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IS IT POSSIBLE TO ASSESS THE CORPORATE MARKET VALUE IN THE EMERGING MARKET?

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Abstract. Assessment of the corporate market value is required in many management decisions. In some cases, the need for such an assessment is predetermined by national legislation. Such cases may include the acquisition of shares by the company at the request of shareholders, the additional issue of shares, etc. However, in the emerging market, which is usually characterized by an increased level of information asymmetry, the ability to correctly estimate the market value is limited, even when it concerns public companies that implies the research problem.

Correspondingly, the research aim was to answer the question on the relevance of assessing the corporate market value in the emerging market. We also sought to show the unfoundedness of the traditional approach to assessing market value using computational models, which in the strict sense allow us to obtain the investment value.

Since differences in assessment of market and investment value can be clearly shown with the example of publicly traded companies, the research methodology was as follows. The research was based on theoretic and applied methods including analysis, synthesis, analogy, and financial modeling. According to a business evaluation methodology, the investment value was determined by the method of discounted cash flows over a period of five years in retrospect (for a sample of Russian public companies, representing the largest industries in the stock market). For the same period, the market value of the companies was analyzed, which was determined through the market capitalization. Main results and findings of the research concern the significant differences in the assessment of market and investment value. This showed the inconsistency of computational models for estimating market value in the emerging market.

Correspondingly, the main conclusions of the research are the following. It was proved that in assessing a business in the emerging market one should focus primarily on the standard of investment value. The corporate market value in the emerging market is a rather suppositive value, which should be used cautiously. At the same time, the investment value as a whole can be used in solving the same range of analytical tasks for which the market value is currently estimated. The revealed limitations in the assessment of the corporate market value should be suggested as one of the characteristic signs of the emerging market. Ultimately, these restrictions are a sign that the conditions for entering into transactions with companies and corporate securities in the emerging market are in some sense not entirely market-based, which opens up prospects for further research in this area.

The research contributes to the development of the theory and methodology for assessing the business value as well as partly to the current discussion about the content and defining features of the emerging market. The practical significance of the research, in our opinion, lies in the fact that the results obtained can be applied in the improvement of national standards for evaluation activities.

Key words: *investment assessment, investment value, market value, emerging market*

JEL code: G32

Introduction

Countries with emerging markets form a special group of countries which has a number of characteristic features (Mody A., 2004). Among the main features are the following: dynamic and unstable financial development; low or medium level of financial well-being; relatively high level of financial liberalization; relatively low importance of the financial market in funding the real sector of the economy, limited possibilities for funding of companies, etc. (Lvova N.A., 2016).

Despite the fact that specificities of countries with emerging markets are recognized by professional financial community, financial studies of this phenomenon have not been sufficiently developed. The literature often ignores the fact that investment assessment of companies in countries with emerging markets should take into account the increased level of information asymmetry, which effectively precludes the possibility of obtaining a correct assessment of the corporate market value of companies, even if they are public companies.

Thus, in our study we formulate a hypothesis about significant differences in assessment of the market and investment value of public companies in countries with emerging markets, testing this hypothesis using examples from Russian practice. The results of the study and their discussion are provided in four sections. The first section raises the issue of corporate financial health in the conditions of emerging market, which brings us to the problem of increased information asymmetry. The second section deals with the content and significance of assessment of the corporate market value of companies from the point of view of the Russian legislation. In the third section there is a discussion of the problems of assessing the market value of companies in the emerging market on the example of the Russian Federation, which allows to create a methodology of empirical research. The fourth section contains the results of this study. Conclusions, suggestions and recommendations are represented in the conclusion.

Research results and discussion

1 Information asymmetry as a challenge to corporate financial health in the emerging market

The problems under study are connected with the theory and methodology of supporting investment decisions. Thus, on the one hand, we turn to methods and models of assessing the investment value of companies. On the other hand, we question the reasonability of using traditional tools of investment value, taking into account the increased information asymmetry which is a significant challenge for the companies operating in the emerging markets. Thus, one way or another, our research is related to the issues of corporate financial health. Let us show this interrelation in more detail, which will help prove the importance of the study.

The financial health of the corporate sector is an important indicator of financial stability of the economy. This situation primarily concerns the companies in the financial sector, massive defaults of which lead to a systemic financial crisis (Classens S. & Kose M.A., 2013; Gorton G., 2018). At the same time, the successful operation of non-financial sector companies and, consequently, their readiness and ability to operate raised funds are a necessary condition of financial stability, which is confirmed by the results of testing the hypothesis of financial fragility by Hayman Minsky (1992) (Minsky H.P., 2017).

The significance of the financial health of the corporate sector in the economy is most evident in relation to public companies which include the largest and systemically important corporations. The financial health of public companies is sensitive to market expectations and reflects investors' perceptions of the level of country risk and promising investment targets. The assessment of financial health of public companies has fundamental specifics and the methodology of

financial diagnostics must consider features of the financial market, including comparative level of information asymmetry (Abramishvili N.R. et al, 2016).

According to the authors, information asymmetry is both a consequence and a factor of financial destabilization of the corporate sector. Consequently, the increase in the "information glut" which is found with increasing levels of information asymmetry may lead to financial insolvency of certain public companies, including "target" companies when it comes to the use of information as a tool of unfair competition. The problem of information asymmetry increases as the information economy develops, it requires research of new challenges that public companies face.

It should also be noted that the impact of information glut is relatively less susceptible to developed financial markets with a solid stock of information security, high liquidity, and attractiveness for investors as safe havens. Developed markets relatively quickly restore the disturbed functions, which is largely facilitated by the investors' focus on "quality" (this situation could be observed through the global financial recession). Undeveloped financial markets, initially characterized by increased information asymmetry, in the context of financial crises, on the contrary, show the sharpest increase in volatility and a sharp reduction in liquidity (Darushin I.A. et al, 2016).

Thus, information asymmetry poses a significant threat to the financial health of corporations, particularly in the emerging market. Increasing information asymmetry can reflect the systemic financial crisis (Mishkin F., 1999) and at the same time can become a driver of this crisis. One of the factors of increasing information asymmetry, in its turn, is the wrong assessment of the investment value of companies. If such assessment is made incorrect systematically in the economy, the problem of increased information asymmetry will only get worse. The study showed that this exact situation is observed in the Russian Federation when assessing the market value of companies, which, in fact, is not a market one. Let us consider this situation in more detail.

2 The concept of market value of companies and the value of its assessment in the Russian Federation

According to the article 3 of the Federal law "On valuation activity" (ConsultantPlus, 1998), the market value of the object of valuation is understood as the most probable price at which the object of valuation can be alienated in the open market in a competitive environment when the parties of the transaction act reasonably, having all the necessary information, and no exceptional circumstances are reflected on the value of the transaction price, i.e. when:

- one of the parties of the transaction is not obliged to alienate the object of valuation, and the other party is not obliged to accept execution;
- the parties of the transaction are well aware of the subject of the transaction and act in their own interests;
- the object of valuation is presented in the open market through a public offer typical for similar objects of valuation;
- the transaction price is a reasonable remuneration for the object of valuation and there were no enforcement to the transaction in respect of the parties of the transaction from any party;
- the payment for the valuation object is expressed in monetary terms.

In the Russian literature there is a definition of reasonable market value. This type of cost assumes that business assessment is based on the information (about the property, current and forecast market conditions and purchased resources, business opportunities, etc.), which is equally available to any potential buyer and seller, for any investor.

We emphasize that the process of assessment of Russian companies' value at the current stage of economic development of the country is an essential condition for the functioning of the financial system. The Russian legislation stipulates a large number of situations where the assessment is necessary and mandatory. This need is reflected in the legislation in the following cases:

1 Repurchase of shares by the company at the request of shareholders (articles 75 and 77 of the Federal law "On joint stock companies");

2 Additional issue of shares (articles 34 and 77 of the Federal law "On joint-stock companies");

3 Repurchase of securities of a public company at the request of a person who has acquired more than 95% of the shares of a public company (art. 8 of the Federal Law "On joint-stock companies"), etc.

Furthermore, the assessment is compulsory in case of involvement in the transaction of objects (in our case it is blocks of shares) owned or partly owned by the Russian Federation, by constituent entities of the Russian Federation and municipal entities (article 8 of the Federal law "On valuation activities") (ConsultantPlus, 1998). Moreover, the determination of market value accompanies most of the operations on providing property as collateral in commercial banks, as well as mergers and acquisitions.

However, it should be noted that according to the requirements of the legislation, in all these cases it is necessary to determine the market value itself[1]. The concept of market value is adopted in the Russian valuation legislation, and is considered by various authors.

Foreign authors, such as A. Damodaran (2012), N. Antill and K. Lee (2008) and others in their works do not give strict definitions of market value, apparently thinking that this category has an obvious essence. The concept of Fair Value is precisely formulated in International Financial Reporting Standards. But due to Russian legislation the term "market value" is used. Actually, all these terms have a very similar meaning. This assumption is confirmed by the analysis of periodicals on this subject, where, as a rule, the definition of market value is not given at all (Chen M.-C. et al, 2005, Xueming L. & Bhattacharya C.B., 2006, etc.). This can be explained by the fact that the market value is not understood as estimated value determined using analytical models, but it is the value of the asset formed in the market (for companies it is, for example, market capitalization). One should ask the question: to what extent is this approach to assessing the market value of companies realistic in the Russian Federation?

3 Problems of assessing the corporate market value in Russia

The research has shown that for the majority of the Russian companies *it is generally impossible to focus on the market value*. This is mainly due to the fact that the majority of them are not public companies which offer their shares on the stock exchange. Thus, as of January 1, 2018, about 86,000 joint-stock companies were included in the National Register of Legal Entities (Kommersant, 2018), but only 230 companies are listed on the Moscow stock exchange (and only 88 of them are in the quotation lists of the first and second levels) (NAUFOR, 2018).

Taking into consideration that active bidding takes place only for a limited number of shares, and the percentage of shares in free circulation is quite low, the result of the calculations within the comparative approach lacks credibility. Therefore it is necessary to create and develop computational models using other approaches (income and cost approaches).

It is also worth mentioning that the definitions of market value given above imply that market conditions and publicly available information should be taken into consideration when assessing the value. However, speaking of the information directly regarding the company being assessed, the only source available to public is its accounting statements, and the assessors, when using income, comparative, let alone cost approaches, have access to an immense amount of information provided by the company. This information is not publicly available and then, strictly speaking, the value assessed on the basis of these data cannot be considered market value. In addition, in situations related to mergers and acquisitions, it is

[1] According to the article 7 of the Federal law "On valuation activity", if in the regulatory legal act containing the requirement of obligatory assessment of any object of assessment ... the specific type of cost of the object of assessment is not defined, the market value of this object is subject to establishment.

often necessary to assess not only the market value of the company, but also the synergy, which, in fact, means the assessment of investment value.

It is noteworthy that the Russian legislation also contains a definition of the investment value of the asset. According to the Federal Appraisal Standard “Investment Value Determination FSO 13, "investment value means the value of the object of assessment for a particular individual or group of individuals, regarding the investment purposes of using the object of assessment established by that individual (individuals)" (ConsultantPlus, 2016). At the same time it is necessary to calculate "the amount of money representing the beneficial effect of using the object of assessment for a particular individual or group of individuals ... regarding the investment purposes of using the object of assessment established by that individual" (ConsultantPlus, 2016).

In this regard, we would like to pay attention to the following. When assessing the value of the company, the assessor bases their forecast within income approach on the historical data of the company's income and expenses. These indicators are formed under the influence of the decisions of the company's management hired by shareholders (in other words, investors). Thus, extrapolation of these data leads to the fact that the forecast is formed not on the basis of market data, but on the basis of the views of a particular investor about the future activity of the company. Any forecast not backed up by the historical trends will look insufficiently substantiated. In the same way, the discount rate calculated according to the CAPM or BUM represents the specific risks of the company itself and not the average industry (or market) return.

In the comparative approach, the valuation ratios are also most often applied to the indicators of retrospective financial and economic activity, which are also affected by the decisions of the company's management. In addition, in the absence of a sufficient number of equivalents on the exchange, the usage of the transaction method also leads to the consideration of the investment component of mergers and acquisitions. Thus, the result obtained with this method also cannot be strictly considered to be market value.

Hence, it can be said that the methodology, developed in the Russian assessment practice is more in line with the standard of the investment value than the market one. The authors also indicate that there is no formalized approach to the assessment of the investment value of Russian companies in the theory and practice of business valuation, and, in most cases, this assessment is reduced to calculating the market value (Zukhrova L.I. & Novilova I.Y., 2007).

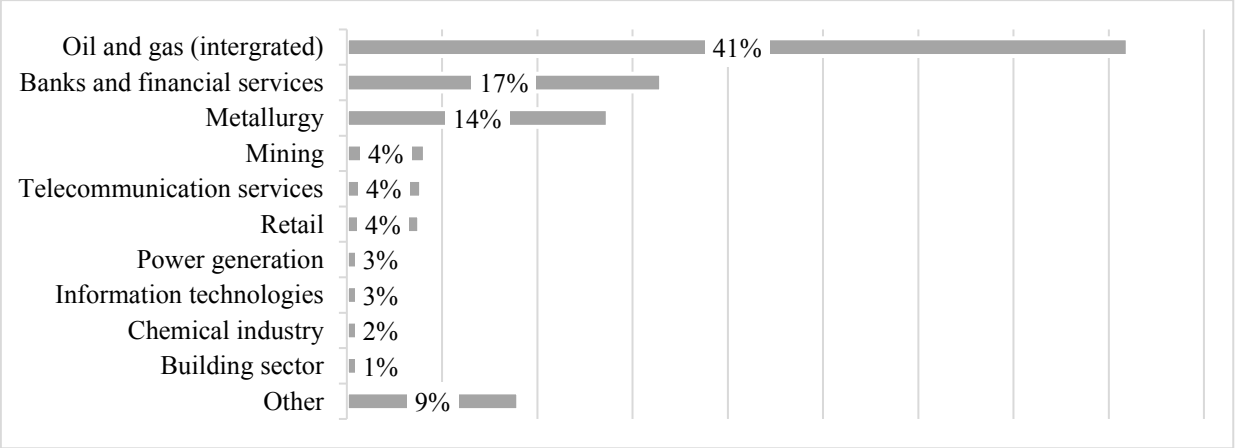
As for public companies, the implementation of the comparative approach for them is possible based on the analysis of their own quotations, which provides the required market value for public companies, and the necessity to assess this value is enshrined in law. At the same time, when determining the value by income approach, we will inevitably obtain the investment value, not the market value.

Assumptions about the nature of the market value of companies in the emerging financial market, including public companies, are, from our point of view, a direct consequence of the fact that these markets have a high level of information asymmetry. Consequently, there will be significant differences in market and investment values, even for the largest and most actively traded companies. In the following section, we will test this assumption in practice.

4 Comparative assessment of market and investment values using the example of Russian public companies

The methodology of empirical research was as follows.

As an example, we have chosen several companies that are the largest in their industries, which in their turn are among the ten largest by capitalization in the Russian stock market. The sectoral composition of the Russian market is shown in the figure below (figure 1).



Source: authors' calculation based on (Moscow Exchange, 2018).

Fig. 1 **Industry structure of issuers, % of market capitalization, 2018, the Moscow Exchange**

The calculation was carried out using the following companies as an example:

- PJSC "LUKOIL"[2] (oil and gas);
- PJSC "NLMK" (metallurgy);
- PJSC "MMC "Norilsk Nickel" (mining);
- PJSC "Magnit" (retail).

For each company, the investment value was assessed using the discounted cash flow model as of 01.01.2018, as well as of the dates in retrospect – 01.01.2017, 01.01.2016, 01.01.2015 and 01.01.2014.

The capitalization values of companies for the corresponding dates were also analyzed. The results obtained after calculating the investment value were compared to the dynamics of the share price on the same dates to draw conclusions.

Here we will give a detailed methodology for assessing the investment value of the company by discounted cash flows model using the example of PJSC LUKOIL as of 01.01.2018.

The company's retrospective statements for 5 years prior to the valuation date were used to forecast cash flows. Free cash flow to firm was chosen as the cash flow model.

In the assessment as of 01.01.2018, the company's revenue for 2018 and 2019 was assessed based on the forecasts generated in the Bloomberg terminal. In other cases, a deflator was used to forecast revenue (the consumer price index based on the forecasts of the Ministry of economic development, relevant for each date of the assessment) (The Ministry of Economic Development of the Russian Federation, 2019).

Earnings before interest and taxes were calculated on the basis of average retrospective profitability for the period of 5 years prior to the valuation date. The corporate income tax rate was determined at 20% in accordance with the Tax code of the Russian Federation Part 2 (ConsultantPlus, 2000).

Amortization was forecast to be at the level of the last reporting year, assuming no significant change in the value of fixed assets takes place. At the same time, investments were forecast only for the renovation of fixed assets, taking inflation into consideration.

The terminal value was calculated based on the growth rate at the level of long-term inflation rate at 3.9% (according to the forecasts of the Ministry of economic development of the Russian Federation). The discount rate determined by the WACC model was 18%, considering the equation.

[2] PJSC LUKOIL is not the largest company in its sector, but it is one of the largest non-state companies. This company was chosen as the object of research in order to exclude the factor of the influence of the state as the owner of the company on its activity.

Here we will present the calculation of the investment value of the analyzed company as of January 1, 2018, taking the above assumption into consideration (table 1).

Table 1.

Assessment of the investment value for the PJSC LUKOIL by discounted cash flows model

Indicators	2017	2018	2019	2020	2021	2022 (F)
S, m RUR	5,475,180	8,033,675	7,950,781	8,251,639	8,585,252	
SG, %				3.78	4.04	3.97
EBIT, m RUR	481,785	741,789	734,135	761,915	792,719	
EBIT margin, %	8.8	9.23	9.23	9.23	9.23	
T, m RUR		148,358	146,827	152,383	158,544	
NOPAT, m RUR		593,431	587,308	609,532	634,175	
NWCG, m RUR		225,187	-7,296	26,480	29,363	
A&D, m RUR		325,054	325,054	325,054	325,054	
CAPEX, m RUR		336,138	339,152	337,354	338,196	
FCFF, m RUR		357,160	580,506	570,751	591,670	
r, %		18				
TV, m RUR						4,215,975
Present value of FCFF and TV, m RUR		302,678	416,911	347,377	305,177	2,174,553
IV, m RUR		3,546,695				
LTD, m RUR		487,647				
E, m RUR		3,059,048				

Note: S – sales; SG – sales growth; EBIT – earnings before interest and taxes; T – tax; NOPAT – net operating profit after tax; NWCG – non-cash working capital growth; A&D – amortization and depreciation; CAPEX – capital expenditures; FCFF – free cash flow to firm; r – discount rate; TV – terminal value; IV – investment value; LTD – long-term debt; E – equity (equity value).

Source: authors' calculation based on (Bloomberg)

Similarly, the investment value of the analyzed companies was assessed for the entire period of research. The obtained estimates were compared to the value of market capitalization (table 2).

Table 2

Comparing the market and investment values of the analyzed companies

Date	IV (Investment Value), m RUR	MC (Market Capitalization), m RUR	Δ (IV – MC)	
			m RUR	%
PJSC "LUKOIL"				
Jan 1, 2014	2,771,636	1,723,581.38	1,048,054.76	60.8
Jan 1, 2015	2,508,017	1,886,038.96	621,977.77	33.0
Jan 1, 2016	2,972,598	2,001,035.11	971,563.31	48.6
Jan 1, 2017	2,902,757	2,916,156.12	-13,399.22	-0.5
Jan 1, 2018	3,059,048	2,823,444.72	235,603.17	8.3

PJSC "NLMK"				
Jan 1, 2014	45,979	328,189.12	-326,781.26	-99.6
Jan 1, 2015	251,017	389,859.43	-385,395.92	-98.9
Jan 1, 2016	480,678	376,314.74	-369,723.78	-98.2
Jan 1, 2017	371,790	685,804.99	-679,597.75	-99.1
Jan 1, 2018	482,169	884,540.41	-876,088.17	-99.0
PJSC "MMC "Norilsk Nickel"				
Jan 1, 2014	623,224	854,050.83	-834,967.90	-97.8
Jan 1, 2015	1,044,656	1,291,599.58	-1,273,023.82	-98.6
Jan 1, 2016	1,396,883	1,451,585.75	-1,432,431.98	-98.7
Jan 1, 2017	1,261,894	1,589,259.32	-1,568,191.27	-98.7
Jan 1, 2018	1,164,412	1,700,664.13	-1,680,252.43	-98.8
PJSC "Magnit"				
Jan 1, 2014	330,381	868,999.94	-538,619.29	-62.0
Jan 1, 2015	382,109	931,807.59	-549,698.48	-59.0
Jan 1, 2016	441,466	1,052,089.64	-610,623.58	-58.0
Jan 1, 2017	465,710	1,031,475.26	-565,765.12	-54.9
Jan 1, 2018	437,739	598,289.69	-160,550.68	-26.8

Source: authors' calculation based on (Bloomberg)

Thus, the values of market and investment value of the analyzed companies show significant discrepancies. And, as you can see, there are cases when market value exceeded investment value and vice versa. For example, PJSC "Magnit", was overestimated during the analyzed period, analysts claim (Expert Online, 2017). And as a result, we can notice that the market value of the company exceeded its investment value and then, in 2017, it fell down almost to the level of the investment value. JSC "Norilsk Nickel" and JSC "NLMK" also look overvalued. However, a more detailed explanation of the reasons for this discrepancy requires insider information. At the same time, the scale of the identified discrepancies and, consequently, the significance of the respective causes reflect the high level of information asymmetry in the Russian financial market, which is traditionally considered to belong to emerging markets.

Conclusions, proposals, recommendations

The study has shown that in the emerging market countries, the assessment of the market value of companies is in high demand. There are mandatory and recommendatory requirements for this. In particular, in Russia there is a number of situations in which the assessment of the market value of companies is mandatory by law. At the same time, analysts face a number of specific limitations in the assessment of market value such as insufficient base to choose an equivalent and implement a comparative approach, insufficient information transparency for the implementation of a reasonable income approach, and others. As a result, the ability to correctly assess market value using traditional analytical models is dubious even for large public companies. Thus, we used the example of Russian public companies representing industries that are among the largest in the Russian stock market to find systematic significant differences between the investment value and market capitalization, which confirms the hypothesis of the study. This way, the methodology of investment valuation of companies should be primarily focused on the standard of investment value rather than market value. The research contributes to the development of the theory and methodology for assessing the business value as well as partly to the current discussion about the content and defining features of the emerging market. In particular, we

received another confirmation of the fact that information asymmetry which distorts the guidelines of the investment decision-making poses a significant challenge for the financial health of corporations in the emerging market. However, our conclusions apply generally to the research sample and proposals regarding the Russian market should be compared with other countries in further research.

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Bibliography

Abramishvili, N.R., Lvova, N.A., Ivanov, V.V. & Voronova N.S., 2016. Prediction of Debtor Solvency: Developing Bankruptcy Framework in Russia. *Innovation Management and Education Excellence Vision 2020: from Regional Development Sustainability to Global Economic Growth*. The 27th International Business Information Management Association Conference, Seville, Spain, November 9–10, 2016: Proceedings. IBIMA, 362–370.

Antill, N. & Lee, K., 2008. *Company Valuation under IFRS: Interpreting and Forecasting Accounts Using IFRS*. 2nd ed. Petersfield: Hariman House Ltd.

Bloomberg Professional Services, 2019. The Bloomberg Terminal.

Chen, M.-C., Cheng, S.-J. & Hwang, An Y., 2005. Empirical Investigation of the Relationship between Intellectual Capital and Firms' Market Value and Financial Performance. *Journal of intellectual capital*, 6 (2), 159–176.

Classens, S., & Kose, M.A., 2013. *Financial Crises: Explanations, Types, and Implications.* IMF Working Paper, WP/13/28. The International Monetary Fund.

ConsultantPlus, 1998. *Federal law of the Russian Federation "On Valuation Activities in the Russian Federation", no, №135-FZ, Jule 29, 1998 (current ed.)* [in Russian]. [Online]. Available at: http://www.consultant.ru/document/cons_doc_LAW_19586/ [Accessed 15 January 2019]

ConsultantPlus, 2000. *Federal law of the Russian Federation "Tax code of the Russian Federation Part 2", no, №117-FZ, August 5, 2000 (current ed.)* [in Russian]. [Online]. Available at: http://www.consultant.ru/document/cons_doc_LAW_28165/ [Accessed 15 January 2019]

ConsultantPlus, 2016. *Federal Appraisal Standard "Investment Value Determination FSO 13", the Ministry of Economic development of the Russian Federation act no. 722, Nov. 30, 2016 (current ed.)* [in Russian]. [Online]. Available at: http://www.consultant.ru/document/cons_doc_LAW_207685/e81f4d937b26e20d617284d85fb20f89ca5eb15e/ [Accessed 15 January 2019]

Damodaran, A., 2012. *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*. 3rd ed. New York: Wiley Finance Series.

Darushin, I.A., Lvova, N.A., Ivanov, V.V. & Voronova N.S., 2016. The Russian Stock Market: Is It Still Efficient? *Innovation Management and Education Excellence Vision 2020: from Regional Development Sustainability to Global Economic Growth.* The 27th International Business Information Management Association Conference, Seville, Spain, November 9–10, 2016: Proceedings. IBIMA, 818-828.

Expert Online, 2017. *A Magnet Loses Its Force of Attraction* [in Russian]. [Online]. Available at: http://expert.ru/expert/2017/44/magnit-teryaet-silu-prityazheniya/ [Accessed 15 January 2019]

Gorton, G., 2018. Financial Crises. *Annual Review of Financial Economics*, 10, 43–58.

Kommersant, 2018. *Registers Are Waiting for Industry Consolidation and Developing New Services* [in Russian]. [Online]. Available at: https://www.kommersant.ru/doc/3628126 [Accessed 15 January 2019]

Lvova, N.A., 2016. The Concept of Financial Systems' Comparative Evaluation [in Russian]. *Actual problems of economics*, 179 (5), 308–316.

Ministry of Economic Development of the Russian Federation, 2019. *Forecasts of Socio-Economic Development of the Russian Federation and Certain Sectors of the Economy* [in Russian]. [Online]. Available at: http://economy.gov.ru/minec/activity/sections/macro/prognoz [Accessed 15 January 2019]

Minsky, H.P., 1992. *The Financial Instability Hypothesis*. The Levy Economics Institute Working Paper, 74, May. Annandale-on-Hudson: The Jerome Levy Economics Institute of Bard College.

Minsky, H.P., 2017. *Stabilizing an Unstable Economy* [in Russian]. Rozmainsky, I. (ed). M., SPb.: Gaidar Institute Publishing, Faculty of Liberal Arts and Science (SPSU).

Mishkin, F., 1999. Global Financial Instability: Framework, Events, Issues. *Journal of Economic Perspectives*, 13 (4), 3–20.

Mody, A., 2004. *What Is an Emerging Market?* IMF Working Paper, WP/04/177. The International Monetary Fund.

Moscow Exchange, 2018. *The Market Capitalization of Securities at the End of Trading in the Stock Market, PJSC Moscow Exchange at the End of the Third Quarter of 2018* [in Russian]. [Online]. Available at: https://www.moex.com/a4420 [Accessed 15 January 2019]

NAUFOR, 2018. *Russian Stock Market: 1st Half of 2018* [in Russian]. [Online]. Available at: http://www.naufor.ru/getfile.asp?id=11860 [Accessed 15 January 2019]

Xueming, L. & Bhattacharya, C.B., 2006. Corporate Social Responsibility, Customer Satisfaction, and Market Value. *Journal of Marketing*, 70 (4), 1–18.

Zukhrova, L.I., & Novilova, I.Y., 2007. Rusiian M&A Market. Deals Efficiency Increasing by Investment Value Evaluation [in Russian]. *Finansi i kredit = Finance and Credit*, 22, 66–72.

WORK AND LIFE BALANCE – THE NEW AGE MANAGEMENT MATTER

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Abstract. Even apart from the dramatic statistical data about sicknesses caused by imbalance and burnout, surveys make it clear that individuals are struggling to enjoy living because of the growing workload and the persistent presence of technologies around us (EQLS, 2016). Work-life imbalance causes loss for companies for several reasons - intentional or unintentional absence at work, high employee turnover, low productivity, insurance costs etc.

The scientific question arises from the fact that until now there have not been clear researches which indicate the model of how the work and life balance (WLB) or imbalance is being created. Particularly, author is interested in how the interaction between the values of employee and employer or direct supervisor affects WLB of the employee. However, before practical research the aim of this paper is to evaluate the importance of this topic in Latvia and to detect the major steps to even the balance out between work and private life by using the data that is already available. The methodology of the research is to gather local (i.e. TNS) and international (i.e.EUROSTAT) secondary data available to assess the current situation in Latvia. The research shows that unemployed people in Latvia tend to feel less stressed than those who are employed, which shows that although unemployment itself may cause stress, workplace and employment creates even a greater room for stress related factors. Further author is determined to conduct a research to later provide a model, which could be practically used by managers to help them with managing the WLB for their employees.

Key words: *work-life balance, job satisfaction, stress*

JEL code: J28, M54

Introduction

In life there are several roles for every member of the society – to be an employee or employer, a husband or a wife, a mother or a father, a daughter or a son, a friend and not to forget to be a human. These roles take energy, time and in the great pace of the everyday life it is possible to notice a conflict between these roles. This conflict is only one of the reasons for work and private life imbalance in life of members of our modern society. The imbalance in turn results as dissatisfaction of both work and life, it leads to greater stress levels and thus to stress related illnesses. In extreme cases the imbalance may cause burnout and even a phenomenon called karōshi, which in Japanese means literally "overwork death". The statistical data from several sources show that the tendency is getting worse over time, for example, Europe's Quality of Life Survey, which is being organized once in every two years, shows a clear trend even when comparing the difference of data of two years apart. In their opinion, the trend can be explained by the growing workload, requirements and the increasing speed of life. Undeniably, the balance between work and private life is, first of all, an individual's responsibility. However, there are many aspects which are dependent on employer and a conscious approach towards the employees.

There have been studies, which seek for the answers of what are the main influencing factors, which cause work and life imbalance. However, there is a lack of scientific attention to the factors of organizational culture and particularly the interaction of the values of an employee and the values of the employer or the supervisor. Thus author sees a scientific problem that the role of values has not been detected and evaluated in determining the work and life balance. Work-life imbalance is an important factor when analysing efficiency of an enterprise for the reason that it causes intentional or

unintentional absence at work, high employee turnover, low productivity, higher insurance costs, low job satisfaction and other consequences. The aim of the research is to evaluate the current situation in the particular matter in Latvia. For it to be done, the author will gather quantitative and qualitative information from official researches and surveys done in the past years. The further aim is to assess the current threats and losses because of work and private life imbalance and to foster a conscious approach towards company policy making to take care of the greatest resource of the 21st century – the human capital. Author wants to raise a theoretical discussion on the mode of entrepreneurship of 21st century and the role of conscious capitalism in it, which is an emerging phenomenon among scholars. The novelty of this research is to raise the question of human capital as the greatest value of entrepreneurship and to foster the research and practical implementation of conscious capitalism in modern business practices in Latvia. Information sources used in this paper are scientific papers and sources, which provide secondary statistical data on the particular matter.

Research results and discussion

Taking into account that work plays a great role in every life of an employee, job satisfaction is one of the key components which builds the overall satisfaction of life and overall wellbeing. Undeniably, job satisfaction is also making a great difference on economic indicators – researches are showing that it gives impact of productivity (Halkos et al, 2010, Van de Voorde et al, 2012), on turnover of employees (Freeman, 1978, Clark et al, 1988, Clark, 2001, Antecol et al, 2009), and on absence of work (Brown, 1996). Although job satisfaction is a widely examined topic among scholars, there still isn't a united approach towards it. Most widely used definition for the term "job satisfaction" dates back to 1976, when Locke defined it as "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences" (Locke, 1976). Locke's theoretical model is the one that is most widely used in researches about one's job satisfaction. The main idea of the model is that job satisfaction is being determined by the difference from what the individual expects and what he gets in return. In other words it means that if one strongly values autonomy in workplace, then the actual situation whether he or she gets autonomy or not strongly influences overall job satisfaction. It can be aggregated in a formula –

$$\boldsymbol{S = (V_c - P) \times V_i}$$

Formula 1. **Theoretical model of job satisfaction**

Where S is satisfaction, Vc is content of the value that one desires, P is perception on how much the individual has actually received at work and Vi is a coefficient showing the level of importance of a particular value (Judge et al, 2008). This theory states that job satisfaction is not directly connected with particular factors which are or aren't present in a workplace, but it is rather important whether this factor is important or not for the individual. For instance, if the microclimate between colleagues is not pleasant, but it is not a value for the particular employee (for example, if one is working from home or one's work is not connected with communication with others), then one's job satisfaction might not be influenced by lack of this factor. The overall job satisfaction can be detected when several factors are counted together. In author's opinion this clearly shows the importance of matching values between the organization and the employee, while it also shows the importance of an employee as a core value for the enterprise to ensure that the workplace meets the needs and values of the employees.

Most of the researchers see job satisfaction as a concept that consists of several aspects. Most widely used is categorization, which includes 5 aspects – salary, promotion, colleagues, supervision and work content (Smith et al. 1969). Locke, however, adds work recognition, working conditions, policy and other aspects (Locke, 1976). Many researchers believe that work which gives motivation mainly because of the work content, will give a greater satisfaction that work

without a sense of fulfilment. Several researchers believe that interaction between individual and organizational values and adjusted organizational culture leads to job satisfaction. Schematically it may be seen in Fig.1. (Goštautas et al, 2015).

Source: Goštautas V, Diskiene D., Relationship between individual and organizational values and employees' job satisfaction

Fig. 1. **Hypothetical relationship between values, culture, job satisfaction and other variables**

Another influencing factor is work orientation. Work orientation means whether an employee chooses to work in a particular organisation because he or she sees it as either as work, as a part of career or as a calling. Individuals, who see their occupation as work, concentrate on the financial benefits they get from work. In their perception work is an opportunity to accumulate financial resources, which can be spent outside work. Individuals who see their occupation as career sees their job as an investment in their personality and life path. They are motivated not only by their salary, but by the opportunity to acquire a higher social status, to gain power and to raise their self esteem. However, the ones, who see their job as a calling, feel it as a part of their personality. Their greatest motivation is neither money, nor status, but the end result and their ability to benefit society by their work (Bellah et al, 1985, Wrzesniewski et al, 1997)

1. Work and private life balance connection with job satisfaction

Work and life balance together with job satisfaction are responsible for employee performance – there is a positive correlation between both (Isse et al, 2018). Undoubtedly, work-life balance is vital for individuals' wellbeing, organisations' performance and a functioning society (Grady et al, 2008). While there are numerous researches and there is still a discussion about both – work-life balance and job satisfaction, researchers mostly agree and explain that work and life balance is a set of internal factors, which take part in the overall evaluation of job satisfaction (Yadav et al, 2014) .

Source: author's construction based on the literature reviewed

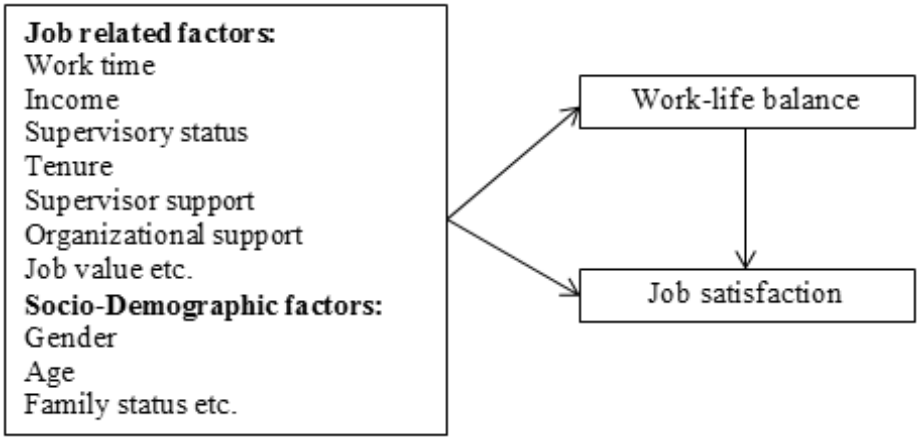

Fig. 2. **Interrelations of work-life balance and job satisfaction**

Although researchers had already had an insight about the topic even before the World War I, a crucial development of the concept started only in the 80ies of 20th century (Lockwood, 2003). Work and life balance nowadays is a widely

researched topic, which has been topical in several fields – management (Konrad et al, 2000), psychology (Hegvedt et al, 2002), sociology (Glass et al, 1997) and mostly in the context of human resource management (Hill et al, 1989, De Cieri et al, 2005). Different terms are used by different scholars to refer to 'work-life balance'. For example, Frone (Frone, 2003), Greenhaus et al.(Greenhaus et al., 2003) ,and Clark (Clark, 2000) refer to the term 'work-family balance'; Clarke (Clarke et al, 2004) refer to 'work-family fit'; Burke (Burke, 2000) refers to 'work-personal life balance'; and Grady et al.(Grady et al, 2008) refer to 'work-life balance'. As work-family balance is often associated with traditional families, i.e., individuals who are married with children (Barnett et al, 2001), and this study refers to a family in both its traditional and non-traditional form; in order to therefore avoid any confusion, the term 'work-life balance' is used throughout this paper.

Clark defines work and life balance as "satisfaction and good functioning at **work** and home, with a minimum of role conflict" (Clark, 2000). Clarke et al (Clarke, 2004) state that work and life balance (WLB) is an "equilibrium or maintaining overall sense of harmony in life", while other scholars (Greenhaus et al., 2003) define WLB as "the amount of time and the degree of satisfaction with the work and family role".

There are several theories, which describe the nature of work and life conflicts, which cause imbalance. For example, researchers separate conflicts which are caused by time, strain based conflicts and behavior-based conflicts. Time becomes a reason for conflict when time devoted to one role makes it difficult to fulfill requirements of another role. Time-based conflict is consistent with the excessive work time and schedule conflict dimensions identified by Pleck (Pleck et al, 1980) and role overload identified by Kahn (Kahn, 1964). Strain-based conflicts involve role-produced strains i.e. there is considerable evidence that stressful work factors can produce strain symptoms such as tension, anxiety, fatigue, depression, apathy and irritability. In short the second form of work-family conflict happen because the roles are incompatible in the sense that the strain created by one makes it difficult to comply with the demands of another role (Greenhaus et al, 1985). Specific patterns of in-role behavior may be incompatible with the expectations regarding behavior in another role. For example, if a male has a managerial position, he is supposed to be emotionally stable, self-reliant and strict, while family members may expect a warm, emotional and nurturing husband and father.

2. Current situation in Latvia in terms of work and life balance

Work and life balance in the last years has been a concern for both local and international authorities. Internationally, European Union for several years has conducted a research to overview and control the situation in terms of work and life balance. There are also several initiatives proposed to enhance the situation in EU countries. For example, on 17 November 2017, the European Parliament, the Council and the European Commission formally proclaimed the European Pillar of Social Rights (EPSR, 2017). The Pillar includes an initiative to particularly support work–life balance for parents and carers. The initiative aims to address women's underrepresentation in the labour market and outlines a number of new or improved minimum standards for parental, paternity and carer's leave.

Locally, Ministry of Welfare has raised the importance of this question. There have been several initiatives under a 3 year long EU project which is meant to foster family friendly practices among employees and employers in Latvia. For example, in 2016 Ministry of Welfare organized a press conference "Work and life balance in the labour market of Latvia" and a seminar "Good Practice for Entrepreneurs in Latvia: Implementing Family-Friendly Principles in the Work Environment and Relationships". Under this project there was also developed a website www.darbsungimene.lv, which means work and family. The aim of this website is to foster the awareness of the topic of work and life balance in society to enhance the implementation of employee-friendly practices in Latvia. Ministry of Welfare states that both – local and international researches show that one of the approaches for developing human capital is to foster work and life balance

for employees and to integrate family friendly initiatives. Former minister of welfare Jānis Reirs says that very often employers think that balancing between work and life is a task for employees. However, the experience of enterprises clearly shows, that investing in employee-friendly organizational culture, fosters not only the involvement and loyalty, but it is also important for attracting new and holding the existing employees in their workplace (Ministry of Welfare, 2016). The methodology of this paper is to use both – local and international sources to gather secondary data about the work and life balance issue in Latvia and how it can be assessed among other European countries.

EUROSTAT researches show that bad working environment in European Union is responsible for losses in amount of 2,6-3,8% of EU GDP (EUROSTAT, 2009). Also, 8,6% (20 million inhabitants) clearly state work is responsible for their obtained health issues. Since 2003 European Union organizes European Quality of Life Survey, which has been repeated in 2007 , 2012 and 2016 (EQLS, 2016). Overall, it is possible to say that there is general progress in different indicators like quality of life, quality of public services, level of optimism. However, the work-life balance has deteriorated over years, which, in author's opinion, could be the cost for raising the standards. In EQLS the work and life balance term consists of 3 dimensions – if employees are too tired to do household jobs, if they experience difficulties fulfilling family responsibilities because of time spent at work and do they have difficulties on concentrating at work because of family responsibilities. It is believed that the deterioration is prominent because of labour market pressures, new forms of work organisation, and technological progress that sometimes contribute to the blurring of boundaries between private and working lives (Eurofound, 2017). It is also stated that to achieve balance, it is important to have resources – and in this context, time is a critical resource – as well as having the means to address conflicting demands and the related stress. Author would like to agree that time is the most important resource in the context of this issue. While many professionals and even researchers emphasize the importance of family-friendly practices, flexible working hours and other benefits, the actual number of working hours is often ignored. Among all OECD countries and some developing countries Latvia takes 32nd position out of 39 in the amount of average working hours per week, which for sure is not a contributing factor to sustain work and life balance (OECD, 2018). Also, due to technologies the time off work is not really completely free – everyone is accessible through e-mails or phones and, in authors opinion, the organizational culture and management practices are important to be developed in an employee-friendly manner to sustain work and life balance.

Are employees in Latvia content and healthy? Are they productive? Ivars Vanadziņš, researcher in Institute for Occupational Safety and Environmental Health and professor in Riga Stradins University, states that there is a lack of local researches to give precise data, however, the available statistical data is unsatisfactory. He also states that many enterprises have already started to understand that it is obligatory to care for the welfare of employees, not only to increase profits and decrease losses, but also to attract workers, who ensure a competitive advantage for the enterprise. He believes that actions to improve the situation should be taken in a national scale so the employers would see that the employee-friendly choices are also the best for the enterprises (Conference "„Providing flexible childcare services to employees working on non-standard working hours", 2018).

The available data shows that in the Baltic States 60% of employed respondents are too tired from work to do household jobs, 43% feel that they have a difficulty fulfilling family responsibilities because of time spend at work and only 23% feel that they have difficulty concentrating at work because of family responsibilities. While it is important to balance both sides to ensure balance between work and life, it is obvious that work is more making conflict with private life than the other way around. The best situation is among Nordic countries (Sweden, Denmark, Finland), which are then followed by Western Europe countries (Germany, Austria, Belgium, Netherlands etc.). The cluster with the least success in sustaining work and life balance is among Balkan countries (Bulgaria, Romania – respectively 67%, 51%, 31%).

Table 1

Work–life balance related problems occurring at least several times a month (% of respondents in employment)

		Too tired from work to do household jobs	Difficulty fulfilling family responsibilities because of time spent at work	Difficulty concentrating at work because of family responsibilities
Country cluster	Nordic (Denmark, Finland, Sweden)	53	26	13
	Continental (Austria, Belgium, France, Germany, Luxembourg, Netherlands)	55	33	15
	Western islands (Ireland, UK)	66	37	17
	Mediterranean (Cyprus, Greece, Italy, Malta, Portugal, Spain)	60	39	21
	Eastern Europe (Czech Republic, Croatia, Hungary, Poland, Slovakia, Slovenia)	63	50	28
	Baltic (Latvia, Lithuania, Estonia)	60	43	23
	Balkan (Bulgaria, Romania)	67	51	31

Source: EQLS, 2016

Comparison of work–life balance indicators between 2007 and 2016 show that work–life balance has deteriorated for all age groups and in particular for young women and women in the middle-age category (35–49). The deterioration mostly took place after 2011, which has probably been influenced by global changes i.e. the global economic crisis. One of the influencing factors, which worsen the work life balance for women is that women still provide most of the care, whether for their own children, grandchildren or for their relatives, friends and neighbours with a disability. When it comes to providing care on a daily basis, twice as many women as men do so (Eurofound, 2016), thus it makes an extra pressure for females to be able to balance their work and private life needs.

However, when analysing the numbers of Latvia alone (Table2), comparatively with other countries, it is possible to notice that Latvia has the fourth worst summary indicator of work-life balance in European Union (sharing the position with Hungary and winning over Czech Republic, Greece and Croatia). It has a summary coefficient of 5,2 (out of 10), while the highest rating is in Netherlands with a score 6.6. Meanwhile, it must be noticed that in most of the countries the indicator has worsened over time, while in Latvia it has stayed the same since the previous survey in 2011. It is also possible to conclude that all European Union countries have a room for growth since none of them have at least 7 as their summary indicator.

Table 2

Summary indicator of work–life balance

	2003	2007	2011	2016
Austria	6.9	6.2	6.6	6.2
Belgium	6.7	6.9	6.6	5.9
Bulgaria	5.8	5.6	5.9	5.5
Croatia	-	5.1	5.2	3.7
Cyprus	6.5	5.7	5.0	5.3
Czech Republic	6.3	5.9	5.7	5.0
Denmark	7.2	6.9	7.3	6.5
Estonia	5.9	6.1	6.3	5.9
Finland	6.7	6.7	6.8	6.2
France	6.7	6.9	6.6	5.7
Germany	6.9	7.0	6.7	6.3
Greece	6.0	5.3	5.3	4.9
Hungary	6.0	5.7	5.7	5.2
Ireland	6.6	6.7	6.5	6.4
Italy	6.2	6.2	6.7	5.7
Latvia	4.6	5.7	5.2	5.2
Lithuania	6.4	6.2	6.7	5.9
Luxembourg	7.3	6.9	6.7	6.2
Malta	6.4	6.4	5.7	5.8
Netherlands	7.2	6.9	7.2	6.6
Poland	5.9	5.8	5.5	5.3
Portugal	5.7	6.1	6.4	5.9
Romania	6.0	5.6	6.0	5.0
Slovakia	5.7	6.2	6.1	5.9
Slovenia	6.3	6.1	6.1	6.3
Spain	6.2	5.8	5.6	5.3
Sweden	6.6	6.9	6.6	6.2
United Kingdom	6.0	6.5	6.3	5.8
EU28	**6.3**	**6.3**	**6.2**	**5.8**

Source: EQLS, 2016

Meanwhile, in 2017 there was another research in Latvia, conducted by Kantar TNS, a company doing researches in Latvia for over 25 years, which asked 913 respondents their opinion. The research made it clear that 69% of employees in Latvia are overall satisfied with their work and life balance. In the research it was found out that 44% of all respondents see elastic working time as the best opportunity to find balance, 33% of respondents have an opportunity to get an extra day off and 19% are allowed to work from distance. Meanwhile 84% of respondents state they might feel too tired of work to do their responsibilities at home and 70% state that they see a hard time of doing their responsibilities outside work because of the long working hours (Kantar TNS, 2017). However at the end of year 2018, TNS conducted another research, which showed dramatic results – almost half of the respondents (48%), who are all employed, stated that in the

past year they have experienced at least some of the symptoms of a professional burnout. Comparatively more often these symptoms appear among women, those who work in retail, for those who work more than 40 hours per week and also for those, who are not satisfied with their job and have thoughts of changing it in the next year. The consequences of these symptoms are directly connected with both – the quality of individual's life and with his abilities to perform well in the workplace. The most common consequence for people who experience symptoms of burnout is not willing to take any other responsibilities at work (56%). They also state that they are not able to concentrate at work (53%), that they feel emotionally and physically tired all the time (52%), they react aggressively on little issues (50%) and are constantly anxious(36%). Respondents admit that they are regularly sick and thus not able to go to work (17%) and that they use medicine (15%) and alcohol for stress relief (28%). Another point that stands out in this research is that, while most of the researches concentrate on the work and life imbalance among those, who have children, the data shows that inability to concentrate, lack of good sleep and a tendency to use medicine is more among those , who live alone. (Kantar TNS, 2018) In author's opinion it is important to notice this trend, because obviously it is a topical issue for the whole society, not only for those who are actively involved in their family lives. TNS also looked at the interaction between hours worked and a tendency for burnout – they noticed that those, who work over 40 hours per week are often those who experience symptoms of burnout. Overall, 40% of respondents stated that they work more than 40 hours per week, those were also people with high income, top level managers, those who are not satisfied with their current job , those who feel imbalance between their work and private life and those, who have stated that they have a too high-intensity workload at the moment. Another issue that appeared in the research is that only 41% of employees would be ready to talk to their employer about their burnout symptoms, which means that there is a room for improvements in terms of managerial practices and organizational culture, so the employees felt safe to talk with managers about problematic situations. It was clear according to data that those, who are ready to talk about their issues, are those who feel more secure in the labour market – employees with top level management positions, high income and those who state to feel confident about finding a new job. Meanwhile those, who aren't ready to talk about their problems, are those who are in the age before retirement, who have average or low income and those who feel there is a great imbalance between work and private life. (Kantar TNS, 2018)

Conclusions, proposals and recommendations

Conclusions:

1. In author's opinion work and life balance is clearly an issue in society not only in Latvia, but globally as well. It is a matter that both employees and employers should think about, because it impacts both – the overall health and wellbeing of an individual and effectiveness, productivity and even reputation of the enterprise. In the last decade it is possible to notice a trend that this is a worrisome topic, because both local and global authorities have raised their voice to pay attention to this issue.
2. Also, it is possible to conclude that the issue shows an undeniable trend in all researches regardless of the institution doing the research, which clearly gives credibility in the seriousness of the particular work and private life imbalance issue. In author's opinion one of the opportunities to improve the situation is to look deeper into theory and practice of conscious capitalism. It the matter of fact, in author's opinion it could in the next decades become a must, not a trend. The reason is simple- first of all, taking care of the wellbeing of employees is not only essential, but an integral part of a policy for sustainable enterprises, and second of all, in Latvia there is a clear lack of available labour (Kantar TNS, 2018) – it is getting more and more difficult to find employees and especially if the standards, that the employer is looking for, are high. Thus author believes that conscious capitalism is phenomenon that should be more deeply examined in further researches.

3. Another conclusion that can be clearly noticed is that theory goes well together with practice. Previously author described three reasons for work and family conflicts – time, behaviour and strain based conflicts. TNS research clearly showed that time and strain is a crucial reason to cause work and life imbalance with the corresponding consequences. In author's opinion it is important to, firstly, pay extra attention on separating work from private life by limiting extra hours worked per week (working week should not be much longer than 40 hours per week), and, secondly, to pay attention to the importance of organizational culture and the values that both an individual and an organization share. In author's opinion, in terms of organizational culture it would be important to set boundaries in working after working-hours (limiting the use of technologies i.e. answers on calls, e-mails and messages) to foster work and private life balance.

Proposals and recommendations:

1. Author believes that further research should be focused on examining what managers would be ready to do to enhance the current situation and what employees would be willing to receive from their workplaces to reduce the consequences of work and life imbalance.
2. Further research may also examine, which are the values, which employees expect to see represented in their workplace. Thus, which are the values, which should be included in the organizational culture of the particular enterprises.

Bibliography

Ahrendt. D, 2016, et al. *European Quality of Life Survey, Quality of Life, Quality of Public Services, and Quality of Society*, Eurofound, Luxembourg: Publications Office of the European Union, ISBN: 978-92-897-1623-9

Antecol, H., Cobb-Clark, D.,2009., *Racial Harassment, Job Satisfaction, and Intentions to Remain in the Military*. J. Popul. Econ. 22 (3), 713–738

Barnett, R.C. & Hyde, J.S. 2001,*'Women, Men, Work, and Family: An Expansionist Theory'*. American Psychologist, 56, 781-796.

Brown, S., Sessions, J., 1996. *The Economics of Absence: Theory and Evidence*. J. Econ. Surv. 10 (1), 23–53.

Bellah, R. N., Madsen, R., Sullivan, W. M., Swidler, A., & Tipton, S. M., 1985, *Habits of the Heart.* New York: Harper & Row.

Burke, R., 2000, *Do Managerial Men Benefit From Organisational Values Supporting Work-Personal Life Balance?*, Women in Management Review, 15 (2): 81-87.

Clark, S. C., 2000, *Work/family Border Theory: A New Theory of Work/Family Balance,* Human Relations, 53 (6): 747-770

Clark, A., Georgellis, Y., Sanfey, P., 1998*, Job Satisfaction, Wage Changes and Quits: Evidence From Germany*. Res. Labor Econ. 17, 95–121

Clark, A., 2001. *What Really Matters in a Job? Hedonic Measurement Using Quit Data*. Lab. Econ. 8 (2), 223–242.

Clarke, M. C., Koch, L. C. & Hill, E. J., 2004, *The Work and Family Interface: Differentiating Balance and Fit*, Family and Consumer Sciences Research Journal, 33 (2): 121-140.

Conference „*Providing Flexible Childcare Services to Employees Working on Non-standard Working Hours*", 2018, Riga, Latvia, Ministry of Welfare of Latvia

Darba un Ģimenes Līdzsvars (Work-life Balance website), [Online], http://www.darbsungimene.lv/ [Accessed 13 January, 2019]

De Cieri, H., Holmes, B., Abbott, J., & Pettit, T., 2005., *Achievements and Challenges for Work/life Balance Strategies in Australian Organizations*. International Journal of Human Resource Management, 16(1), 90-103.

Eurofound, 2017*, Working Time Patterns for Sustainable Work,* Publications Office of the European Union, Luxembourg

EUROSTAT, 2009, *8.6% of Workers in the EU Experienced Work-related Health Problems*, Statistics in focus, 63/2009

EQLS (Eiropas dzīves kvalitātes aptauja), *European Foundation for the Improvement of Living and Working Conditions*, 2016

European Pillar of Social Rights, [Online], https://ec.europa.eu/commission/priorities/deeper-and-fairer-economic-and-monetary-union/european-pillar-social-rights_en [Accessed 11 January, 2019]

Freeman, R.B., 1978. *Job Satisfaction as an Economic Variable Author*. Am. Econ. Rev. 68 (2), 135–141.

Frone, M. R., 2003, *Work-Family Balance,* In: Quick, J.C. & Tetrick, L.E. (eds). Handbook of occupational health psychology. Washington: American Psychological Association, 143-162.

Goštautas V, Diskiene D., 2010, *Relationship Between Individual and Organizational Values and Employees' Job Satifaction*, Current Issues of Business and Law, 5(2)

Grady, G., McCarthy, A., Darcy, C.& Kirrane. M., 2008, *Work Life Balance Policies and Initiatives in Irish Organisations: A Best Practice Management.* Cork: Oak Tree Press.

Greenhaus, J. H., & Beutell, N. J., 1985, *Sources of Conflict Between Work and Family Roles*. Academy of Management Review, 10(1), 76–88.

Greenhaus, J. H., Collins, K. M. & Shaw, J. D., 2003, *The Relation Between Work-Family Balance and Quality of Life*. Journal of Vocational Behaviour, 63 (3): 510-531.

Glass, J. L., & Estes , S. B., 1997, *The Family Responsive Workplace*. Annual Review of Sociology, 23, 289-313. Article Stable URL: http://www.jstor.org/stable/2952553

Halkos, G., Bousinakis, D., 2010., *The Effect of Stress and Satisfaction on Productivity*. Int. J. Prod. Perform. Manag. 59 (5), 415–431.

Hegtvedt, K. A., Clay-Warner, J., & Ferrigno, E. D., 2002, *Reactions to Injustice: Factors Affecting Workers' Resentment Toward Family-Friendly Policies.* Social Psychology Quarterly, 65(4), 386-400.

Hill, S., Bahniuk, M., Dobos, J. & Rouner, D., 1989*., Mentoring and Other Communication Support in the Academic Setting,* Group and Organization Management, 14, 355-368.

Isse H., Abdirahman H., 2018, *The Relationship Between Job Satisfaction, Work-Life Balance and Organizational Commitment on Employee Performance*, IOSR Journal of Business and Management, Volume 20, Issue 5. Ver. VII., pp 76-81

Judge, T. A., & Klinger, R., 2008., *Job Satisfaction: Subjective Well-Being at Work*. In M. Eid & R. J. Larsen (Eds.), The science of subjective well-being (pp. 393-413). New York, NY, US: Guilford Press.,

Kahn R.L., Wolfe D.M., Quinn R., Snoek J.D., Rosenthal R.A., 1964, *Organizational Stress,* New York, Wiley

Kantar TNS, 2018, *Burnout Syndrome Among Employees,* [Online] http://www.kantartns.lv/newsletters/tnsab55/darbinieku-vidu-iezimejas-profesionalas-izdegsanas-problema/ [Accessed 15 January, 2019]

Kantar TNS, 2017, *Work and Life Balance*, [Online] http://www.kantartns.lv/vairakums-latvijas-darbinieku-ir-apmierinati-ar-darba-un-personigas-dzives-lidzsvaru/ [Accessed 15 January, 2019]

Konrad, A., & Mangel, R.,2000, *The Impact of Work-life Programs on Firm Productivity*. Strategic Management Journal, 21(12), 1225-1236.

Locke, E. A., 1976, *The Nature and Causes of Job Satisfaction*. In M. D. Dunnette (Ed.), Handbook

of industrial and organizational psychology (pp. 1297–1349). Chicago: Rand McNally.

Lockwood N.R.,2003, *Work Life Balance, Challenges and Solutions*, Society for Human Resource Management.

Ministry of Welfare in Latvia, [Online] http://www.lm.gov.lv/lv/index.php?option=com_content&view=article&id=82173 , [Accessed 15 January, 2019]

Murphy L.R., Schoenborn T.F., 1987, *Stress Management in Work Settings*, U.S. Department of Health and Human Services,

OECD, 2018, *OECD Employment Outlook, OECD Publishing,* http://dx.doi.org/10.1787/empl_outlook-2018-en

Pleck J.H., Stainer G.L., Lang L., 1980, *Conflicts between work and family life*. Monthly Labor Review, 103(3), 29-3

Van De Voorde, K., Paauwe, J., & Van Veldhoven, M., 2012*, Employee Well-being and the HRM-organizational Performance Relationship: A Review of Quantitative Studies.* International Journal of Management Reviews,14(4), 391e407.

Smith, P. C., Kendall, L. M., & Hulin, C. L., 1969, *The Measurement of Satisfaction in Work and Retirement*, Chicago. Rand McNally

Wrzesniewski, A., McCauley, C., Rozin, P., & Schwartz, B., 1997, *Jobs, Careers, and Callings: People's Relations to Their Work,* Journal of Research in Personality, 31, 21–33.

TRENDS AND DRIVERS OF PRODUCTIVITY GROWTH IN LATVIA

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Abstract. Designing policies to rise in productivity and understanding global challenges affecting the growth is an important current issue. Trends and drivers of productivity growth continue to be a key theme for researchers and policy makers. Productivity growth has generally slowed over past decade. OECD, IMF, World Bank, the European Commission deal with different aspects of productivity.

The research aims are to analyse foundations of productivity measurement and causes of actual trends, policies fostering productivity growth and promoting sustained economic growth.

The research consists of two parts. In the first part, review of research papers on productivity has been done. The OECD methodology of productivity measurement and relations between structural reforms and productivity growth is the focus of this part. Second part of the research deals with trends and causes of the current situation. The problem of productivity growth in Latvia and in the EU is analysed based on empirical data and calculations. This part of the research is also dedicated to economic policy fostering productivity growth.

Results of the paper find different factors with negative impact on productivity, and factors with positive impact on productivity. Effects on productivity depend on the purpose of productivity measurement as well as on impact on productivity in the short-run or in the long-run.

Key words: *productivity growth, labour productivity, productivity measures*

.**JEL code:** D24, E24**.**

Introduction

The global productivity slowdown and understanding global challenges affecting the productivity growth are an important current issue. An industry perspective on productivity slowdown can provide causes.

In the recent years, research literature has linked structural reforms with productivity growth. Economic structural transformation process is largely dependent on the quality of the institutional framework. The most of reforms have long-term gains.

The research aim is based on theoretical foundations of productivity analysis of and causes of actual trends find out factors with negative impact on productivity, and factors with positive impact on productivity and promoting sustained economic growth in Latvia and the EU.

Tasks of the research:

- Study methodology of productivity measurement and scientific literature;
- Analyse employment and labour productivity;
- Analyse productivity growth in Latvia and in the EU;
- Analyse impact of structural reforms on productivity;
- Find out factors with negative impact on productivity, and factors with positive impact on productivity.

The research methods applied in the paper are based on the OECD and the Eurostat methodology, analysis of scientific literature and economic policy planning documents, statistical data collection and calculation of average and relative values and data analysis.

This paper is organized as follows. The first part describes research papers on productivity, relations between structural reforms and productivity growth. Measures of productivity growth determine main indicators for analysis of economic growth. There are also differences between measures of productivity growth and productivity level. The second part examines trends of productivity in Latvia to compare with other the EU countries. The research mainly deals with labour productivity. The last part discusses the results and concludes.

The research questions needs to be answered: What are trends and dynamics of productivity? What are links between structural reforms and productivity developments? How reforms could be translated in higher productivity growth?

General theoretical background of productivity analysis

The topics of recent articles on productivity concern employment and productivity, the role of digitalization in solving the productivity puzzle, the global productivity slowdown, the impact of structural reforms on productivity,

Innovation and the accumulation of human capital affect productivity both directly and indirectly. Many studies show that R&D investment has a positive and large effect on productivity, on top of leading to improved production processes and higher output quality. Higher educational attainment and quality of education, by increasing skills, also foster productivity growth, and in this respect reducing skills mismatch is often stressed in policy discussions. Investment in network infrastructure, especially in transport, energy and digital infrastructures, can have positive multiplier effects provided there is no overprovision. (European Commission, 2014.)

"Technology pessimists" mention a weaker impact on productivity of the recent IT-driven innovation cycles and skill mismatches in the labour force (OECD, 2015.). Andrews, D., Criscuolo, C. and P. Gal in the article "The global productivity slowdown, technology divergence, and public policy: A firm level perspective" find out that problems in the diffusion of technological advances might be contributing to the productivity growth slowdown (Andrews, D., Criscuolo, C. and P. Gal, 2016). In the article "The Productivity Paradox of the New Digital Economy" by Van Ark, B. (Van Ark, B., 2016), seems to be a productivity paradox of the New Digital Economy: if we compare the period 1999-2006 with 2007-2014, the most intensive Information and Communication Technologies (ICT)-using sectors have seen a bigger slowdown in labour productivity growth than the least intensive ICT-using sectors. Jeff Mollins and Pierre St-Amant investigate a number of models with different channels by which ICT affects productivity (Mollins Jeff and St-Amant Pierre, 2018). They find that 0.1- 0.2 percentage points (20-40 percent) of the labour productivity slowdown in Canada since early 2000s can be explained by a weaker ICT contribution, but point out that the timing of the two developments do not coincide..

In recent years, literature has linked structural reforms with productivity growth. Ana Fonotura Guveia, Silvia Santos and Ines Goncalves analysed how these reforms translated into higher productivity growth in Portugal. They find out that despite some short-run costs most reform areas considered bring long-term productivity gains.

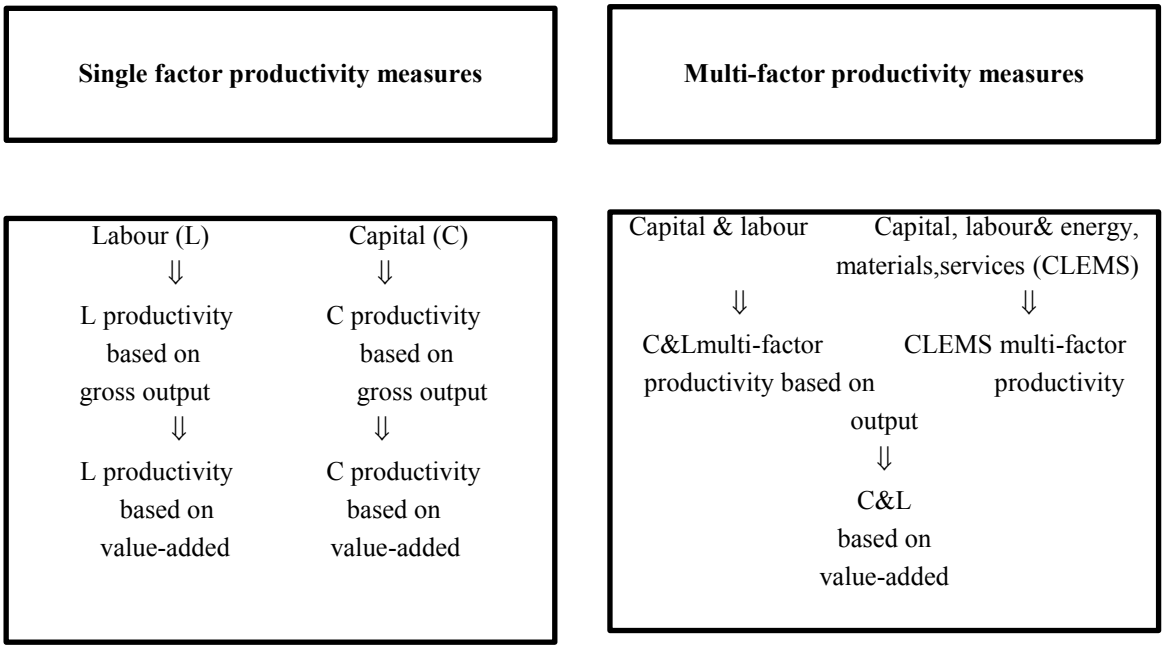
According Ana Fonotura Guveia, Silvia Santos and Ines Goncalves, reforms of institutions, goods markets, financial markets and the tax framework bring lager gains for the less productive firms, reforms affecting the insolvencies' framework, health, education, training and innovation are more beneficial for those with higher productivity. For the case of reforms directly potentiating entry, long-term benefits only accrue the younger firms. Concerning the labour

market, the effects on productivity are, for most firms, negative (Fontoura Gouveia, A., Santos, S. and Goncalves, I., 2017, p.6).

Wulong GU and Michael Willox in the article "Productivity Growth in Canada and the United States: Recent Industry Trends and Potential Explanations" conclude that labour productivity growth in Canada was weaker than that in the United States from mid-1980s to 2010, leading to a decline in Canada's relative productivity level due the lower multifactor productivity growth experienced in most Canadian industries in that period. Higher labour productivity growth in Canada for the 2010 - 2014 period was due to a larger capital deepening effect and relatively higher multifactor productivity growth. Main sources of the relatively faster productivity growth in Canada after 2010 with that in the United States and found to be stronger demand and stronger productivity growth of information and communication technologies intensive using industries in Canada.

Slower productivity growth in advanced economies in a period of rapid technological change has interested many researchers. The impact of digitalization is uncertain, but Jaana Remes, Jan Mischke and Mekala Krishnan argue that it has the potential boost labour productivity growth by at least 2 per cent per year over the next decade. They conclude that a dual focus on demand and digitalization could unleash a powerful new trend of rising productivity growth that drives prosperity across advanced economies for years to come. (Jaana Remes, Jan Mischake and MekalaKristinan, 2018, p.49)

There are different methodologies to obtain data of output which shape also outcome of productivity measurement. Theoretical foundations to productivity measurement based on OECD approaches to measuring productivity. are presented in Figure 1.



Source: author's construction based on OECD

Fig.1. **Productivity measures**

There is presented (see Figure 1) choice between gross output and value-added based productivity measures. Labour productivity is useful measure due to the fact that it relates to the single most important factor of production. Labour productivity is a key determinant of living standards. Labour productivity measured as GDP per hour worked, is one of the most widely used measures of productivity at country level. Productivity based on hours worked better captures the use of labour input than productivity based on numbers of persons employed.

There are different channels for productivity growth at country level. First, aggregate productivity growth is the result of within-firm productivity growth. This, in turn, is strictly related to firms' ability to innovate, invest (both in tangible and intangible assets) and improve their endowments of human capital as well as their organisation and management. Second, aggregate productivity growth as the result of reallocation of production factors from less productive to more productive firms. In this respect, there is also a sectoral dimension, because some sectors are characterized by lower productivity growth, other things equal. Third, productivity growth is the result of the entry of new, innovative firms and the exit of inefficient and non-competitive ones. The sum of these three factors ultimately determines a country's productivity performance.

In the policy discussion, it is important to acknowledge the potential interrelationships between productivity developments and the social dimension. First of all, increasing dispersion in productivity across firms implies dispersion in wages as well, contributing to overall income inequality (OECD, 2017). The rapid diffusion in ICT is expected to facilitate social and regional inclusion and lead to more effective use of human capital and financial resources while saving costs and reducing pollution from transportation, office-space construction.

The global economy is undergoing significant changes in the rate and composition of productivity growth, business dynamism and employment gains since the financial crisis in the context of digitalization, globalization, demographic and climate change according to the OECD (OECD, 2018). There is a potential for large economic gain. The reallocation of activity between firms, sectors and countries can help to ensure that these gains are shared in a way that supports long-term economic growth that is beneficial to all. The OECD Productivity Inclusiveness Nexus (OECD, 2017) suggests that there might be a “sorting” effect which increasingly separates frontier firms, able to compete on the same ground. The Next Production Revolution and the transition to the digital economy are exacerbating these trends. Globalization and technological change have contributed to job creation, but also to a considerable restructuring of labour market. Digital technologies have facilitated non-standard forms of work. These trends provide opportunities for greater flexibility and can help overcome barriers to labour market participation.

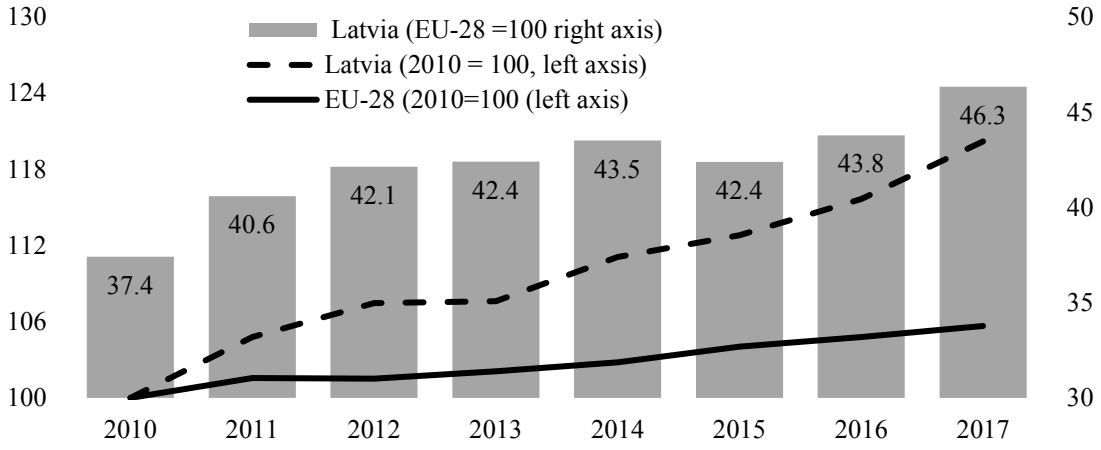
According to McKinsey Global Institute analysis (KcKinsey Global Institute Report, 2018) there are three waves. Wave 1 – waning of mid 1990s productivity boom includes waning impact from a PC, software, and database system ICT revolution and the restructuring of domestic operation and global supply chains. The first wave mattered more in Sweden and the United States, where the productivity boom had been more pronounced. Wave 2 – financial crisis aftereffects, including weak demand and uncertainty, excess capacity, contraction and expansion of hours, and boom/boost in finance, real estate, and construction. Financial crisis aftereffects were felt more broadly across countries than Wave 1. Wave 3 – digitalization. Digitalization offers the promise of opportunities that could boost productivity growth. The McKinsey Global Institute has calculated that Europe overall operates at 12 percent of digital potential, and the United States at 18 percent. While the economic cost associated with networks has been well established, digital platforms may exhibit unique characteristics that make the implications different from past network industries. Companies will need to develop a productivity strategy that includes the digital transformation of the business model as well as their entire sector and value chain.

We can conclude that the search for the determinants of productivity growth should focus on the factors contributing to demand growth. There are different channels by which ICT affects productivity. The global economy is undergoing significant changes in the rate and composition of productivity growth.

The next part examines trends of productivity in Latvia to compare with other the EU countries.

Productivity growth in Latvia and in the EU

Since 2010 the productivity of Latvia's economy has been at the level of 40-45% of the EU average (see Figure2). Although in recent years productivity growth rate was faster than the EU average, but labour costs grew almost twice the rate. High economic growth has translated into improvement employment outcomes. However, income inequality and poverty remain relatively high.



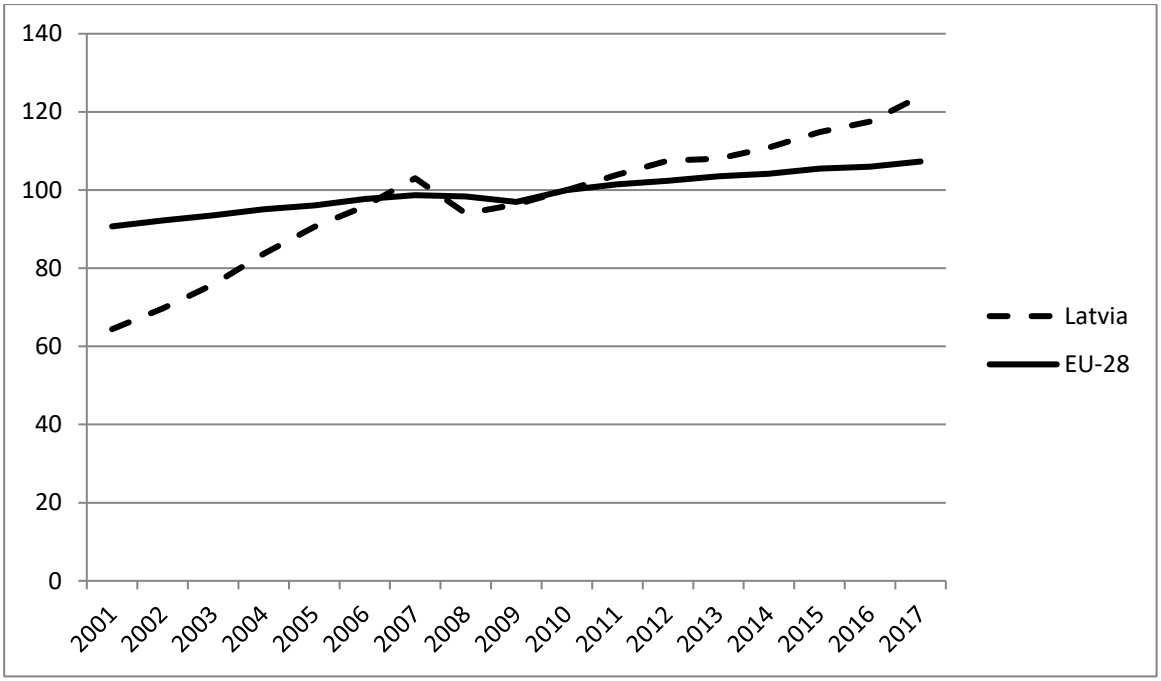
Source: Ministry of Economics, 2018

Fig.2. **Dynamics of productivity in Latvia and EU from 2010 – 2017**

The recent labour market trends are partly the result of cyclical movements, but they are also due to structural and institutional labour market challenges affecting economic activity and the performance of labour markets. For example, consistently implemented economic policy in the previous years has fostered improvement of macroeconomic situation and as result it contributes positively to the growth and employment in Latvia. (Baranova D., 2013).

Labour productivity is a key driver of economic growth and living standards.

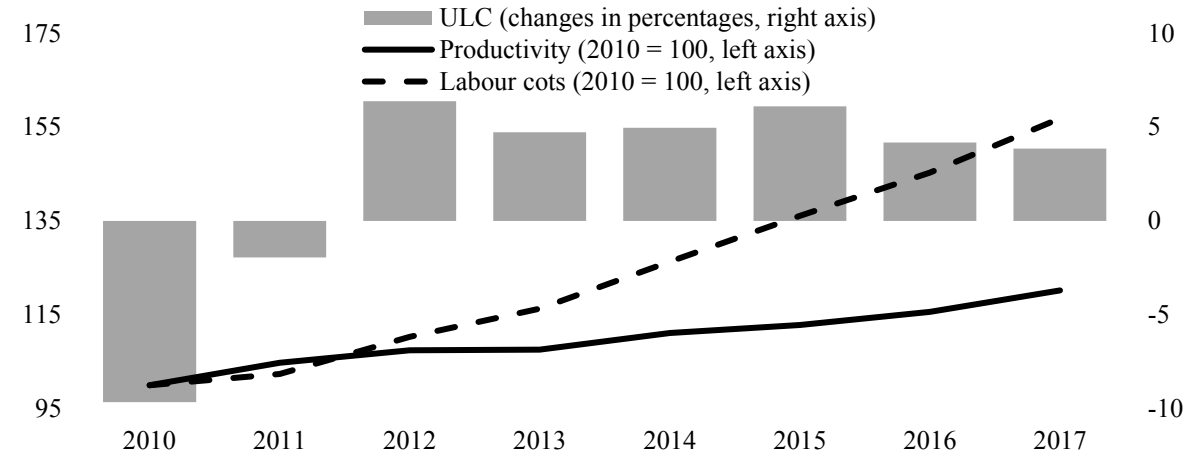
GDP per hour worked (Figure 3) is a measure of labour productivity. It measures how efficiently labour input is combined with other factors of production and used in the production process.



Source: author's construction based on OECD productivity statistics, 2018

Fig.3. **GDP per hour worked (total, 2010 = 100) in Latvia and EU-28, 2001 – 2017**

Dynamics of labour costs in Latvia from 2011 till 2017 are presented in Figure 4. The dynamics of labour costs and productivity were largely determined by factors of structural nature. With economic growth resuming, wage growth is become more rapid, substantially due to the growing competition in the EU labour market and the low competitiveness of Latvia. By contrast, growth of productivity has been more moderate. It means that wages have been growing faster than productivity in Latvia, and could cause risks of losses in competitiveness.

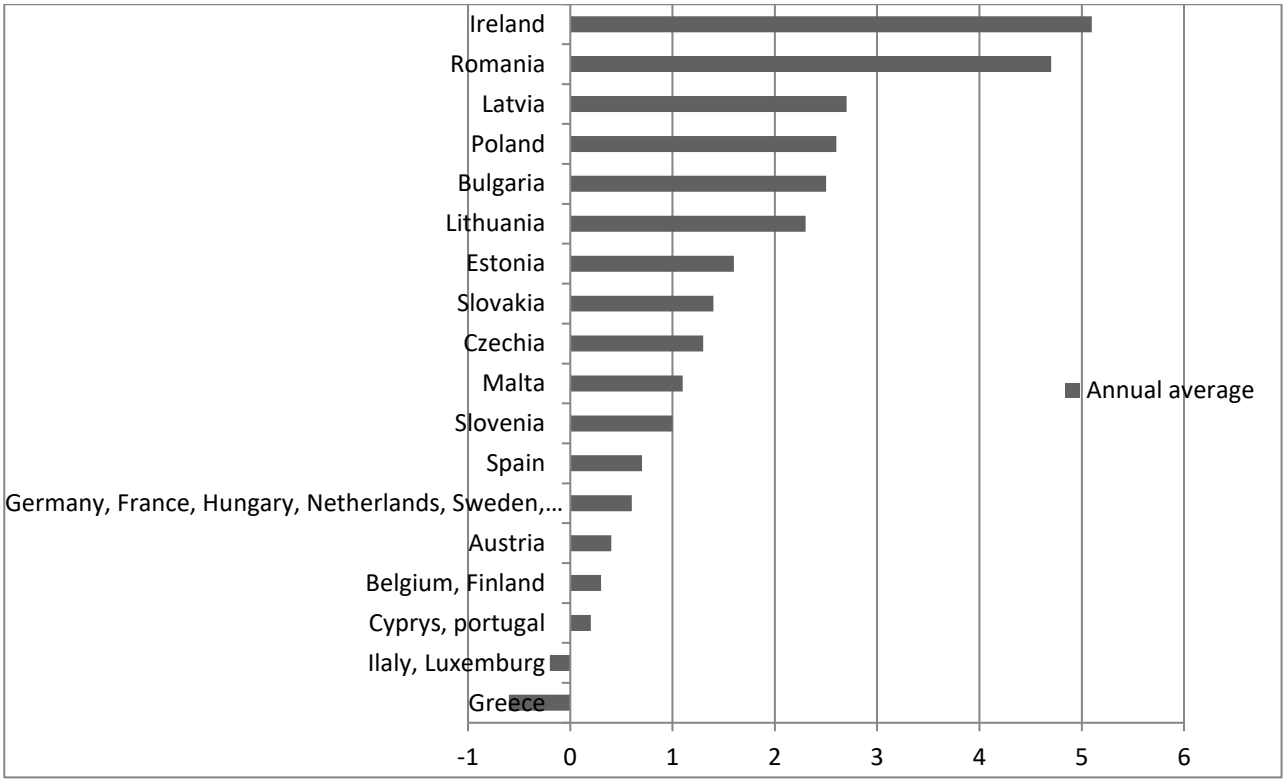


Source: Ministry of Economics, 2018

Fig.4. **Labour costs in Latvia and EU**

Before economic crisis in 1996 – 2007 productivity increased by 6.2% on average. In 2008 – 2009 productivity reduced by almost 3%. Since 2010 annual productivity growth in Latvia has been 2.5% on average. It is one of the highest in the EU. The EU average productivity in 2010 – 2015 was 0.7%. Annual productivity growth in 2010 – 2018 was 2.7% in Latvia (Figure 6). Latvia's productivity growth is high, but its innovation performance is average.

The falling labour supply appears to be the main driver of wage growth. Real wage growth has exceeded productivity growth in Latvia. On the one hand, it raises potectial concern about Latvia's cometitivenss. On the other hand, it may stimulate firms to invest in labour-savinig tecnologies.

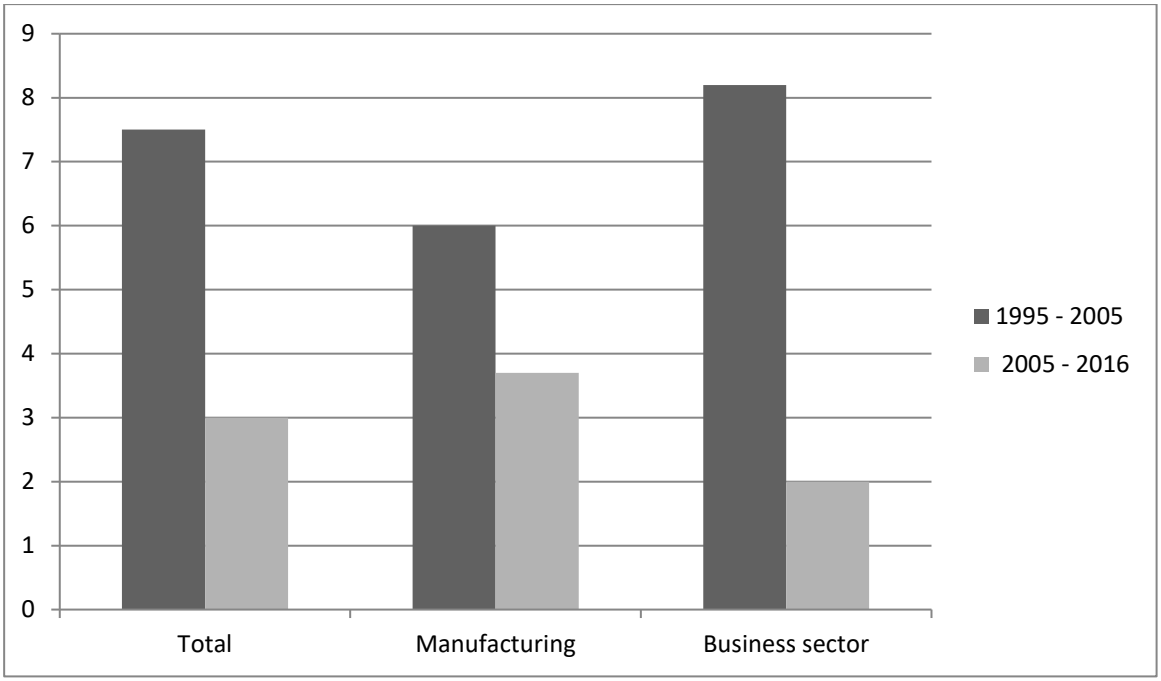


Source: author's calculations based on .Eurostat, 2019.

Fig.5. P**roductivity in Latvia and in the EU 2010 - 2018, % change**

Despite this Latvia's productivity level still stands among the lowest in the EU. Productivity in Latvia is lower than in other Baltic countries. Due to the fact, that in the EU productivity in manufacturing has main contributor to the aggregate productivity growth.

Average annual growth of labour productivity in Latvia in 1995 – 2005 and 2005 – 2016 in different sectors is presented by Figure 6. Productivity growth in manufacturing has lagged behind and this may explain Latvia's overall productivity. In manufacturing the productivity level is lower than the national economy on average.



Source: author's construction based on OECD, 2017.

Fig.6. **Average annual growth of labour productivity in Latvia, %**

If we use for productivity levels calculation as GDP per capita divided by average numbers of hours worked, Luxembourg has the highest productivity level. Latvia's rank is 30, Estonia's – 26 and Lithuania's – 29 in 2017.

The gaps in GDP per capita can be broken down into contribution from labour productivity and labour utilization. Labour productivity is measured as GDP per hour worked and labour utilization is measured as a total number of worked per capita. Best performing country is Luxembourg. The gaps of Belgium, France, Germany and the Netherlands can be mostly accounted by lower labour utilization.

Challenges for productivity growth and the policy priorities may differ across countries.

Designing effective policies to raise productivity is a complicated business. An increase of productivity growth requires some combinations of increased growth in the capital stock, in labour inputs, or in technological progress. Government may use fiscal policies to encourage saving, investment, and expenditures on research and development.

Productivity hinders: population aging, slowdown in global trade and unresolved legacy of global financial crisis. The slower productivity growth in a period of rapid technological change has interested many researchers. Globalization and technological change have contributed to job creation, but also to a considerable restructuring of labour market.

Changes in the structure of the global network reflected position of Global Value Chains, identifying central and peripheral countries and sectors. The productivity effects of Global Value Chains depended on position within them. Latvia must move up the Global Value Chain to knowledge-intensive activities. Flexible labour market policy is important to transform the changing structure of Global Value Chains into faster productivity growth. Productivity growth by trade openness and participation in Global Value Chains is one of instruments. Better integration in Global Value Chains, especially in sectors characterised with rapid changes is key for Latvia.

Innovation policies, cooperation between universities and firms, as well as R&D tax incentives are other instrument to increase productivity.

Improvements of matching in labour market by reducing skill mismatch can also increase productivity. Therefore, lifelong learning and labour market reforms are necessary. Rising labour market participation and sustainable increase in productivity is a key to supporting future growth.

OECD in *The Future of Productivity* demonstrates that there is much scope to boost productivity and reduce inequality simply by more effectively allocating human talent to jobs. A better use of talent could translate into significant labour productivity gains in many OECD economies. (OECD, 2015)

According to the World Bank, productivity accounts for half of the differences in GDP per capita across countries. Identifying policies to stimulate it is thus critical to alleviating poverty and fulfilling the rising aspirations of global citizens. Yet, productivity growth has slowed globally over recent decades, and the lagging productivity performance in developing countries constitutes a major barrier to convergence with advanced-country level income. The World Bank Productivity Project seeks to bring frontier thinking on the measurement and determinants of productivity to global policy makers. (The World Bank Productivity Project, 2018).

There is no one right productivity policy, there are productivity friendly principles.

Research should also focus on better measurement of emerging technologies, IT- related mismeasurement, the future contribution of robots and artificial intelligence, their effect on productivity growth and economic growth.

Conclusions

The main findings of the research are:

1. Many studies show that R&D investment has a positive and large effect on productivity. Innovation and the accumulation of human capital affect productivity both directly and indirectly. Digitalization offers the promise of opportunities that could boost productivity growth.

2. Structural reforms despite some short-run costs most reform areas considered bring long-term productivity gains.

3. Since 2010 the productivity of Latvia's economy has been at the level of 40-45% of the EU average. Although in recent years productivity growth rate was faster than the EU average, but labour costs grew almost twice the rate. A further increase in labour costs is inevitable in the open market conditions. In the long-term, the productivity dynamics become more moderate.

4. There are big differences in productivity between the EU countries. The euro area and the EU in terms of labour productivity are behind the US.

Bibliography

Andrews, D., Criscuolo, C. and P. Gal, 2016. *The global productivity slowdown, technology divergence, and public policy: A firm level perspective.* Global Forum on Productivity, Background Paper

Baranova, D., 2013. *Implementation of "Europe 2020" strategy employment targets in Latvia and EU Countries*. Riga: University of Latvia

Jaana Remes, Jan Mischake and MekalaKristinan, 2018. *Solving the Productivity Puzzle: The role of Demand and Promise of Digitalization.* Number 35, Fall 2018, pp.28 – 51, International Productivity Monitor

Jekabsone, S., Skribane, I., Priede, J., Skapars , R., 2017. *Productivity and its Impact on the Competitiveness of Latvia*. European Research Studies Journal Vol. 20, N 3A (2017), p. 920-930

European Commission , 2014. *Infrastructure in the EU: Developments and Impacts on Growth*, European Economy, Occasional Papers 203, December 2014

Eurotat, 2019. [Online] Available at: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nama_10_lp_ulc&lang=en [Accessed 31 March 2019]

Fontoura Gouveia, A., Santos, S. and Goncalves, I., 2017. *The impact of structural reforms on productivity: the role of the distance to the technological frontier*. OECD Productivity Working Papers, 2017-08 OECD Publishing, Paris

Ministry of Economics Republic of Latvia, 2018. *Latvijas makroekonomiskais apskats,* 2018 aprīlis , Ekonomikas Ministrija

Mollins Jeff and St-Amant Pierre, 2018. *The Productivity Slowdown in Canada : an ICT Phenomenon?* Number 35, Fall 2018, pp.95 – 112, International Productivity Monitor

OECD, 2015. *The future of productivity*, OECD Publishing, Paris. [Online] Available at: http://dx.doi.org/10.1787/9789264248533-en [Accessed 14 January2019]

OECD, 2016. *The Productivity Inclusiveness Nexus.* OECD Publishing, Paris. [Online] Available at: https://www.oecd.org/global-forum-productivity/library/The-Productivity-Inclusiveness-Nexus-Preliminary.pdf. [Accessed 26 March 2018]

OECD, 2017. *Great Divergences: The growing dispersion of wages and productivity in OECD countries.* STI Policy Note, 15 May 2017.

OECD, 2018. *Opportunities for All. A Framework for Policy Action on Inclusive Growth,* OECD Publishing, Paris. [Online] Available at *https://doi.org/10.1787/9789264301665-en* [Accessed 15 January2019]

Van Ark, B., 2016. *The Productivity Paradox of the New Digital Economy*, International Productivity Monitor, 2016, vol. 31, 3-18.

OECD, 2015. *The Future of Productivity*, OECD Publishing, Paris [Online] Available at: http://dx.doi.org/10.1787/9789264248533-en. [Accessed 21 March 2018]

OECD, 2017. OECD Productivity Statistics. [Online] Available at: http://www.oecd.org. [Accessed 16 March 2018]

The World Bank Productivity Project, 2018 [Online] Available at: http://www.worldbank.org/en/topic/competitiveness/brief/the-world-bank-productivity-project. [Accessed 26 March 2018]

World's Most Productive Countries, 2017 [Online] Available at [Accessed 16 March 2018]

GDP per hour worked, 2018[Online] Available at: https://data.oecd.org/lprdty/gdp-per-hour-worked.htm#indicator-chart [Accessed 26 March 2019]

Mc Kinsey Global Institute, 2018. *Solving the productivity puzzle*. Report. February 2018. [Online] Available at https://www.mckinsey.com/featured-insights/regions-in-focus/solving-the-productivity-puzzle#part%202 [Accessed 26 March 2019]

DEVELOPING CORPORATE BOND MARKET IN BELARUS

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Abstract. Corporate bonds are fundamental financing instruments that are widely held by institutional investors, fund managers and households all over the world. Corporate bonds play an important role in capital markets. As the economy develops, firms try to borrow first in the form of indirect financing (bank loans). At the same time the bigger firms in good standing seek funding in the form of direct finance from the corporate debt and equity markets. Corporate bond market also offers access to longer-dated, unsecured financing for growth businesses. So the importance of corporate bond market in the framework of direct debt finance can be hardly overemphasized.

The aim of the article is, while investigating the current state of Belarusian corporate bond market and revealing the challenges within this market, to identify more practical and efficient measures to improve it in line with the best practice of developed markets. The research methods used in this article are scientific abstraction, qualitative methods; statistical methods including data evaluation.

The article presents the results of analysis of volumes of corporate and government bonds trading at the platform of the Belarusian Currency and Stock Exchange. The author reveals the problems in Belarusian corporate bond market development as follows: the existing emphasize of household financial savings towards bank deposits; the significant reliance of the corporate sector on bank borrowing; the lack of institutional investors on the demand side; an illiquid secondary market; the lack of information for benchmarking; large borrowing costs for issuers.

The analysis shows that coupon rate is considered as the main factor determining the demand and return on Belarusian corporate bonds. By comparison, the main factors at developed bond markets are loan size and credit rating of the issuer. The coupon rate "corridors" have been examined in the article as well for bonds nominated in national currency (BYN) and for bonds nominated in free-convertible currency (EUR, USD). The article concludes that high-priority measures for developing Belarusian corporate bond market are the simplification of the trading procedure, the enhancement of the competition from demand side and the creation of observable benchmarks for issuers and bond investors. All these measures will encourage issuers and investors, both domestic and international, to participate in the Belarusian corporate bond market.

Key words: *corporate bond market, issuers of bonds, institutional investors, funding*

JEL code: G23, G24

Introduction

Corporate bonds are fundamental financing instruments that are widely held by institutional investors, fund managers and households all over the world (Brealy, 2011; Brigham, 2013; Ross, 2013; Van Horne, 2008). Corporate bonds play an essential role in capital markets; their prevalence-led academic and practitioner communities devote their energies to the analysis of bond evaluations and relevant claim holder's decisions (Liang-Chih Liu, 2016). More developed bond markets are typically associated with stronger macroeconomic fundamentals, more stable financial systems, sounder and stronger institutional frameworks, more open economies, and the long-lasting presence of institutional investors enhancing the demand for bond securities, especially those holding long maturities (Azimova, Mollaahmetoglu, 2017). Besides, more developed and enlarging sovereign debt market may foster the development and

supply of corporate bond securities in local currency thereby underpinning firms to finance long-term investments (Smaoui, Grandes, Akindele, 2017).

The theme of the article is very topical, because the access to longer-term, unsecured financing is crucially important for growth of businesses in the Republic of Belarus. The volume of government investment support reduced dramatically in recent years. Firms and companies spend significant amount of time and resources to explore alternative sources of funding. These called the Belarusian researchers to explore the phenomena of corporate bond market development further (Belzetskaya A., 2017; Kuznetsov E., 2016). The lack of complex analysis of Belarusian corporate bond market as well as the lack of attention to the experience of developed and developing countries by the Belarusian authors requires an in-depth investigation. At the same time, patterns of behavior in markets for specific goods and services offer lessons about the determinants and effects of supply and demand, market structure, strategic behavior, and government regulation (Bessembinder and Maxwell, 2008).

Therefore, the author proposes and sets forward **the aim** of the research: while investigating the current state of Belarusian corporate bond market and revealing the challenges within this market, to identify more practical and efficient measures to improve it in line with the best practice of developed markets. According to the research aim, the author intends to study the current state of Belarusian corporate bond market to enable him to reveal the key challenges in its development and to find out the directions of improving the situation. In order to achieve above-mentioned aim, **the following objectives** are set out:

- to analyze the current state of Belarusian corporate bond market and the dynamics of its development over the last 6 years;
- to evaluate qualitative data, normative acts and quantitative factors in order to investigate the weaknesses of Belarusian corporate bond market;
- to identify the key challenges of Belarusian corporate bond market' development and to find out their root causes;
- to develop suggestions, required for the successful development of the corporate bond market.

This research is based on a comprehensive review of the literature and utilises the applied methods of scientific abstraction; qualitative methods; statistical methods including data evaluation. Normative acts regulating corporate bond market, data provided by Ministry of Finance of the Republic of Belarus and Belarusian Stock and Currency Exchange, research produced by Belarusian and foreign scientists, and Internet sources form the theoretical and methodological grounding of the paper.

The theoretical and practical significance of the paper lies in researching the problematic issues pertaining to the development of corporate bond market while taking into the account the best practices of developing and developed countries. The structure of the article follows the devised objectives.

Research results and discussion

Sub-Part 1Analyzing the state of Belarusian corporate bond market

According to the National Classification by Ministry of Finance of the Republic of Belarus, the corporate bonds in Belarus include: bonds issued by banks, bonds of non-banking organizations, and other bonds. In order to evaluate the dynamics of market development it is important to establish, which volumes are there generally and in each group specifically. It is explicitly demonstrated by the information included in Table 1.

Table 1

Volume of cumulative bond issues by categories

Category of issuer	Volume of cumulative bond issues on reporting date, millions BYN					
	01/01/2013	01/01/2014	01/01/2015	01/01/2016	01/01/2017	01/01/2018
Banks	3 157,4	3 219,7	5 292,6	6 530,9	6 569,0	7 196,2
Non-banking organizations	2 731,2	3 245,6	4 586,7	6 182,0	6 503,0	6 010,0
Others	733,2	843,6	1 111,5	1 313,2	2 378,7	3 594,2
All issuers of corporate bonds	6 621,8	7 308,9	10 990,8	14 026,1	15 450,7	16 800,4

Source: Ministry of Finance of the Republic of Belarus

Hereinafter the data for periods earlier than year 2016 led to the comparable view. According to the data in Table 1, the growing tendency within the corporate bond market has been established in recent years. The most important period for the market was between 2014 and 2015. The volume of corporate bonds in Belarus has almost double during these two years.

In order to evaluate the significance of corporate bond market in the Belarusian economy is important to compare volumes of corporate bond issues with GDP as it is shown in Table 2

Table 2

Comparative analysis of corporate bond issues and GDP

	Reporting dates					
	01/01/2013	01/01/2014	01/01/2015	01/01/2016	01/01/2017	01/01/2018
Volume of all corporate bonds, million BYN	6 621,8	7 308,9	10 990,8	14 026,1	15 450,7	16 800,4
GDP for previous year, million BYN	54 761,7	67 068,8	80 579,3	89 909,8	94 949,0	105 199,0
Percentage of GDP, %	12,1	10,9	13,6	15,6	16,3	16,0

Sources: (1) Ministry of Finance of the Republic of Belarus,

(2) Statistics Yearbook of the Republic of Belarus 2018

Figures in table 1 and table 2 show that the years 2014 (before 01/01/2015) and 2015 (before 01/01/2016) have become crucial for the development of Belarusian corporate bond market. The percentage of corporate bond's issues to GDP gained 15.6 % that year and since it has remained at the level about 16 %. However, this is a very low level. In the majority of developed countries, the size of corporate bond market exceeds the GDP.

The other objective is to analyse the proportions of the different categories of bond issuers (see Table 3) in order to find out the trends within the structure of corporate bonds.

Table 3

Structure of different categories of issuers

Category of issuer	Shares of different categories of issuers (%)					
	01/01/2013	01/01/2014	01/01/2015	01/01/2016	01/01/2017	01/01/2018
Banks	47,7	44,1	48,2	46,6	42,5	42,8
Non-banking organizations	41,2	44,4	41,7	44,1	42,1	35,8
Others	11,1	11,5	10,1	9,4	15,4	21,4
All issuers of corporate bonds	100,0	100,0	100,0	100,0	100,0	100,0

Source: Ministry of Finance of the Republic of Belarus

In fact, the main percentage at the market belongs to bonds issued by Belarusian banks. There is only one period (01/01/2013) where the percentage of non-banking organizations' bond exceeded it, but only by 0.3 percentage points. In order to analyze the scale of issuers it is necessary to present the data on the number of issuers (Table 4)

Table 4

Number of corporate bond issuers

Category of issuer	Number of bond issues on reporting date					
	01/01/2013	01/01/2014	01/01/2015	01/01/2016	01/01/2017	01/01/2018
Banks	22	26	26	26	23	23
Non-banking organizations	205	240	276	245	198	158
Others	28	27	49	42	44	66
All issuers of corporate bonds	255	293	351	313	265	247

Source: Ministry of Finance of the Republic of Belarus

As it is shown in Table 4, the busiest category of corporate bonds' issuers are non-banking organisations. However, according to the data in Table 3, the main share of accounts for bond issues is by banks.

In order to address the aim of the article, it is necessary to analyse the volume of corporate bonds per one issuer. It is presented in Table 5.

Table 5

Average volume of corporate bonds per issuer

Category of issuer	Volume of bonds per 1 issuer on reporting date, million BYN					
	01/01/2013	01/01/2014	01/01/2015	01/01/2016	01/01/2017	01/01/2018
Banks	143,5	123,8	203,6	251,2	285,6	312,9
Non-banking organizations	13,3	13,5	16,6	25,2	32,8	38,0
Others	26,2	31,2	22,7	31,3	54,1	54,5
All issuers of corporate bonds	26,0	24,9	31,3	44,8	58,3	68,0

Source: Calculations of the author on the base of tables 3 and 4

The figures in Table 5 clearly show the concentration of bond issues particularly among banks. The ratio of the volume of bonds per one bank to the average volume of bonds per one issuer in general vary from 4.6 (01/01/2018) to 6.5 (01/01/2015) times. It can be explained by three reasons: (1) Banks do not need to use services of Professional Securities Market Participants since they have the licenses for professional securities market activity themselves. (2) The households can easily buy the bonds of banks rather than the bonds of non-banking and other organizations. (3) Banks are active market players not only from supply side but also from demand side.

As for non-banking organizations, the shift in their dynamics is related to the progressive role of amendments of Decree of the President No. 277 (Decree No. 272 of 18 July 2016 "On Amending the Decree of the President of the Republic of Belarus No. 277 of 28th April 2006"). Since 18 July 2016, it became possible to issue unsecured bonds within the limitations of the issuer's net assets.

The structure of corporate bonds by currencies is presented in Table 6.

Table 6

Corporate bonds by currencies

All issues of bonds according to the official exchange rate	Year 2016		Year 2017	
	million BYN	share, %	million BYN	share, %
	15 450,7	100,0	16 800,4	100,0
included				
nominated in BYN	7 685,6	49,7	8 330,5	49,6
nominated in USD	5 894,8	38,2	5 988,4	35,6
nominated in EUR	1 568,1	10,1	1 968,8	11,7
nominated in RUR	302,2	2,0	512,7	3,1

Source: Ministry of Finance of the Republic of Belarus

This table shows the proportion of corporate bond issues according to the currencies they are nominated in. The national currency (BYN) remains the most popular with the issuers. The table also shows the slowdown of the share of bonds nominated in United States daollars (USD). The unpopularity of bonds nominated in Russian roubles (RUR) can be explained by high instability of this currency recently.

The structure of corporate bond issues according to means of bond's yield is presented in Table 7

Table 7

Structure of different means of bond's yield

	Year 2016		Year 2017	
	million BYN	share, %	million BYN	share, %
All issues of bonds	15 450,7	100,0	16 800,4	100,0
included				
fixed coupon rate	7 919,7	51,3	9 073,2	54,0
variable coupon rate	5 936,8	38,4	7 174,6	42,7
discount yield	1 594,2	10,3	552,6	3,3

Source: Ministry of Finance of the Republic of Belarus

As it is shown in the table, the bonds with fixed coupon rate remain the most preferable among lenders. The bonds with discount tend to slowdown.

The analysis of secondary market is also very important. As noted by A.Belzetskaya (2017), the most preferable bonds for potential investors are collateralized bonds with good secondary market. The volumes of corporate bond turnover in comparison with the average cumulative bond issue are shown in Table 8.

Table 8

Turnover of corporate bonds

	Year 2016			Year 2017		
Category of bonds	Turnover	average cumulative issue	turnover rate	turnover	average cumulative issue	turnover rate
Banks	6 353,0	6 550,0	0,97	4 879,4	6 882,6	0,71
Non-banking organizations	3 274,8	6 342,5	0,52	2 534,9	6 256,5	0,41
Others	386,5	1 846,0	0,21	378,6	2 986,5	0,13
All issuers of corporate bonds	10 014,3	14 738,4	0,68	7 792,9	16 125,6	0,48

Sources: (1) Ministry of Finance of the Republic of Belarus

(2) Calculations of the author on the base of Table 1

The table demonstrates that bonds of banks are more liquid comparing to other bonds. The main cause of this fact is that banks are active market players from both sides of market.

While issuing the bonds, it should be taken into account that the lower limit of their yield is related to the economic interests of the investor and it is limited by the yield of alternative instruments for investing (for example, interest rates on deposits). The upper limit of the yield of corporate bonds relates to the economic interests of the issuer and is determined by the interest rate of alternative instruments for raising funds for bank loans. Therefore, in a functioning market, the yield of corporate bonds should fluctuate within these limits, i.e. it should not be lower than the yield of similar alternative investment options for investors and at the same time, it should not exceed the interest rate on bank loans.

To determine the target group of investors in corporate bonds, the author makes such comparisons according to the latest data of the National Bank of the Republic of Belarus in open access. In September 2018, the average interest rate on newly issued loans for companies in freely convertible currency was 5.22%, while the yield on government long-

term bonds was 4.19% in USD and 3.66% in EUR. The yield of short-term bonds of the National Bank nominated in USD was 3.9%. Such a low "spread" at the presented interest rates largely explains the narrow field for issuing corporate bonds among companies. Moreover, not all companies in non-financial sector within Belarusian economy have enough cash to invest in corporate bonds.

The prospect for the placement of corporate bonds nominated in freely convertible currency among households is more optimistic. According to the same review, the average interest rate on foreign currency deposits in September 2018 was only 1.01%, with a maximum numerical value of 2.19 for deposits of over 3 years. Similar comparisons in national currency are characterized by a completely different situation: the average interest rate on new loans for companies in September 2018 was 11.08%, and the average interest rate on deposits of households during the same period was 9.73%. The yield of short-term bonds of the National Bank in national currency was 9.98%. Hence, the spread for companies as potential investors was only 1.1 persentage points. The spread for households was 1.35 persentage points.

Thus, the current situation at the Belarusian financial market is most desirable for the bonds issues nominated in freely convertible currencies and above all targeted the households.

The author points out that Belarusian corporate bond market is rather weak. Considering the tendency of concentration of bonds issued by banks, it is essential to strengthen a non-banking segment of the market. The author finds out that, when preparing Listing Particulars for their bonds, Belarusian companies should take into consideration the fact that the coupon rate is the most important factor for potential buyers of bonds.

Sub-part 2 Revealing current problems of Belarusian corporate bond market

Taking into account the objectives of the article and the results of the analysis the author determines the most significant psroblems of Belarusian corporate bonds market as follows:

1) Despite the growing interest of households in the corporate bonds, the volume of such investments is significantly lower than bank deposits of households. According to the Statistics Bulletin of the National Bank of the Republic of Belarus on the 1st of January 2018, the volume of term deposits of the households in Belarus amounted to BYN 16 537.5 millions which almost equals the total amount of all issues of corporate bonds for the period mentioned above (BYN 16 800.4 millions). However, it is important to remind that the most active market players from the demand side are banks. Unfortunately, there is no exact data on the percentage of households' investment into the Belarusian corporate bond market. According to the estimations (Kuznetsov E., 2016) the share of households from the demand side of the market varies from 30 % to 40 %. Therefore, the households in Belarus still prefer to save with the help of deposits.

2) There is a significant reliance of the corporate sector of the Republic of Belarus on bank borrowing. On the other hand, banking loans remain the main financing source for borrowers. Additionally the Belarusian government continues to stimulate this way of raising the funding in spite of potential problems with the other budget expenditure. As an example, the Decree of the President of the Republic of Belarus No. 445 of 16 November 2018 "On financing investment projects" sets out the conditions for lending money to the state enterprises from the large state banks to finance the selected investment projects.

3) The current situation at the corporate bonds market is characterized by the lack of institutional investors on the demand side. Most of Belarusian institutional investors are banks and insurance companies. There are some restrictions concerning their possible investments in security market including bond markets. According to the Ordinance of the Cabinet of Ministers of the Republic of Belarus No. 1750 of 29 December 2006 "On establishing of the Regulation of

investment procedures and placement of insurance reserves", only 50 % of insurance reserves can be invested in the corporate securities including corporate bonds. This share is divided equally between bonds of banks and non-banking organizations.

As for international investors, their expectations rely to a high extent on the evaluation of country risks. The sovereign credit ratings are shown in Table 9.

Table 9

Sovereign credit ratings of the Republic of Belarus

Rating agency		**The worst**	**The best**	**The current**
Fitch Ratings	Rating	B-	B	B
	The date	26/02/2016	20/07/2018	20/07/2018
Moody's	Rating	Caa1	Ba2	B3
	The date	17/04/2015	22/08/2007	16/03/2018
Standard & Poor's	Rating	B-	B+	B
	The date	18/10/2013	21/08/2007	05/10/2018

Source: Ministry of Finance of the Republic of Belarus

In spite of some improvement in the current situation, the level of sovereign ratings is very low. All that agencies consider government bonds of Belarus as highly speculative. Some banks in Belarus (e.g. Belarusbank, Belinvestbank, and Belagroprombank) have their own credit ratings from S&P or Moody's agencies, with levels comparable to sovereign ratings.

The author suggests that this problem can easily result in related problem – the lack of market information.

4) There is the lack of information for benchmarking both for national and international investors. The problem is that almost all Belarusian issuers are unknown to foreign investors. Moreover, the overall investment image of Belarus is mostly negative.

Even for national investors in many cases the only benchmark within the corporate bond market is Listing Particulars. Some issuers are included into the Belarusian Currency and Stock Exchange Listing. However, they comprise only about 20 % of overall number of issuers.

But as Bessembinder and Maxwell (2008) mentioned, bond issuers hire credit-rating agencies to evaluate their creditworthiness. So the proper and qualified benchmarking is very useful not only for investors but also for issuers of bonds.

5) As it has been mentioned in the previous section, the secondary segment of the corporate bond market in Belarus is very narrow. This causes the difficulty for corporate bond's selling before the fulfillment of the obligations from the side of issuer. Therefore, market players usually invest in the corporate bonds in order to gain the maximum yield generated by coupon rate. Hence, the coupon rate is the main driver at the Belarusian corporate bond market. By comparison, the main factors at developed bond markets are loan size, the bond's credit rating, on-loan percentage and the identity of the borrowing broker (Asquith, 2013).

Both the lack of institutional investors (and consequently, the low level of competition from the demand side) and illiquid secondary market cause another problem – significant borrowing costs for issuers.

6) There are large borrowing costs for issuers of corporate bonds in Belarus. According to Paul Asquith (2013), the borrowing costs for corporate bonds has two major components: rebate rate paid by the lender and the market interest rate. As for Belarusian corporate bond market there is no rebate rate but there are quite large transaction costs. The borrower should pay the commission fee to the Professional Securities Market Participant. The other side of the problem is the high level of coupon rates because of imperfections of current bond market. If market players know that it is very difficult to sell corporate bonds purchased earlier, they would try to maximize their current interest yield.

Therefore, issuers of bonds nominated in national currency (BYN) sometimes offer the extremely high coupon rates up to 16 %. It is much higher even in comparison with the aberage credit interest rates (see previous section).

Conclusions, Proposals, Recommendations

The conclusions, drawn as a result of the carried out analysis, correspond to the opinions and views of the scientists from the Republic of Belarus and other countries (Altman, 2005; Aquilina and Suntheim, 2017; Azimova and Mollaahmetoglu, 2017; Bektic and Regele, 2018; Belzetskaya A., 2017; Kuznetsov E., 2016, Bessembinder and Maxwell, 2008; Dick-Nielsen, Feldhutter, and Lando, 2012; Kwok and Phelps, 2012; Liang Chih Liu, 2016; Smaoui, Grandes, Akindele, 2017; Paul Asquith, 2013; Tocelovska N., 2017). The development of the corporate bond market in Belarus should take into consideration the best practice worldwide. The research has shown some inequality in the nature of the Belarusian corporate bond market which leads to its imperfect structure. As a result of performed research, the author has identified the following challenges within the Belarusian corporate bond market:

- the existing emphasis of household financial savings on bank deposits;
- the significant reliance of the corporate sector on bank borrowing;
- the lack of institutional investors on the demand side;
- the lack of information for benchmarking;
- an illiquid secondary market;
- large borrowing costs for issuers.

Taking into account the progressive role of amendments of Decree of the President of the Republic of Belarus No. 277 (Decree No. 272 of 18 July 2016 “On Amending the Decree of the President of the Republic of Belarus No. 277 of 28 April 2006”) and reasonably good infrastructure of Belarusian corporate bond market the author proposes the following measure for it’s prospective development:

1. to simplify the trading procedure in order to make bonds issued by non-banking organizations more accessible for households. This can increase not only the possibilities of potential issuers but also would encourage households to develop secondary market.
2. to enhance the competition from the demand side. The priority should be given to enhancing the financial literacy of households through popularizing the expansion of their investment opportunities using corporate bonds, as well as establishing the effective mechanisms for interactions between lenders and borrowers. This would allow optimizing the borrowing costs of issuers, creating a certain level of competition among potential investors and could help bringing the coupon rates on corporate bonds closer to the economically reasonable range of values.
3. to create observable benchmarks for issuers and bond investors as far as for national and foreign investors. For domestic investors it is worthwhile to make a National system of credit rating suitable for all issuers of corporate bonds. For foreign investors it is vital to meet all the conditions to feel them in familiar environment.
4. to spread the issues of Eurobonds more widely. There are some positive examples already – the collaboration of Belarusian Eurotorg LLC with Irish Bonitron Designative Activity Company enabled Eurotorg LLC to issue bonds at amount 350 million USD.
5. it is vital to address these measures as a complex, what will enable a positive synergetic effect. This complex of mesures should enable Belarusian companies to reduce their financing costs, to enhance the transparency and disclosure of companies through the access provided by capital markets and to provide both domestic and international investors for a more efficient allocation of savings.

Bibliography

Altman E. An emerging market credit scorung system for corporate bonds. *Emerging Market Review Volume 6, Issue 4, December 2005, pp. 311-323*. [Online] Available at: https://doi.org/10.1016/j.ememar.2005.09.007 [Accessed 27 November 2018].

Azimova T., Mollaahmetoglu E. Bond Market Capitalization: The Case of Advanced Countries. *The Empirical Economics Letters, Volume 16, Number 10, October 2017* [Online] Available at: https://www.researchgate.net/publication/321251611 [Accessed 27 November 2018].

Bektic D., Regele T. Exploiting uncertainty with market timing in corporate bonds market. *Journal of Asset Management, Volume 19, Issue 2, March 2018, pp. 79-92.* [Online] Available at: https://link.springer.com/article/10.1057/s41260-017-0063-6 [Accessed 27 November 2018].

Belzetskaya A. The configurational model of corporate bond market performance. *Bank Bulletin 2 (643) February 2017 pp. 43-51* [Online] Available at: https://www.nbrb.by/bv/Arch/643.pdf [Accessed 26 November 2018]. (in Russian)

Bessembinder H., Maxwell W. Venkatamaran K. Market transparency, liquidity externaities, and institutional trading costs in corporate bonds. *Journal of Financial Economics,Volume 82, Number 2, November 2006, pp. 251-288.* [Online] Available at: https://doi.org/10.1016/j.jfineco.2005.10.002 [Accessed 27 November 2018].

Bessembinder H., Maxwell W. Markets Transparency and the Corporate Bond Market. *Journal of Economic Perspectives, Volume 22, Number 2, Spring 2008, pp. 217–234*. Available at: https://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.22.2.217 [Accessed 26 November 2018].

Brealy, Richard A. Principles of corporate finance / Richard A. Brealy, Stewart C. Myers, Franklin Allen. 10th edition McGrow Hill/Irwin. 2011. 875 p.

Brigham, Eugene F. Fundamentals of Financial Management / Eugene F Brigham, Joel F. Houston Concise Eighth Edition. Cengage Learning. 2013. 620 p.

Houcem Smaoui, Martin Grandes, Akintoye Akindele The Determinants of Bond Market Development: Further Evidence from Emerginf and Developing Countries *Emerging Markets Review, Volume 32, September, 2017, pp. 148-167* [Online] Available at: https://doi.org/10.1016/j.ememar.2017.06.003 [Accessed 27 November 2018].

Jens Dick-Nielsen, Peter Feldhutter, David Lando Corporate bond liquidity before and after the onset of the subprime crisis. *Journal of Financial Economics,Volume 103, Issue 3, March, 2012, pp. 471-492.* [Online] Available at: https://doi.org/10.1016/j.jfineco.2011.10.009 [Accessed 28 November 2018].

Kuznetsov E. Development of the market of high-risk bonds it the Republic of Belarus as perspective instrument of non-budget financing the small business. *Herald of BSU. Issue 3. 2016. pp. 66-70* [Online] Available at: http://elib.bsu.by/bitstream/123456789/170779/1/66-70.pdf [Accessed 28 November 2018]. (in Russian)

Kwok Yuen, Bruce D.Phelps The Hunt for a Low-Risk Anomaly in the USD Corporate Bond Market. *The Journal of Portfolio Management, Volume 42, Issue 1, October 2015, pp. 63-84.* [Online] Available at: https://doi.org/10.3905/jpm.2015.42.1.063 [Accessed 28 November 2018].

Liang Chih Liu, Tian-Shyr Dai, Chuan-Ju Wang Evaluating corporate bonds and analyzing claim holders' decisions with complex debt structure. *Journal of Banking and Finance. 2016, Volume 72, Issue C. pp. 151-174.* [Online] Available at: https://doi.org/10.1016/j.jbankfin.2016.05.007 [Accessed 28 November 2018].

Matteo Aquilina, Felix Suntheim Liquidity in the U.K. corporate Bond Market: Evidence from Trade Data. *The Journal of Fixed Income, Volume 26, Issue 3, Winter 2017, pp. 49-62.* [Online] Available at: https://doi.org/10.3905/jfi.2017.26.3.049 [Accessed 28 November 2018].

Paul Asquith, Andrea S. Au, Thomas Covert, Parag A. Pathak The market for borrowing corporate bonds *Journal of Financial Economics 2013, Voume. 107, Issue 1, pp. 155-182.* [Online] Available at: https://doi.org/10.1016/j.jfineco.2012.08.007 [Accessed 28 November 2018].

Paul R.F. van Loon, Andrew J.G. Gairns, Alexander J. McNell, Alex Veys Modelling the liquidity premium on corporate bonds. *Annals of Actuarial Science, Volume 9, Issue 2, September 2015, pp. 264-289*. [Online] Available at: https://researchportal.hw.ac.uk/en/publications/modelling-the-liquidity-premium-on-corporate-bonds [Accessed 28 November 2018].

Project Bonitron – Listing Particulars [Online] Available at: https://www.ise.ie/debt_documents/ListingParticulars_cff8b244-95cc-49ba-957d-8fefacebbfec.PDF [Accessed 28 November 2018].

Ross, Stephen A. Fundamentals of corporate finance / Stephen A. Ross, Randolph W. Westerfield, Bradford D. Jordan.10th edition. McGrow Hill/Irwin. 2013. 726 p.

Statistics Bulletin of the National Bank of the Republic of Belarus. 10 (232) 2018 . [Online] Available at: https://www.nbrb.by/Publications/bulletin/Stat_Bulletin_2018_10.pdf [Accessed 28 November 2018].

Statistics Yearbook of the Republic of Belarus 2018. [Online] Available at: http://www.belstat.gov.by/upload/iblock/0be/0becfeb4ff8551d54808f25ebc33ca51.pdf [Accessed 28 November 2018].

Tocelovska N. Waiting for the Capital Market Union: the Position of Latvian Corporate Bond Market / *European Integration Studies 2017/11* [Online] Available at: http://eis.ktu.lt/index.php/EIS/article/viewFile/18147/9050 [Accessed 2 December 2018].

Van Horne James C., Wachowicz John M. Fundamentals of Financial Management. 13th edition. Financial Times: Prentice Hall. 2008. 719 p.

INFLUENCE OF INTEGRATED MARKETING COMMUNICATION TOOLS UPON CONSUMERS' BUYING DECISIONS IN THE CONTEXT OF SUSTAINABILITY

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Abstract. A topical business subject of nowadays is the influence of integrated marketing communications (IMC) for sustainability upon various consumer audiences and their buying decisions. From the standpoint of businesses the use of integrated marketing communications in product promotion contributes to the consumption of sustainable, ecological products and, consequently, a healthy lifestyle, yet the factors influencing buyer's buying decisions still remain topical. In this research the authors surveyed buyers of Latvian food retail chains to find out the influence of promotion-related integrated marketing communication tools for sustainability upon buyers' buying decisions. The research brings conclusions regarding a customer-oriented approach to the processes of integrated marketing communication for sustainability, incl. the making of integrated marketing communication for sustainability to increase consumer awareness of sustainability.

Purpose of the article: The purpose of the research was to study and assess the influence of promotion-related integrated marketing communication tools for sustainability upon buyers' buying decisions. The object of the research is promotion-related IMC tools for sustainability. The subject of the research is the influence of product promotion tools for sustainability upon buyers' buying decisions.

Methodology/methods: The research makes use of the results of the studies of food retail chains conducted by the authors in 2017 and 2018. The survey of buyers is based on the results of the survey of leading marketing specialists of food retail chains in 2017. Drawing on the conclusions the authors surveyed randomly selected buyers of Latvian food retail chains with a sample of 1,003 respondents. In order to attain the goal and objectives, the following quantitative and qualitative methods of economic research were used: survey, comparison, grouping, evaluation, market investigation, comparative analysis. The study is based on scientific papers published by Latvian and foreign scholars, general and special literature, and periodicals. The survey data were processed and analysed using the SPSS 23 software.

Findings: The research confirmed the hypothesis that the use of integrated marketing communications for sustainability in product promotion enhances consumer awareness of sustainability. The results of the research are of both theoretical and practical value.

Key words: *sustainability; sustainable development; sustainable marketing; integrated marketing communications for sustainability, buyer survey*

JEL code: M14; M31

Introduction

The use of integrated marketing communications for sustainability in strategies of businesses and the impact of their performance on consumer audiences in the process of buying decisions is a topical business subject. From the standpoint of businesses a strategically correct use of integrated marketing communications in product promotion contributes to the consumption of sustainable, ecological products and, in the long run, to a sustainable lifestyle. There is, however, a second key component to this strategic approach – one that pertains to the target audience. It is the objective and subjective influencers of buyers' behaviour and buying decisions. Based on consumers' wishes and needs, businesses develop IMC for sustainability where the market development trends need to be taken into account. A key role here is played by the raising of consumer awareness of sustainability issues, as awareness is closely linked to buyers' behaviour and conduct on the market. Changes in what consumers need to know in the context of globalisation make it difficult for businesses to find a way how to effectively apply the process of sharing and spreading of knowledge in their operations to create and/or choose the right means for communication with customers so as to effectively satisfy their needs for knowledge. In order to analyse the said issues, the authors studied the impact of promotion-related integrated marketing communication tools for sustainability on consumers' buying decisions by analysing the opinion of buyers of Latvian food retail chains and drew conclusions on a customer-oriented approach to the processes of integrated marketing communication for sustainability, incl. building integrated marketing communications for sustainability to raise consumer awareness of sustainability.

The objective of the research is to study and assess the influence of promotion-related integrated marketing communication tools for sustainability upon buyers' buying decisions while **the object of the study** is promotion-related IMC tools for sustainability. **The subject of the research** is the influence of product promotion tools for sustainability upon buyers' buying decisions. In order to achieve this objective, applying conventional quantitative and qualitative **methods.** The study is based on the scientific works published by Latvian and foreign scientists, general and specialised literature, periodicals. The authors of the study carried out an assessment, market research, comparative analysis, surveyed buyers of Latvian food retail chains, processed data with the MS Excel and SPSS 23 software.

The research confirmed the **hypothesis** that the use of integrated marketing communications for sustainability in product promotion enhances consumer awareness of sustainability. The results of the research are of both theoretical and practical value.

1. Importance and theoretical aspects of IMC for sustainability

Nowadays, in the context of entrepreneurship development, it is important to develop innovative management principles with a crucial role assigned to setting up sustainable IMC of the companies as they foster synergy between companies' targets and consumers. In the literature, IMC is mainly described as a process and approach to a customer, yet, in order to evaluate certain guidelines in the process of IMC with a customer, the authors surveyed buyers of Latvian food retail chains with the purpose of finding out the influence of promotion-related IMC tools for sustainability upon their decisions and coming to conclusions on a customer-oriented approach to IMC for sustainability, including building IMC for sustainability to raise consumer awareness of sustainability. The authors' 2018 survey of buyers is based on the results of the authors' 2017 survey of leading marketing specialists of food retail chains. The survey of leading marketing specialists in 2017 confirmed that the use of IMC for sustainability may help companies boost demand. Hence, in order to find out the impact of the use of IMC for sustainability by companies in product promotion upon consumers' buying decisions in the context of sustainability and in promoting the consumption of ecological products. The authors surveyed randomly selected buyers of food retail chains with a sample of 1,003 respondents. The survey data was analysed with the respondents grouped by their income, education, gender and age.

According to *D. Martin, 2012* and *J. Schouten, 2012*[1], due to the rapidly increasing global population, the development of technologies, the changing economic relationship, and such economic issues as poverty, preservation of the ecosystem, shortage of water and food, climate change etc., sustainability becomes increasingly topical.

The concept of sustainability (sustainable development) is explained in multiple ways these days. In the report "Our Common Future" published by the World Commission on Environment and Development in 1987, sustainable development was defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[2]

L. P. Thiele, Director of Sustainability Studies at the University of Florida (*Thiele L. P., 2013*)[3], argues that sustainability stands on three pillars – society, ecology and economy. They are closely related and one cannot exist without the others. J. Strube, former CEO of the German chemical company BASF SE (*Strube J., 2006*)[4], too, holds that sustainable development in such areas as economy, ecology and society will be key to success in the 21st century. Society cannot continue building their economic growth at the expense of environmental protection and social stability.

According to *F.M. Belz, 2012* and *K. Peattie, 2012*[5], sustainable development lies in an integrating concept that considers the development and growth of humanity in such areas as business and economy, manufacturing and consumption, prosperity, environmental protection, well-being and health, justice (both social and environmental), integration and governance.

D. Martin, 2012 and *J. Schouten, 2012*[6] distinguish economic, social and environmental sustainability, where economic sustainability fosters the prosperity of people and depends on their productivity, social sustainability depends on the ability of people to meet their need for food, medicine, clothes, services, transport, health care, education etc., and environmental sustainability is defined as preservation of the ecosystem and biodiversity.

M. Stenmark, 2001[7] maintains that sustainable development is to some extent affected by: 1) *technology and technical means* possible to develop at present and in future; 2) *social organisations and economy*, i.e., the current economic and social structures and the improvements that will become possible in future; 3) *the Earth's biosphere*, i.e., the capacity of the ecosystem that can support and provide for human activity; 4) *moral attitude towards sustainable development*. He also stresses that sustainable development is built by the individual's behaviour and the government's policy that attempt to meet both the basic needs and wishes (as long as they do not come into conflict with the interests of the present and future generations, which, in turn, could materialise within the constraints set by technology, morality, social and economic structures, and the capacity of the Earth's ecosystems).

With the issue of sustainability becoming increasingly topical, there is a new trend of IMC development in the scientific literature, with IMC linked to marketing for sustainability. This stems from IMC activities being managed by the business *Barney, Miller, Day*[8;9], with the integration having the objectives of: 1) creating internal conditions (such as internal communication activity planning, organisational structure, personnel, implementation, and integration) to lay the internal foundations for an effective external communication; 2) coordinating and approving external communication activities to make sure that the company's image be clear, unified and comprehensible. This applies to all communication messages generated by the company and addressed to external stakeholders based on the company's strategic posture to

[1] Martin D., Schouten J., 2012. *Marketing in the Twenty–First Century*, USA: Pearson Prentice Hall, p. 8-9
[2] World Commision on Environment and Develpoment Our Common Futura. Oxford: Oxford University Press, 1987.
[3] Thiele, L. P., 2013. *Sustainability.* UK: Polity Press, p. 5.
[4] Brassington, F., Pettitt, S., 2006, *Principles of marketing* (4th ed.). Essex: Pearson Education Limited, p. 22.
[5] Belz, F. M., Peattie., K., 2012, Sustainability Marketing, TJ International Padstow, Cornwall, UK, p.12.
[6] Martin, D., Schouten, J., 2012, Sustainable Marketing, Pearson Education, New Jersey, p.4.
[7] Stenmarks, M., 2001, Vides ētika un ilgtspējīga attīstība, ilgtspējīgas attīstības pamati, 7.-11.lpp.
[8] Barney, J. (1991). *Firm resources and sustained competitive advantage*. Journal of Management, Vol. 17, pp. 99–121.
[9] Day, G. S. (2011). *Closing the marketing capability gap*. Journal of Marketing, Vol. 75(4), pp. 183–195.

achieve superior performance by developing, managing, capitalising on specific resources which are valuable, scarce, inimitable and non-substitutable.

Marketing communication is strategic efforts, and, in order to succeed, heads of marketing communications need to begin with clear objectives. Along with standard marketing targets, which are introduction, information, persuasion, reminding and rewarding, marketing communication for sustainability has additional ones pertaining to sustainability – maximum gain from minimum resources. *(Martin, D., Schouten, J. , 2012)*[10]

Marketing communication for sustainability is integrated. In the concept of integrated marketing communication (IMC) it is believed that all messages from the organisation should work together in all media to convey the image or market position desired by the organisation. Imagine IMC as a rope. Its strength and effectiveness is provided by the integration of many individual strands of fibre into one string. Without a proper integration you have merely a pile of fibre. A marketing communication that lacks integration may only be a mix of various messages in various directions to various audiences. Without integration marketing messages may contradict each other, thus adversely affecting the credibility of the company or the brand and confusing the target audience.

D. Martin, 2012 and *J. Schouten, 2012*[11] have emphasised that the general purpose of marketing communication for sustainability is to help businesses reach their marketing and sustainability targets, expressed as economic success, whilst increasing both human and natural capital. Sustainable marketing requires an extensive cooperation of stakeholders, and marketing communication for sustainability is therefore a mechanism that enables them to cooperate despite different and even conflicting interests and ideologies. The authors have also mentioned the principles of IMC for sustainability: 1) integrity, 2) responsibility; 3) transparency and 4) credibility. They make a maximum use of resources by involving and mobilising the target audience and people in general.

These elements should be worked into the communication messages aimed towards educating the target audience through demonstrating a harmony of values between consumers and sustainable brands. Marketing implementers need to stress both the core features and benefits of the product and those of its sustainability features. Most importantly, in marketing communication one has to avoid greenwashing, hidden sponsorship and other misleading information. Governmental regulations and media participation, as well as guidelines on marketing communication for sustainability would facilitate cooperation among stakeholders.

F.M. Belz, 2012 and *K. Peattie, 2012*[12] consider marketing communications for sustainability the next step in the evolution of marketing communications because: 1) traditional promotion communications are focused on advertising the product to the consumer; 2) relationship marketing is more focused on communication with the consumer and particularly on finding out more about them so as to sell more effectively. Meanwhile, 3) marketing communications for sustainability also reveal the company behind the product offer to enable the consumers to find out more about it and open a dialogue between the consumer and the company so that both understand and learn from each other. This leads to the dual focus of the strategy of marketing communication for sustainability: to communicate with the consumer on the sustainability solutions offered by the company through its products, and to communicate with the consumer and other stakeholders on the company in general.

F. Baldassare, 2016 and *R. Campo, 2016*[13] have explored communication for sustainability as a business means or tool that enables businesses to reach new customers, draw investors. They have developed a self-assessment matrix for sustainability that identifies the importance and competitive advantage of marketing communication for sustainability.

[10] Martin, D., Schouten, J. (2012) *Sustainable Marketing*, Pearson Education, New Jesrey, pp. 200-247
[11] Martin, D., Schouten, J. (2012) *Sustainable Marketing*, Pearson Education, New Jesrey, pp. 200-247
[12] Belz, F.M, Peattie, K., 2012. *Sustainability Marketing: a global perspective. Hoboken*, N.J.: Willey, pp. 12
[13] Baldassare, F., Campo, R. (2016) *Sustainability as a marketing tool: to be or to appear to be?* Kelly School of Business, Elsevier, pp. 421-429, pieejams http://dx.doi.org/10.1016/j.bushor.2016.03.005 [skatīts 10.08.2017.]

The matrix features four different dynamic stages of businesses, or dynamically sustainable initiatives, with various approaches to marketing communication for sustainability, paying special attention to relative costs and benefits: 1) if businesses are responsible, do they opt to communicate on this matter, 2) or are they more discreet in marketing communication for sustainability, 3) do businesses perceive their sustainability conduct as part of their overall marketing strategy, 4) or merely as a matter of ethics, 5) can they afford to take a risk and entirely ignore the need to be sustainable. Also analysed are opportunities and threats – whether sustainability can be a marketing tool.

The authors find that transparency is a dynamic and thus controllable feature of marketing communication and of the relationship between the company and any stakeholders interested in being informed of the company's sustainable activities. Transparency in communication may be more than just a characteristic or attribute. Hence, marketing communication for sustainability should be implemented through all marketing channels, by all means of communication, corresponding to the different categories of stakeholders, which, in the authors' view, reinforces the importance of integrated marketing communications for sustainability. Commitment to sustainability actions and communication on it depends on variables, i.e., national legislation, corporate sustainability culture, internal business environment, communication between departments, certification costs, and financial resources.

Based on the above, businesses may have different marketing strategies when it comes to sustainability. However, in the context of sustainability marketing communication may bring the following advantages: new investments, improved working conditions, increased motivation of employees, and attraction of specialists, satisfaction with work, positive information and messages in the media.

A. Pomering, 2017[14] has researched marketing for sustainability in the context of increase in the consumption value, where the sustainability of the company's communication as innovation may be implemented as a system. He has come to a conclusion that, in order to encourage customers towards consumption habits, one must build more distinct marketing communications for sustainability, implementable a system, with a particular emphasis on packaging, marking, promotional and other marketing communication activities for sustainability with the purpose of encouraging social responsibility, creating a consumption value, and addressing not only the needs and wishes of individual consumers but also those of society as a whole.

Nowadays, in the context of business development, it is important to develop innovative management principles, with a key role assigned to building integrated marketing communications for sustainability (IMC S) as they foster synergy between the company's goals and consumer audiences. Product promotion depends not only on product availability but also on the factors motivating the customer's choice[15].

O. Duralia, 2012[16] has listed a number of aspects that contribute to developments pertaining to environmentally friendly products: 1) changes in the demand structure – made by manufacturers, retailers and final consumers, i.e., their orientation towards safe, healthy and sustainable products; 2) the need to reduce costs – by diversifying raw materials, with preference to renewable biodegradable products that yield reduced costs and improved competitiveness in the long run; 3) an increase in the market share as a result of innovations – despite the present of major players there is fierce competition on the market, so a move towards innovation in the domain of ecological products may open up new opportunities for businesses.

[14] Pomering A, Marketing for Sustainability: Extending the Conceptualisation of the Marketing Mix to Drive Value for Individuals and Society at Large, (2017), *Australasian Marketing Journal*, 25 (2), pp. 157-165, pieejams DOI: 10.1016/j.ausmj.2017.04.011
[15] Bormane, S., Batraga, A., (2018), *Digital Promotion as Solution for Integrated Marketing Comunication in Business,* Economic Science for Rural Development, No. 48, pieejams doi10.22616/esdr.2018.103, pp. 338-347
[16] Duralia, O., 2014, Applying sustainable marketing strategies – The key to Obtaining Competitive Advantages On the Industrial Products Market, *Studies in Business and Economics* no. 9(3), 2014, pp. 21-28

From the consumer viewpoint, it is changes in the consumption structure and factors motivating the customers' choice that substantially affect the development of the company's plan on IMC for sustainability. *V.Kumar, 2012 et.al.*[17] maintain that, when introducing sustainability in a marketing strategy, it may be difficult to formulate and implement, as the consumer is the one whose wishes and needs the marketing strategy is based on. Demand must be met, but not necessarily by communicating in the customer's language. On the other hand, a sustainable marketing strategy builds a long-term relationship with customers, to the benefit of not only business, but also society and ecology. The authors find that it is the consumers whose wishes and needs IMC for sustainability are based on, also considering marketing development trends in terms of buyers' behaviour.

Franco S., Cicatiello C., 2019[18] Branding for sustainability may strengthen consumers' attitude towards purchasing the product and readiness to pay for it, consumers' satisfaction after purchase and consumers' loyalty towards products marked as sustainable. In order to achieve this, it is important to promote awareness of sustainability brands and their image, as well as to enhance consumers' knowledge about the impact of food production on sustainability issues, and to create a social environment where a food sustainability culture is highly regarded, thus urging consumers to make sustainable food choices.

Nevertheless, the authors hold that, in order to raise consumer awareness, businesses need not only to find an effective way and suitable channel of communication but also to appreciate the environment and the consumer. *Raudeliunienė, J., Davidavičius, S., 2017*[19] maintain that changes in what consumers need to know in the context of globalisation make it difficult for businesses to find a way how to effectively apply the process of sharing and spreading of knowledge in their operations to create and/or choose the right means for communication with customers so as to effectively satisfy their needs for knowledge.

Due to the development of technologies and the growth of virtual space as a business environment, the role of digital marketing in IMC becomes more prominent. In this regard, *Belz F.M., 2012*[20] has underlined the importance of online marketing and digital environment in the implementation of IMC for sustainability, supported by the results of a study on consumers' reaction to marketing messages whereby consumers who are psychologically outward-oriented (i.e., expect appreciation from others) are difficult to motivate with appeals containing guilt, fear or sustainability value. Communication messages need to be based on the following principles: 1) make things personally significant (related to the particular consumer's home and lifestyle) and personalise; 2) avoid negative, guilt-based messages and focus on the benefits of saving money, "getting something" and convenience; 3) associate behaviours with positive self-images in the consumers' perception (wisdom, flattery and charm) and the local, known and present as opposed to the global and prospective; 4) be interactive, playful, entertaining and informative.

In this context, *Sabaitytė, J., Davidavičius, S., 2017*[21] refer to the multigenerational nature of the present society and. The public assimilation of new technologies largely depends on consumers' attitude which, in turn, is determined by their psychological characteristics. It is also stressed that consumer segments on the market may be defined by generations and their specific characteristics and that the theory og generations may be used as a consumer segmentation tool.

[17] Kumar V., Rahman Z., Kazmi A., Goyal P., Evolution of Sustainability as Marketing Strategy, Volume 37, 2012, pp. 482-489, https://doi.org/10.1016/j.sbspro.2012.03.313
[18] Franco S., Cicatiello C. The Role of Food Marketing in Increasing Awareness of Fodd Securty and Sustainability: Food Sustainability Branding, Volume 3, 2019, pp. 27-31, https://doi.org/10.1016/B978-0-08-100596-5.22018-0
[19] Raudeliuniene, J., Davidavicus, S., (2017), *A Conceptual Model of Assessment of Knowledge Transfer to consumer,* Business, Management and Education, Vol. 15(2), p. 174-195
[20] Belz, F.M, Peattie, K., 2012. *Sustainability Marketing: a global perspective. Hoboken*, N.J.: Willey, pp. 12
[21] Sabaitytė, J., & Davidavičius, S. (2017). *Challenges and solutions of adopting public electronic services for the needs of Z generation.* International journal of learning and change, Vol. 9(1), pp. 17–28.

Their view is shared by *Raudeliunienė, J., et al., 2018*[22] who maintains that, since the virtual environment is constantly changing, not only consumers' needs for information and knowledge changes but also the means and channels used by organisation in communication with customers. There is a tendency to shift more advertising campaigns to social media, given the opportunities they provide to organisations and users. The popularity and user base of these networks keeps increasing.

In another piece of research, *Davidavičienė et al. 2017*[23] points out that the development of social media gives rise to new ways of marketing communications and scientific challenges. The increasing role of B2B and B2C communications and customer relationship is affected by dynamic changes on the e-market. In this context, depending on the market where there are either sales transactions between businesses or a transaction process between a business and a final consumer, different activities may be needed, as well as different channels for conveying information.

The progressive social changes and observed trends in the food chain urges producers to seek opportunities to attract consumers' attention to credible product information. *Wyrwa, J., Barska, A., 2017*[24] maintain that information on the food packaging as one of the components of marketing information is a factor of substantial impact upon consumer's opinion about the product.

Information on product marking, labelling, packaging and other key elements is governed by national legislation, governmental regulations and other regulatory enactments. The state thus has tools to introduce changes that are binding to both producers and traders. The availability of information educates consumers and affects demand and assortment in stores. This is how the link among the consumer, the producer, the trader (retail chain) and the state manifests itself[25].

Still, not all consumers are using the latest technologies, possibly due to a lack of information, skills and knowledge when it comes to selecting information and comparing alternatives. Such a situation may stem not only from buyers' habits in the pre-purchase stage but also from the timing of the buying decision. For instance, advertising in mass media or information in specialised newspapers are IMC tools for sustainability that often reach their target audience outside the shop where the purchase is made. The consumer might receive product information in a moment when he/she is not ready to perceive it and develop a negative attitude towards both the product and the company. Even if the marketing communication has appealed to the consumer, the situation may change due to various external circumstances up to the moment when the consumer arrives in the shop and makes a purchase. Thus, factors of influence on the buying decision may also be invisible communication from friends, acquaintances, relatives based on experience, changes in one's priorities, marketing activities by competitors, other factors in the competitor offers, such as price changes, gifts for purchase, appealing product design, sales assistant advice etc.

However, as already stated by the authors, in order to draw conclusions regarding the impact of specific IMC tools for sustainability on consumers' buying decisions, one needs to analyse the age, income, education and gender structure in-depth.

[22] Raudeliuniene, J., Davidaviciene, V., Tvaronaviciene, M., Jonuška, L., (2018), *Evaluation of Advertising Campaigns on Social Media Networks,* Journal Sustainability, Vol. 10, p 14

[23] Davidavičienė, V., Pabedinskaitė, A., & Davidavičius, S. (2017). *Social Networks in B2B and B2C Communication.* Transformations in Business & Economics, Vol. 16(1), pp. 69–84.

[24] Wyrwa, J., Barska, A., (2017), *Packaging as a Source of Information about Food Products,* Procedia Engineering 182, p.770 – 779

[25] Bormane, S., Šķiltere, D., Batraga, A., (2018) *Impact of the regulary decisions of the Republic of Latvia on Sustainable Product Supply Provided by the Food Retail Chains*, Regional formation and developmant studies, p. 21-35

2. Influence of promotion-related IMC tools for sustainability on consumers' buying decision, an empirical study

While concurring in essence with the conclusions on the present-day development of integrated marketing communications, the authors put forward a hypothesis that the use of IMC for sustainability in product promotion enhances consumer awareness of sustainability.

In order to confirm or reject the hypothesis, in 2018 the authors conducted a survey of randomly selected buyers of Latvian food retail chains with a sample of 1,003 respondents.

Table 1

Sociodemographic profile of respondents in Latvia, 2018

Gender	Number of respondents	Percentage of respondents
Male	484	48.3
Female	519	51.7
Total	**1,003**	**100.0**
Age		
Up to 30	217	21.6
30 to 45	246	24.5
45 to 65	391	39.0
65 and more	149	14.9
Total	**1,003**	**100.0**
Education level		
Primary	62	6.2
Secondary (incl. vocational secondary, college, technical school)	304	30.3
Incomplete higher (incl. student)	107	10.7
Higher (professional higher, bachelor, master, doctoral degree)	530	52.8
Total	**1,003**	**100.0**
Income level (monthly net)		
Up to 500,- EUR	277	27.6
500,- EUR to 1,000,- EUR	453	45.2
1000,- EUR and more	273	27.2
Total	**1,003**	**100.0**
Residence		
Riga	669	66.7
Vicinity of Riga	334	33.3
Total	**1,003**	**100.0**

Source: created by the authors after processing the buyer survey data in SPSS

The survey data were aggregated using MS Excel and analysed using SPSS. The goal of the survey was to explore and assess the impact of promotion-related IMC tools for sustainability upon consumers' buying decisions in the context of sustainability. The key faults identified from the survey of buyers served as basis for drawing up proposals and improving IMC in the further development of the process of IMC for sustainability under a customer-oriented approach.

Next, the study addresses IMC tools for sustainability because, based on their previous research, the authors believe that demand at food retail chains is affected by such factors as product location and placement in a shop's premises, shelves etc., advertising in mass media, internet, outdoor advertising, advertising stands, visual information about product discounts, product discount coupons etc. measures to increase sales, product tasting in shops, shop assistant consultations, loyalty system, best-before dates, product proportion etc. The above and the survey data suggests that the following IMC tools for sustainability tend to have an impact (including a substantial impact) on consumers' buying decisions in the context of sustainability:

Table 2

Key IMC tools for sustainability with impact on buying decisions, 2018

No.	IMC tool for sustainability	Percentage of respondents
1.	Price discounts on Latvian-made products	87.7
2.	Price discounts on ecological products	80.7
3.	Best-before dates of Latvian-made products	79.1
4.	Proportion of Latvian-made products on offer	73.8
5.	Price discounts on products with environmentally friendly packaging	71.7
6.	Best-before dates of import products	70.7
7.	Linkage of loyalty card to payment options	69.9
8.	Availability of environmentally friendly shopping bags	68.9
9.	Waste sorting options	67.2
10.	Products with environmentally friendly packaging (that quickly decomposes in nature)	66.7

Source: created by the authors in MS Excel after processing the buyer survey data in SPSS.

The authors find that the key factors in the context of sustainability when it comes to buying decisions are price, availability of domestic products, best-before dates, and understanding of environmental and social issues. In Table 2 the authors have pooled the respondents' answers on what affects buying decisions with their answers on what substantially affects buying decisions. It follows from Table 2 that a key role in consumers' buying decisions is played by price-related, product-related, geographic placement and technology-related, and digital promotion-related IMC tools. Hence, when the IMC approach is used for reaching the target audience, the above tools tend to contribute to consumers' buying decisions in the context of sustainability. The target audience can be reached through a complex application of IMC tools in the context of sustainability, both for specific campaigns and a marketing strategy. However, in order to ascertain benefits from IMC tools for sustainability and find out which IMC activities have contributed to buying decisions, the authors recommend doing research before and after the campaigns and studying the factors of influence on buyers within a specific period of time. Furthermore, Table 2 suggests that buying decisions in the context of sustainability are affected by such factors as price discounts, best-before dates, loyalty system, payment options, availability of packaging supplies (for takeaway), product packaging etc.

Given the variety of consumer audiences, it is important to find out not only which IMC tools for sustainability do not contribute to purchases, but also in which groups of age, education, income, gender etc. there might be differences that would be relevant in the planning and implementation of IMC.

The key IMC tools for sustainability predominantly rated by respondents as having no impact on buying decisions are presented in Table 3.

Table 3

Key IMC tools for sustainability with no impact on buying decisions, 2018

No.	IMC tool for sustainability	Percentage of respondents
1.	Barcode information on disposal, re-use, composition of packaging and its health impact, pictures of general use of product	75.6
2.	Mobile applications providing information on ecological and Latvian-made products available in-store	70.5
3.	Informational messages on vegan products (without ingredients of animal origin)	68.2
4.	Creation of social groups on social media for regular buyers of ecological products	67.7
5.	Consumer involvement in making new products, game element system drawing to brand loyalty programme to promote sales of ecological products (points, discounts, gifts, status etc.)	66.3
6.	Option of consumer involvement in making new products	62.8
7.	Location of import products in shop shelves	60.8
8.	Support for and contribution to conferences, education and instructional literature	59.4
9.	Structure of information on company website, with ecological and Latvian-made products singled out	56.7
10.	Proportion of import products on offer	56.3

Source: created by authors in MS Excel after processing the buyer survey data in SPSS.

The authors find that buying decisions tend to be unaffected by digital promotion-related IMC tools for sustainability, yet the authors also believe that more thorough research would be needed on how the said IMC tools affect buying

decisions for certain groups of respondents, i.e., whether or not there are different opinions among people of different education levels, ages, and income. This stems from the fact that the use of digital promotion tools involves the latest technologies and the knowledge, skills and habits of utilising the advantages of smartphones differ among generations.

Table 3 also suggests that consumers lack understanding of the necessity of contributions to education and instructional literature in dealing with sustainability issues and for the purposes of public awareness. Hence, information on the results of scientific research in the business environment becomes increasingly topical for public education. Still, the authors see a positive trend from the viewpoint of promoting the consumption of domestic products – the location of import products in shop shelves does not matter to consumers and nor does their proportion in the assortment.

The authors find different classifications of consumers in scientific research, e.g., as passive, active, initiators etc., yet there is an assumption that consumers with a higher level of education earn more but tend to exhibit a different market behaviour because of busyness, risk less in their buying habits and are reluctant to change their favourite brand for another. Hence, IMC may often tail to reach the target audience if no complex system approach is developed. The authors also find that digital tools for sustainability are relatively new, as proven by the results of the study whereby digital IMC tools for sustainability do not exist at companies, yet food retail chains intend to use them in marketing communication within the next few years.

Conclusions and proposals

1. The research confirmed the initial hypothesis that the use of IMC for sustainability in product promotion enhances consumer awareness of sustainability. The results of the research are of both theoretical and practical value.
2. A key role in consumers' buying decisions in the context of sustainability is played by such marketing communication activities as price discounts on ecological and Latvian-made products, products with environmentally friendly packaging, best-before dates, loyalty system, payment options, staff knowledge and advice, proportion of domestic products etc., thus making the factors of influence on buying decisions more prominent.
3. Assigning a key role to IMC for sustainability in a company's marketing strategy fosters synergy between the company's goals and consumer audiences. Product promotion depends not only on a strategically reasoned assortment, but also the factors motivating the customer's choice, the overall public attitude towards sustainable development, and the importance of environmental conservation and social responsibility, information exchange among the company and all stakeholders of the buying and selling process, public understanding of healthy lifestyle.
4. IMC may often fail to reach the target audience if no complex system approach is developed. In the context of sustainability and, in line with the company's corporate strategy for sustainability, a key role in marketing communication with the buyer and in the use of IMC for sustainability should be played by activities pertaining to price lowering, product availability and appearance (incl. packaging) to help reach new customers and draw investors.
5. Buyers at food retail chains lack understanding of the necessity of investments in education and instructional literature for dealing with problematic issues and raising public awareness. Hence, there is an increasing role in public education for information about the results of scientific research in the business environment.
6. It becomes topical for scholars to explore in detail how the said IMC tools for sustainability affect buying decisions in specific groups of respondents, i.e., whether there are differences in opinions among people with different levels of education, income and ages, based on a variety of factors – the advantages of new technologies, knowledge and skills, generational differences in habits.

Bibliography

Baldassare, F., Campo, R. (2016) *Sustainability as a marketing tool: to be or to appear to be?* Kelly School of Business, Elsevier, pp. 421-429, available from http://dx.doi.org/10.1016/j.bushor.2016.03.005 [accessed on 10.08.2017]

Barney, J. (1991). *Firm resources and sustained competitive advantage*. Journal of Management, Vol. 17, pp. 99–121.

Belz, F.M, Peattie, K., 2012. *Sustainability Marketing: a global perspective. Hoboken*, N.J.: Willey, pp. 12

Bormane, S., Batraga, A., (2018), *Digital Promotion as Solution for Integrated Marketing Comunication in Business,* Economic Science for Rural Development, No. 48, available from doi10.22616/esdr.2018.103, pp. 338-347

Bormane, S., Šķiltere, D., Batraga, A., 2018. *Impact of the regulatory decisions of the Republic of Latvia on Sustainable product supply provided by the food retail chains*, Regional formation and development studies, p 21-35

Day, G. S. (2011). *Closing the marketing capability gap*. Journal of Marketing, Vol. 75(4), pp. 183–195.

Davidavičienė, V., Pabedinskaitė, A., & Davidavičius, S. (2017). *Social Networks in B2B and B2C Communication.* Transformations in Business & Economics, Vol. 16(1), pp. 69–84.

Duralia, O., 2014, Applying sustainable marketing strategies – The key to Obtaining Competitive Advantages On the Industrial Products Market, *Studies in Business and Economics* no. 9(3), 2014, pp. 21-28

Franco S., Cicatiello C. The Role of Food Marketing in Increasing Awareness of Fodd Securty and Sustainability: Food Sustainability Branding, Volume 3, 2019, pp. 27-31, https://doi.org/10.1016/B978-0-08-100596-5.22018-0

Kumar V., Rahman Z., Kazmi A., Goyal P., Evolution of Sustainability as Marketing Strategy, Volume 37, 2012, pp. 482-489, https://doi.org/10.1016/j.sbspro.2012.03.313

Martin, D., Schouten, J. (2012) *Sustainable Marketing*, Pearson Education, New Jersey, pp. 200-247

Pomering A, Marketing for Sustainability: Extending the Conceptualisation of the Marketing Mix to Drive Value for Individuals and Society at Large, (2017), *Australasian Marketing Journal*, 25 (2), pp. 157-165, available from DOI: 10.1016/j.ausmj.2017.04.011

Raudeliuniene, J., Davidavicus, S., (2017), *A Conceptual Model of Assessment of Knowledge Transfer to consumer,* Business, Management and Education, Vol. 15(2), p. 174-195

Raudeliuniene, J., Davidaviciene, V., Tvaronaviciene, M., Jonuška, L., (2018), *Evaluation of Advertising Campaigns on Social Media Networks,* Journal Sustainability, Vol. 10, p 14

Sabaitytė, J., & Davidavičius, S. (2017). *Challenges and solutions of adopting public electronic services for the needs of Z generation.* International journal of learning and change, Vol. 9(1), pp. 17–28.

Wyrwa, J., Barska, A., (2017), *Packaging as a Source of Information about Food Products,* Procedia Engineering 182, p.770 – 779

PRODUCTION PLANNING AND CONTROL (PPC) SYSTEM ARCHITECTURE FOR THE USE IN NETWORKED ADDITIVE MANUFACTURING (AM) FACILITIES

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Abstract. Additive manufacturing (AM), also referred as 3D printing, is a disruptive innovation and is already indispensable in the field of prototype development. In the course of continuous development of the technology, it increasingly finds itself application in the industrial area. Traditionally, the flexibility of the production process was enabled by the Production Planning and Control (PPC) software module as a part of Enterprise Resource Planning (ERP) system. The main function of PPC is that of detailed scheduling and process planning, including monitoring and enabling changes in the process, thus catering to high(er) level of efficiency. To take advantages of traditional features and functions of PPC in the AM facility, the control functionality must be extended. For example, multiple printing facilities can be used in a company or even in a partner network. To develop PPC architecture which would cater for the new possibilities enabled by AM, we have examined the scope of functions and controls of the traditional PPC systems and identified those functions which require adaptation, which are redundant or those which are missing. Based on the results of this analysis, a conceptual design for an integrated PPC system for AM technology is presented. In the proposed architecture, individual PPC tasks and the interaction between the corresponding sections are described and functional requirements are elaborated. Implementation of PPC according to the proposed architecture bears a promise of production cost reduction due to more efficient utilization of the manufacturing facilities and allows controlling not only a single AM site, but any number of networked sites.

Keywords: *PPC, ERP, additive manufacturing, 3d-printing, architecture*.

JEL code: O14, L16, M11

Introduction

Additive manufacturing (AM) is a manufacturing process in which objects are produced from 3D model data by depositing individual layers on top of each other (Gibson et al., 2015). Using the slicing process, the manufacturing object is first broken down into a set of individual 2D layers, followed by the generation of a machine code for each of the layers, from which a total machine code for the entire object is calculated. This manufacturing process is opposed to the traditional subtractive and formative manufacturing processes. In comparison to the traditional manufacturing processes, AM does not require a specific component-dependent tools (Attaran, 2017; Gu et al., 2012; Zhang et al., 2014). This makes AM technology a universal production technology in the sense of Industry 4.0 (Frank et al., 2019; Lasi et al., 2014), which can be used without being tied to individual production steps. In contrast, traditional manufacturing is characterized by the use of large quantities of task-specific plants. This results in the requirement for the production planning and control (PPC) to keep the individual plants and their operating processes synchronized to all necessary tasks for the production of certain products in order to avoid downtimes (Sydow and Möllering, 2015).

Through the use of AM a paradigm shift occurs. Instead of coordinating a large number of individual task-specific production plants, a large number of plants with the same task area must be coordinated in order to achieve a high total number of units. This requirement brings forth the first research question (RQ1):

- What should be the functional architecture of a PPC for AM to achieve efficient utilization of manufacturing plants with the same scope of responsibilities?

Efficiency with which manufacturing plants are utilized is contingent on changes and short-term events, such as changes in the orders, personnel availability, machine availability and components availability. To maintain high efficiency, production planning must be capable of quick and direct response to such (Szelke and Monostori, 1999). This requirement leads to the second research question (RQ2):

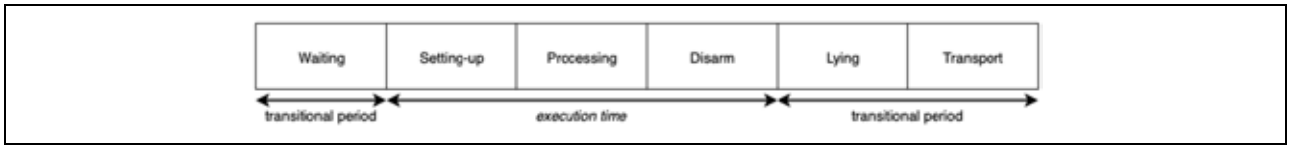
- Which (sequences of coordinated) steps must be taken to respond to changes that typically occur in production in order to maintain the production targets when using AM?

In this article we attempt to elaborate on the architecture for such a tool. In the future, the proposed architecture will be implemented and tested to validate the general functionality of the architecture by performing different simulations.

The requirements for an AM-PPC

To elicit requirement for PPC under additive manufacturing, it is appropriate to first review the nature of the traditional manufacturing process. In contrast to AM technology, traditional manufacturing processes have a significantly lower degree of digitization, which is reflected in a large number of manual work steps (Birtchnell and Urry, 2016). However, due to their long existence, the manufacturing processes are well known and can therefore be well planned within companies. In the following, we will therefore briefly discuss the manufacturing process and planning of Subtractive Manufacturing (SM), which takes a representative part in traditional manufacturing processes, in order to illustrate the changes that arise from the use of AM.

In SM, objects are manufactured by removing material. For the SM, specific tools and tension devices are necessary which differ depending on the objects to be produced. The use of object-dependent specific tools requires that setup and teardown times are taken into account when production orders are scheduled (Herrmann and Manitz, 2015).



Source: Illustration derived from (Herrmann, 2011).

Fig. 1. **Allocation of process times for subtractive manufacturing**

The sequence of the objects to be produced has to be taken into account so that a large number of specific tools can be reused for the next part to be produced (Salonitis and Ball, 2013). On the one hand, this large number of required work steps means that long and complex planning is required and, on the other hand, the production of individual items is associated with high costs, as the set-up and dismantling times are no longer in proportion to the actual processing time. This results in rigid planning, which requires a lot of effort to be able to react to changes. The dispatching and scheduling of production orders is the task of the Production Planning and Control (PPC) systems (McKay and Wiers, 2003). Precise planning with high utilization of production machines has a significant impact on the enterprise's production costs (Mula et al., 2006). Fundamental for an exact planning are the usable data sets, in the form of time measurement for the necessary work steps and the respective processing times. A problem for the time estimation is the work steps, which are carried out by the employees. For this purpose, either historical values are used or estimates of the necessary working time for the work step are made during the initial process and later corrected on the basis of the historical values (Guide et al.,

1997). This form of scheduling is particularly critical in the production of individual parts, since there are no directly usable historical values and so the entire planning is based on a large number of estimates, which results in a great danger of a deviation of the planning.

In contrast, AM does not require a specific tool, which eliminates set-up and dismantling times. As a consequence, on the production cost side no difference arises as to whether parts are produced in series or individually. The required work steps, the removal and release process, which is carried out by the personnel, are not component-specific and have therefore no influence on the production costs either. In summary, AM allows the continuous production of individual components. Similarly, these advantages can be transferred to the production of series parts, which enables dynamic planning of the production orders. To conclude, in contrast to the necessary planning for SM, planning for AM needs not to account for set-up and dismantling times. What is not needed under SM, but required for AM planning, is the capability to combine different parts from different products and orders in one print job to achieve the optimum utilisation of individual production plants.

The proposed architecture

In the following an architecture is described that connects a complete automation of different types of AM production plants with each other, where all processes interact by interchanging information cross-linked and thus run computer controlled. The necessary manual work steps are recorded and scheduled digitally in order to carry out a sequential processing of the tasks at the AM production plants. After manual work instructions have been issued, the production systems are released for production again. The production start of a facility takes place automatically at the scheduled time. Desired is the shortest possible downtime of the production lines. The interaction and task areas of the individual system sections are shown in the following subchapters.

1. Introduction of the overall architecture

For the development of a production plan for the AM production facilities, a multi-layered model must be used due to many associated processes. The different parameters that influence the planning must be taken into account. Due to the inter-dependence of involved tasks, changes affect not only ongoing but also subsequent processes. Depending on the particular characteristics of the change and the change type itself, this can lead to a complete replanning of a production period. Our described production architecture uses a number of process-affecting input parameters, such as: 1) changes of the customer and production orders, 2) the availability of employees and machines, and the CAD models. In the following, the respective processes for the different input parameters are described, a detailed description of the different types of changes is given in Section 3.

The initial parameters needed for scheduling are the required manufacturing resources, in the form of personnel, manufacturing equipment, materials and resources, as well as the products and components. The first prerequisite for planning is to determine the availability of production resources. In order to process the resources, data must first be entered on which employees and production facilities are available and when. On the other hand, there is the section determining the required production resources, for which the input parameter is the exported CAD model itself. This task has to be carried out in advance for each model that is produced in the AM process or only after a demand for the model has been stated. In order to gain information about the required production resources, a machine code for each type of production facility is produced for the individual model. Using the machine code, parameters can be read out on how high the demand for production resources is and the working time at the respective production plant can be determined by simulating the production process. This data is also stored in the "manufacturing data" database and is linked one-to-one with the CAD model. A later exchange of a model, e.g. due to a revision, would result in a complete new data acquisition

of the required production resources for the model. Once the available production resources and the required production resources are known, the production order batches can be determined from the bill of materials and the direct customer orders. For this purpose, the available manufacturing space of a production facility is used to the fullest extent possible, observing the maximum usable period. The models that can be combined with each other are tested using a nesting or packing algorithm.

An exact sequence of the necessary steps for a time-oriented combination of objects has been described previously (Baumung and Fomin, 2018). A restriction with the free combinability of different models represents the special task of grouping. Grouping describes a set of parts that should be completed at the same time, as required for assembling individual components. The parts can be bundled and distributed to several printers at the subsequent finishing time to ensure that they follow one another during sequential removal. An estimation of the time expenditure is made by the simulated production orders per model plus a percentage buffer time for the transport routes of the production plants for positioning. For these scheduled orders, the work plans are dispatched with the necessary work steps. The observance of a sequential processing at the plants is reached, in which the completion time of a production plant together with the working time for the respective work task forms the completion time of the next production plant. The starting of an individual production line then begins automatically via the component responsible for controlling and monitoring the production lines. Unexpected events, such as the occurrence of errors in an individual production plant, are also reported to the control and monitoring component, which then triggers the appropriate actions, such as a technician's requirement notification and the event of a change in machine availability. As output parameters, the respective products or components are then received. A differentiation whether the output parameter is a product or a component is made by the input parameter “customer” or “production order”. In a production order, any combination of products and components is carried out on the basis of the available production resource. The following is a schematic representation of the architecture (Figure 2).

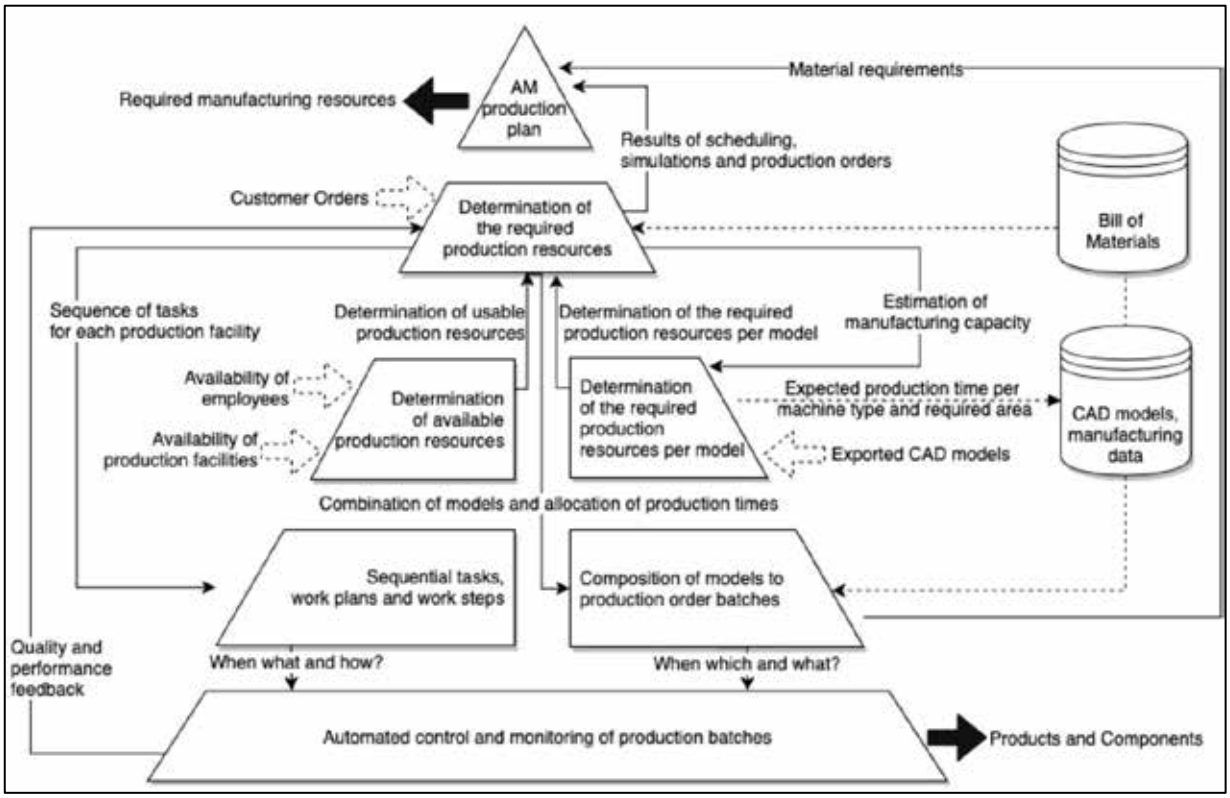


Fig. 2. **PPC system architecture for AM technology with dynamic planning and networked components for automated handling of changes**

2. Scheduling the production batches

Backward scheduling is used for scheduling production orders. This type of scheduling is gives flexibility for changes that can be taken into account in the production orders before the manufacturing process starts. If an order is changed in quantity or a new order is added, these changes can be considered in the period up to the scheduled print start, in the form of a new scheduling of the models to be printed or also the addition of new models, in order to be able to use the available production period. This approach also allows adaptability to changing production conditions. When assigning production jobs, not only the current utilization of individual machines is taken into account, in addition workpieces dispatched from the machine and in production as well. If errors are detected by the machine operator during the production process or after completion, the input stream of new workpieces can be blocked at the respective production plant. The rejected defective parts can be distributed and manufactured to the machines in the time window in which changes can be reacted to. Thus, a capacity bottleneck is avoided and the adherence to the set dates is aimed at (Figure 3).

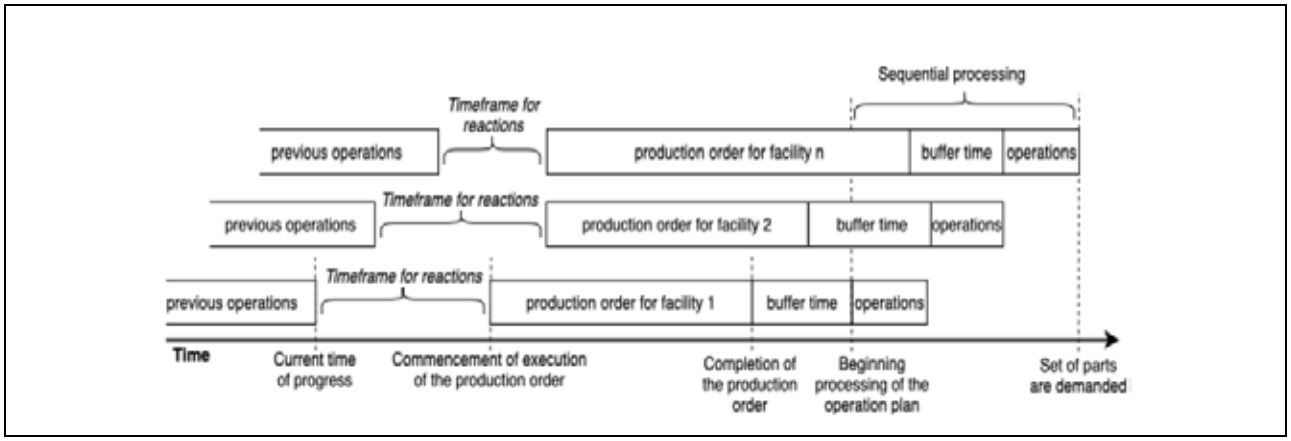


Fig. 3. **Backward scheduled production orders with the time period in which the system can react to changes**

3. Changes in customer and production orders

In the event of changes in the order situation, the utilization of the individual machines is corrected in the form of individual production orders. This change occurs due to cancellations, changes in the order quantity or the acceptance of new orders. If the order quantity is reduced, all planned orders can be rescheduled and parts can be redistributed so that individual machines can be shut down without incurring unnecessary operating costs. In case of an increasing order above the own maximum production limit, additional production capacities of other manufacturers can be consolidated directly, because no further parts or tools are needed, which would require a transport logistics or adjustment work, except for the digital object as well as the production parameter.

4. Changes in employees and machines availability

The availability of employees and machines can be scheduled data from a higher-level planning system. As a consequence, an input parameter for the availability of employees represents a central module for scheduling. Scheduling can only be performed by specifying when which employees will be available in certain periods in the future. In this way, the architecture always follows the personnel specifications and does not dictate them in advance. A change of a personnel presence or their respective possible qualified work performance has the consequence that a new planning of the production orders for the respective work phase must be accomplished. Missing work can either be transferred to a next work phase or lead to a shutdown of the respective production plant. However, the time periods already specified and scheduled for which the production process has already been started represent a restriction. When a production line

confirms the completion of an order, the system checks whether the confirmation occurred in the scheduled time period. If there is a deviation from the scheduled time period, a change in machine availability is triggered. When exceptions occur, e.g., when a fault in print job is detected by personnel, the input stream of the production plant is blocked and distributed to the other production plants until elimination by qualified personnel takes place.

5. Changes of CAD models

Components and products may change due to design or production process errors, improvement or model maintenance, or complete replacement, all of which ultimately results in changes to the associated CAD models. The updated CAD model can be directly taken into account for all production orders that have not yet been started by means of the event that has occurred. This allows a complete replanning for all production orders with the affected model to be carried out directly. However, it is important to consider how to proceed with the components that already belong to a product. Either all remaining components belonging to the product must be produced and then switched to the new series or directly switched to the new product series and produced parts must be disposed.

Implementation of the architecture

The technical feasibility of the proposed architecture can be examined by simulating a process flow through individual control modules described in Sections 2.-5. above. In the forthcoming paper, the described modules will be integrated as web-based applications according to the process flow logic (Figure 4).

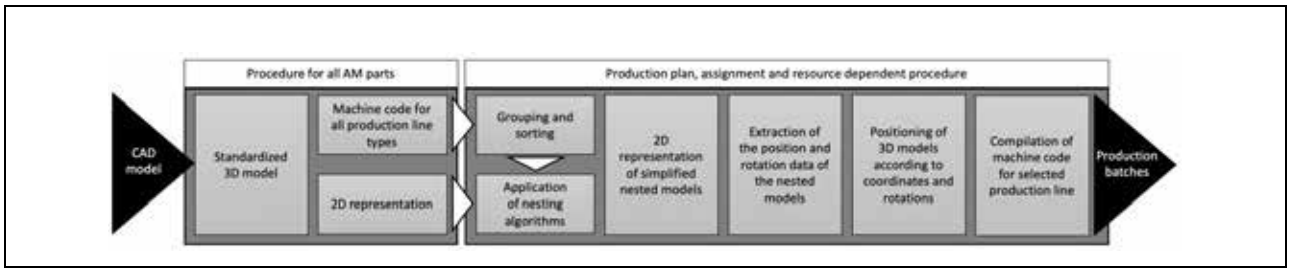


Fig. 4. **Implemented process flow for the creation of production orders**

The implementation would be fed with a standardized 3D model of the CAD model as the first input parameter required for the procedure. To extract the manufacturing data from the models, a machine code has first to be created for each model for each production plant-specific machine type on the basis of the manufacturing parameters in order to obtain a manufacturing time for each plant. This extracted data, such as production time, material consumption and object volume, has to be stored in the database. The grouped models must be aggregated into further constellations for the production lines based on the sum of their production times and a percentage buffer time added till the available production time is reached.

Different nesting methods can be used to maximize the utilization of individual printing units. In addition to selecting appropriate nesting algorithm, the available IT resources, the number of objects to be nested and the available calculation time must also be taken into account when selecting a suitable simplification of the models. Nesting has to be followed with calculation of rotation and positions for each body to allow the 3D objects to be ported on the basis of the read-out data, from which a machine code for the respective production plant is generated, as reported in (Baumung and Fomin, 2018).

Research results and conclusion

In this paper we proposed an architecture for Production Planning and Control (PPC) system for networked (distributed, multi-site) additive manufacturing (AM) facility. The proposed architecture is complemented by the description of functional requirements for individual modules of the PPC. Based on the presented description of the modules and their integration logic for the execution of the process flow a subsequent system implementation and testing can be performed.

We believe the described PPC architecture represents a suitable approach for the control of a large number of AM production plants that share the same tasks. Implementation and simulation-based testing of the proposed architecture must answer the question whether the set design aims were met: namely, whether the proposed PPC contributes to manufacturing cost reduction due to the increased utilization of AM facilities (and printing areas of AM printers) and an early detection of over and under capacities due to the planning runs. In addition, the proposed control logic must enable variable working times, planning of which is not fixed for the employees (as it is under the traditional manufacturing model), but the production processes are aligned to the working times of the maintenance staff and allows to have changes (in the employee's working schedule) and interruptions. Finally, the presented approach enables the production of components and products with AM Production to be planned, scheduled and controlled for a specific site or independently from any specific site in a networked production setup.

Beyond the testing, further research can be directed at identification of suitable methods and technologies for automated identification of the printed parts (as opposed to human-centric visual identification).

Bibliography

Attaran, M., 2017. The rise of 3-D printing: The advantages of additive manufacturing over traditional manufacturing. Business Horizons 60, 677–688. https://doi.org/10.1016/j.bushor.2017.05.011

Baumung, W., Fomin, V.V., 2018. Optimization Model to Extend Existing Production Planning and Control Systems for the Use of Additive Manufacturing Technologies in the Industrial Production. Procedia Manufacturing 24, 222–228. https://doi.org/10.1016/j.promfg.2018.06.035

Birtchnell, T., Urry, J., 2016. A New Industrial Future?: 3D Printing and the Reconfiguring of Production, Distribution, and Consumption, 1st ed. Routledge, 1 Edition. | New York : Routledge, 2016. https://doi.org/10.4324/9781315776798

Frank, A.G., Dalenogare, L.S., Ayala, N.F., 2019. Industry 4.0 technologies: Implementation patterns in manufacturing companies. International Journal of Production Economics 210, 15–26. https://doi.org/10.1016/j.ijpe.2019.01.004

Gibson, I., Rosen, D., Stucker, B., 2015. Additive Manufacturing Technologies. Springer New York, New York, NY. https://doi.org/10.1007/978-1-4939-2113-3

Gu, D.D., Meiners, W., Wissenbach, K., Poprawe, R., 2012. Laser additive manufacturing of metallic components: materials, processes and mechanisms. International Materials Reviews 57, 133–164. https://doi.org/10.1179/1743280411Y.0000000014

Guide, V.D.R., Srivastava, R., Spencer, M.S., 1997. An evaluation of capacity planning techniques in a remanufacturing environment. International Journal of Production Research 35, 67–82. https://doi.org/10.1080/002075497195984

Herrmann, F., 2011. Operative Planung in IT-Systemen für die Produktionsplanung und -steuerung. Vieweg+Teubner, Wiesbaden. https://doi.org/10.1007/978-3-8348-8172-4

Herrmann, F., Manitz, M., 2015. Ein hierarchisches Planungskonzept zur operativen Produktionsplanung und -steuerung, in: Claus, T., Herrmann, F., Manitz, M. (Eds.), Produktionsplanung und –steuerung. Springer Berlin Heidelberg, Berlin, Heidelberg, pp. 7–22. https://doi.org/10.1007/978-3-662-43542-7_2

Lasi, H., Fettke, P., Kemper, H.-G., Feld, T., Hoffmann, M., 2014. Industry 4.0. Business & Information Systems Engineering 6, 239–242. https://doi.org/10.1007/s12599-014-0334-4

McKay, K.N., Wiers, V.C.S., 2003. Planning, scheduling and dispatching tasks in production control. Cognition, Technology & Work 5, 82–93. https://doi.org/10.1007/s10111-002-0117-4

Mula, J., Poler, R., García-Sabater, J.P., Lario, F.C., 2006. Models for production planning under uncertainty: A review. International Journal of Production Economics 103, 271–285. https://doi.org/10.1016/j.ijpe.2005.09.001

Salonitis, K., Ball, P., 2013. Energy Efficient Manufacturing from Machine Tools to Manufacturing Systems. Procedia CIRP 7, 634–639. https://doi.org/10.1016/j.procir.2013.06.045

Sydow, J., Möllering, G., 2015. Produktion in Netzwerken: make, buy & cooperate, 3., aktualisierte und überarbeitete Auflage. ed, Vahlens Handbücher. Verlag Franz Vahlen, München.

Szelke, E., Monostori, L., 1999. Reactive Scheduling in Real Time Production Control, in: Brandimarte, P., Villa, A. (Eds.), Modeling Manufacturing Systems. Springer Berlin Heidelberg, Berlin, Heidelberg, pp. 65–113. https://doi.org/10.1007/978-3-662-03853-6_5

Zhang, Y., Bernard, A., Gupta, R.K., Harik, R., 2014. Evaluating the Design for Additive Manufacturing: A Process Planning Perspective. Procedia CIRP 21, 144–150. https://doi.org/10.1016/j.procir.2014.03.179

TOURISM ASSOCIATION DEVELOPMENT TENDENCIES IN LATVIA

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Abstract. Tourism as one of the leading industries has gained attention from scholars that are researching different influencing factors of tourism destination development. One of the challenges that tourism destinations need to overcome is heterogeneous nature of tourism industry that could be solved with the help of professional and regional tourism associations. Current tourism technology from one side creates additional potential for tourism enterprises and destinations, from other side it could decrease need for traditional tourism associations.

The Investment and Development Agency of Latvia (LIAA) indicates eighteen active tourism associations in Latvia. These tourism associations have been going through different development stages in Latvia, first ones started their activities already straight in time of struggle for independence and are actively functioning even now after 28 years of intensive involvement in industry development. On the other hand some of tourism associations have hardly surviving and are forced to bootstrap. Research aims to analyse different stages of tourism association development and draw conclusions on development strategies applied by tourism association in Latvia. Research method will comprise in-depth interviews with tourism association management during the years of 2018 and 2019. Research findings show a variety of development strategies applied both by professional tourism associations as well as regional associations. Conclusions indicate most successful tourism association management model, evaluation of current development stage of tourism associations in Latvia and evaluation of future development potential.

Key words: *tourism, tourism associations, cooperation*

JEL code: M10

Introduction

Even though as indicated by cooperation evolution science scholars (Axelrod, 1990; Ridley, 1998) that our civilization is made on the base of collaboration, in many industries cooperation is a challenge that needs to be overcome. The issue of an existing gap between the various stakeholders and a lack of cooperation in tourism has been outlined already in the mid-seventies (van der Zee, Vanneste, 2015), leading to key publications on tourism stakeholder cooperation and tourism network formation (Bramwell and Lane, 2000). Still in many fields cooperation network governance and administration is in immature research stage (Provan, Kenis, 2008) van der Zee, Vanneste, 2015) leading to the need to study the problematic of cooperation network development. Following the Porter concept of competitive advantage, tourism scholars claimed that tourism destinations have a greater opportunity to be competitive on a national and global basis when their businesses are competing and cooperating at the same time (Novelli, Schmitz, Spencer, 2006). Research importance and topicality can be outlined by the cooperation network potential to foster tourism enterprise and organisation innovation, knowledge sharing, competitiveness and destination sustainable economic development (Novelli, Schmitz, Spencer, 2006).

This paper presents a theoretical discussion on importance of cooperation networks in tourism destination development using the perspective of professional and regional tourism associations. Research question inquires if tourism association development in Latvia has a pattern of common development tendencies.

Research aims to analyse different stages of tourism association development and draw conclusions on development strategies applied by tourism association in Latvia

Research method comprises in-depth interviews with tourism association management during the year of 2018.

Research findings show variety of development strategies applied both by professional tourism associations as well as regional associations and the research findings contribute to the discipline of tourism networking.

Importance of cooperation networks in tourism destination development

As scholars indicate (Zach, Racherla, 2011), tourism is a complex phenomenon that cannot be explained by conventional economic or business logic and tourism enterprises as well as tourism organizations are pushed to apply collaborative approaches (Chim-Miki, Batista-Canino, 2017) rather than stay in purely competition environment.

Networking in the tourism sector is particularly crucial as tourism cooperation networks promote the spread of information and strengthen the connections between individuals and organizations, contribute to more sustainable tourism development, greater tourist satisfaction and economic success of the regions in which they operate (Vernon, Essex, Pinder, Curry, 2005; March, Wilkinson, 2009; Jesus, C., Franco, M., 2016.).

For cooperation networks as particular form of cooperation researchers generally apply the terms 'network', 'networking' and 'clusters' referring to intangible linkages, social structure and cooperation between entities, such as individuals, government organizations, non-government organizations (NGOs) and businesses (Thipsingh, 2015). Cooperation networks are formed by a group of organisations that engage in exchanging and sharing different resources and capacities in order to achieve a common mainly strategic purpose (Dias, Franco, 2018). Cooperation networks need to involve at least three actors, who have some degree of independence (Vante, Taylor, 2000; Ford, Gadde, Hakansson, Snehota, 2003; Fyall, Garrod, 2005). After studying Silicon Valley collaboration approach, author of the book "The Power of Collaboration: Powerful Insights from Silicon Valley to Successfully Grow Groups, Strengthen Alliances, and Boost Team Potential" the author T. S. Spitzer (2017) developed her definition of cooperation: "being able and willing to blend our ideas and efforts into "communal brain" to create better results by working together than we could on our own". For further research two types of tourism cooperation networks will be analysed more in detail – professional tourism associations or business networks and regional tourism associations or partnerships.

Professional associations act as a node for information flow connecting tourism business with the rest of community (Dickson, Arcodia, 2010). There is a need for additional studies on professional associations, as current research mainly is limited to the role of professional associations in the diffusion of new technologies, professional association management (Gruen, Summers, Acito, 2000) and performance standards determination (Ammons, 1994). In the studies of Greenwood Suddaby, Hinings (2002) influence of professional associations was outlined in the transformation of institutionalised fields because of interaction with industry collective. Professional associations act as representatives that observe compliance with normatively and coercively sanctioned expectations. Once established, these beliefs and the practices associated with professional associations become taken-for-granted and reproduced through processes such as training and education, hiring and certification, and ceremonies of celebration (Dickson, Arcodia, 2010).

Regional tourism associations act mainly as Destination Marketing Organisations (DMO) that comprise both public organisations and private enterprises. As Reid, Smith and McCloskey (2008) indicate in their research, recognition of the value of collaboration and partnerships has been driven, in part, by declining tourism marketing budgets in many governments that has caused issues for regional tourism association development. Despite the advantages of forming public-private cooperation networks they require effort to form and to succeed in:

- determining the relative levels of partner funding contributions,
- balancing power and decision-making authority among partners,

- budgeting for marketing versus other tourism activities such as research and evaluation,
- stabilising political imperatives with market forces in a more holistic policy context of government–industry interaction (Reid, Smith, McCloskey, 2008).

On the other hand United Nations World Tourism Organisation (UNWTO) identifies that regional networking cooperation initiatives commonly are based in a regional destination management organization that previously worked on region promotion collaboratively, but nowadays is expanding to support product development (UNWTO, 2015)

It is interesting to outline the study of van der Zee and Vanneste (2015) indicating that quite often research on regional cooperation networks, in the study mentioned as policy networks, and professional cooperation networks or business networks are very separated and do not cite each other. Regional and national networking studies focus on the relationships between government, businesses and civil society, while most of the studies in the professional business networks are of a very explorative nature and offer only a broad conceptualization of tourism networks (van der Zee, Vanneste, 2015).

Tourism cooperation network creation and development depends on many factors that can be analysed from economic, political, social and technological perspectives. From the angle of network creation, tourism cooperation network can be initiated from top down by government agencies, municipalities, planners, and designers; or from bottom up as an enterprise or local activist's initiative (Yang, 2018). In cooperation processes actor interactions can be classified in two main sources of legitimacy - non-official social interactions based on social capital and official interactions based on institutional capitals (Lin, Simmons, 2017).

The whole tourism cooperation network from the initiation phase throughout the development can be analysed from the perspective of its lifecycle. Inspired by Tourism Area Life Cycle model tourism researcher Caffyn (2000) introduced the concept of a Tourism Partnership Life Cycle model (TPLC) that is based on the study of life cycle model application in different areas as well as investigations of rural tourism and tourism development partnerships (Peroff, Deason, Seekamp, Iyengar, 2017). Caffyn's (2000) model can be applied to different tourism cooperation network development analysis as it allows to apply specifics of tourism industry tourism partnerships in six particular life cycle phases - pre-partnership, take-off, growth, prime, deceleration and continuation or 'after-life' options. The characteristic processes and activities of each phase of TPLC model can be seen in Table 1.

Table 1

TPLC model phases characteristics

Tourism Partnership Life Cycle model phases	Partnership Characteristics	
Pre-partnership	Issues identified Ideas explored Formulation of objectives	Securing commitment and funding Developing a common purpose
Take-Off	Launch Seeking wider support Staff appointed Inventory of resources	Needs assessment Objectives refined Work program set Trust develops
Growth	Early projects implemented Establish identity Expand activities	Refine internal organization High commitment Innovation Leadership
Prime	Stability and credibility Held up as good practice Additional funds secured	Monitoring progress Activities consolidated Delegating/tendering some activities Increased administration

Deceleration	Stagnation of activities Loss of interest Questioning commitment	Uncertainty Loss of momentum Objectives re-evaluated Reviewing commitment
Continuation or 'after-life' options	Community takes it on Absorbed into bigger partnership Split between partners Taken on by one organization	Continues in different form Continues same Spawns other projects Finishes completely

Data source: Peroff, Deason, Seekamp, Iyengar, 2017

As emphasized by Peroff, Deason, Seekamp, Iyengar (2017), not every tourism cooperation network is following exact phases of partnership lifecycle starting with pre-partnership and gradually leading to continuation, nor needs every characteristic in abovementioned table to be present in each phase, still Caffyn's TPLC model provides an excellent visualization tool for partnership planning and evaluating collaborative success.

The scope of the cooperation coverage can be analysed using the number of members in each cooperation network. There has been no particular formula developed in order to distinguish between large, medium and small cooperation networks. Polish tourism network researcher Borkowska-Niszczota (2015) made the proposal for network intervals by indicated number of members: for large networks it is over 61 entities, for medium networks between 29 to 60 entities and for small networks under 29 members. The size of the country needs to be taken into account as the number of enterprises as well as the share of tourism in GDP is different. That's why other indicators need to be considered to describe cooperation networks.

Additional element in studying tourism cooperation network development proposed by article author is market coverage. The term market coverage from the perspective of cooperation studies has been used by Terpstra, Simonin (1993) when describing cooperation taxonomy based on the following variables: form, mode, market coverage and motives of the cooperation partners. Market coverage is defined as the initial target market considered for the cooperation network output (Terpstra, Simonin, 1993) that can be seen as geographic distribution showing regional coverage or from industry perspective industry or sector coverage. Market coverage analyses in study of tourism cooperation network development is important as network expansion can be not only horizontal, but also vertical, acquiring new members from other industries or other tourism sectors in the same cooperation network.

Research methodology

To understand the development of tourism associations in Latvia qualitative research design was chosen as appropriate since the way tourism associations work can be different. A qualitative approach is flexible enough to follow each individual case in order to understand the topic in a more holistic way (Creswell, 2009, p.185). In-depth interviews were chosen as the method of data collection. This type of an interview is suitable because it allows deviating from the prepared questions if the story flows in an unforeseen direction. In that case the researcher can ask extra questions based on the story to better understand the specific networking practices in that association. In-depth interview is a great tool for understanding something that hasn't been previously researched as it is in this case with tourism association development specifically in Latvia (Given, 2008, p.422). Precisely because it values the individual story giving it time and space to develop organically without too much restriction from the researcher. The relationship between the researcher and study participant is very important for conducting an in-depth interview because it aims to see the hidden perceptions of the topic (Marvasti, 2004, p.21).

In the interview 11 main questions were asked to understand each association. Main cooperation and networking concepts are based on research of known scholars in the field - Terpstra, Simonin (1993); Bramwell, Lane (2000); Caffyn

(2000); Morrison, Lynch, Johns (2004); Fyall, Garrod (2005), Borkowska-Niszczota (2015); Peroff, Deason, Seekamp, Iyengar (2017) and Lin, Simmons (2017).

Directed content analysis was selected as the method of data analysis as content analysis is often used when faced with large amount of text like in the case of in-depth interviews. Directed content analysis in particular changes the way codes are categorized. It is a deductive way of analysing where categories mainly come from previous research or theory, but can be supplemented with additional categories as the analysis evolves (Hsieh, Shannon, 2005). There is previous research done on tourism cooperation networks in other countries that provide insight for analysing data (Bramwell, Lane, 2000; Fyall, Garrod, 2005; Borkowska-Niszczota, 2015; Peroff, Deason, Seekamp, Iyengar, 2017). Even though main categories are taken from theory open coding is still done with underlining meaningful words and phrases, then these codes are put into subcategories and then main categories (Miles, Huberman, Saldana, 2014, p.77), which are:

- cooperation network creation and funding model,
- cooperation network scope,
- cooperation network development phase,
- cooperation network market coverage.

Table 2

Directed content analysis categories, subcategories and dimensions

Categories	Subcategories	Dimensions
Cooperation network creation and funding model	Funding of the initiative at an early stage of the cluster development, private financing by the cluster members (membership fees) and with the public funds under clusters' development support programs	Top-down, bottom-up creation indicative Number of members, membership levels Public, private, combined funding to raise capital for association creation and development
Cooperation network scope	Number of members	Large clusters; medium clusters; small clusters
Cooperation network development phase	Cooperation network development phase or cycle of life	Nucleus stage; stabilization; maturity; transformation; decline / nucleus; growth; mature; declining
Cooperation network coverage	Types of enterprises and organisations as members of associations Share of the industry enterprises and organisations who are part of the network	Types and number of enterprises and organisations as members of the association Number of enterprises and organisations in industry Dense clusters; rare clusters, the cluster is rooted regionally Local, supralocal, regional and supraregional, national, supranational (cross-border, international)

Data source: authors developed table based on the Terpstra, Simonin, 1993; Bramwell, Lane, 2000; Caffyn, 2000; Morrison, Lynch, Johns, 2004; Fyall, Garrod, 2005, Borkowska-Niszczota, 2015; Peroff, Deason, Seekamp, Iyengar, 2017, Lin, Simmons, 2017

Lastly relationships between categories are sought to explain the unique development of tourism associations in Latvia.

Database of Investment and Development Agency of Latvia on Tourism associations in Latvia (LIAA) was chosen as the main source of information about various tourism cooperation networks. LIAA indicates eighteen active tourism associations in Latvia. First cooperation networks started their activities already straight in time of struggle for independence and are actively functioning even now after 28 years of intensive involvement in industry development in Latvia. From those 18 networks only 14 associations correspond to required criteria for research:

- an association that is directly related to tourism industry,
- tourism enterprises and organisations (legal persons) are members of the association.

As a limitation of research could be the fact that all 14 associations were contacted for interviews, but only half of associations could be reached during the research time. From part of regional associations 3 out of 6 association management representatives were interviewed. Interviews with professional associations were conducted with 4 out of 8 association management comprising both tourism intermediates as well as suppliers from different tourism type - nature, cultural, health tourism.

As part of field work, in-depth interviews were conducted from October 2018 till January 2019 mainly meeting in premises of associations having 20-60 minute interviews with leading representatives - association managers or executive directors. As ethical consideration needs to be outlined -all participants of the study gave verbal consent for the interview to be recorded and the transcript to be added to the study, if needed, with a possibility of associations to be mentioned in the study.

Research results and discussion

When researching cooperation in tourism industry in Latvia 10 years ago, author's aim was to know how tourism enterprises and organisations cooperate – principles, patterns, motivation. Main conclusion from that research was that there is a difference between the enterprises that were not part of a network in comparison with enterprises that were part of cooperation networks - these enterprises reported a client increase and better financial indicators than those that didn't participate in any networks. Therefore this paper is more in-depth research on tourism cooperation network development and changes during the last years in Latvia.

Majority of tourism association in Latvia have been created as bottom-up indicative of tourism enterprises and organisations. Associations can perform different functions, in the case of regional tourism associations an important function is marketing for the local companies. When researching regional tourism associations it is important to pay attention to how such a public-private partnership was formed, who are the board members, who are the active and associated members and what is the influence level of public sector. This can have an impact on how tourism develops in that region and how the private and political interests interact. In case of Latvia different regions have chosen different models that determine how they organize their work. There are associations that are independent and their decisions are not influenced by municipalities, on the other hand there can be another extreme situation in which municipalities are the real rulers.

As mentioned in literature review, TPLC model is useful to understand the phase life cycle of tourism cooperation networks. From the main development stages of TPLC - pre-partnership, take-off, growth, prime, deceleration and continuation – majority of tourism cooperation networks in Latvia are in the prime and deceleration stage. Still the development strategies applied by particular tourism networks are different.

Even though practically all professional associations as the goal are setting increase of the number of members, some associations after 20 years of experience are choosing another approach. One of strategies for tourism association development is switching from quantity towards quality by keeping the most active members in association and not fighting for new members. The case of network of tourism intermediates, association is not trying to get new members, but is actively working with the companies that are active in the association, are important players in the industry and are adding value to the whole industry.

Generally in all the interviews it was noticeable that associations strive for more members; still adding that they would be happy for meaningful members that could give input in association activities. In the small countries as in the case of Latvia, majority of active tourism enterprises are already part of some cooperation network, therefore increase in number can be achieved either via new but not yet active enterprises, or new entrants in market, or by extending the scope of specialisation of association.

Example of development of scope of association is in rural tourism cooperation networks. In the first two decades rural tourism cooperation network comprised rural accommodation establishments. The strategy of last years both for Latvia as well as Estonia is to increase number of members by adding rural farms that provide their products to local and foreign tourists.

Tourism cooperation network significance in particular area or industry can be characterised by market coverage, which can be calculated as share of market represented in the tourism cooperation network, respectively how high is the percentage of one type of tourism enterprise that is taking part in an association.

As market coverage of particular tourism sectors, indicator varies from 10-70%. In case of rural tourism cooperation network in previous years the coverage was 50%, but expanding the members scope with new industries the coverage of new added farmers, who are targeting tourists, decreased to 30%. In case of cultural tourism network the coverage is only 10% due to the fact of many micro enterprises as well as poor financial support of cultural objects in rural areas.

In case of intermediate sector, calculation shows that 50% of tourism enterprises are a part of an association, still association is outlining 70% coverage of sector turnover as members are biggest intermediate enterprises in Latvia. It was interesting to notice that tourism intermediate association regularly counts in the statistics of a functioning member in the industry and checking market coverage each year.

In case of regional cooperation networks, majority have approximately 20% geographical coverage as part of members they include different types of tourism enterprises and organizations not just accommodation.

Conclusions, proposals, recommendations

Conclusions based on the in-depth interviews indicate that majority of current tourism association in Latvia have been created as bottom-up indicative of tourism enterprises and organisations in the first decade after gaining the independence in 90s. Research findings show variety of creation and development strategies applied both by professional tourism associations as well as regional associations. Dominating majority of cooperation networks of Latvia were created as a bottom-up initiative in its formation and it is considered as the most successful and sustainable approach. Generally tourism cooperation networks in Latvia are in the prime and deceleration stage applying few new member acquisitions or alternatively going for new sector incorporation in the tourism network. Regardless of being large cooperation networks, some of them after the growth and prime stage experience have chosen the quality strategy continuing their work only with active and dedicated industry enterprises as members of association. Thus each association can choose which strategy to apply depending on whether they are regional or professional cooperation networks, and deciding on strategy to maximise coverage or decide to drop the size of a network by membership only for dedicated members. For further research wider scope of cooperation networks need to be investigated additionally studying benefits of cooperation networks provided to members and destinations.

Bibliography

Ammons, D.N., 1994. The role of professional associations in establishing and promoting performance standards for local government, *Productivity & Management Review*, 17 (3), pp. 281-298.

Axelrod R., 1990. *The Evolution of Co-operation*, Penguin Books, USA, p. 3-54

Borkowska-Niszczota, M., 2015. Tourism Clusters in Eastern Poland - Analysis of Selected Aspects of the Operation, *Procedia - Social and Behavioural Sciences*, 213, pp. 957-964.

Bramwell, B., Lane B., 2000. *Tourism collaboration and partnerships: Politics, practice and sustainability,* Channel View Publications, Clevedon, UK

Caffyn, A. 2000. Is there a tourism partnership life cycle? Article in book Bramwell B., Lane B. Tourism collaboration and partnerships: politics, practice and sustainability, Channel View Publications, Clevedon, UK, pp. 200-229

Chim-Miki, A., F., Batista-Canino, R.M., 2017. Tourism coopetition: An introduction to the subject and a research agenda, *International Business Review*, Volume 26, Issue 6, pp. 1208-1217

Creswell, J. W.,2009. *Research design: Qualitative, quantitative, and mixed methods approaches*. Los Angeles: Sage.

Dickson, C., Arcodia, C., 2010. Promoting sustainable event practice: The role of professional associations, *International Journal of Hospitality Management*, Volume 29, Issue 2, pp. 236-244

Evans, N., 2001. *Alliances in the International Travel Industry: Sustainable Strategic Options?"* [Online] Available at: http://www.haworthpress.com [Accessed 29 November 2018]

Ford, D., Gadde, L.E., Hakansson, H., Snehota, I., 2003. *Managing Business Relationships*, Wiley, UK, 215 p.

Fyall, A., Garrod, B. 2005. *Tourism Marketing. A Collaborative Approach*, Channel View Publications, UK, 234 p.

Given, L. M.,2008. *The Sage encyclopaedia of qualitative research methods*. Los Angeles, Calif: Sage Publications.

Greenwood, R., Suddaby, R., Hinings, C.R., 2002. Theorizing change: the role of professional associations in the transformation of institutionalized fields, *Academy of Management Journal*, 45 (1), pp. 58-80

Gruen, T.W., Summers, J.O., Acito, F., 2000. Relationship marketing activities, commitment, and membership behaviors in professional associations, *Journal of Marketing*, 64 (3) (2000), pp. 34-49

Hsieh, H., Shannon, S. E., 2005. Three Approaches to Qualitative Content Analysis, *Qualitative Health Research*, Volume: 15 issue: 9, pp. 1277-1288

Jesus, C., Franco, M., 2016. Cooperation networks in tourism: A study of hotels and rural tourism establishments in an inland region of Portugal, *Journal of Hospitality and Tourism Management*, Volume 29, pp. 165-175

Lin, D., Simmons, D., 2017. Structured inter-network collaboration: Public participation in tourism planning in Southern China, *Tourism Management*, Volume 63, pp. 315-328

March, R., Wilkinson, I., 2009.Conceptual tools for evaluating tourism partnerships, *Tourism Management*, Vol. 30, pp. 455-462

Marvasti, A. B., 2004. *Qualitative research in sociology: An introduction*. London: SAGE Publications

Miles, M. B., Huberman, A. M., Saldaña, J., & SAGE., 2014. *Qualitative data analysis: A methods sourcebook*. Thousand Oaks: Sage Publications.

Morrison, A., Lynch, P., Johns, N., 2004. International tourism networks, *International Journal of Contemporary Hospitality Management,* Vol. 16 (3), pp.197–202

Novelli, M., Schmitz B., Spencer, T., 2006. Networks, clusters and innovation in tourism: A UK experience, *Tourism Management*, Volume 27 (6), pp. 1141-1152

Peroff, D.M., Deason, G.G., Seekamp, E., Iyengar, J., 2017. Integrating frameworks for evaluating tourism partnerships: An exploration of success within the life cycle of a collaborative ecotourism development effort, *Journal of Outdoor Recreation and Tourism*, Volume 17, pp. 100-111

Provan, K.G., Kenis, P., 2008. Modes of network governance: Structure, management, and effectiveness

Journal of Public Administration Research and Theory, Volume 18 (2), pp. 229-252,

Reid, L.J., Smith, S.L.J., McCloskey R., 2008. The effectiveness of regional marketing alliances: A case study of the Atlantic Canada Tourism Partnership 2000–2006, *Tourism Management*, Volume 29, Issue 3, pp. 581-593

Ridley M., 1998, *The Origins of Virtue: Human Instincts and the Evolution of Cooperation*, Penguin, 304 p.

Terpstra, V., Simonin, B.L., 1993. Strategic Alliances in the Triad: An Exploratory Study, Journal of International Marketing, Vol. 1, No. 1, pp. 4-25

Thipsingh, S., 2015. Creating a Network of Youth in Sustainable Tourism Development in the Greater Mekong Sub-region Case study: Nakhon Phanom, Thailand and Khammouan, Laos PDR, *Procedia - Social and Behavioural Sciences* 195, pp. 1573-1582.

Spitzer, T.S., 2017. *The Power of Collaboration: Powerful Insights from Silicon Valley to Successfully Grow Groups, Strengthen Alliances, and Boost Team Potential,* Career Press, 224.p.

UNWTO, 2003. *Co-operation and Partnerships in Tourism: A Global Perspective",* UNWTO in cooperation with CTC, Spain, Madrid, 135 p.

UNWTO, 2015. *Global Report on Public-Private Partnerships: Tourism Development*, Affiliate Members Report: Volume eleven, published by UNWTO and the Griffith Institute for Tourism Griffith University, 74 p.

van der Zee, E., Vanneste, D. 2015. Tourism networks unravelled; a review of the literature on networks in tourism management studies, *Tourism Management Perspectives*, Volume 15, pp 46-56

Vante, E., Taylor, M., 2000, *The Networked Firm in a Global World. Small Firms in New Environments*, Aldershot: Ashgate Publishing, pp. 1-20.

Vernon, J., Essex, S., Pinder, D., Curry, K., 2005. Collaborative policymaking local sustainable projects, *Annals of Tourism Research*, Vol.32 (2), pp. 325-345

Yang, Y., 2018. Understanding tourist attraction cooperation: An application of network analysis to the case of Shanghai, China, *Journal of Destination Marketing & Management*, Volume 8, pp. 396-411

Zach, F., Racherla, P., 2011. Assessing the Value of Collaborations in Tourism Networks: A Case Study of Elkhart County, Indiana, *Journal of Travel & Tourism Marketing*, Volume 28(1), pp.97-110

Investment and Development Agency of Latvia (LIAA) http://www.liaa.gov.lv

ADDING A MORAL DIMENSION TO THE LUXURY VALUE

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Abstract. Luxury as a concept has generated extensive academic research, revealing its complex, ambiguous and fluctuating character. While generally taking the managerial perspective, the extant research has agreed on the dimensions of luxury brand value, involving financial, functional, individual and social attributes. Less academic attention has been paid to affluent consumers' intrinsic motivations and individual understandings of luxury brands on both personalized and social levels. This study addresses the question of whether the academic research considers luxury consumers' personal identity and ethical value base in the conceptualisation of the luxury value.

The aim of the study is two-fold: first, by employing the method of systematic literature review, the author provides review of the literature in order to identify and evaluate the knowledge base about the luxury construct. Second, while addressing the identified research gap in knowledge about the moral motivations associated with luxury consumption practices, the study draws from the deontological perspective, offering an extended conceptual model of luxury consumer value dimensions.

The main contribution of the research is a broadened conceptualization of luxury consumer value allowing a richer understanding of consumers' role in creating the luxury value. The findings provide new insights for further luxury research and implications for luxury brand managers. By respecting consumers moral beliefs, businesses operating in the luxury segment can capitalize on socio-cultural changes in luxury markets and gain significant advantages in form of consumers' stronger identification with the brand and maximized positive buying behaviours.

Key words: *Brand value, Luxury, Consumer sovereignty, Morality*

JEL code: M14, M21, M31

Introduction

The number of high net worth individuals (HNW) holding wealth between USD 1 million and USD 50 million is estimated 42 million adults in the year 2018 (Credit Suisse, 2018) compared to 36 million as per year 2017 estimation. Ultra-high net worth individuals (UHNW) with net assets above USD 50 million number to 149,890 according to this study, while the wealth group with net worth over USD 100 thousand amounts to 478.6 million adults. The latter figure takes after BCG's estimate of the total number of global luxury consumers being equivalent to 414 million (BCG and Altagamma, 2018). The volume of the world-wide luxury market including both luxury goods and experiences is estimated USD 1,4 trillion subsequent to its 5% growth during the year 2018 (Bain & Company, 2019). These numbers suggest that the luxury market is not restricted to the HNW consumer group and incorporates an extended consumer base embracing wide range of premium segment shoppers. While the so called "true luxury consumers", spending over 5000 USD on luxuries annually, still account for around 30% of luxury sales (BCG and Altagamma, 2018), the democratization of luxury evidently develops as a trend (Kapferer, 2012; Silverstein, 2005). As a result, luxury brands find themselves forced to deal with the trade-off between the strategies of increased brand penetration among broader public and the requirement to preserve the exclusivity and uniqueness of the luxury product. In order to retain affluents as core luxury consumer population base, luxury managers need to deeply understand the luxury concept and the intrinsic motivations

directing luxury consumers' behaviour. Based on this understanding, strategies for luxury brand management can be further developed. Following the intention to summarise existing evidence and gain a profound insight in the luxury research landscape in the context of recent market developments, the author conducted a literature review on luxury as a construct. Thus, this paper seeks to unfold the dynamics of the research area, indicate gaps for further research and advance the understanding of luxury concept and luxury consumers' behaviour.

With central questions arising around the meaning and context of the luxury concept, this literature review is built upon the constructivist philosophical frame (Mir & Watson, 2000). The theoretical point of departure of this approach is the notion that several, possibly contradictory though equally valid explanations of the same phenomenon can co-exist. Considering the interpretive nature of luxury research, the review places high value on contextuality and meaning of the human experience. However, the literature review of theoretical and empirical research requires conceptual and methodological rigor and is a central tool to manage the diversity of knowledge in the academic field. Its purpose is to systematically investigate and organize the body of the extant academic literature comprising both qualitative and qualitative research.

Earlier literature reviews in the field of luxury are either based on bibliometric analysis (Gurzki & Woisetschläger, 2017) or are descriptive evaluations of selected researchers' contributions (Dubois et al., 2005; Huber et al., 2007; Bachmann et al., 2018). To avoid an arbitrary selection of authors and studies included along with the risk of narrowness associated with the "narrative" review approach, the method of systematic literature review (SLR) was employed (Tranfield et al., 2003). This technique is originated in the medical field (Cook et al., 1997) and serves the purpose to provide a methodical and thorough evidence-based literature research, and explain differences among studies on the same question. The basic principles of SLR have spread across different sciences and is adopted by management research with the aim to achieve transparency, clarity, focus and broad coverage of the research (Thorpe et al., 2005).

Although the SLR method has its limitations, such as complexity of data synthesis from various scientific disciplines, risk for overlooking some important contributions (Pittaway et al., 2004) and, in the particular case, the ambiguity of the luxury construct (Roper et al., 2013), it is important to follow a systematic approach in order to deal with a broad range of research material. With the purpose of completing the first choice of the most relevant contributions in the research area, the SLR provides useful means to detect research subjects and select the most important keywords. Furthermore, the SLR facilitates search for the most relevant articles to be shortlisted for a comprehensive study of the research content.

Research results and discussion

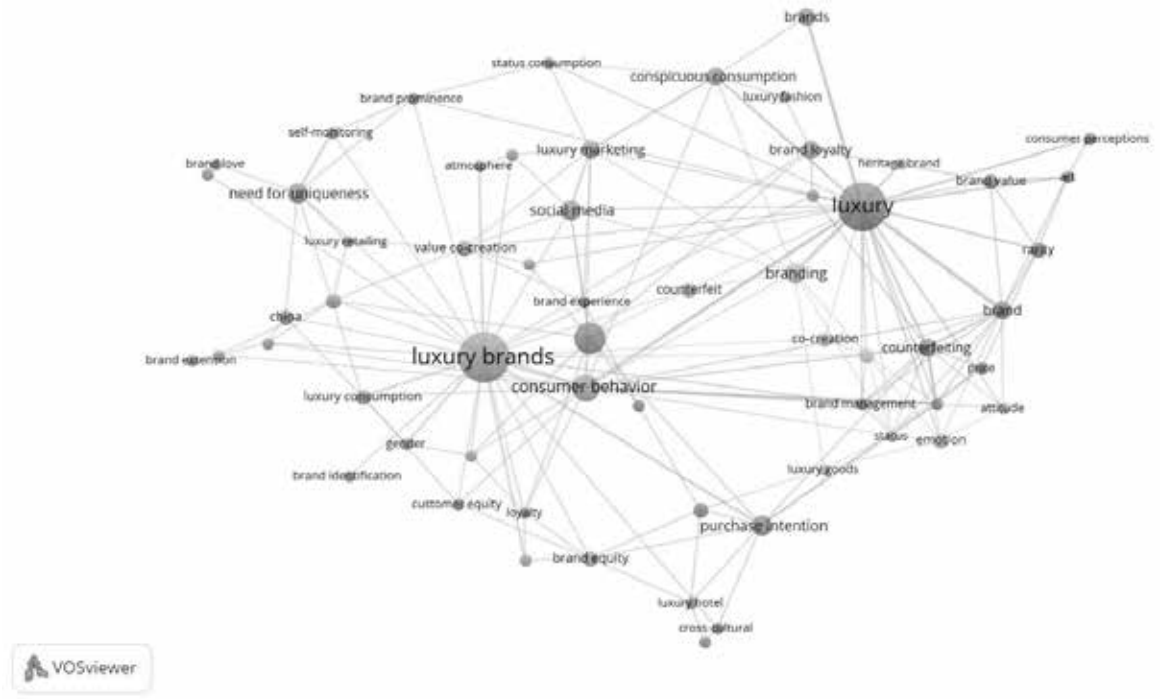
The literature review research was guided by the systematic research process suggested by Tranfield, Denyer and Smart (2003), including three stages of planning, conducting and reporting. In the planning stage, the research questions were formulated: 1. How is the luxury concept defined? 2. What are the main perspectives of luxury investigation? 3. What methodology is used for luxury research? 4. What conceptual framework has the luxury research established? Secondly, the author identified keywords on the subject and generated series of strings. Thirdly, the citation databases were chosen, and search accomplished followed by citation network analysis and visualization in the VOSviewer and CitNetExplorer software tools. Subsequently, articles were reviewed according to the identified relevant keywords and citation networks. Based on the major keyword and citation network analysis, 84 relevant articles were chosen manually subjected to perform a deep content analysis. Finally, the research results were analysed and presented.

Following the objective to assess the range of theories and frameworks of the luxury construct, as well as to identify the perspectives taken by the researchers, a broad scan of the articles was accomplished. In order to avoid too general or wide-ranging results, the keywords were combined with the intention to generate series of strings for application in the database search (e.g. the string: "luxuries" AND "conspicuous consumption" OR "brand identity"). Several strings were

created and refined to a shortlist of 10 relevant research strings. The initial list of 3,392 contributions was generated by keyword search within EBSCO Host as the primary database simultaneously searching articles on multiple databases, as Emerald, Sage and Science Direct, with indexed content from more than 20,000 journals. A further query was run in the Scopus data base in order to obtain abstract and citation data, followed by Web of Science data base for citation statistics. However, as the current research suggests, using Scopus and Web of Science for research analysis can introduce bias, since social sciences are underrepresented in favour of natural sciences and engineering (Mongeon & Paul-Hus, 2016). Furthermore, the citations can take several years to appear in these databases due to publishing delays (Thelwall & Kousha, 2017). In view of these limitations, bibliometric and scientometric research was conducted primarily with the objective to detect the key research areas and the most significant authors of luxury research resulting in a shortlist of 120 relevant research articles. These research publications were studied and exhaustively examined by the author for key concept, citation analysis, used methodology and major findings and allowing to generate a shortlist of 84 contributions. Using citation statistics provided by Google Scholar Metrics as the most powerful tool for early citation impact indicators (Thelwall & Kousha, 2017), the most influential contributions were identified. As the next step, these articles were examined for the used sampling strategy, quality of acquired data, theoretical adequacy and generalizability (Tranfield et al., 2003).

The search of articles comprised only peer-reviewed journals and books of collected essays for the time period from year 1985 to 2019. The subject was limited to economics, business management, anthropology and psychology fields, and only articles available in English and German languages were considered. In the manual content analysis stage, articles dealing with specific segments, as fashion or car industry, or particular geographic areas (e.g., China or Italy), were excluded as not complying with the research aim to identify the main perspectives on luxury concept. Considering citation network as a system of channels carrying scientific information, citation network analysis (CNA) allows a deeper understanding of the knowledge flows (Hummon & Dereian, 1989). Citations are an important conjunction between channels of knowledge and the most important citations constitute the core of the research universe and can be organized in different paths. However, large emphasis on impact assessment triggers overuse of citations even if they are not relevant for the outcome of the research, as an article that refers to findings from numerous other sources can cause an increase of the citations of the previous articles and will receive many citations itself.

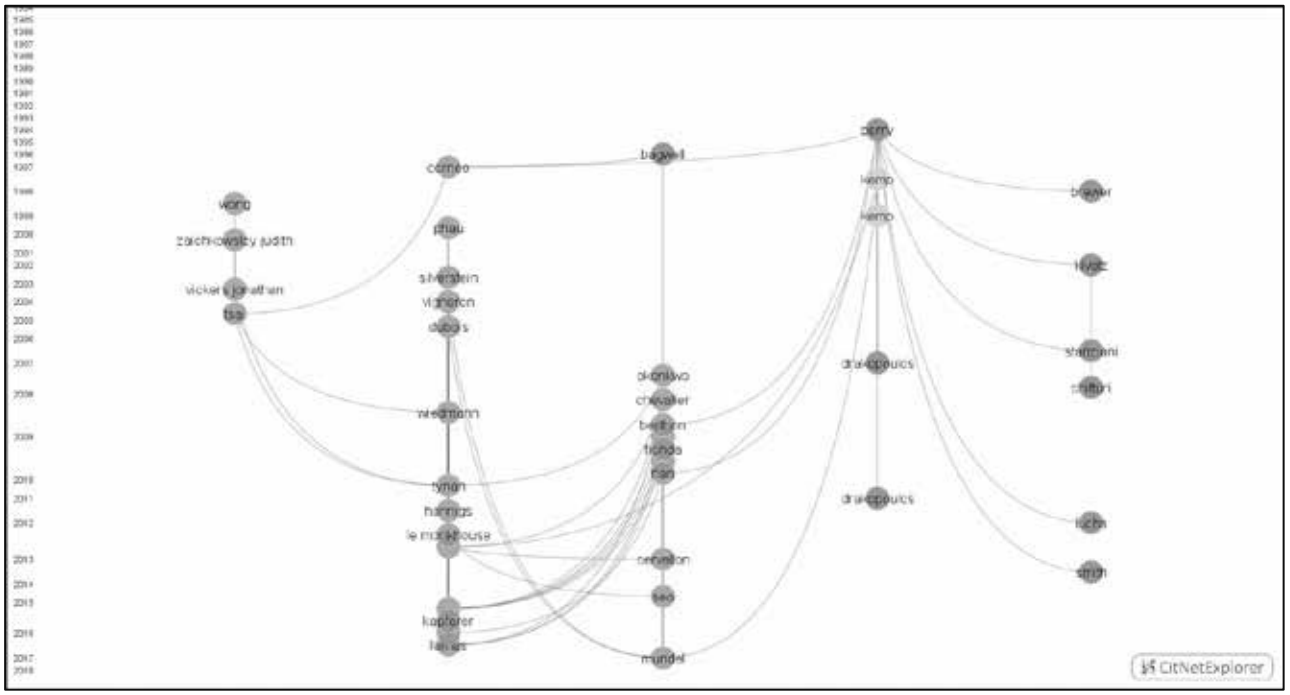
On the basis of the number of their occurrences, relevant article keywords are mapped using data from EBSCO Host and Scopus databases and the clustering technique (van Eck & Waltman, 2017) in VOSviewer (Fig. 1). The largest nods in the network represent keywords with a high frequency of occurrence and are grouped in 9 different clusters. The most emphasised clusters are those representing topics of luxury, luxury brands, consumer behaviour, need for uniqueness, conspicuous consumption, branding, co-creation, brand experience, brand extension, luxury marketing, counterfeiting.



Source: citation network analysis in VOSviewer

Fig. 1 **Keyword network visualisation map.**

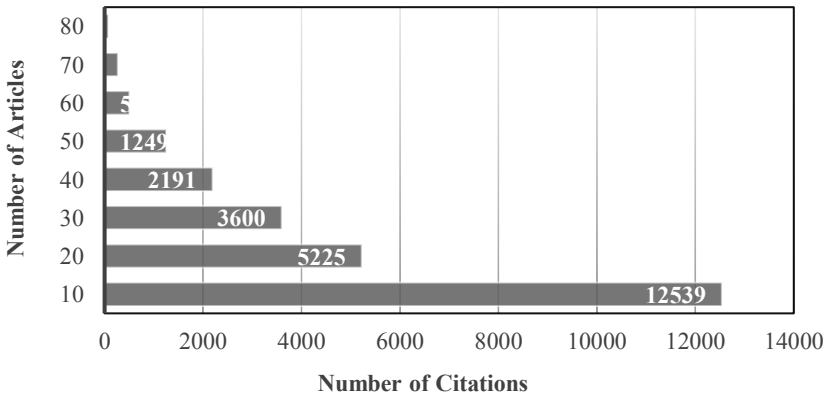
Additionally, the author used CitNetExplorer software to obtain an overview of the most frequently cited publications based on their citation relations (Fig. 2). This occurs at the level of individual articles (van Eck & Waltman, 2017). Using data obtained from the Web of Science database, the software tool allows to visualize the citation network with publications shown along the time axes and clusters to which the publications belong. The analysis indicates three main clusters with one dominating relatively independent research body demonstrating the most citation relations between publications belonging to the same cluster.



Source: citation analysis in CitNetExplorer

Fig. 2 **Citation network visualisation map**

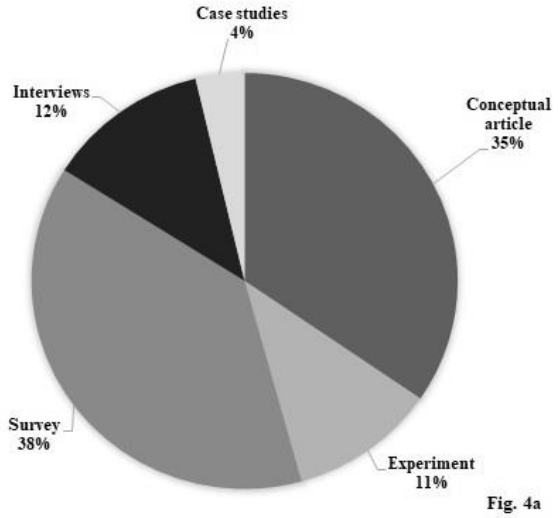
The results of citation network analysis were used to create a list of the most relevant contributions in the field of conceptual luxury market research. The most cited authors within the publications from this directory were indicated, which resulted in the extension of the publications list with historical articles dated earlier than the time period of the database search. Citation tracking with Goole Scholar citation database was performed in order to rank the selected articles. 84 manually selected articles received an accumulated number of 24,470 citations, an average of 291.3 citations per document. The selected articles were ranked in citation frequency order and grouped, combining single items into a group of ten. The analysis displays a sizable impact of the ten most cited publications serving as a theoretical basis for the entire luxury research landscape (Fig. 3). These contributions were subjected to analysis of their key concepts.

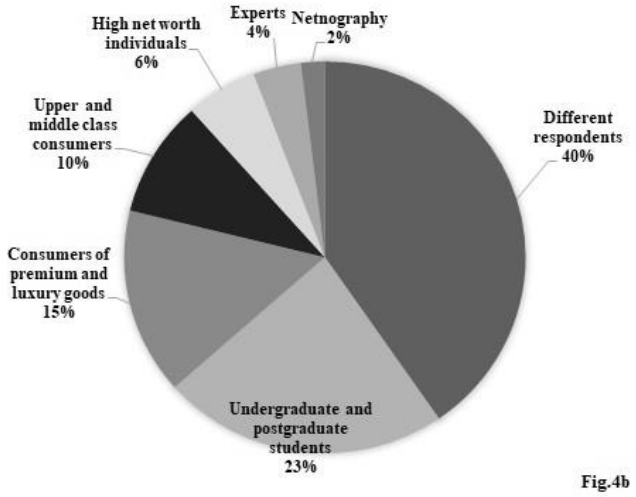


Source: author's construction based on systematic literature review

Fig. 3 **Grouped citations' frequencies distribution**

As a next step, the selected articles were evaluated after the applied research method (Fig. 4a). A third of the contributions are conceptual and draw a theoretical frame without providing empirical evaluation of the model. Most of the articles though are based on explanatory research conducted in different countries in Europe, America and Asia. Empirical evidence demonstrates considerable dissimilarities in consumers' perceptions in the ownership of luxury brands between Western and Asian markets (Phau & Prendergast, 2006), thus the contributions related to Asian markets were not considered for the review in order not to deviate from the research purpose.





Source: author's construction based on systematic literature review

Fig. 4a and 4b **Breakdown of exploratory research by paper type (4a) and sampling methodology (4b)**

A closer look at the sampling methodology of the exploratory research (Fig. 4b) confirms that despite of the different consumer perceptions in the luxury market (Okonkwo, 2016) the scholars broadly use student (Vigneron & Johnson, 2007; Kapferer, 2013) and non-luxury consumer populations (Dubois & Paternault, 1995; Hennigs et al., 2015) as a sampling frame. Furthermore, a considerable portion of studies are based on premium segment consumers (Kastanakis & Balabanis, 2012; Nueno & Quelch, 2002; Kapferer, 2012) with only few contributions involving real luxury consumers (Dubois et al., 2001; Janssen et al., 2017) and high net worth individuals (Heine, 2011). For obvious reasons, the sample size of the latter studies is considerably smaller. These observations indicate a methodological constrain of luxury research associated with the identification and approachability of the respondents.

Based on the keyword and citation network maps as well as citation tracking, the evolution of main concepts over time was studied and several research directions were examined and described (Table 1). The content analysis of the studies with the largest citation impact shows that majority of the conceptual research takes the brand manager perspective and constitutes a development of the luxury value framework rooted in brand value perception of a prestige-seeking consumer (Vigneron & Johnson, 1999). A further advancement of this model draws a multidimensional framework of luxury value embracing the financial, functional, individual, and social dimensions (Wiedmann et al., 2009) and the values of luxury, price, usability, quality, uniqueness, self-identity, hedonism, materialism, conspicuousness, prestige and social appeal (Bachmann et al., 2018; Dubois et al., 2001, 2005; Heine, 2011).

Table 1

Main contributions to conceptual framework of luxury

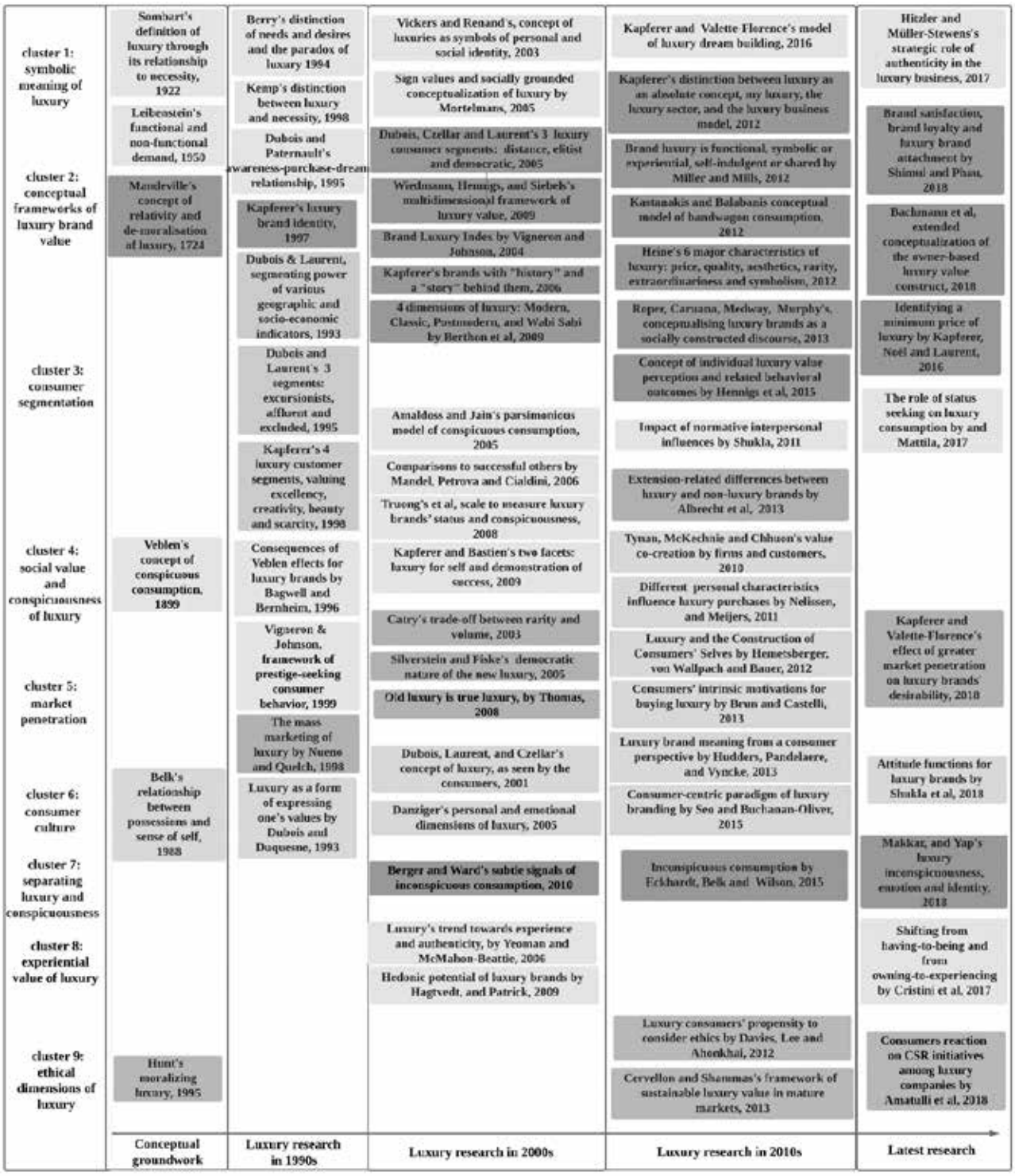
Author and Work	Key concept
The theory of the leisure class (Veblen, 1899)	conspicuous consumption, "Veblen effect" - an increase in demand due to a price increase
Possessions and the extended self (Belk, 1988)	relationship between possessions and sense of self
Bandwagon, snob and Veblen effects in the theory of consumers' demand (Leibenstein, 1950)	external consumption effects (bandwagon, snob and Veblen) in the theory of demand
A review and a conceptual framework of prestige-seeking consumer behaviour (Vigneron & Johnson, 1999)	framework of prestige-seeking consumer behaviour
Conspicuous consumption, snobbismand conformism (Co rneo & Jeanne 1997)	consumers engage in conspicuous consumption to signal their wealth
Measuring perceptions of brand luxury (Vigneron & Johnson, 2007)	brand luxury index (BLI)
Veblen effects in a theory of conspicuous Consumption (Bagwell, 1996)	definition of utility over consumption and status for luxury goods
The idea of luxury: a conceptual and historical investigation (Berry, 1994)	the paradox of luxury, relationship between needs and desires
Signalling status with luxury goods: the role of brand prominence (Han et al., 2010)	taxonomy of four groups based on wealth and need for status
Personal taste and family face: Luxury consumption in Confucian and western societies (Wong & Ahuvia, 1998)	East Asian consumers' exposure to social norms and quest for symbolic instead of hedonistic values
The mass marketing of luxury (Nueno & Quelch, 2002)	luxury brand ratio of functionality to price and the ratio of intangible utility to price
The market for luxury goods: income versus culture' (Dubois & Duquesne, 2002)	power of income vs. culture in the context of a market
Consuming luxury brands: the relevance of the rarity principle (Phau & Prendergast, 2006)	influence of awareness, purchase and dream values of luxury brands
Value-based segmentation of luxury consumption behaviour (Wiedmann et al., 2009)	multidimensional framework of luxury value with four latent dimensions: financial, functional, individual, and social

Co-creating value for luxury brands (Tynan et al., 2010)	complex interactions between the brand owner, employee, customer and other social groups
Trading up - why consumers want new luxury goods and how companies create them (Silverstein, 2005)	the phenomenon of "masstige luxuries"
Measuring the involvement (Zaichkowsky, 1986)	gaining cultural capital with brand's history and craftmanship
The specificity of luxury management: turning marketing upside down (Kapferer & Bastien, 2009)	two facets of luxury: indulging in one' s pleasure (luxury for self) and demonstration of success (luxury for others)
Luxury brand marketing – the experience is everything! (Atwal & Williams, 2009)	four 'experiential zones': Entertainment, Education, Escapist and Aesthetic
Consumer rapport to luxury: analysing complex and ambivalent attitudes (Dubois et al., 2005)	concept of "luxury," as seen by the consumers
The concept of luxury brands (Heine, 2011)	luxonomy – the definition and categorization of luxury
The marketing of luxury goods: an exploratory study (Vickers & Renand, 2004)	three dimensions of luxury brand performance: functionalism, experientialism and symbolic interactionism
Aesthetics and Ephemerality: Observing and Preserving the Luxury Brand (Berthon et al., 2011)	two dimensions of luxury: aesthetics and ontology
Impact of personal orientation on luxury-brand purchase value (Tsai, 2018)	intrinsically oriented luxury purchases reflecting internal self-fulfilment goals
Conspicuous Consumption and Sophisticated Thinking (Amaldoss & Jain, 2005)	a parsimonious model of conspicuous consumption using the rational expectations framework
Social benefits of luxury brands as costly signals of wealth and status (Nelissen & Meijers, 2011)	the possession of abundant resources is not the only element of the message that is sent through conspicuous consumption

As a last stage of the literature analysis, a comprehensive picture of the luxury research landscape was drawn (Fig. 5), clustering the key areas of the research and their evolution over time. The early research defines luxury, based on the consumers' need for status and the instrumental performance of the luxury goods. The luxuries are positioned at the right end of the necessity-unnecessity scale emphasising the symbolic character of the luxury brands (cluster 1). Based on this assumption, advanced conceptual frameworks developed over the time, adding more dimensions to the luxury brand value (cluster 2). Early research work provides segmentation of luxury customers both on the value perception and social status, as well as the financial bases (cluster 3).

Numerous studies of all periods refer to the concept of conspicuous consumption (Veblen, 1899) and oeuvre of Thorstein Veblen as the "founding father" of the luxury research. The idea of the interpersonal impact of the luxury consumption continues to exist throughout the whole luxury research (cluster 4).

Cluster five covers studies dealing with the "paradox of luxury" (Berry, 1994) i.e., the effect of luxury democratisation processes on the luxury brands' desirability. A smaller part of contributions comprised in cluster six take a luxury consumers' perspective and shed light on the consumers' attitudes. Later studies introduce the notion of "inconspicuous consumption" and are part of cluster seven revealing one of the recently indicated tendencies towards a more personal character of the luxury value. Likewise, a number of recent studies (cluster 8) examine drivers and barriers of ethical consumption in the luxury market. A further transformation in luxury consumers' attitudes unveils with the trend of moving from owning a luxury product to experiencing luxury (cluster 9).



Source: author's construction based on systematic literature review

Fig. 5 **Conceptual luxury research**

The luxury research is deeply rooted in the Veblenian concept of conspicuous consumption (Veblen, 1899), with a view on humans being in continual need of positive recognition by others. The acquisition and subsequent demonstration of material goods results in both social status and self-respect, rewarding the owner with recognition, respect and consideration. Another theoretical cornerstone of the luxury research is set with the concept of the "extended self" (Belk, 1988), which in essence follows the notion that consumption helps people to express who they are and their possessions become extensions of the self. While taking the extended self as a naturalized concept, consumers' need for agency in the expression of their identities (Bhattacharjee et al., 2014) is not considered in the luxury research.

Despite the lack of consensus about the definition of luxury (Heine, 2011) attributable to its complexity and ambivalence, a profound multidimensional conceptualization of luxury brand value is established within the academy (Vigneron and Johnson, 2007, Wiedmann et al., 2009). Luxury consumers' perspective however is mostly taken with the purpose to evaluate consumers' attitudes towards the defined luxury brand values (Dubois et al., 2005). Few studies investigate consumers intrinsic motivations (Truong and McColl, 2011, Brun and Castelli, 2013) and their role in the luxury brands' co-creation process (Roper et al., 2013, Tynan et al., 2010). In general, the extant luxury research focuses either on consumers' attitudes or the companies' brand identity strategy without integrating and harmonizing them.

Informed by the classical tradition of the marketing discipline (Batra & Ahtola, 1991), the luxury research is bidimensional and measures merely hedonic and utilitarian shopping conditions of luxury consumers. The utilitarian perspective views consumers as efficient, rational and inclined to evaluate the products according to their instrumental and functional product features. Hedonic consumers in turn indulge in experiential consumption and seek pleasure and excitement. Derived from hedonic and utilitarian perceptions, the research focuses on instrumental values of luxury goods, such as functionalism, aesthetics, experientialism and symbolic interactionism (Kapferer, 2013; Vickers & Renand, 2004).

With the aim to deeper assess luxury consumers' motivations, the author suggests adding a third, deontological dimension to the luxury consumers value perception model. The deontological perspective (Fukukawa, 2004) allows for moral values, intensions and commitments, enriching the foundation of investigation, as the values are a major element in shaping and reshaping consumers' preferences (Etzioni, 1989) and can be important factors in their decision making. Deontological position places the focus on the intentions (Tanner et al., 2008) behind the act of consumption, drawing a more complete picture of luxury consumers motivations and sources of attitudes. The luxury value develops in the interaction between consumer and marketer, and the grade of their interdependence determines both consumer actions and brand personality.

A theoretical perspective on consumers' contribution can be provided by the neoliberal concept of consumer sovereignty (Gintis, 1972), describing the rational, utility-maximizing consumer as a key agent in the economy, responsible for generating the condition, where the demand influences production. The subsequent development and criticism of this concept (Schor, 2007) suggests that the brand marketers intervention, on the other hand, reduces luxury consumers' authority to freely form and express their own identity and disrupts the rule of consumer sovereignty.

Drawing together two theoretical lines of consumer moral orientation and consumer sovereignty, the author proposes a conceptual framework of luxury consumer value dimensions (Fig. 6), mapping luxury consumers according to their moral concerns and propensity to be influenced from outside powers, such as social pressures or marketing efforts.

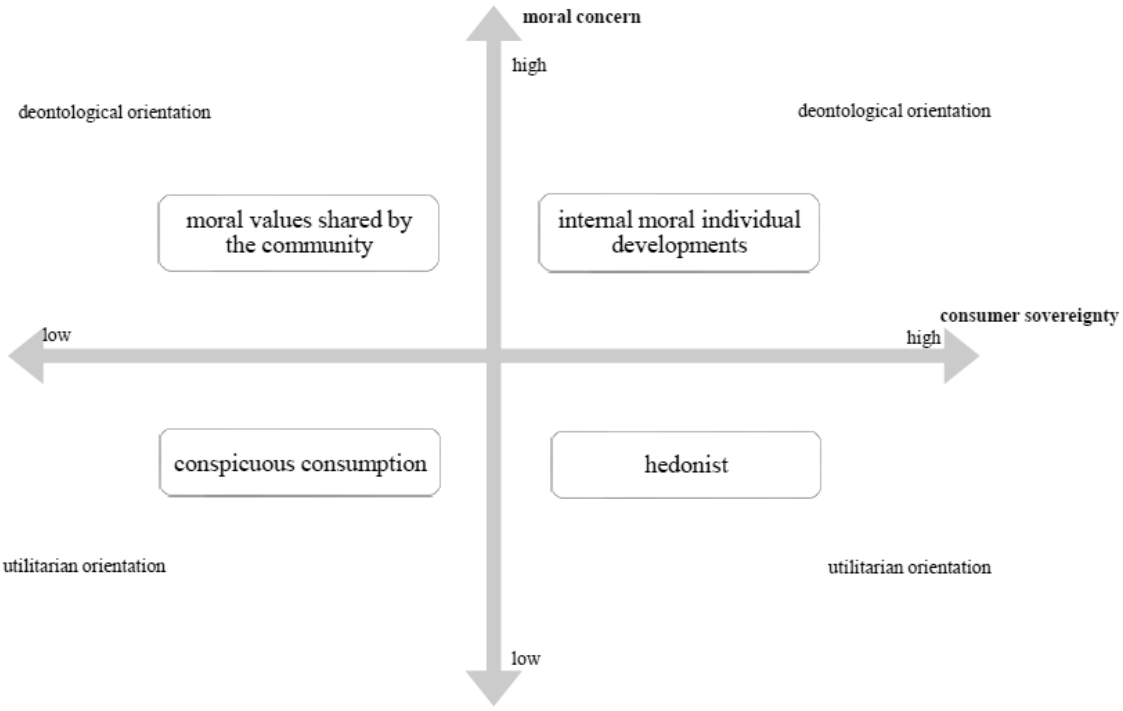


Fig. 6 **Model of luxury consumer value dimensions**

This model allows placing luxury consumers' attitudes in the scale between individual agency and social conformity and assessing consumers' intrinsic motives and susceptibility to interpersonal influence. The model extends the theoretical perspective of luxury research and adds a moral dimension to the extant consequentialist research landscape.

Conclusions, proposals, recommendations

1. The objective of this study was to systematically review the luxury research, deepen the understanding of the luxury construct and derive an agenda for future research. The study consolidated knowledge in this area and proposed an expanded luxury consumer value framework adding a moral dimension to the luxury consumer value.
2. The review summarised and clustered the knowledge of luxury research and revealed a broad conceptual landscape, yet with a restricted empirical underpinning, as the studies mostly rely on samples of undergraduate students or a broad consumer base. A further sampling issue arises from the academic disagreement on how to deal with the expansion of the luxury markets into the premium or "masstige" segment. By routinely selecting sample respondents, only occasionally trading up to some luxury products, the current research misses out the population of affluents as the core customer base for the highest level of prestigious brands.
3. The literature review showed that the luxury research is mainly based on the premise that the display of one's possessions is socially rewarded. The dimensional analysis of the luxury brand attaches great importance to the interpersonal aspect of the consumption. Exploring and measuring the inherent value of luxury provide promising research opportunities.
4. Another perspective in luxury research considers consumption as one of the personality-building attributes, whilst the products are used to define human identities. Consumption constitutes an essential building block in the consumer identity construction work, endowing the brand with a manipulative power in the project of individual self-creation. The author suggests that the further research goes beyond the focus on consumers' effort to express themselves through brands and considers consumers' agency in the identity expression. Luxury consumers' individual personality building work can be subject for further academic studies.

5. Reflecting from the deontological perspective, the author developed an overarching framework of luxury consumer value dimensions that integrates luxury consumers' identity definition and their freedom of choice. In such way, the study addressed one of the main limitations in the current literature, namely, the conceptualisation of the interaction between the marketers and consumers from the managerialist perspective. The suggested model proposes a shift from the marketer to consumer as an object of the research.

Bibliography

Amaldoss, W. & Jain, S., 2005. Conspicuous Consumption and Sophisticated Thinking. *Management Science*. 51 (10), 1449–1466.

Atwal, G. & Williams, A., 2009. Luxury Brand Marketing - The Experience Is Everything! *Journal of Brand Management*. 16 (5–6), 338–346.

Bachmann, F., Walsh, G. & Hammes, E.K., 2018. *Consumer Perceptions of Luxury Brands: an Owner-Based Perspective.* [Online] Available at: https://doi.org/10.1016/j.emj.2018.06.010. [Accessed 10 January 2019]

Bagwell, L.S., 1996. Veblen Effects in a Theory of Conspicuous Consumption. *American Economic Review*. 86 (3), 349–373.

Bain & Company, 2019. *Luxury Goods Worldwide Market Study, Fall–Winter 2018.* [Online]. Available at: https://www.bain.com/insights/luxury-goods-worldwide-market-study-fall-winter-2018/. [Accessed 15 January 2019]

Batra, R. & Ahtola, O.T., 1991. Measuring the Hedonic and Utilitarian Sources of Consumer Attitudes. *Marketing Letters*. 2 (2), 159–170.

Boston Consulting Group and Altagamma, 2018. *True-Luxury Global Consumer Insight*. [Online]. Available at: https://www.bcg.com/d/press/20february2018-altagamma-true-luxury-global-consumer-insight-184693. [Accessed 11 December 2018]

Belk, R.W., 1988. Possessions and the Extended Self (Part I). *Journal of Consumer Research*. 15, 139–168.

Berry, C.J., 1994. *The Idea of Luxury: A Conceptual and Historical Investigation.* Cambridge: Cambridge University Press

Berthon, P., Pitt, L., Parent, M. & Berthon, J.-P., 2011. Aesthetics and Ephemerality: Observing and Preserving the Luxury Brand. *California Management Review*. 52 (1), 45–66.

Bhattacharjee, A., Berger, J. & Menon, G., 2014. When Identity Marketing Backfires: Consumer Agency in Identity Expression. *Journal of Consumer Research*. 41 (2), 294–309.

Brun, A. & Castelli, C., 2013. The Nature of Luxury: a Consumer Perspective. *International Journal of Retail & Distribution Management*. 41 (11–12), 823–847.

Cook, D.J., Mulrow, C.D. & Haynes, R.B., 1997. Systematic Reviews: Synthesis of Best Evidence for Clinical Decisions. *Annals Of Internal Medicine*. 126 (5), 376–380.

Corneo, G. & Jeanne, O., 1997. Conspicuous Consumption, Snobbism and Conformism. *Journal of Public Economics*. 66 (1), 55–71.

Credit Suisse, 2018. *Global Wealth Report - Credit Suisse*. [Online]. Available at: https://www.credit-suisse.com/uk/en/about-us/research/research-institute/global-wealth-report.html?WT.i_short-url=%2Fgwr&WT.i_target-url=%2Fuk%2Fen%2Fabout-us%2Fresearch%2Fresearch-institute%2Fglobal-wealth-report.html. [Accessed 11 December 2018]

Dubois, B., Czellar, S. & Laurent, G., 2005. Consumer Segments Based on Attitudes Toward Luxury: Empirical Evidence From Twenty Countries. *Marketing Letters*. 16 (2), 115–128.

Dubois, B. & Duquesne, P., 2002. The Market for Luxury Goods: Income Versus Culture. *European Journal of Marketing*. 27 (1), 35–44.

Dubois, B., Laurent, G. & Czellar, S., 2001. *Consumer Rapport To Luxury. Analyzing Complex And Ambivalent Attitudes.* Paris: HEC.

Dubois, B. & Paternault, C.,1995. Observations: Understanding the World of International Luxury Brands: The 'Dream Formula'. *Journal of Advertising Research*. 35 (4), 69–77.

van Eck, N.J. & Waltman, L., 2017. Citation-Based Clustering of Publications Using CitNetExplorer and VosViewer. *Scientometrics*. 111 (2), 1053–1070.

Etzioni, A., 1989. Toward Deontological Social Sciences. *Philosophy of the Social Sciences*. 19 (2), 145–156.

Fukukawa, K., 2004. A Theoretical Review of Business and Consumer Ethics Research: Normative and Descriptive Approaches. *The Marketing Review*. 3 (4), 381–401.

Gintis, H., 1972. Consumer Behavior and the Concept of Sovereignty: Explanations of Social Decay. *The American Economic Review*. 62 (1), 267–278.

Gurzki, H. & Woisetschläger, D.M., 2017. Mapping the Luxury Research Landscape: A Bibliometric Citation Analysis. *Journal of Business Research*. 77., 147–166.

Han, Y.J., Nunes, J.C. & Drèze, X., 2010. Signaling Status with Luxury Goods: The Role of Brand Prominence. *Journal of Marketing*. 74 (4), 15–30.

Heine, K., 2011. The Concept of Luxury Brands. [Online]. Available at: http://www.conceptofluxury.com/concept/Heine_TheConceptofLuxuryBrands.pdf. [Accessed 16 December 2018]

Hennigs, N., Wiedmann, K.-P., Klarmann, C. & Behrens, S., 2015. The Complexity of Value in the Luxury Industry. *International Journal of Retail & Distribution Management*. 43 (10/11), 922–939.

Huber, F., Herrmann, A. & Henneberg, S.C., 2007. Measuring Customer Value and Satisfaction in Services Transactions, Scale Development, Validation and Cross-Cultural Comparison. *International Journal of Consumer Studies*. 31 (6), 554–564.

Hummon, N.P. & Dereian, P., 1989. Connectivity in a Citation Network: the Development of DNA Theory. *Social Networks*. 11 (1), 39–63.

Janssen, C., Vanhamme, J. & Leblanc, S., 2017. Should Luxury Brands Say It Out Loud? Brand Conspicuousness and Consumer Perceptions of Responsible Luxury. *Journal of Business Research*. 77, 167–174.

Kapferer, J.-N., 2013. Why Are We Seduced by Luxury Brands? *Journal of Brand Management*. 6 (1), 44–49.

Kapferer, J.N., 2012. Abundant Rarity: The Key to Luxury Growth. *Business Horizons*. 55 (5), 453–462.

Kapferer, J.N. & Bastien, V., 2009. The Specificity of Luxury Management: Turning Marketing Upside Down. *Journal of Brand Management*. 16 (5–6), 311–322.

Kastanakis, M.N. & Balabanis, G., 2012. Between the Mass and the Class: Antecedents of the 'Bandwagon' Luxury Consumption Behavior. *Journal of Business Research*. 65 (10), 1399–1407.

Leibenstein, H., 1950. Bandwagon, Snob, and Veblen Effects in the Theory of Consumers' Demand. *The Quarterly Journal of Economics*. 64 (2), 183-207.

Mir, R. & Watson, A., 2000. Strategic Management and the Philosophy of Science: The Case For A Constructivist Methodology. *Strategic Management Journal*. 21 (9), 941–953.

Mongeon, P. & Paul-Hus, A., 2016. The Journal Coverage of Web of Science and Scopus: A Comparative Analysis. *Scientometrics*. 106 (1), 213–228.

Nelissen, R.M.A. & Meijers, M.H.C., 2011. Social Benefits of Luxury Brands as Costly Signals of Wealth and Status. *Evolution and Human Behavior*. 32 (5), 343–355.

Nueno, J.L. & Quelch, J.A., 2002. The Mass Marketing of Luxury. *Business Horizons*. 41 (6), 61–68.

Okonkwo, U., 2016. *Luxury Fashion Branding: Trends, Tactics, Techniques*. New York: Palgrave Macmillan.

Phau, I. & Prendergast, G., 2006. Consuming Luxury Brands: The Relevance of the 'Rarity Principle'. *Journal of Brand Management*. 8 (2), 122–138.

Pittaway, L., Robertson, M., Munir, K., Denver, D. & Neely, A., 2004. Networking and Innovation in the UK: a Systematic Review of the Literature. *International Journal of Management Reviews*. 5/6 (3&4), 137–168.

Roper, S., Caruana, R., Medway, D. & Murphy, P., 2013. Constructing Luxury Brands: Exploring the Role of Consumer Discourse. *European Journal of Marketing*. 47 (3), 375–400.

Schor, J.B., 2007. In Defense of Consumer Critique: Revisiting the Consumption Debates of the Twentieth Century. *Annals of the American Academy of Political and Social Science*. 611 (1), 16–30.

Silverstein, M., Fiske, N. & Butman, J., 2005. *Trading Up : Why Consumers Want New Luxury Goods - and How Companies Create Them*. New York: Portfolio.

Tanner, C., Medin, D.L. & Iliev, R., 2008. Influence of Deontological Versus Consequentialist Orientations on Act Choices and Framing Effects: When Principles Are More Important than Consequences. *European Journal of Social Psychology*. 38 (5), 757–759.

Thelwall, M. & Kousha, K., 2017. ResearchGate versus Google Scholar: Which Finds More Early Citations? *Scientometrics*. 112 (2), 1125–1131.

Thorpe, R., Holt, R., Macpherson, A. & Pittaway, L., 2005. Using Knowledge Within Small and Medium-Sized Firms: A Systematic Review of the Evidence. *International Journal of Management Reviews*. 7 (4), 257–281.

Tranfield, D., Denyer, D. & Smart, P., 2003. Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review. *British Journal of Management*. 14 (3), 207–222.

Truong, Y. & McColl, R., 2011. Intrinsic Motivations, Self-Esteem, and Luxury Goods Consumption. *Journal of Retailing and Consumer Services*. 18 (6), 555–561.

Tsai, S., 2018. Impact of Personal Orientation on Luxury-Brand Purchase Value: An International Investigation. *International Journal of Market Research*. 47 (4), 427–452.

Tynan, C., McKechnie, S. & Chhuon, C., 2010. Co-Creating Value for Luxury Brands. *Journal of Business Research*. 63 (11), 1156–1163.

Veblen, T., 1899. *The Theory of the Leisure Class: An Economic Study of Institutions*. New York: B. W. Huebsch.

Vickers, J.S. & Renand, F., 2004. The Marketing of Luxury Goods: An exploratory study – three conceptual dimensions. *The Marketing Review*. 3 (4), 459–478.

Vigneron, F. & Johnson, L.W., 1999. A Review and a Conceptual Framework of Prestige-Seeking Consumer Behavior. *Academy of Marketing Science Review*. 1, 1–15.

Vigneron, F. & Johnson, L.W., 2007. Measuring Perceptions of Brand Luxury. *Journal of Brand Management*. 11 (6), 484–506.

Wiedmann, K.P., Hennigs, N. & Siebels, A., 2009. Value-Based Segmentation of Luxury Consumption Behavior. *Psychology and Marketing*. 26 (7), 625–651.

Wong, N.Y. & Ahuvia, A.C., 1998. Personal Taste and Family Face: Luxury Consumption in Confucian and Western Societies. *Psychology and Marketing*. 15 (5), 423–441.

Zaichkowsky, J.L., 1986. Conceptualizing Involvement. *Journal of Advertising*. 15 (2), 4–34.

THE ROLE AND TENDENCIES OF DEVELOPMENT OF THE SOCIAL MEDIA IN HUMAN RESOURCES MANAGEMENT

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Abstract. Social media as a topicality in human resources management has gained significance during the recent years.

The goal of the article is to determine the role and priorities of using social media and to examine the types of social media currently used by organisations.

The theoretical frame of the research is based on the structure of social media, characterised by two directions: personnel development that includes the inner environment of an organisation and the brand management of the employer that includes the outer environment. The main topicality and problem of the research is that employers are unable to provide companies with labour force, and employers' activities in the social media environment are insufficient and not organized professionally in the context of human resources management.

The quantitative and qualitative research methods were used in the research. The purpose of the article is to study the habits of using social media in small and medium-sized enterprises. It is based on a pilot study with non-representable sampling, where 79 small and medium enterprises both from the private and public sectors were surveyed.

The results of the research showed that, currently, organisations use the social media at a low level in their operations, and maintain and develop their social media profiles. The employees of the organisations are involved in maintaining the social network profiles. The data collected in the research reflect that organisations associate the use of the social media with human resources selection, attraction, publishing of the vacancies, and developing content in their social media profiles.

The data provided in the conclusions show that small and medium-sized enterprises use social media in human resources insufficiently. The proposals are to increase the intensity and competence of corporate social media use.

Key words: *human resources management, social media, social networks*

JEL code: O15, M31, J24

1. Introduction

The topicality of the article is established by the global problems of recent years that present enterprises with difficulties to ensure personnel, which is related to the soaring problem of shortage of labour in Europe. Rapid outflow of employees and their migration to other states do not allow enterprises to implement timely and systematic policy of employment planning. An essential impact is created by the demographic problems and inability to attract the leading and emerging talents of the industry, as well as the inability to address them through appropriate informative and communication channels.

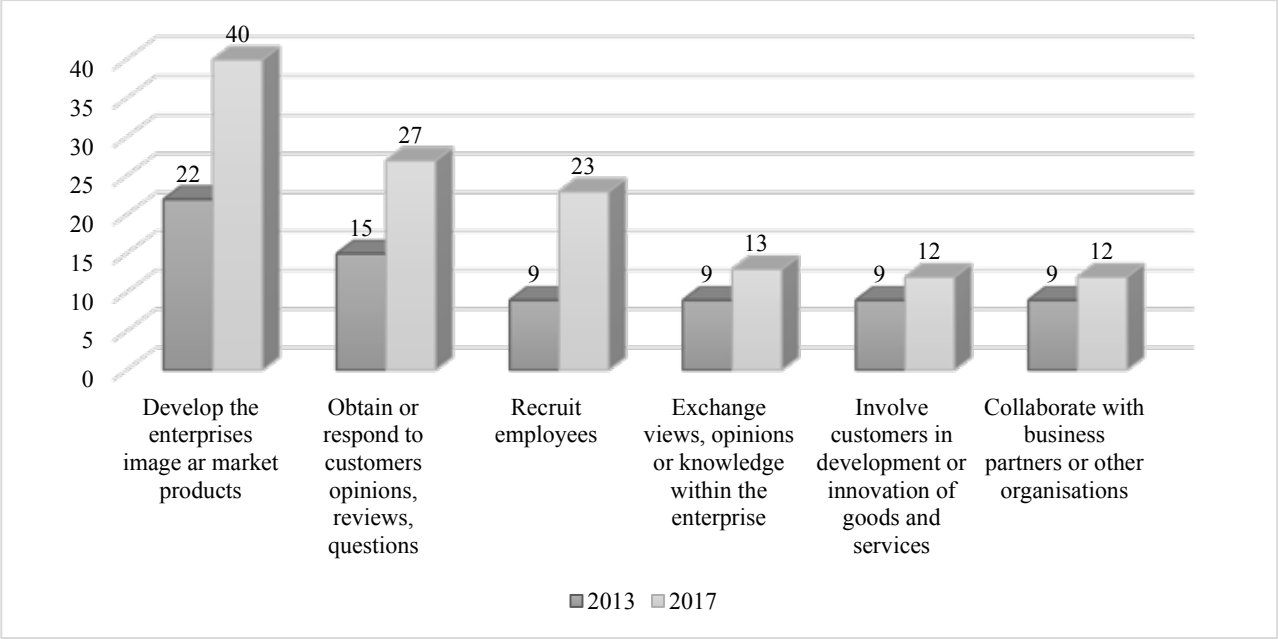
The German scientists already in 2006 indicated that the main problems in human resources management, especially in human resources attraction, were shortage of qualified labour force, global demographic problems in Europe, lack of

graduates in the most demanded and topical industries, continuous economic tension, very high demands by the employers towards the candidates, inability of candidates to find a balance between work and private life, high staff turnover and the globalisation in this particular aspect (DGFP, 2006).

The main variables of the article are the social media and human resources management. The authors of the article provide an insight on the main terms that will be discussed in this article because terminology in the context of this article can be interpreted differently in different sources and languages. The definition of social media is 'websites and computer programs that allow people to communicate and share information on the internet using a computer or mobile phone' (Cambridge Dictionary, 2019). The use of the social media from a communication platform used by individuals has evolved into a corporate social media tool used by organisations for the purposes of human resources management. Organisations transform the traditional communication tools to the environment of social media, where the main actions are brand management, attraction of human resources and mutual communication (Bondarouk T., Olivas-Luján M. R., 2013). Within the context of contemporary human resources management, social media are studied from the aspect of external human resources marketing. It is an essential function of human resources marketing, which ensures the communication of an enterprise with the external environment that is the society, job seekers, students and other concerned target groups (Fahrbach S., 2013, Bärman F., 2012).

The above mentioned problems motivate organisations to use new tools and approaches in human resources management. Therefore the role of social media grows because it is one of the instruments that will help enterprises to solve the above mentioned problems. In the nearest future, the corporate use of social media for human resources management will become more topical in relation to the above mentioned problems and transformation of habits of generations. Enterprises will need a strategy of human resources marketing in order to attract new employees purposefully, where external human resources marketing is one of the solutions. One of the external marketing tools is social media.

The novelty of the article is characterised by little global research on the use of social media from the aspect of human resources management. The use of social media during the so-called 'period of Web 3' will become one of the main communication platforms between an employer and a job seeker (Kryger Aggerholm H., Esmann Andersen S., 2018). The authors of the article found out that there is no in-depth study performed on the use of social media in Latvia in the context of human resources management, as well as there is little global research. The other aspect of the novelty of the article is the available statistical data. The use of social media in enterprises grows dynamically, and there are tendencies of their use in human resources management. Despite this development, scientifically this aspect of development, and the term from the point of view of human resources management, is studied little. A study performed by Eurostat shows the significance the enterprises assign to the presence of the internet. Enterprises strive to improve the quality of use of the internet, using the possibilities provided by social media. In 2017, more than two thirds of EU enterprises, which employ more than 250 employees (68%), had an account and they used at least one social media network. Whereas slightly more than every fourth enterprise (43%), which employ 10 to 49 employees, used social networks. In Figure 1.1., the use of social media is compared in 2013 and 2017. It is shown in the Figure that social media mostly are used by enterprises in the context of human resources management – the development of the image of the employer and seeking for employees, and product marketing. It can be seen in the Figure that the proportion of the purposes of seeking for employees and development of the image of the employer has increased. Both indicators testify the topicality and novelty of the theme of the article. The topicality of the article is confirmed by the geography of the above mentioned study, which certifies that Latvia in terms of using social media in entrepreneurship and human resources management has comparatively low figures in relation to other EU states (Eurostat, 2017).



Source: author's construction based on Eurostat

Fig.1.1. **Enterprises using social media, by purpose of use, EU-28, 2013 and 2017 (% of enterprises) (Eurostat, 2017)**

2. The Theoretical Framework and Problem Questions of the Research

The theoretical framework of the article is based on topicalities of social media use in human resources management, the rapid growth of the use of social media in the world; and separately the usage goals of the above mentioned media or the habits of organisations are highlighted. The use of social media is possible as means of ensuring communication, brand management of the employer, marketing of human resources management, attraction and selection of personnel.

It was established in an international research on working places by a human resources management association that enterprises increasingly often use social media for marketing, human resources management and public relations, and some enterprises limit the user access to their social media (Bill L, 2012). German researchers delved into importance of social media in human resources management already in 2011 by stating the main developmental tendencies that are essential for an enterprise in relation to external communication using digital technologies. The authors emphasize that employers use the digital technologies – social media and other search tools – for purposes of finding employees (Eilert M., 2011). Whereas in 2018, the Centre of Human Resources Information Systems (CHRIS) of Universität Bamberg and Friedrich Alexander Universität Erlangen Nürnberg in cooperation with Monster Worldwide Germany GmbH performed a comprehensive annual research on use of social media in German organisations. The results showed that a large proportion of organisations use social media in search for employees and that the use of social media for this purpose becomes increasingly innovative and creative (CHRIS, 2018). The use of social media as a unified human resources management cooperation system combines the traditional human resources management structure with time resources and communication channels. In the pilot case studies, the researchers applied the model to map social media usage at organisations. The results confirmed rapidly increasing dynamics and role of using social media in human resources management (Wolf M., Sims M., Huadong J., 2014). 'The social media develop faster than society,' researchers indicated. During the research, the researchers concluded that the use of social media in human resources management is essential in making decisions in human resources management. Organisations actively use social media in search for employees.

There is a substantial probability in the future that new methods and approaches will be invented on how employers will establish communication in social media with the potential candidates (Roth P. L., Bobko P., Van Ideekinge C., H., Thatcher J., B., 2016). German researchers delved into importance of social media in human resources management already in 2011, by stating the main developmental tendencies that are essential for an enterprise in relation to external communication using digital technologies. The authors emphasize that employers use the digital technologies – social media and other search tools – for purposes of finding employees (Eilert M., 2011).

The authors of the article conclude that the insight in the researches performed indicate that the use of social media in human resources management in the world will increase rapidly. The goals of attraction and search for employees using creative and innovative methods are particularly explicit. Over the years, these methods will obtain a new shape and technological advancement will enable the establishment of communication with potential candidates more effectively. However, too extensive utilization of social media would induce problems for enterprises, thus limiting the vast access to the corporate social media. Nevertheless, the researches do not present in depth the directions of use that discover the vast possibilities of human resources management. Separate theoretical aspects reveal other problems associated with the use of social media in human resources management.

Researchers, using quantitative and qualitative research methods, found out that social media provided an opportunity to increase the strategic role of human resources management specialists, the strategy of employers' brand, development of internal skills and larger involvement of managers in the process of employee selection (Girard A., Fallery B., Rodhain F., 2014). In other researches, performing experiments in a social network, the authors of the research concluded that, contrary to the hypothesis, most of the research participants acknowledged the social networks, one of the elements of social media, as an effective means of communication in the academic environment (Frasca Keely J., Edwards Martin R., 2017). In other researches, the authors with an integrating research model evaluated the influence of various factors on exchange of knowledge in social media and their impact on performance of innovations in small and medium enterprises. In the research, the authors aspired to ascertain if the exchange of social knowledge in social media could become a mediator between human resources management and performance of innovations. The researchers found out that social media as a technological and organizational tool had a larger impact than the exchange of environmental and social knowledge (Soto-Acosta P., Popa S., Palacios-Marques D., 2017).

Some of the mentioned research aspects suggest that, in the future, the digitalisation, which currently can be observed from the point of view of the use of social media, will massively integrate into operations of any enterprise. The involvement of human resources managers and their role in the utilisation of social media in enterprises will be substantial. Social media will be used as a technological tool in the corporate communication with the society. These are just some of the insights in the developmental tendencies that the author of the article found out during the theoretical research.

2.1. The Aim and Tasks

The aim of the article is to identify the role and priorities of the use of social media and to examine the types of social media currently used in human resources management in medium and small enterprises.

The tasks of the research article are to study the theoretical frame of the use of social media in human resources management; to analyse the data acquired in the research performed by the authors of the article on the social media usage habits in small and medium enterprises; to draw conclusions and to offer suggestions.

2.2. Research Questions and Methods

The main research questions of the article are: how many enterprises use social media in human resources management? Why the use of social media by enterprises in Latvia is high, but their use for purposes of human resources management in contrast to other states of the European Union is very low? Which social media do enterprises use most often for the purposes of human resources? How does it relate to the theoretical studies and problem-questions on a scientific level?

The research method used for the research of the article is quantitative quasi-experimental research. The authors of the article use the critical analysis of the theoretical aspects, and the secondary analysis of the data. The primary method of collecting the data is an inquiry. The data is analysed using methods of descriptive statistics.

The limitations of the subject of research article are related to the geographical limitations of the sampling of the research and improbable or small sampling of the research that only partially reflects overall tendencies, but is essential for further research.

2.3. The Sampling of the Research

The sampling of the research is 79 organisations, which is an improbable selection in the context of respective research. The research was performed on December 2, 2015, performing a survey (73 survey questions) within the framework of another research on human resources management marketing in Latvia, where the set of items was about the social media in human resources management, with corresponding 16 items or questions composed according to Likert scale.

According to Eurostat data, the social media in Latvia in 2015 were used by 9% of all registered enterprises (Eurostat, 2019). According to Lursoft data, on December 2, 2015, there were 242,929 registered legal entities (Lursoft, 2015). Thus the set of the research is 21,864 organisations. Thus, the sampling with a standard error of 5% would be 269 respondents. The criteria for selecting the sampling: registered enterprises that use social media.

The sampling of the research is smaller than necessary, thus the acquired data of the research are partially representative and may reflect the presumptions and tendencies of the authors of the article, and cannot provide a common conclusion on the whole set. The K-S test (One-Sample Kolomogorov Smirnov test) showed sig ≥ 0.05, which indicates that the set of items corresponds to normal distribution and the research data can be analysed with the parametric methods, which is indicated in Table 2.1.

Table 2.1

Verification of the Reliability of the Survey with One-Sample Kolmogorov-Smirnov Test

		Social media in Human Resources Management
N		79
Normal Parameters[a,b]	Mean	43.6962
	Std. Deviation	8.74328
Most Extreme Differences	Absolute	0.089
	Positive	0.053
	Negative	-0.089
Kolmogorov-Smirnov Z		0.787
Asymp. Sig. (2-tailed)		0.566
Exact Sig. (2-tailed)		,536
Point Probability		0.000
a. Test distribution is Normal.		
b. Calculated from data.		

3. The Results of the Research and Discussion

Descriptive and conclusive methods of statistics were used in the research of the article. The tasks of the research article were to study how many enterprises used social media in human resources management and which media were used most often. First, the authors of the article performed the analysis of frequency distribution, which showed that, from all enterprises surveyed, most used an account of social media as shown in Table 3.1., Table 3.2.

Table 3.1.

Descriptive Statistics of an Organisation with a Social Media Account

The organisation has a social media account		
N	Valid	79
	Missing	0
Mean		3.3924
Std. Error of Mean		0.11594
Median		4.0000
Mode		4.00
Std. Deviation		1.03053
Variance		1.062
Skewness		-1.578
Std. Error of Skewness		0.271
Kurtosis		1.088
Std. Error of Kurtosis		0.535
Range		3.00

Table 3.2.

Descriptive Statistics of an Organisation with a Social Media Account

The organisation has a social media account					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 (disagree)	10	12.7	12.7	12.7
	2.00 (somewhat disagree)	2	2.5	2.5	15.2
	3.00 (somewhat agree)	14	17.7	17.7	32.9
	4.00 (agree)	53	67.1	67.1	100.0
	Total	79	100.0	100.0	

In Table 3.4., the authors of the article study the use of social media by organisations from 16 potential purposes that were reflected in the survey of the research. The results show that enterprises mostly have registered a social media account for purposes of personnel needs. It is used for such goals as building the image of the employer, attraction of new talents and personnel, and for the organising the business operations. The theoretical research performed by the authors of the article coincides with the results of the research. The research shows a large proportion of organisations' employees using social media in everyday work processes, they publish and organize social activities and publish current vacancies. These results reflect that the employees spend a lot of time on social media in order to perform diverse activities. It is worthwhile to mention that enterprises comparatively little do understand notions and their use regarding creating a personnel policy in relation to social media, they do little research on employees and their potential behaviour on social media, and they cooperate scarcely with outsourcing providers, who help to create a human resources social media policy (Boitmane, 2016).

Table 3.4.

Central Tendencies and Variation Indicators for the Survey Item 'The Use of the Social Media in an Organisation'

Question	Average	Confidence interval	Median	Standard deviation	Skewness	Kurtosis	Entropy
The social media account for the needs of human resources management	3.4	3–4	4	1.021	-1.588	1.156	1.345
Building an image of the employer	3.4	3–4	3	0.734	-1.329	2.178	1.378
Attraction of personnel and new talents	3.3	3–3	3	0.769	-1.105	1.188	1.494
Commercial activities in the social media	3.2	3–3	4	1.084	-1.123	-0.177	1.614
Employees use the social media/social networks daily	3.0	3–3	3	0.893	-0.657	-0.153	1.757
Information about collective activities	2.9	3–3	3	1.027	-0.675	-0.628	1.838
To visit profiles of potential employees and candidates on the internet	2.9	3–3	3	0.883	-0.833	0.267	1.644
To publish current vacancies	2.8	3–3	3	1.132	-0.369	-1.265	1.953
Employees actively participate in creating the content for social media accounts	2.8	3–3	3	1.121	-0.448	-1.159	1.918
Photos from employees' events, employees' articles are published	2.5	2–3	3	1.062	-0.080	-1.212	1.972
To inform graduates about human resources management activities	2.4	2–3	3	0.998	-0.082	-1.082	1.910
Organisations provide training for employees on how to use social media	2.1	2–2	2	0.962	0.464	-0.735	1.866
Use social media outsourcing	2.0	2–2	2	1.012	0.593	-0.833	1.846
The organisation has a policy on using social media	1.9	2–2	2	0.985	0.796	-0.406	1.792
Studies the opinions and behaviour of the employees regarding use of social media	1.9	2–2	2	0.875	0.655	-0.356	1.725
It is prohibited to use social media in everyday work at the organisation	1.7	1–2	1	0.998	1.308	0.473	1.547

The authors of the research conclude that the pilot-study conducted provides interesting results on the aspects of use of social media in Latvia in the context of human resources management. It gives a new direction to conduct a broader research so that the results could be attributed to the theoretical aspects, the whole sample, and be compared to world-wide researches.

The data were acquired using an electronic survey in Webropool environment. Data were analysed in the programs IBM SPSS, Webropool.

Conclusions, Proposals, Recommendations

The authors of the article, after performing the theoretical and practical study of the topic, came to the following conclusions:

1. enterprises use social media in human resources management for the purposes of finding employees, building the image of the employer, business operations;

2. the use of social media in human resources management has rapidly increased during the recent years and potentially will transform into comprehensive semantic network platforms;
3. enterprises in Latvia use social media on a low scale in comparison to other states of the European Union;
4. there are unlimited possibilities in using the social media that enterprises have not mastered.

Following the conclusions gained, the authors of the article put forward the following proposals for further research:

1. to conduct a practical survey on a representative sample so that the results obtained can be applied to the entire sample of the research;
2. an in-depth research on employee-searching functionality in human resources management using social media;
3. a wider research on social media development in the context of potential goals of utilization;
4. to find out the reasons why there is a low usage of social media in Latvia as such, as testified by Eurostat data;
5. an in-depth study of the social media goals that currently are not used widely, for instance, the behavioural peculiarities of communication with employees and job seekers in the context of generations.

The findings of the authors of the research are that there are unexplained reasons why there is a low usage of social media in Latvia in the context of other states. It is necessary to broaden the research on social media in the context of the users' behaviour and peculiarities of generations.

The recommendations of the authors of the research are that it is necessary to increase the use of social media in human resources management in medium and small enterprises in Latvia, as well as to develop further education programs for human resources management specialists to increase their digital competences. It is necessary to introduce the tools of social media evaluation and analysis in enterprises, as well as to pay attention to how to work with job seekers of different generations.

Bibliography

Bärman, F., 2012. *Social Media im Personalmanagement*. Beltz Druckpartner GmbH und Co,KG, Hemsbach, s.271. s.21-26.

Bill, L., 2012. HR has a Role In Corporate Social Media. *HR Magazine*, Vol 57 Issue 1, p16-16, 1/2p.

Boitmane, I., 2016. The Development of Human Resources Marketing in Latvia. *Master Thesis*, Riga: RISEBA, pp. 99.

Bondarouk, T., Olivas-Luján, M. R., 2013. Social Media and Human Resource Management: It Takes Two to Tango. *Advanced Series in Management,* Volume 12, pp.xi-xv.

Cambridge Dictionary, 2019. *Meaning of "social media" in the English Dictionary.* [Online] Available at: https://dictionary.cambridge.org/dictionary/english/social-media [Accessed 10 January 2019].

Centre of Human Resources Information Systems (CHRIS), Otto-Friedrich Universität Bamberg, 2018. *Recruiting Trends 2018*. [Online] Available at: https://www.uni-bamberg.de/isdl/transfer/e-recruiting/recruiting-trends/recruiting-trends-2018/ [Accessed 10 January 2019].

Deutsche Gesellschaft für Personalührung (DGFP) e. V., 2006. Erfolgsorientiertes Personalmarketing in der Praxis. *Kon Instrumente-Praxisbeispiele.* Schriftenreihe Band 80. Germany: Bielefeld.

Eilert, M., 2011. HR-PR: Get together? *Pesonalmarketing und Public Relations für ein attraktives Arbeitsgeberimage in den Social Media*. Hamburg: Diplomatica Verlag GmBh, p73, 35p.

Eurostat, 2017. *Enterprises using social media, by purpose of use, EU-28, 2013 and 2017 (% of enterprises).* [Online] Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php/Social_media_-_statistics_on_the_use_by_enterprises#Social_media.2C_a_business_paradigm_shift [Accessed 10 January 2019].

Fahrbach, S., 2013. *Personalmarketing. Anspruch und Wirklichkeit. AKAD Fachhochschule Stuttgart Studiengang Betriebswirtschaftslehre*. Germany: GRIN Verlag GmbH, p11. 8p.

Frasca K. J., Edwards M. R., 2017. Web-based corporate, social and video recruitment media: Effects of media richness and source credibility on organizational attraction. *International Journal of Selection & Assessment.* Vol. 25 Issue 2, p125-137. 13p.

Girard, A., Fallery, B., Rodhain, F., 2014. Integration of Social Media in Recruitment. *Social Media in Human Resources Management. Vol.12.* pp.97 – 120.

Kryger, A. H., Esmann, A. S., 2018. Social Media Recruitment 3.0: Toward a new paradigm of strategic recruitment communication. *Journal of Communication Management,* Vol. 22 Issue: 2, pp.122-137.

Lursoft, 2015. *Register of Enterprises registers of registered and liquidated subjects,* [Online] Available at: https://www.lursoft.lv/lursoft_statistika/?&id=2 [Accessed: 6 December, 2015].

Roth, P. L., Bobko, P., Van Ideekinge, C., H., Thatcher, J., B., 2016. Social Media in Employee-Selection Related Decisions: A Research Agenda for Uncharted Territory. *Journal of Management,* Vol. 4, Issues: 1. SAGE publ. p269-298

Soto-Acosta, P., Popa, S., Palacios-Marques, D., 2017. Social Web knowledge sharing and innovation performance in knowledge-intensive manufacturing SMEs. *Journal of Technology Transfer.* Volume: 42. Issues: 2. NY: Springler publ. p. 425-440.

Wolf, M., Sims, J., Huadong, Y., 2014. Social Media Utilization in Human Resource Management. *International Conference on eHealth*, p79-85, 7 p.

IMPROVED INNOVATIVE PRODUCT STRATEGY ASSESSMENT MODEL IN MARKET RESEARCH CONTEXT

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Abstract. In the innovation economy, companies more often face the need quickly and efficiently evaluate not only their existing product and service portfolios in the context of the industry's potential, but also evaluate theoretical concepts of innovations. There are various systems for evaluating innovation concepts and already existing products and/or services for companies that are planning to expand their business in a new industry. The innovation economy is characterized by the convergence of innovations and the most demanded products on the market with continuous market upgrades. A company which wants to grow in a new industry faces an assessment challenge between already existing, demanded products and the choice of innovative concepts in the context of the company's most perspective growth. As market examples show, a successful company's entry into a new industry can be related to both an innovative concept and an innovative business model of existing, demanded market products. The aim of the study is to analyse the appropriateness of the existing assessment systems of innovations concepts and market bestselling products from the perspective of an enterprise, considering an expansion into new industry. The theoretical benefit of the study is to highlight a new, complementary model in the assessment of the company's growth strategy in the context of developing new industries and markets. The practical contribution of the study is an improved combined industry and company assessment model. Proposed model is company growth perspective assessment tool in the context of new products, either it is completely new to market or new to company, but already known in the market.

Key words: *NPD evaluation model, industry attractiveness model, company growth analyses, market research*.

JEL code: M31

Introduction

Why is it important? Innovation economy requires from companies a continuous new product creation. Development of innovations is time and resource-intensive with a low success rate. Organizational growth begins with an evaluation of resources that exert leverage on competitive advantage and the identification of sources of synergy or "fit" (Day, G.S., Wensley, R., 1988) Research on the success of the NPD (new product development) projects, has focused on available firm resources and has linked these positional advantages and performance outcomes (Di Benedetto 1999; MontoyaWeiss and Calantone 1994).

Selecting the right strategic decisions is crucial for the success of an organization (Drucker P., 2000, Müller R., Martinsuo M., Blomquist T., 2008) Available investment alternatives usually far exceed the number of projects that can

be executed with an organization's limited resources at any given time, and, therefore, choosing the right products and projects in a particular context is seldom easy (Engwall M., Jerbrant A., 2003). Therefore, academics and practitioners have sought to develop methods to address the product selection problem. While financial criteria play a significant role in defining the optimal state, qualitative strategic assessments are also significant contributors (Englund R.L., Graham R.J., 1999).

Effective management of an innovation or new product is no longer sufficient. In today's business market, proactive management of the innovation product portfolio has become increasingly important to achieve long-term success and competitive advantage. To create a viable product concept, opportunities have to be discovered, ideas created and as a result a foundation for a future project, portfolio, and corporate success is laid. (Heising W., 2012)

Pose research question that needs to be answered. How to effectively identify the most promising company's new products affected by multiple factors among similar options and at the same time taking into consideration market demand, company's resources, competencies, and the growth vision? **How do the findings contribute to the discipline? The theoretic summary and** assessment gives an insight in available product assessment methods which can be used to assess or compare results derived with different methods. The research also offers an improved assessment model to which missing dimensions are added. **Description of study**. In the research product assessment both industrial environment and academic environment strategies are compiled and its content analysis conducted; based on the results, an improved combined model is offered. **Research aim.** The aim of the study was to analyse the appropriateness of the existing assessment systems of innovations concepts and market bestselling products from the perspective of an enterprise, considering an expansion into new industry. **Research methods applied.** The research was based on the study of the meta and content analyses, and an analysis of the most recent scientific and professional literature available. Additionally, in-depth interviews with scientists and directors of the companies from the industries were conducted. **Research novelty.** The research offers a new, combined approach to new product assessment as a result of complex factors. The research also offers unprecedented summarizing analysis on the approach of the existing methods in the context of the research object**. Problematic questions of the conducted research and theoretical discussion.** Several discourse questions have been highlighted during the research. One of the most problematic questions is the approbation of methods in the context of industry research and its potential assessment. Considering that directly influencing internal and external environmental factors are constantly changing, the research aims to answer whether the method approbation in an empirical environment is practically possible. This aspect is highlighted as problematic by several developers of other methods, as well as, entrepreneurs of the industrial environment. **Information sources**. In-depth interviews with directors of SMEs (small-to-medium enterprises) and scientific literature databases were used as information sources. **Delimitations of research subjects**. The research reviews methods used and described in the industrial and academic environments. The research does not analyze approaches of institutional environment. The research does not analyze and compare methods mutually against empirical problem.

Research results and discussion

In industrial (in companies and organizations providing consulting services to companies), academic and research environment, as well as, in institutional environment exist many and various new product and their growth strategy assessment systems. They are defined and structured in various departments in an industrial environment, and in various disciplines in the social sciences context. Assessment systems and growth strategies of new products can be found in R&D, project management and product portfolio management areas. In the context of company's product portfolio's management, the most widely known assessment systems are McKinsey Matrix, BCG Matrix, Ansoff Matrix, VRIO

framework, Porter's 5 Forces model. Project management systems use other approaches to identify the most promising company projects which are based on the project management systems, mostly on the financial assessment approaches.

In the R&D field various matrices are used to assess new products (NPD); the best-known are P. Kotler's New Product Development Matrix (Ashford N.A., Hall P.H., 2018) G. Cooper's Assessment System (Cooper G., 1997), although generally they are less known in the business environment than company's product assessment systems. Wildly known are institutional assessment systems which are intensively used in the public sector, providing similar assessment (OECD, 2015, 2018). However, the critical questions are which of these approaches should be chosen by a company when assessing an innovation concept or business model to be develop in the future. The discussion highlights a range with multiple options, assessing appropriateness of the available assessment methods. The discussion also indicates an uninitiated range. As researchers emphasise, no single set of broad guidelines exists that guarantees the selection of successful projects; however, the process is not random. (Thamhain H. J., 2014) The matrix offered in the research highlights a new and unique combined approach with a goal to create a method to be applied in applied research.

1. Evaluation of existing product strategy assessment models

In the table below a summary of existing product strategy assessment methods is provided. Methods are divided in 3 basic groups which have been discussed previously.

Table 1

Available product strategy assessment models

No.	Assessment model	Brief description	Gaps in the context of complex product strategy assessment
	Selected organization product portfolio assessment models		
1.	McKinsey Matrix (Amatulli C., Caputo T., Guido G., 2011)	Framework that evaluates business portfolio, provides further strategic directions and helps to prioritize the investment needed for each existing business unit	Lacks innovation or new to company product evaluation scale
2.	P. Drucker Industry Attractiveness Model (Daidj N., 2015)	Framework that evaluates industry attractiveness and helps to prioritize the investment areas	Lacks company resources, capabilities and vision evaluation scale
3.	Porter 5 Forces (Hargroves K., Smith M.H., 2006)	Analysis tool that uses five industry forces to determine the intensity of competition in an industry and its profitability level	Lacks horizontal structural framework to compare various industries and products
4.	Ansoff Growth Matrix (Daidj N., 2015)	Analysis tool that identifies four growth strategies through 4 market segments: market penetration, market development, product development, and diversification	Lacks company resources, capabilities and vision evaluation scale
5.	VRIO Framework (Peng M.W., 2017)	Tool used to analyse company internal resources and capabilities to find out if they can be a source of sustained competitive advantage	Lacks horizontal structural framework to compare various industries and products
	New product and innovation assessment models		
5.	Cooper NPD assessment model (Cooper R. G., Kleinschmidt E.J., 1995)	Analysis tool that uses various determinants to identify most perspective innovation concept	Lacks complex industry assessment scale

No.	Assessment model	Brief description	Gaps in the context of complex product strategy assessment
6.	DELI (Natter M., Mild, A., 2003)	Analysis tool that uses various 3 step approach to cluster innovation determinants to identify most perspective new product attributes	Lacks in-depth company resources, capabilities and vision evaluation scale
7.	Effective NPD Schemes (Natter M., Mild A., et al, 2001)	New model for determination the new product success through development process	Lacks in-depth company resources, capabilities and vision evaluation scale
8.	PSS evaluation (Kim K.J., Lim CH., Heo J.Y., et al., 2016)	Product–service system (PSS) which integrates products and services to fulfil customer needs and create sustainability according 94 evaluation criteria	Lacks in-depth company resources, capabilities and vision evaluation scale
9.	InnoMatrix (Batraga A., Salkovska J., et al., 2018, 2019)	Analysis tool that uses various determinants to identify most perspective innovation concept	Lacking in-depth company resources, capabilities and vision evaluation scale
10.	NPD Transparency flow (Rogers H., Ghauri P., Kulwant S., 2005)	Methodology highlights that transparency of measures at the individual project level is key important, aside to move product development performance up the corporate training agenda; and concentrate on the core processes.	Focuses on NPD process, lacks in-depth company resources, capabilities and vision evaluation scale
11.	0–1 nonlinear integer programming model (Abbassi M, Ashrafi M, Sharifi E., 2014)	Model maximizes R&D project portfolio values while taking into account various types of R&D projects, uncertain nature of these projects and their interdependencies. Helps construct the organizations' R&D project portfolio by accurate assessment of the key variables affecting portfolio values.	Lacking complex industry assessment scale
12.	Balanced portfolios method (Oh J., Yang J., Lee S., 2012)	Analyse the product matrices of the scoring model and manages portfolios to ensure that the projects are well balanced in terms of periods, risks and profits.	Lacks innovation or new to company product evaluation scale
13.	Fuzzy set theory and multi-criteria group decision making method (Wei C.C., Chang H.W., 2011)	Model takes into account project performance, project delivery and project risk, and formulates the selection decision of NPD project portfolio as a fuzzy linear programming problem. The illustrative example shows that the model proposed can generate projects with the h.ighest success rate under limited resources and manpower.	Lacks complex industry assessment scale
14.	4 success dimensions method (Harmancioglu N., Droge C., Calantone R.J., 2009)	Analyse the key 4 matrices to identify most perspective innovation concept	Lacks complex industry assessment scale

Source: author's summary of new product strategy assessment methods based on industry and scientific literature analyses, 2019

Overall, the management of research and development project assessment and selection processes highlights a comprehensive research process in all segments of the company and its environment segments to mitigate risks, uncertainties, and flaws the company is facing to determine the value-added to a new product, in comparison with other options. Reviewed methods emphasise some of the growth aspects; however, as it is also mentioned by the management science experts and scientists, there are no one common guidelines which would guarantee a successful project selection. (Thamhain H. J, 2014). However, it is also stressed that the process and strategy selection are not accidental. Improved understanding of organizational dynamics that affect project performance, and factors that contribute to cost, revenue, and other benefits, can help to get a better and more relevant insight into the value of a future new product. Researching both quantitative and qualitative measures included in a combined rational assessment process is often the most plausible predictor of values and desirability of the future project. It is equally important that the process requires leadership and strong planning, organizational, and communication skills. To build a meaningful and credible consensus among all stakeholders, a management style that encompasses an understanding of common goals and experience is needed.

Frequently the methods emphasize that first of all, the project assessment team lead has to be talented and experienced manager who understands and has the capacity to combine the product strategy assessment's multifunctional process and its determinants.

Main results and findings of the theoretical study highlight a large quantity of product strategy assessment models which exhaustively analyze several strategic guidelines for product strategy selection. However, the authors of the article did not identify a complex methodical approach which would link together company's new product with a complex industry assessment and a company's resources, competencies, and vision. The authors of the article identified approbated and detailed approaches in every aspect mentioned; therefore, the authors of the article offer an improved model for a company's new product strategy assessment.

2. New combined view of industry assessment and business potential strength in new product context

The offered model by the authors of the article is based on modern business management experts' Peter Drucker and Philip Kotler's conceptual approach of models. The elaborated assessment model projects that in the first stage the specifically chosen perspective in the industry context for the company's new product. In the second stage the product is assessed against company's perspective of competition, competence and the vision; in the third stage the two latter indicators are combined in an assessment matrix, creating the total assessment of industry attractiveness in the context of a new product and organization's resources, competencies, and conformity with the vision.

Industry attractiveness of the sector assessment is based on 19 industry and potential product indicators. These 19 indicators combine important and comprehensive aspects with an objective for a company to be able to index (to assess mathematically) new products industry attractiveness, in the context of the product potential and the capacity of the company itself.

Industry assessment should be based on results of a previously conducted in-detail market analysis which comprehensively reviews every industry and its segments involved. 19 assessment elements of the industry attractiveness are as follow: **1. Size of the industry and its sectors** which marks the relative size of the market and which are assessed against other industries and products; 2. **Estimated growth rate of the industry sector** and the perspective in the next five years; 3. **Industry and its sector capacities**, which includes industry assessment from the perspective of demand and supply: whether industry supply meets demand or demand is less than supply; **4. Profitability of the industry and its sectors**, which includes the difference in net income against sales and the gross profit margin. Profitability of the

industry is the average profitability of the companies in this industry, which is relatively comparative to other assessment products. It is recommended that the assessment is based on industry's and its sectors professional assessment, using expert calculations, comparative assessments of several databases and studies; **5. Entry barriers** in the industry sector that include a wide range of measures assessed relative to other industries and products; **6. Exit barriers** in the industry sector that include a wide range of measures assessed relative to other industries and products; **7. Product type**, which according to the P. Drucker's method (, is segmented into 3 basic categories: 1) more expensive than an analogue (either strictly professional or luxury category) in its industry sector, 2) different from other analogues (innovation, limited edition or a price preference) atšķirīgs no citiem analogiem (inovācija, limitēta pieejamība vai cenas priekšrocība), 3) or as widely available commodity (Drucker P., 2002); **8. The level of the product innovation** which according to the method of P. Drucker is assessed in 3 levels where a high level means radical-significant technological innovation, a medium level identifies significant updates to existing functions of existing products, and a low level identifies insignificant improvement of existing functions (Drucker P., 2002); **9. Threat of emerging substitute goods** indexes the opportunity level how relatively easy other market participants can offer the same or similar goods. A substitute good is a product that can offer the same or similar benefits/ advantages as a product from a different industry. In the research, the threat of substitute goods can be assessed by Porter's Five Force model analysis; 10. **Supplier capacity**/ impact in the industry sector is analyzed, using Porter's Five Force model analyses which assesses Suppliers' ability to put pressure on Buyers to benefit from trade advantages. According to the Porter's Five Force industry analysis system, Suppliers capacity is one of the powers that develops the structure of the industry competition; 11. **Buyers power**/ impact in the industry sector is analyzed, using Porter's Five Force model analyses which assesses Buyers' ability to put a pressure on Suppliers to get higher quality products, better customer service, and lower prices. According to the Porter's Five Force industry analysis system, Buyers capacity is one of the powers that develops the structure of the industry competition; 12. It is recommended that **the number of competitors** in the industry to be analyzed, using Porter's Five Force model analysis, assessing the competition intensity level among competitors. If competition is fierce, competitors will try to take over profits and market shares from other competitors, assuming that the growth of the market sector is low or non-existent. According to the Porter's Five Force industry analysis system, the number of competitors is one of the powers that develops the structure of the industry competition (Hargroves K., Smith M.H., 2006); **13. Technological change** in the industry sector identifies how mutable in the context of the technology is the specific industry sector - how many technological innovations are implemented in the industry sector and how significantly they have changed the industry overall. **14. Required capital investments** identify how much capital investment is needed to start a business in a particular industry; **15. Government regulations for the industry sector with a positive impact** identifies if the industry has a particularly favourable status with regards to economic policy; **16. Government regulations for the industry sector with a negative impact** identifies if the industry has a particularly restrictive status with regards to economic policy; **17. Industry impact on the economy** identifies if the product represents an industry which is one of the leading industries in the economy; **18. Export potential** identifies the potential product demand, based on a detailed export and import flow and analysis of export indices. **19. Time required for product development** identifies the relative new product development cycle after the decision has been made.

As estimated by Drucker's industry assessment, the industry's elements are assessed on a 10-point system, highlighting 3 main assessment categories - high impact, moderate or low impact. Each of the 19 industry element assessments is given a score that evaluates the industry-specific component directly in the context of a new product or product group in which the company is considering. In the table below is listed a scoring system in the context of industry elements. The assessment is dividend in 3 basic categories - 10, 5, or 0 points, except one component - the size of the industry sector - where the medium-sized market's assessment can score 7 points (Daidj N., 2015). Table 2.

Table 2

Industry Assessment Indices

No.	**Industry-Descriptive Component**	***Significance / Impact of the Component in the Context of a Given Product and Assessment Points (0 is low and 10 is high)***		
		High	Medium/ Moderate	Low
1.	Size of the industry sector	Large market (5 points)	Medium-sized market (7 points)	Small-sized / niche market (10 points)
2.	Estimated growth rate of the industry sector	Rapid growth (10 points)	Slow, stagnant growth (5 points)	Negative growth (0 points)
3.	Capacity of the industry sector	Supply exceeds demand (0 points)	Capacity = demand (5 points)	Demand is higher as capacity (10 points)
4.	Profitability of the industry sector	High profitability (10 points)	Moderate profitability (5 points)	Low profitability (0 points)
5.	Entry barriers	Difficult to enter the industry sector (10 points)	Average costs to enter the industry sector (5 points)	Easy to enter the industry sector (0 points)
6.	Exit barriers	High costs to exit (0 points)	Average costs to exit (5 points)	Low costs to exit (10 points)
7.	Product type	Expensive (10 points)	Different (5 points)	Commodity (0 points)
8.	Level of the product innovation	High (10 points)	Medium (5 points)	Low (0 points)
9.	Threat of emerging substitute goods	High (0 points)	Moderate (5 points)	Low (10 points)
10.	Suppliers power/ impact on the industry sector	High impact (0 points)	Moderate impact (5 points)	No or low impact (10 points)
11.	Power of buyers/ impact in the industry sector	High (10 points)	Moderate (5 points)	Low (0 points)
12.	Number of industry competitors	Many competitors (0 points)	Average number of competitors (5 points)	Weak or no competition (10 points)
13.	Technological changes in the industry sector	High (0 points)	Medium (5 points)	Low (10 points)
14.	Required capital investments	High capital investments required (10 points)	Medium-sized capital investments required (5 points)	Low capital investments (0 points)
15.	Government regulations for the industry sector with a positive impact	High impact (10 points)	Moderate impact (5 points)	No or low impact (0 points)
16.	Government regulations for the industry sector with a negative impact	High impact (0 points)	Moderate impact (5 points)	No or low impact (10 points)
17.	Industry impact on the economy	High impact (10 points)	Moderate impact (5 points)	No or low impact (0 points)
18.	Export potential	High (0 points)	Average (5 points)	Low (10 points)
19.	Time required for product development	Relatively long (0 points)	Relatively average (5 points)	Relatively short (10 points)

Source: author's assessment based on P. Drucker general industry assessment evaluation, 2019.

In the second stage the specific product which is assessed by the organization as a potential growth object, is assessed against a company's perspective on competition, competence, available resources, and vision. In the second stage the following 8 elements on a 10-point scale are assessed, where 10 means that the rating component conforms completely and 0 indicates that there is no match. The following 8 components are assessed: 1.The conformity of the company's vision, mission, and goals with the industry sector and product; 2.Company's marketing experience and competencies in

this industry sector against the potential product; 3.Experience and competence of the company in this industry sector in respect to the potential industry sector and product; 4.Company's access to sufficient financial resources to enter the industry sector with the intended product; 5.Company's current sales approaches to sales channels in the relevant industry sector; 6. Competences of the Research and Development department on the relevant industry sector; 7.Competencies of the Procurement and Supply department on the relevant industry sector; 8.Company's access to necessary material resources in accordance with the relevant industry sector and product. See table 3.

Table 3.

Company new product evaluation indexes upon company mission, vision, competencies and available resources

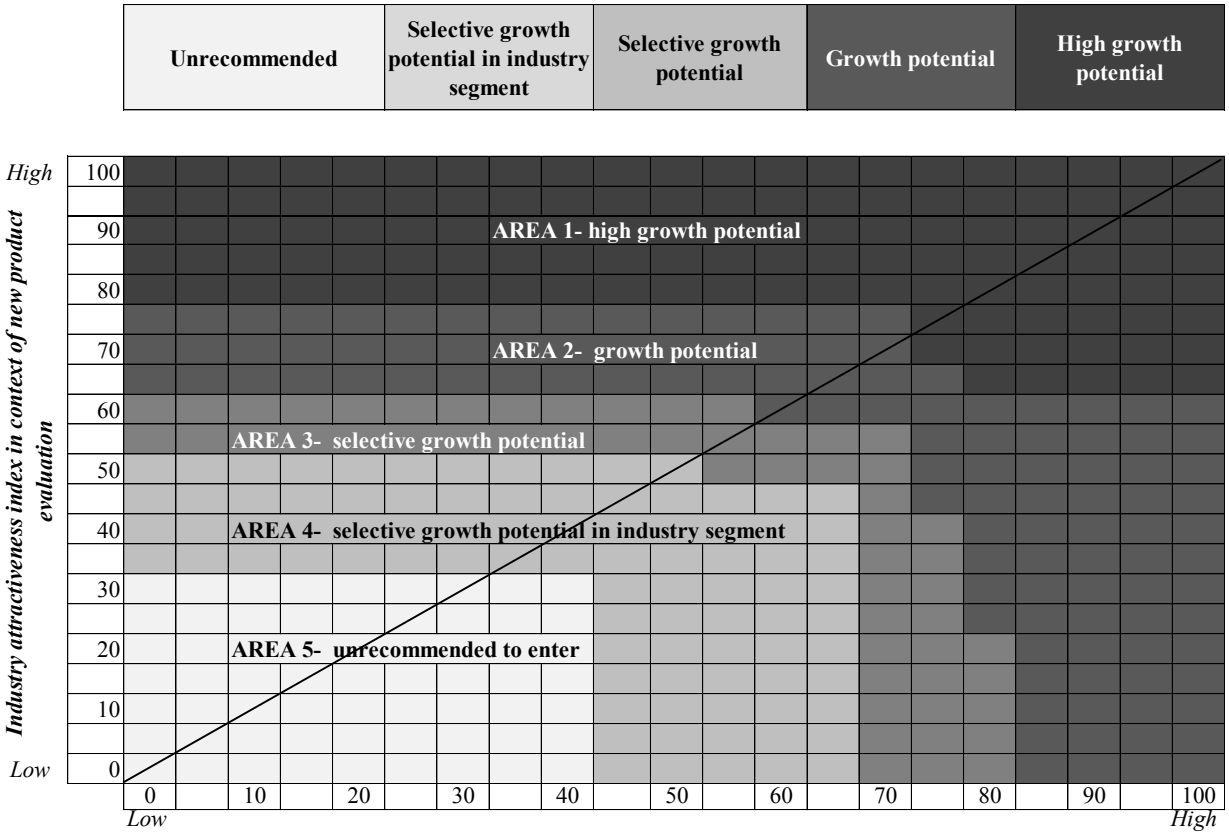
No.	Company's competition and competence perspective's component	Relative Importance (weight) (A)	Expert Assessment (B)	Index (A x B)
1.	Company's vision, mission, and goals' conformity with the relevant industry sector and product.	0,20		
2.	Company's marketing experience and competencies in this industry sector against a potential product.	0,15		
3.	Company's manufacturing experience and competencies in this sector against a potential industry sector and product.	0,10		
4.	Company's access to sufficient financial resources to enter the relevant industry sector with the intended product.	0,15		
5.	Company's access to existing sales channels in the relevant industry sector.	0,15		
6.	R&D department's competence on the specific industry sector.	0,10		
7.	Procurement and supply departments' competencies on the relevant industry sector.	0,05		
8.	Company's access to necessary material resources in accordance with the relevant industry sector and product.	0,10		

Source: author's assessment based on P. Kotler general new industry assessment evaluation matrix, 2019.

For the company assessment, it is recommended to use at least 4 company experts who have substantial knowledge on the company and are familiar with the results of the industry research.

3. Combined Assessment model to identify new product potential in context

In the third stage of the research two previous indicators were combined in an assessment matrix, creating industry attractiveness in a context of a new product and the total assessment of organizational resources, competencies and conformity of vision which allows a company to identify a growth direction based on calculations. The assessment matrix consists of 2 vectors where the vertical vector identifies the level of attractiveness; the horizontal vector identifies an assessment of company's resources, competencies, and vision. See Figure 1.



Source: author's construction based on P. Drucker and P. Kotler assessment methodologies, 2019.

Fig. 1. **Industry attractiveness and company opportunity combined assessment model of new product (both new to company and new to market).**

Area 1 identifies that the industry and the potential product are highly attractive. If organization considers enter it with the specific product, it is recommended that this industry and potential product received resources and an experienced manager is appointed in order to make detailed calculation on starting a business activities. It is possible that is relatively hard to enter the industry, and, therefore, it is recommended to consider an option to acquire a company that is already operation in the relevant industry sector. Area 2 identifies that the industry and potential product are sufficiently attractive for an organization to consider entering it with the specific product. If the organization already participates in any of the relevant industry's sectors, it is recommended to consolidate resources to become a leader in the industry or its sector. If the organization is not represented in the sector, it is recommended to enter the sector, especially if it is a closely held organization with similar sectors, and has an expertise or an option to split the costs with an existing business structure. Area 3 identifies that the industry and the potential product is neither highly attractive nor highly unattractive. The resources available to the organization, the vision of growth, the position of competition and competencies that can be transformed into this industry are the pre-requisite of a success in a case of an assessment as this. Area 4 identifies that industry is not attractive for the company and the product which is being considered for entering the industry. However, it is possible to be a leader of a niche segment if the organization has specific advantages as a unique resource that is not available to other competitors. Area 5 identifies that the industry is not attractive for a company and the potential product which is considered for an entry.

Conclusions, proposals, recommendations

1. As a result of the research it was concluded that among the available business management assessment tools available, there is no universal multi-factor assessment matrix that would help a company to identify the most promising new products in the context of market-perspective attractiveness, company's resources and the growth vision.
2. As a result of the research, methods widely known both in the industrial environment and innovative methods developed in the academic environment were collected and assessed. The summary of methods provides a company an opportunity to mutually compare results obtained with different methods.
3. The study resulted in development of an innovative, new products prospective growth assessment matrix. The model can assist companies and organizations to identify the most promising products for organizational growth. The model is suitable for business industry and company assessments.

   The innovative matrix encompasses the P. Drucker's industry's attractiveness assessment, updated with essential innovative economy's assessment elements, and P. Kotler's innovation assessment method within an organization which are summarized and complemented in two dimensions - an assessment of the industry's attractiveness in the context of a new product against the company's competences.
4. The method assessment combined approach was validated by experienced company management and market experts.
5. The updated method was tested in the JSC "Latvia's State Forests" market research, where the most promising products based on industry and company assessments were determined. (Latvia's State Forests, 2019).
6. It is recommended to use multi-factor matrix in the business research to promote the company growth based on a calculated growth.
7. It is recommended that the results of the multi-factor matrix to be evaluated in the perspective of the medium term, analyzing the achieved results by the organization in detail.

Bibliography

Abbassi, M., Ashrafi, M., Tashnizi, E.S., 2014. Selecting Balanced Portfolios of R&D Projects with Interdependencies: A Cross-Entropy Based Methodology. *Technovation*, 34(1), 54–63.

Amatulli, C., Caputo, T. and Guido, G., 2011. Strategic Analysis through the General Electric/McKinsey Matrix: An Application to the Italian Fashion Industry. *International Journal of Business and Management*, 6(5), 61–75.

Ashford, N.A., Hall, P.H., 2018. Economic Development, Globalization and Sustainability. *Technology, Globalization, and Sustainable Development*.

Batraga, A., Salkovska, J., Braslina, L., Kalkis, H., Skiltere, D., Legzdina, A. and Braslins, G., 2019. Code of Breakthrough Innovations. *Advances in Intelligent Systems and Computing Intelligent Human Systems Integration 2019*, Springer Nature Switzerland AG 2019, W. Karwowski and T. Ahram (Eds.): IHSI 2019, AISC 903, 345–351.

Batraga, A., Salkovska, J., Braslina, L., Legzdina, A. and Kalkis, H., 2018. New Innovation Identification Approach Development Matrix. *Advances in Intelligent Systems and Computing Advances in Human Factors, Business Management and Society*, vol 783, 261–273.

Cooper, R. G., Kleinschmidt, E. J., 1995. Benchmarking the Firm's Critical Success Factors in New Product Development. *Journal of Product Innovation Management*, 12(5), 374–391.

Cooper, R. G., Edgett, S. J., Kleinschmidt, E., 1997. Portfolio Management for New Products. 2nd edition, Basic Books. Reading, MA: Addison-Wesley.

Daidj, N., 2015. *Developing Strategic Business Models and Competitive Advantage in the Digital Sector*. Hershey: Business Science Reference.

Day, G. S., Wensley, R., 1988. Assessing Advantage: A Framework for Diagnosing Competitive Superiority. *Journal of Marketing*, 52 (2), 1–20.

Drucker, P.F., 2000. *The Discipline of Innovation an Article from the Harvard Business Review*. Harvard Business Review.

Drucker, P.F., 2002. The Discipline of Innovation. *Leader to Leader,* Harvard business review, 80(8), 95-100.

Englund, R., 1999. From Experience: Linking Projects to Strategy. *Journal of Product Innovation Management*, 16(1), 52–64.

Engwall, M., Jerbrant, A., 2003. The Resource Allocation Syndrome: the Prime Challenge of Multi-Project Management? *International Journal of Project Management*, 21 (6), 403–409.

Hargroves, K., Smith, M.H., 2006. *The Natural Advantage of Nations: Business Opportunities, Innovation and Governance in the 21st Century*. London: Earthscan.

Harmancioglu, N., Droge, C., Calantone, R.J., 2009. Strategic Fit to Resources Versus NPD Execution Proficiencies: What are Their Roles in Determining Success? *Journal of the Academy of Marketing Science*, 37(3), 266–282.

Heising, W., 2012. The Iintegration of Ideation and Project Portfolio Management — A Key Factor for Sustainable Success. *International Journal of Project Management* 30 (5), 582–595.

Kim, K.J., Lim, C.H., Heo, J.Y., Lee, D.H., Hong, Y.S., Park, K., 2015. An Evaluation Scheme for Product–Service System Models: Development of Evaluation Criteria and Case Studies. *Service Business*, 10(3), 507–530.

JSC Latvia's State Forests unpublished data, 2019

Müller, R., Martinsuo, M., Blomquist, T., 2008. Project Portfolio Control and Portfolio Management Performance in Different Contexts. *Project Management Journal*, 39(3), 28–42.

Natter, M., Mild, A., Feurstein, M., Dorffner, G.,Taudes, A., 2001. The Effect of Incentive Schemes and Organizational Arrangements on the New Product Development Process. *Management Science*, 47(8), 1029–1045.

Natter, M., Mild, A., 2003. DELI: An Interactive New Product Development and Targeting Tool. *Journal of Targeting, Measurement and Analysis for Marketing* .36th Annual Hawaii International Conference on System Sciences, 2003 12 (1), 1479-1862

OECD, 2015, *Frascati Manual*, [Online] Available at: https://read.oecd-ilibrary.org/science-and-technology/frascati-manual-2015_9789264239012-en#page289 [Accessed 3 January 2019]

OECD, 2018, *Oslo Manual*, [Online] Available at: https://read.oecd-ilibrary.org/science-and-technology/oslo-manual-2018_9789264304604-en#page179 [Accessed 3 January 2019]

Oh, J., Yang, J., Lee, S., 2012. Managing Uncertainty to Improve Decision-Making in NPD Portfolio Management with a Fuzzy Expert System. *Expert Systems with Applications*, 39(10), 9868–9885.

Peng, M.W., 2017. *Global Sstrategy.* Boston, MA: Cengage Learning.

Rogers, H., Ghauri, P., Pawar, K.S., 2005. Measuring International NPD Projects: An Evaluation Process. *Journal of Business & Industrial Marketing*, 20(2), 79–87.

Thamhain, H. J.,2015. Assessing the Effectiveness of Quantitative and Qualitative Methods for R&D Project Proposal *Evaluations.Engineering Management Journal*, 26(3), 3–12.

Wei, C.C., Chang, H.W., 2011. A New Approach for Selecting Portfolio of New Product Development Projects. *Expert Systems with Applications*, 38(1), pp.429–434.

OBJECTIVES OF VIRTUAL SYSTEM SUPPLIERS – A CASE STUDY

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Abstract. In the last four decades, the industry has changed significantly. While there has been a reduction in the life cycles of both products and technologies, the complexity inherent in industrial production has grown. The process of globalization brings many new challenges. The automotive industry in particular is dominated on the whole by a few but very large system suppliers. Small and medium-sized suppliers are under pressure to change. The basic strategy changes and new organizational models are required. One possibility is the network-like collaboration of various companies as a virtual system supplier (hereinafter called "VISYSUP").

The goals that the individual companies pursue can be quite different. One aim is to determine the objectives of the VISYSUP participants. Based on complex literature research, possible targets could be identified.

Another goal of this work is to group objectives in order to simplify later investigations. A case study and a questionnaire survey are used to determine which goals are genuinely important to the participants and which are not. In addition, the results are subjected to a factor analysis in order to discover collective terms for the goals. The Kaiser-Meyer-Olkin criterion or measure of sampling adequacy (MSA) is used to test the suitability of the goals for the application of the factor analysis. These methods can be used to achieve the third aim of this work: To establish the hypothesis that "The individual objectives of VISYSUPs can basically be divided into n groups". The hypothesis could be confirmed by this examination. The objectives can be divided into 4 groups.

From the goals elaborated in the case study and their realization, it is possible to deduce, among other things, hints for the strategic decision to establish a VISYSUP. Through the joint production of products that cannot be produced by individual companies alone, VISYSUPs seem to increase sales by e.g. opening new markets, increasing product / service quality and customer satisfaction, and realizing cost reductions.

Key words: *Virtual System Supplier, Virtual Corporation, Small and Medium-sized Suppliers, Objectives, Goals*

JEL code: A10 (General Economics: General), L14 (Transactional Relationships; Contracts and Reputation; Networks) L21 (Business Objectives of the Firm), P13 (Cooperative Enterprises)

Introduction

The requirements for companies grow through constant changes in the business environment. Thus, the intensification of competition, the accelerating technical development, the increasing customer demands, but also changing societal values, create permanent pressure to adapt the management and design of companies. These react to such challenges with the dissolution of hierarchies. The result is decentralized, modularly decomposed structures characterized by autonomy, cooperation and indirect leadership. The classical boundaries of the enterprise begin to blur, to change inwardly as well as outwardly, and partly to dissolve (see Picot *et al.* 2003, p. 2).

Schuh *et al.* (1998, p. 19) have identified two trends within the various attempts made at increasing organizational flexibility in companies. The first involves large companies and their segmentation and dissolution. The second begins with independent units, as well as small and medium-sized companies (SMEs)[1], which are drawn together into cross-

[1] Micro, small and medium-sized enterprises (SMEs) are defined in the EU recommendation 2003/361 (European Union 2003).

organizational, cooperative constructs. The structures created as referred to as network organizations or Virtual Corporations.

Meant for a popular audience, this definition was featured on the cover of Business Week:

"Big, complex companies usually can't react fast enough. Small, nimble ones may not have the muscle. What's the answer? A new model that uses technology to link people, assets, and ideas in a temporary organisation. After the business is done, it disbands. It's called the virtual corporation." (Morrison 1993, Front cover of the Business Week)

The studies known to the author consider virtual corporations mostly in general and across industry boundaries. Only rarely are individual industries or interest groups considered. One exception is the study of Schwinger (2010), which examined small and medium-sized logistics companies or the work of Hess (2002, pp. 303–311), who examined virtual corporations in the service industry.

In his study, the author considers only (virtual) system suppliers. In the automotive industry these are also called Tier 1 suppliers. Tier 1 suppliers produce modules and systems delivered directly to the final manufacturer or OEM (Original Equipment Manufacturer). The VISYSUP (Virtual System Supplier) is a virtual corporation. The term was coined by the author and, at least according to his investigations in science and business, thus far nonexistent (see eg. Brink 2017, pp. 22–37, and Waściński *et al.* 2018, Chapter 19).

The VISYSUP, or activated network, is distinguished from the latent network. As defined by Borchardt (2006, p. 19), the virtual company draws on dynamic basic components contained within both the latent and activated networks, i.e. the project-specific project network (see Schuh *et al.* 1998, p. 63). This allows for the network and project levels of a virtual company to be distinguished from one another.

The latent network of the VISYSUP is unlike networks found in distribution, production or sales. By pooling both homo- and heterogeneous core competencies through loosely formed links, it is able to interact with cooperative partners as a unified whole. The activated network represents only a portion of the total latent network, which itself bears similarities to a strategic network. However, unlike a strategic network comprised of large companies, the latent network remains invisible to the market (Borchardt 2006, p. 20).

The individual objective types of VISYSUPs are to be presented and structured in this chapter. The success of virtual companies (and Virtual System Supplier) can be measured above all by means of these objective types.

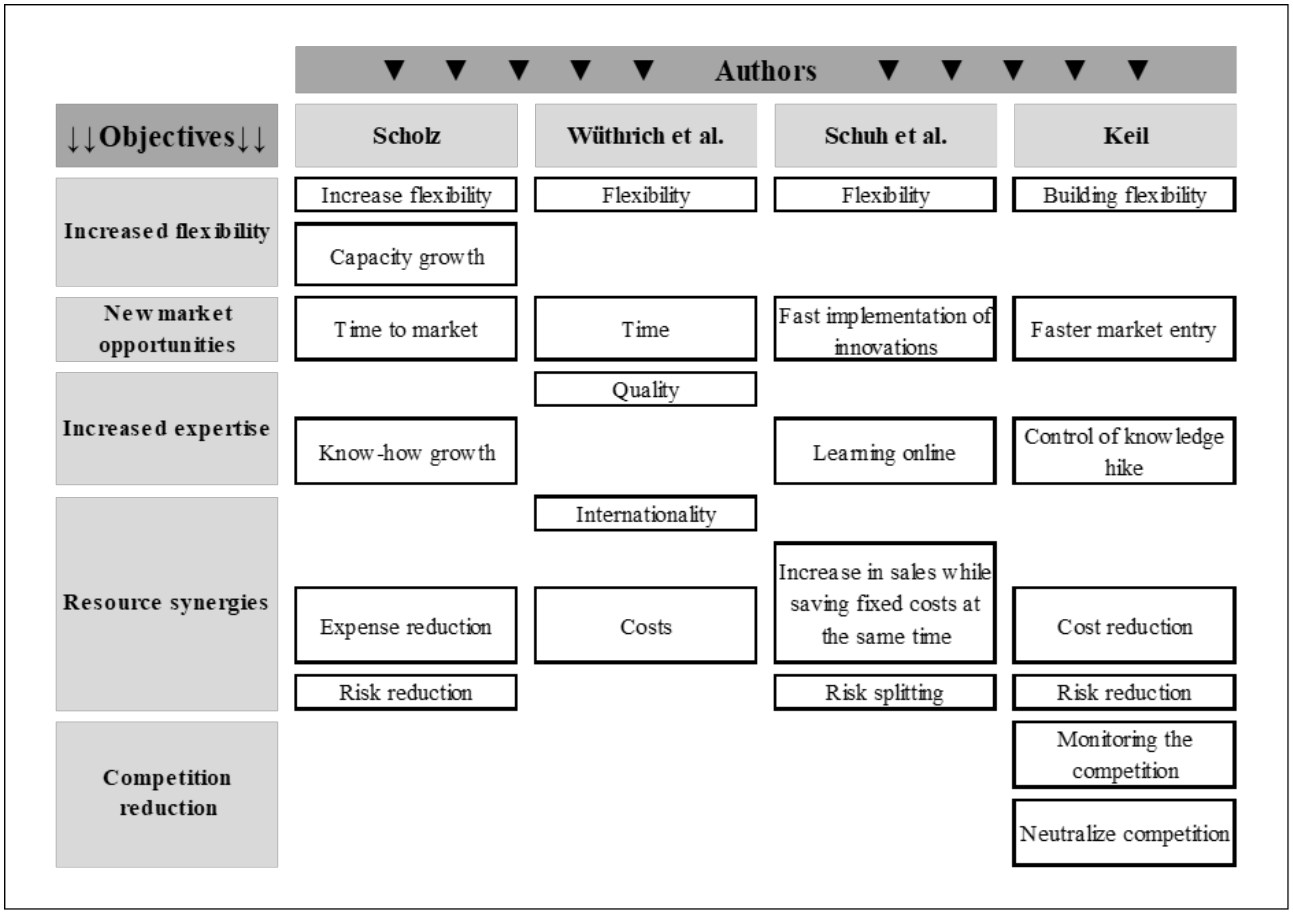
Objectives are subjective - they depend both on the industry conditions as well as the individual companies (Schuh *et al.* 1998, p. 145).

In virtual enterprises, viewed as a form of cooperation, targets may also differ between the partners. A strong partner will have defense against potential competitors as its main target. On the other hand, a weak partner will often try to gain expertise (Tjaden 2003, p. 36).

For Davidow and Malone (1992) the goal of a virtual company was exclusively the production of virtual products. Since then, however, a great variety of objectives have emerged.

According to Tjaden (2003, p. 36), the target areas are an increase in flexibility, new market opportunities, gains in expertise, potential resource synergies and, in some cases, a reduction in competition. The results obtained by Scholz (1997, p. 384), Wüthrich *et al.* (1997, 104, 111f), Schuh *et al.* (1998, p. 145) and Keil (1999, 127f) are included in Fig. 1.

The main factors determining whether an enterprise is an SME are: (1) staff headcount and (2) either turnover or balance sheet total.



Source: Author's illustration based on Tjaden (2003, p. 37)

Figure 1. **Objectives of virtual companies identified by different authors**

Tjaden (2003, pp. 37–38) describes the five objectives as follows:

- **Increased flexibility**

  According to Schuh *et al.* (1998), virtual enterprises are often formed with the goal of reconfiguring value changes in dynamic ways. By doing so, customer requests can be handled with greater flexibility. Such adaptability and speed is of existential importance in market which are gaining momentum and becoming increasingly insecure. (Keil 1999, p. 128).

- **New market opportunities**

  According to Stock and Wende (2000, p. 25), the main aim is to shorten the period from "concept-to-cash". Here, it becomes more possible to quickly identify market opportunities and take advantage of them. Partners can achieved this according to Schuh *et al.* (1998, p. 25) and Keil (1999, p. 127) by supplying standardized parts, by leveraging the partners' existing market access or sales networks, or simply by implementing innovations in the market through targeted cooperation (time-to-market).

- **Increased expertise**

  Not only the acquisition of product knowledge and the picking up of production-specific expertise is important. Crucial is also the company's ability to cooperate. Friendly benchmarking is one means of securing expertise and expanding on it, (see Hale and Whitlam 1997, 192 f.) as is "learning in the network" (see Schuh *et al.* 1998, p. 145), bringing together (partially) conjunctive core competences to create new insights, and allowing other partners to assume core competencies.

- **Resource synergies**

  Cooperation offers various opportunities for cost savings: These include using the core competencies of partners to streamline production, exploiting residual capacities (Schuh *et al.* 1998, p. 61), reducing fixed costs by sharing overheads (Schuh *et al.* 1998, p. 145), mutual customer exchange (Goldman *et al.* 1996, p. 182) and support for internationalization (Wüthrich *et al.* 1997, p. 112). Furthermore, it is possible to reduce or even eliminate risk by splitting that risk across several partners (Schuh *et al.* 1998, p. 145). Thus, the damage to individual partners caused by the failure of a project is reduced, no dependencies arise, and it even becomes possible to turn potential competitors into partners (Keil 1999, p. 127).

- **Competition reduction**

  By cooperating or sharing products and resources with competitors, observing them becomes simpler, areas of competition can be limited and, if possible, profit potential can be tapped (Keil 1999, p. 128).

The aims of this work are:

1. To determine the objectives of the VISYSUP participants in order to be able to measure the achievement of the objectives at a later date.
2. To group goals in order to simplify later investigations.
3. To establish the hypothesis that "The individual objectives of VISYSUPs can basically be divided into n groups".

Methods

In previous studies, the author has already examined the success factors (independent variables) of VISYSUPs. But what goals are being pursued by these virtual system suppliers? The author was able to gain many insights through the investigations of Tjaden (2003), who, however examined virtual enterprises from a wide range of industries. The focus of the present work, however, is solely on networks of SMEs to virtual system suppliers in which a focal company takes an organizing and merging key role.

First of all, potential aims of virtual corporations were compiled through a literature review. The procedure employed was essentially based on a hermeneutic method. According to Erdélyi (2012, p. 9) hermeneutics provides the methodological basis for the analysis of any kind of sources. It is also used in empirical studies, since at the beginning it is necessary to show the current state of research.

In addition, the author, who has been managing a focal company[2] within a virtual network for 15 years, knows many reasons why companies engage in network-like collaborations. However, over the years, the potential targets have never been scientifically investigated.

This will now be undertaken in the form of a case study.

The network partners of BRINK GmbH (focal company) are to be examined. Previous research has shown that the potential targets of virtual system suppliers have never been investigated before. Tjaden (2003) has studied many different types of virtual companies, but they were so different in their organizational structure that his conclusions cannot be readily adopted. However, the findings and approach of Tjaden (2003) provide a good guide to the author's approach.

It is therefore not possible to rely on secondary data from previous research and the collection of primary data becomes necessary. For this investigation, neither a laboratory experiment (excluding disturbance variables) nor an experimental investigation (comparison of randomly assembled groups) can be carried out. As a result, a quasi-experimental field

[2] The author is owner and CEO of BRINK GmbH

investigation is required for the research project, that is, a comparison of natural groups in their natural environment (see Tjaden 2003, p. 115).

The object of investigation cannot be the VISYSUP as a whole. A virtual corporation is a more or less loose association of several otherwise independent companies. A legal corporate group does not exist. Thus, it is almost impossible to capture the overall success of the virtual corporation. However, the goals of the network partners can be recorded and, at a later time, their fulfillment can be queried. Thus, the network partners of the virtual corporation around BRINK GmbH were questioned in writing as part of this investigation.

The content of the questionnaire was based on Tjaden (2003, p. 254), supplemented by the findings of the above-mentioned literature review and the author's experience based on his many years of experience in this field.

Between November and December of 2018, 129 companies received questionnaires. These were companies from Germany, Italy, France, Hungary, Slovenia, Croatia, Romania, Bulgaria, Spain, Portugal, Denmark and Tunisia. Of these, 88 questionnaires were returned. This corresponds to a quota of 68%. The contact persons of the companies surveyed had the option of telephone or written consultation (generally via e-mail). In order to receive as many returned questionnaires as possible, a number of contacts had to be reminded several times to reply.

On the questionnaire, agreement or disagreement was assessed on a 5-point Likert scale. The following evaluation levels applied: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree and 5 = strongly agree.

After calculating the respective mean values, it was possible to rank the importance of the objectives. The elimination of seemingly unimportant goals was initially omitted at this point. Ultimately, additional virtual system suppliers will have to be investigated at a later date to see if comparable results are achieved.

In addition, the results were subjected to a factor analysis in order to discover collective terms for the goals. The Kaiser-Meyer-Olkin (KMO) criterion, also referred to as the measure of sampling adequacy (MSA), was used to test the suitability of the goals for the application of the factor analysis.

Here, Kaiser and Rice (1974, pp. 111–117) and Bühner (2011, p. 170) propose the following value range between 0 and 1 for the resulting KMO / MSA:

- KMO/MSA ≥ 0.9: marvelous
- KMO/MSA ≥ 0.8: meritorious
- KMO/MSA ≥ 0.7: middling
- KMO/MSA ≥ 0.6: mediocre
- KMO/MSA ≥ 0.5: miserable
- KMO/MSA < 0.5: unacceptable

These authors therefore require a KMO / MSA of at least 0.5 for a factor analysis to be appropriate. This assessment is followed here.

The number of factors to be extracted is always determined using the Kaiser criterion recommended for empirical analysis. This takes up any component whose explanatory proportion is greater than the average variance per variable and thus has an intrinsic value greater than 1 as a result of the standardization (Backhaus *et al.* 2018). In order to increase the explanatory ability, a Varimax rotation was performed afterwards. For the final determination of the factor values, regression estimation was applied as the recommended method in the literature (see Backhaus *et al.* 2018, p. 322). The calculations were carried out with the statistics program PSPP (version: GNU pspp 1.2.0-g0fb4db).

Results

1. The Company

BRINK GmbH was founded in 2004 by two shareholders as a sales and consulting company. The majority shareholder has been the company's CEO since that time and is also the author of this paper. Very quickly, the business focused on the production and sales of both metal and plastic technical components as well as mechanical assemblies and systems. It never engaged in the production of the parts itself, but left that to (mainly) European production partners.

This includes every area of the business, from quote generation and the provision of expert advice in the development stage of the customer project, through the creation of prototypes, to the timely delivery to the customers of flawless serial products. This made the company more successful year by year. This arrangement benefits the customer as well in that BRINK GmbH is able to offer the best service and extremely competitive conditions to its customers. Whether the customer is looking for a simple lathed component or a complex welded assembly, BRINK GmbH always follow their own motto: “We are precision!”

BRINK GmbH is not just an automotive supplier, but also supplies other industries such as electrical engineering and electronics, furniture, mechanical engineering, medical and rehabilitation technology, metal and plastic processing, sports and wellness equipment, technical building equipment, etc.

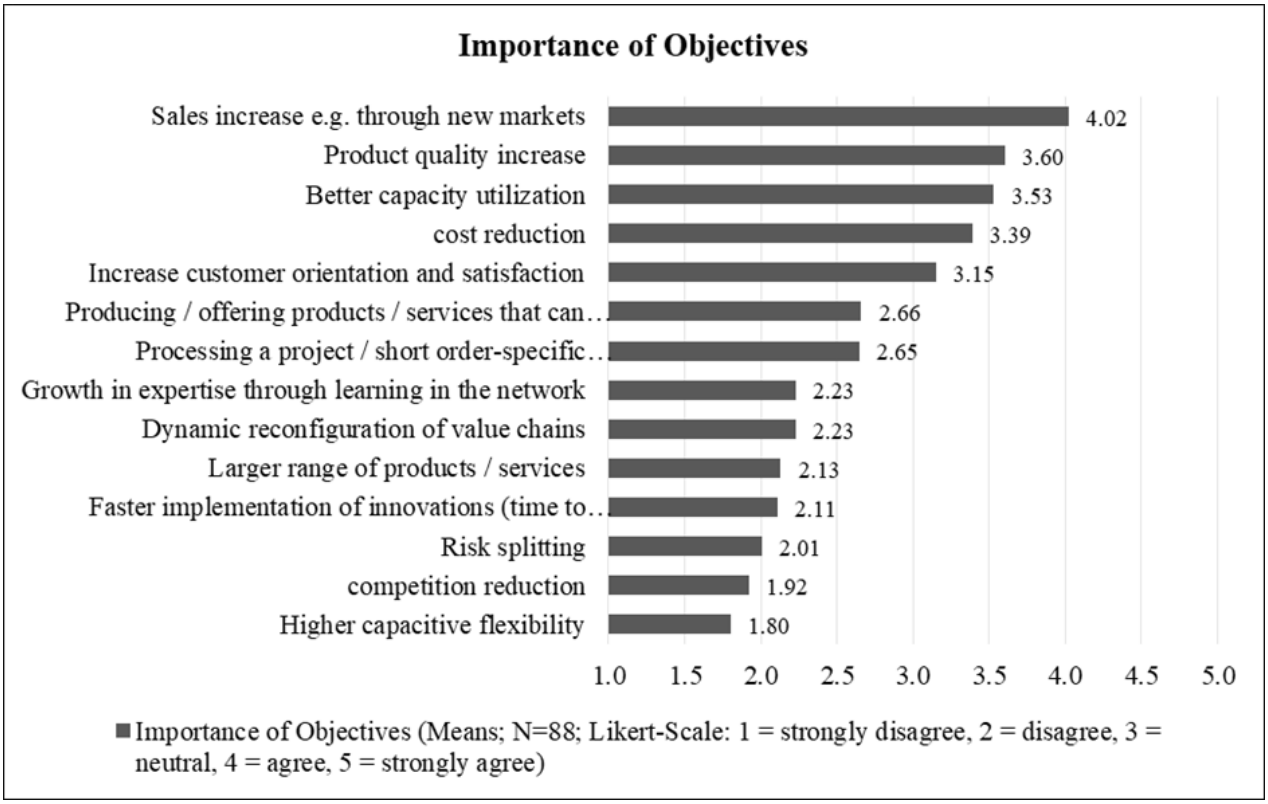
The system supplier BRINK GmbH is a focal company (central company in a strategic network) in a company network consisting of independent companies. BRINK GmbH plays a coordinating and leading role in a joint (project) business. In doing so, the company is in direct contact with the customer and thus gives the virtual company a “face”. The organizational and scheduling coordination between the different participants of the VISYSUP is also the responsibility of BRINK GmbH.

The core competencies of the individual network participants complement each other optimally. According to Brink (2016, p. 6) they range from the production (with the help of external partners) of lathed and milled parts, the casting of iron and non-iron metals, the creation of cold extruded and forged components, through plastic injection molding, to sheet metal working. BRINK GmbH not only supplies individual parts but also assembles everything into finished units and systems and is able to carry out development projects alone or with the support of network partners.

2. Survey Results

With the help of the questionnaire survey, the importance of the identified goals (from the point of view of the respondents) of participants in VISYSUPs could be determined. Figure 2 shows the objectives sorted by the average importance given by respondents. Clearly the most important objective is "sales increase e.g. through new markets" with a mean of 4.02. Important objectives are also (with means between 3.60 and 3.15) “product quality increase”, “better capacity utilization”, “cost reduction” and “increase customer orientation and satisfaction”. Already with a clear distance, the objectives “producing / offering products / services that cannot be produced alone” (mean 2.66) and “processing a project / short-term, order-specific cooperation” (mean 2.65) follow. The goals "competition reduction" (1.92) and "higher capacitive flexibility" (1.80) are considered to be rather unimportant. At first glance, the last value surprises. The target "higher capacitive flexibility" is for the focal company BRINK GmbH of substantial importance. But obviously not for the network partners, who are mostly production companies.

The test of the suitability of this importance for the application of the factor analysis using PSPP resulted in a Kaiser-Meyer-Olkin measure of 0.78, which is regarded as “middling” (almost “meritorious”). The Kaiser criterion provides four main components that account for 68% of the total variance of the factors.



Source: own representation as result of the questionnaire survey

Figure 2. **Importance of Objectives**.

The objectives were subjected to a factor analysis to discover collective terms for the objectives. The main component analysis was used, because it should be found components that are independent of each other.

Table 1 shows the already rotated results.

Table 1

Factor charges of the extracted target components

	Component/ Target area			
	1	**2**	**3**	**4**
Sales increase e.g. through new markets			0.50	
Product quality increase				0.68
Better capacity utilization	0.83			
Cost reduction	0.73			
Increase customer orientation and satisfaction				0.85
Producing / offering products / services that cannot be produced on their own		0.78		
Processing a project / short order-specific cooperation		0.65		
Growth in expertise through learning in the network			0.52	
Dynamic reconfiguration of value chains			0.76	
Larger range of products / services	0.73			
Faster implementation of innovations (time to market)			0.81	
Risk splitting	0.67			
Competition reduction	0.51			
Higher capacitive flexibility	0.84			
Legend: Factor charges of the extracted components (only values above 0.5 shown)				

Four main components were extracted.

The first major component of the objectives is focused on:

- Better capacity utilization
- Cost reduction
- Larger range of products / services
- Risk splitting
- Competition reduction
- Higher capacitive flexibility

The second includes the following goals:

- Producing / offering products / services that cannot be produced alone
- Processing a project / short-term, order-specific cooperation

The third includes the goals:

- Sales increase e.g. through new markets
- Growth in expertise through learning in the network
- Dynamic reconfiguration of value chains
- Faster implementation of innovations (time to market)

The fourth and last main component includes the objectives:

- Increase product quality
- Increase customer orientation and satisfaction

Unlike Tjaden (2003, p. 208), who extracted 3 main components and named these synergy targets, market goals and know-how goals, the author is currently unable to find meaningful generic terms for the four main components he has identified. For the time being, the provisional terms Target area 1, Target area 2, etc. have been employed.

Even if the author has not yet found a name for the 4 groups, at least the confirmation of the hypothesis can be made:

H1: The individual objectives of VISYSUPs can basically be divided into 4 groups.

Conclusions

In the last four decades, the industry has changed significantly. Small and medium-sized suppliers are under pressure to change. One possibility is the network-like collaboration of various companies as a virtual system supplier ("VISYSUP").

The focus of the present work was solely on networks of SMEs to virtual system suppliers in which a focal company took an organizing and merging key role.

Through this investigation, it was possible to achieve the goals named at the outset.

These were:

1. To determine the objectives of the VISYSUP participants in order to be able to measure the achievement of the objectives at a later date.

   With the help of the literature review based on a hermeneutic method and experiences of the author possible goals could be determined. The questionnaire survey confirmed these goals. However, only the network

partners of one VISYSUP were considered, which cannot be considered representative. Additional virtual system suppliers and their participants must be determined and become the subject of further investigations.

2. To group goals in order to simplify later investigations.

   The goals that the individual companies pursue can be quite different. A quasi-experimental field investigation was required for the research project. A case study and a questionnaire survey were used to determine which goals are genuinely important to the participants and which are not.

   129 companies received questionnaires and of these, 88 questionnaires were returned. This corresponds to a quota of 68%. After calculating the respective mean values, it was possible to rank the importance of the objectives.

   Through the joint production of products that cannot be produced by individual companies alone, VISYSUPs seem to increase sales by e.g. opening new markets, increasing product / service quality and customer satisfaction, and realizing cost reductions.

   The Kaiser-Meyer-Olkin (KMO) criterion was used to test the suitability of the goals for the application of the factor analysis. The objectives were subjected to a factor analysis. The Kaiser criterion provides four main components that account for 68% of the total variance of the factors.

3. To establish the hypothesis that "The individual objectives of VISYSUPs can basically be divided into n groups".

   Thanks to this investigation, four main component could be identified (see bullet 2 in this chapter). Actually the authors cannot find meaningful generic terms for them. For the time being, the provisional terms Target area 1, Target area 2, etc. have been employed.

   Therefore, this hypothesis is first set up for further investigations:

   H1: The individual objectives of VISYSUPs can basically be divided into 4 groups

The purpose of this work was not to find confirmatory proof for the established hypothesis. Rather, the initial hypothesis should be hedged. In future research projects and on the basis of further empirical investigations, this hypothesis, in the sense of the Popper criterion (see Popper 1935, pp. 40–50), must be exposed to failure (falsification).

Bibliography

Backhaus, K.*, et al.*, 2018. *Multivariate Analysemethoden: Eine anwendungsorientierte Einführung.* 15th ed. Berlin: Springer Gabler.

Borchardt, A., 2006. *Koordinationsinstrumente in virtuellen Unternehmen*. s.l.: DUV Deutscher Universitäts-Verlag.

Brink, N.G., 2016. *BRINK: We are precision*. Technical parts - Assemblies - Systems. Berlin.

Brink, N.G., 2017. Success Factors of Virtual System Suppliers in the Automotive Industry. *In:* J. Stávková, ed. *PEFnet 2017: Proceedings*. European scientific conference of doctoral students. Brno: Mendel University Press, 22–37.

Bühner, M., 2011. *Einführung in die Test- und Fragebogenkonstruktion.* 3rd ed. München: Pearson Studium.

Davidow, W.H. and Malone, M.S., 1992. *The virtual corporation: Structuring and revitalizing the corporation for the 21. century*. New York: Harper Collins.

Erdélyi, A., 2012. *Grundlagen der Hermeneutik* [online], Carl von Ossietzky Universität Oldenburg. Available from: https://www.uni-oldenburg.de/fileadmin/user_upload/sonderpaedagogik/download/DOZ/ Grundlagen _der_Hermeneutik.pdf [Accessed 14 Feb 2018].

European Union, 2003. Commission Recommendation of 6 May 2003 concerning the Definition of Micro, Small and Medium-sized Enterprises. *Official Journal of the European Union*, 2003/361/EC (notified under document number C(2003) 1422).

Goldman, S.L*., et al.*, 1996. *Agil im Wettbewerb: Die Strategie der virtuellen Organisation zum Nutzen des Kunden*. Berlin, Heidelberg: Springer Berlin Heidelberg.

Hale, R. and Whitlam, P., 1997. *Towards the virtual organization*. London: McGraw-Hill.

Hess, T., 2002. Planning and control of virtual corporations in the service industry: The prototype VICOPLAN. *In:* R.H. Sprague, ed. *Proceedings of the 35th Annual Hawaii International Conference on System Sciences: Abstracts and CD-ROM of full papers : 7-10 January, 2001[sic], Big Island, Hawaii*. Los Alamitos, Calif: IEEE Computer Society Press, 303–311.

Kaiser, H.F. and Rice, J., 1974. Little Jiffy, Mark Iv. *Educational and Psychological Measurement*, 34 (1), 111–117.

Keil, M., 1999. *Zu supranormalen Gewinnen mit Virtualität*. St. Gallen, Univ., Diss., 1999. St. Gallen.

Morrison, M., ed., 1993. *Business Week Magazine*. N° 3304: McGraw-Hill.

Picot, A., Reichwald, R., and Wigand, R.T., 2003. *Die grenzenlose Unternehmung: Information, Organisation und Management ; Lehrbuch zur Unternehmensführung im Informationszeitalter.* 5th ed. Wiesbaden: Gabler.

Popper, K., 1935. *Logik der Forschung: Zur Erkenntnistheorie der Modernen Naturwissenschaft*. Vienna, s.l.: Springer Vienna.

Scholz, C., 1997. *Strategische Organisation: Prinzipien zur Vitalisierung und Virtualisierung*. Landsberg/Lech: mi Verl. Moderne Industrie.

Schuh, G., Millarg, K., and Göransson, Å., 1998. *Virtuelle Fabrik: Neue Marktchancen durch dynamische Netzwerke*. München: Hanser.

Schwinger, D., 2010. *Unternehmensnetzwerke und virtuelle Unternehmen als Wettbewerbsstrategie für kleine und mittelgroße Logistikunternehmen der neuen Bundesländer*. Inauguraldissertation. Otto-von-Guericke-Universität Magdeburg.

Stock, S. and Wende, M., 2000. *Verhältnis von virtuellen Unternehmen und Unternehmensnetzwerken*. Hausarbeit für die Diplomvorprüfung. Integrierter Studiengang Wirtschaftswissenschaft (Bergische Universität Wuppertal).

Tjaden, G., 2003. *Erfolgsfaktoren Virtueller Unternehmen: Eine theoretische und empirische Untersuchung*. Wiesbaden: Deutscher Universitätsverlag.

Waściński, T., Wójcik, K.A., and Brink, N.G., 2018. Success Factors of Virtual System Suppliers in a Case Study of BRINK GMBH and its Suppliers. *In:* M. Jabłoński, ed. *Strategic Value Management: A Dynamic Perspective: scheduled publication date: 2018 - October*. Hauppauge NY: Nova Science Publishers, Chapter 19.

Wüthrich, H.A., Philipp, A.F., and Frentz, M.H., 1997. *Vorsprung durch Virtualisierung: Lernen von virtuellen Pionierunternehmen*. Wiesbaden: Gabler.

LATEST TRENDS IN ASSESSING PENSION REFORMS

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Abstract. Old age pension provision constantly creates an increasing financial pressure on most of the EU countries, therefore some of European countries are in a further stage or reforming pension system, others already completed transformation and became an object of analysis and surveillance for researchers and policymakers.

Over the years attitude towards the role of pension system in economy changed significantly from simple provision of retirement benefits and income distribution to indisputable contribution to a very wide range of economic, social and other processes. Nowadays pension system is supposed to be the instrument of impact and all reforms, even parametric, have a consequent effect on work and tax incentives, welfare, consumption, demographic indicators, etc. Some of the results are well studied, e.g. income distribution, other outcomes, for example society's radicalisation, only recently have become a subject of research.

The aim of this study is to provide an overview of latest scientific approaches to the estimation of various effects of pension system's reform including the influence of parametric corrections. Scientific papers of Latvian and foreign researchers have been considered, systemized and characterised according to the main idea of research. The study provides conclusions on the extent of research on different effects and points out the most actual and up-to-date directions of scientific activities. The results of this study can be implemented for identifying the most untapped area of research, for further investigation and for the assessment of reform from the perspective of the newest scientific achievements.

Key words: *pension system, reform assessment*

JEL code: H55, I38

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Introduction

Nowadays the effectiveness of pension system as well as necessity of pension system reforming is getting more and more topical. Over the years the role of a pension system has changed from the simple provision of retirement benefits as a secure source of income to the important instrument contributing to a wide range of economic, social and other processes. Effective pension system is often related to country's future ability to grow and maintain adequate standard of living having impact on work and tax incentives, welfare, consumption, demographic indicators. On the other hand, pension funds (including private pension schemes) are important institutional investors providing long-term investment necessary for future growth of economy.

Therefore, financial sustainability of pension system is vitally important for economic development of any country. Nowadays, the biggest challenge for the majority of pension systems globally is higher life expectancy and therefore the necessity to pay pension benefits much longer than initially expected when creating the system. According to the World Bank data, life expectancy after retirement age for 2050 is estimated to be by 15-20 years longer as forecasted in 1960

(World bank, 2018). This worsens the pension gap that is expected to grow at 5% annually (2015-2050) (World Economic Forum, 2017).

Thus, due to current demographic trends: longer life expectancy, lower fertility rates and aging population, pension systems in many countries create additional financial pressure for public finance.

Moreover, according to the Report on European Private Pension Schemes (Financial Stability Board, 2017), aging population is one of the disincentives to accumulate savings for pension, potentially increasing current aggregate demand and decreasing demand in future.

Many countries are undertaking various reforms, restricting eligibility criteria, reducing pension benefits or tighten in linking benefits to contribution, increasing employment rate of older workers etc. Therefore the need for reliable models of reform assessing becomes more and more relevant. The aim of this study is to provide an overview of latest scientific approaches to the estimation of various effects of pension system's reform including the influence of parametric corrections.

1. Main Goals of Pension System Reform

Ensuring the successful design and delivery of old-age pensions is complex. According to Barr (Barr, 2013) pension systems have multiple objectives. For the individual or family, the major ones are:

- Consumption smoothing, i.e. redistribution from one's younger to one's older self. Pensions should allow a person to transfer consumption from his/her productive middle years to the retirement years, allowing to choose the preferred time path of consumption over working and retired life.
- Insurance: in a world of certainty, individuals save during working life to finance their retirement. However, people do not know how long they are going to live. Thus a pension based on individual savings faces the person with the risk of outliving own savings. The purpose of annuities (fixed stream of payments created by financial institutions) is to allow people to insure against that risk. Pensions can also insure against disability, and can protect spouses and young children should a worker die before retirement.

According to the public policy pension system has additional objectives:

- Poverty relief: the relief is necessary in case when person's earnings record does not provide an adequate pension.
- Redistribution: it can be achieved by paying pensions to low earners that are a higher percentage of their previous earnings, thus subsidising the consumption smoothing of lower earners. Since life-long earnings are uncertain, such a system provides some insurance against low earnings. There can also be redistribution towards families, for example paying a higher pension to a married couple than to a single person.

Therefore the majority of pension reform studies are devoted to considering reform's prospective to attain those goals or affect current situation.

In most of the post-World War II period, many countries have given greater relative weight to the primary individual objectives of insurance and consumption smoothing. Such an outlook has favoured the development and global diffusion of different defined benefit models. In the last decades of the twentieth century, however, in developed and developing countries alike, increasing attention was given to the secondary public policy objectives. This essentially economic outlook may be deemed more favourable to developing and diffusing defined contribution models (Bloom & McKinnon, 2013).

Assuming that reforming should improve pension system's ability to achieve the previously mentioned goals, the objectives of reform might be stated in many different ways. OECD has formulated the key goals of pension reform as follows:

1. Pension system coverage in both mandatory and voluntary schemes.

2. Adequacy of retirement benefits.

3. The financial sustainability and affordability of pension promises to taxpayers and contributors.

4. Incentives that encourage people to work for longer parts of their lifetimes and to save more while in employment.

5. Administrative efficiency to minimize pension system running costs.

6. The diversification of retirement income sources across providers (public and private), the three pillars (public, industry-wide and personal), and financing forms (pay-as-you-go and funded).

A seventh, residual, category covers other types of change, such as temporary measures and those designed to stimulate economic recovery (OECD, 2013).

Currently, the need to address all objectives of old-age pension systems is generally accepted, as is the expectation that these objectives may be best achieved by using different elements in a composite approach to pension system design (Bloom & McKinnon, 2013).

Most of pension reform studies have been and still remain devoted to previously mentioned goals. Some of studies investigate an optimal way of achieving selected goals, others are more universal. The extent of research is so very broad, that it is not possible to systemize all studies, therefore only the main directions are going to be considered.

2. Development of Pension Reform Studies

First studies dedicated to pension reforms appeared in the second part of the 20th century. J.M.Orszag, S.Valdez-Prieto, N.Barr, P.Diamond, P.Orszag, Z.Bodie, E.Palmer, R.Holzmann, A.Lindbeck and M.Persson are seen as the founders of pension research and their works are still most frequently cited. However, the opinion on global pension systems and their reforms since the early 1990s has changed significantly over time.

In 1990s and even in the beginning of the 21st century most studies appear to have been driven mainly by a desire to reduce projected levels of future spending on state pensions (World Bank, 1994), (Disney, 2000), (Hauner, et al., 2007), (Schneider, 2009). Mentioned approach is usually criticized but still stays rather topical and even dominating as far as pension system's financing is one of the main problems at present and will become even more dramatic in future.

At the end of the 20th century the future for pension systems for some experts and policy makers appeared quite promising and fairly certain once the initial crisis was overcome. In 1994 the World Bank presented the multi pillar pension system model, which seemed to be a universal solution because of: transferring main parts of retirement income provisions from the public sector to the private sector (1) to address fiscal unsustainability and projected further population aging and (2) to accelerate financial market development expected to trigger higher economic growth to co-finance some of the transition costs (World Bank, 1994). World Bank's study, "Averting the Old Age Crisis", provided an invaluable service in drawing attention to this problem and in discussing specific policy changes to address the issue. A number of emerging European economies reformed their pension systems in the late 1990s and early 2000s by adopting multi-pillar pension frameworks. Pension reforms were anticipated to improve the long-run fiscal sustainability and lead to better macroeconomic outcomes, including higher national saving rates and increased labour participation. An important part of the reforms was the introduction of a private, in most cases mandatory, pre-funded, defined contribution second pillar pension system. This private component, in conjunction with the public first pillar, was expected to help to diversify risks, supplement old-age income for pensioners that was being tightened under the public pension schemes, and help with the development of capital markets (Velculescu, 2011) (Voļskis, 2008).

These suggestions have come to be viewed narrowly - focusing on a second pillar limited to a private, non-redistributive, defined contribution pension plan. The most recent reassessment of pension reforms has been provoked in 2007-2008 by the ongoing global financial crisis and its consequences for funded and unfunded pensions.

Already in 1999 P.R.Orszag and J.E.Stiglitz reported, that most of the arguments in favour of this particular reform are based on a set of 10 myths, that are often not substantiated in either theory or practice (Orszag & Stiglitz , 1999). The authors divided ten myths into three broad areas: macroeconomic effects; microeconomic efficiency; and political economy. The myths in each area were:

1) Macroeconomic myths:
a. Myth #1: Individual accounts raise national saving
b. Myth #2: Rates of return are higher under individual accounts
c. Myth #3: Declining rates of return on pay-as-you-go systems reflect fundamental problems
d. Myth #4: Investment of public trust funds in equities has no macroeconomic effects
2) Microeconomic myths:
a. Myth #5: Labour market incentives are better under individual accounts
b. Myth #6: Defined benefit plans necessarily provide more of an incentive to retire early
c. Myth #7: Competition ensures low administrative costs under individual accounts
3) Political economy myths:
a. Myth #8: Corrupt and inefficient governments provide a rationale for individual accounts
b. Myth #9: Bailout politics are worse under public defined benefit plans
c. Myth #10: Investment of public trust funds is always squandered and mismanaged.

The authors claimed to prove, that many of the arguments advanced in favour of individual accounts are not necessarily valid, and that pension policy therefore requires a more nuanced approach than that implied by a single "optimal" constellation of pillars. Orszag and Stiglitz assumed, that in particular, a second pillar that relies exclusively on a privately managed, defined contribution approach may not be appropriate for many countries and the optimal approach is likely to vary across countries, depending on differential attitudes toward risk-sharing, inter-generational and intra-generational redistribution, and other factors (Orszag & Stiglitz , 1999). The authors also proposed more expansive view of the optimal second pillar which should incorporate well-designed public defined benefit plans. A privately managed second pillar is not always optimal. A more expansive perspective would allow policy-makers to weigh appropriately all the tradeoffs they face, including private vs. public systems; prefunding vs. not prefunding; diversifying vs. not diversifying; and defined contribution vs. defined benefit pension plans (Orszag & Stiglitz , 1999).

Since the onset of the global crisis in late 2008, several countries including Latvia have been backtracking on the funding of their private pension systems to help to lower their fiscal deficits. These actions reflect the individual countries' recognition of the large fiscal costs associated with pre-funding of future pension liabilities. Pre-funding costs also make it more difficult for pension reformers to comply with the EU's Stability and Growth Pact (SGP) rules (Velculescu, 2011). A new direction of scientific research appeared, where the impact of crisis is estimated and the reasons of negative trends are specified (Zartaloudis, 2014) (Altiok & Jenkins, 2018) (Altiparmakov, 2018) (Duvvury, et al., 2018) (Komp, 2018) (Börsch-Supan, et al., 2018) (Jakimova, 2018) (Whitehouse, et al., 2009)

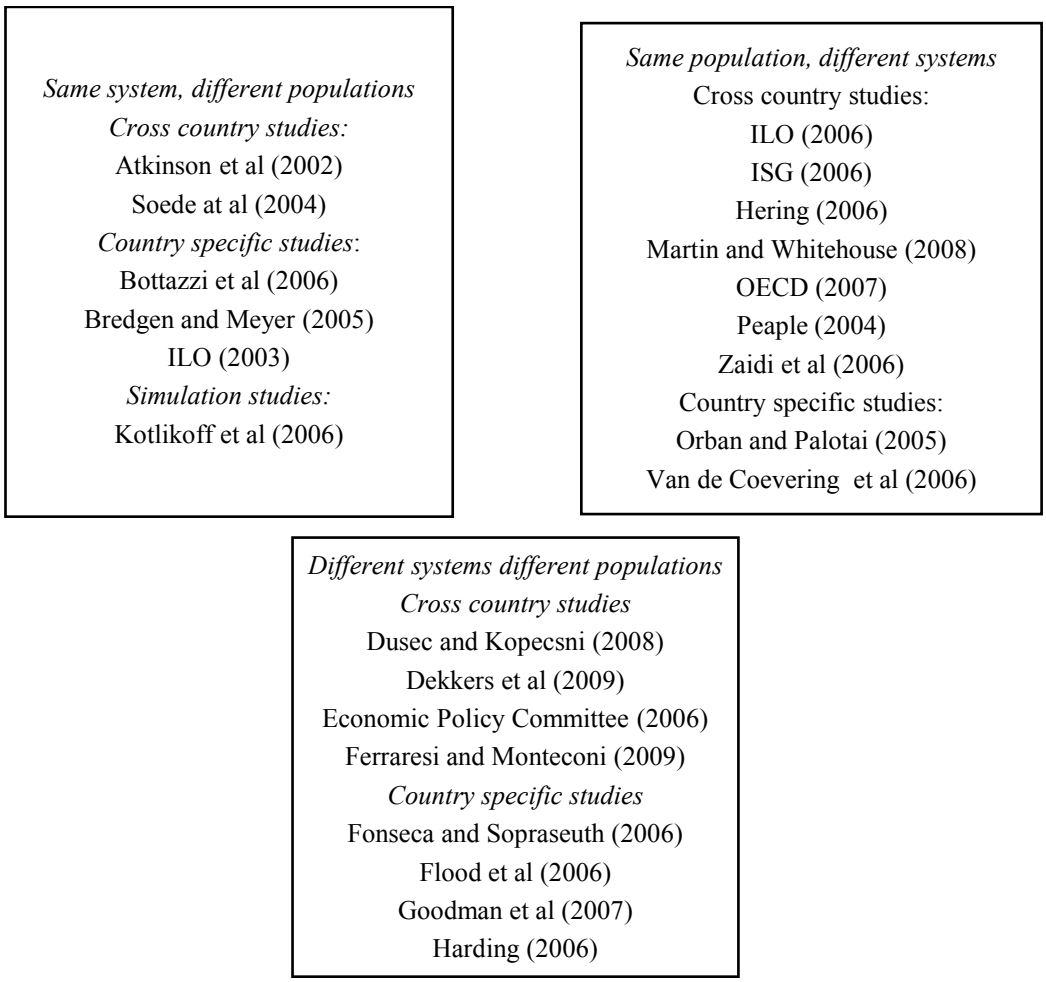
Additional challenges have been detected for developing countries: populations getting "old" (in some cases, rapidly) before they get "rich"; large rural/agriculture populations and large informal-sector workforces; large internal and international migration flows; and weak institutions and information and governance systems (which often have yet to earn the trust of the electorate (Bloom & McKinnon, 2013).

The worldwide reassessment of the policy approach to pension system reform is broadly the result of three changes: a readjustment of objectives (such as a refocus on basic protection for the vulnerable elderly); moving reform needs (such as recognizing the urgency of addressing the effects of population aging and deferred retirement ages) (D'Addio, et al., 2010) (Qi, et al., 2018) (Cottier, 2018) (Atalay & Barrett, 2015) (Hanel & Riphahn, 2012) as well as perceived and actual

changes in enabling environments (such as more realistic views about the capacity of funded schemes to manage risks, the achievable rates of return, and the fiscal restrictions to finance transition deficits) (Holzmann, 2012) (Orenstein, 2013) (Arza, 2008) (Barr & Diamond, 2009) (Castagnolo & Ferro, 2010) (Drahokoupil & Domonkos, 2012) (Cui, et al., 2011) (Arefjevs, 2017).

The reassessment has strengthened the push for alternative or complementary reform approaches, such as Non-financial (or Notional) Defined Contribution (NDC) and Matching Defined Contribution (MDC) schemes (Ponds & Van Riel, 2009) (Vidal-Melia, et al., 2009) (Dundure, 2017). While these new approaches should help to move pension systems towards greater coverage and sustainability, there is a number of issues that still await solutions, such as addressing the uncertainty about longevity increases (Holzmann, 2012).

While there is broad agreement that the influence of ageing on future pension spending is an important constraint, there is increasing interest in assessing pension reforms more broadly, looking at their impact on pension system's abilities to achieve their goals (Grech, 2013) within the frame of financial sustainability. According to Grech, this literature appears to be divided into 3 main strands. The first attempts to evaluate the impact of changes in the pension system on a population with set characteristics, while the second focuses on the impact of the same pension rules but on different population groups. The third approach tries to compare the impact of different pension rules on different population groups. Within these categories, researchers have adopted three different focuses, namely studying reforms in just one country, carrying out cross-country analysis and hypothetical reform simulations (Grech, 2010). Figure 1 groups some of existing studies along these dimensions.



Source: Grech, 2010

Fig.1. A taxonomy of studies on the reforms' effects on pension system outcomes

The results of distinct scientific research become fundamental for modelling the consequences of pension reform. Scientifically described and proved relationship between different social and economic processes sets up an algorithm for microsimulation models, computable equilibrium models and overlapping generation models. This kind of modelling has become popular already at the end of the 20th century, but also nowadays such models are constantly improved and updated.

A profound analysis of pension reforms is a demanding modelling task because it should integrate three types of effects (Galaasen, et al., 2014):

1. First, a large amount of detailed information is required to provide an operational and relevant description of the reform elements, such as e.g. threshold values, coordination with occupational private pension schemes, special arrangements for low-income groups, temporary rules phased out during transition periods and other exceptions from main principles. In addition, the model should capture the heterogeneity of individual earning profiles and other aspects of individual life courses. Such details are not only important for the re-distributional properties of the system, but also for accurate computations of the aggregate public pension expenditures. Dynamic Microsimulation (DMS) models provide such details, which make them frequently used by the authorities to compute effects on individual benefits and public pension expenditures (Fredriksen, et al., 2015).
2. Second, realistic estimates should capture that pension reforms indeed intend to affect behaviour, notably labour supply. A tremendous empirical literature has studied how pension schemes affect labour supply, especially through retirement.
3. Third, the mechanical and the behavioural responses to plausible pension reforms are likely to be strong enough to cause significant general equilibrium repercussions in a long run perspective, motivating the use of Computable General Equilibrium (CGE) models pension reform analyses. A good illustration of the potential power of equilibrium effects is Coile and Gruber (2003). Their estimated effects on the budget deficit of the US Social Security reform reflecting just the expansion of tax bases, whereas actuarial mechanisms leave expenditures almost unaffected. In a study of a Norwegian pension reform proposal, also Holmøy and Stensnes (2008) find a stronger fiscal contribution from expansion of tax bases than from lower pension expenditures. Beetsma, Bettendorf and Broer (2003) and Bovenberg and Knaap (2005) use CGE models with overlapping generations (OLG) in the tradition pioneered by Auerbach and Kotlikoff (1987) to assess budget and economic consequences of stylized pension reforms in the Netherlands. Fehr (2009) surveys the use of stochastic CGE models in analyses of population ageing and pension reforms.

The latest trend in estimating pension reforms is an approach, which combines dynamic microsimulation model and computable general equilibrium model (macro modelling) for predicting the effects of pension reform. For example, Fredriksen et. al propose a micro-macro assessment of fiscal effects of Norwegian pension reform (Fredriksen, et al., 2019).

Relatively recent topics in this literature include the transition between steady states, uncertainty and risk sharing, social efficiency effects, as well as inter- and intra-generational income distribution effects. Papers addressing these issues include: (Fehr & Habermann, 2010); (Harenberg & Ludwig, 2015). Fehr and Kindermann (Fehr & Kindermann, 2008) introduce hyperbolic discounting in an analysis of the welfare effects of the German social security system. Optimal retirement in an OLG model is also included in the analyses of stylized pension reforms in (Fehr, et al., 2012) and (Imrohoroglu & Kitao, 2010) as well as in the studies of Spanish pension reform (Díaz-Giménez & Díaz-Saavedra, 2009) and (Sánchez Martín & Sánchez Marcos, 2010). Imrohoroglu and Kitao introduce both optimal retirement and benefit

claiming in a dynamic stochastic OLG-CGE model of the US economy. The same modelling approach is used by Galaasen in a study of the Norwegian pension reform of 2011 (Galaasen, 2017).

Rather broad area of scientific research is dedicated to the universal accession to pension reforms and pension systems in the framework of Open Method of Coordination (OMC) through which the European Union (EU) has extended its role on pensions. OMC has been developed as a process to support and facilitate Member States in meeting the goal on poverty eradication and linked goals in employment and other social areas, such as pensions, health care and making work pay. The process recognizes what has come to be termed the inter-linked and inter-dependent policy triangle of economic, employment and social policies. Economic development is, of course, essential to make progress in the employment and social spheres. However, it is often not sufficiently recognized that economic development is also dependent on both employment and social development. Achieving the employment and social goals of the Lisbon Strategy, while at the same time striving to be the most dynamic and knowledge-based competitive economy in the world is a major challenge. In the framework of OMC Member States share common challenges to a greater or lesser degree in the social area which among different elements also include ageing of the population and poverty and social exclusion. EU countries also share a common goal of maintaining and enhancing the European social model, which involves a major role for the state, in a spirit of solidarity, in providing social protection and promoting greater social cohesion. The overarching objectives of the OMC for pensions are to promote adequate and sustainable pensions by ensuring (European Commission, 2018):

1. adequate retirement incomes for all and access to pensions which allow people to maintain, to a reasonable degree, their living standard after retirement, in the spirit of solidarity and fairness between and within generations;
2. the financial sustainability of public and private pension schemes, bearing in mind pressures on public finances and the ageing of populations, and in the context of the three-pronged strategy for tackling the budgetary implications of ageing, notably by: supporting longer working lives and active ageing; by balancing contributions and benefits in an appropriate and socially fair manner; and by promoting the affordability and the security of funded and private schemes;
3. that pension systems are transparent, well adapted to the needs and aspirations of women and men and the requirements of modern societies, demographic ageing and structural change; that people receive the information they need to plan their retirement and that reforms are conducted on the basis of the broadest possible consensus.

One of the leading authors in the field of OMC is David Natali. The author identifies the main socio-economic, institutional and political factors, that led to the launch of the new method, and tries to explain the peculiar 'weakness' of the coordination process of national pension reforms (in terms of its convergence capacity) (Natali, 2011).

Other studies investigate whether European pension systems have become more similar and convergent in terms of the three main objectives of the OMC: adequacy, sustainability, and modernization of pensions (Chybalski & Gumola, 2018) (Tinios, 2012) (Natali, 2008) (Greve, 2018) (Kennett & Lendvai-Bainton, 2017).

Adequacy of pensions is one of the latest trends of scientific research. As it has been mentioned previously, different aspects of sustainability are the main questions policy makers and scientists are worried about. But in some cases sustainability is achieved via the amount of retirement benefits and such scenario is not acceptable anymore as far as sustainability becomes jeopardized by political and social risks. In other words, society starts to disrupt the implementation of reform.

There does not seem to be a broad consensus in policymaking circles and academic literature on what constitutes the best measure of pension adequacy. While various indicators have been developed and used, no single measure appears to offer a clear indication of the extent to which reforms will impact on the achievement of pension system goals. That is

why some studies pretend to define the term of adequacy or assess only a limited range of adequacy indicators (Rajevska, 2016) (EuropeanCommission & Committee, 2018) (Saunders & Wong, 2011) (Chybalski & Marcinkiewicz, 2016). Another direction of research tries to formulate the systemic approach to measuring pension adequacy (Grech, 2013) (Alonso-Garcia, et al., 2018) (Alonso-Fernandez, et al., 2018) and its contribution to the efficiency of pension system in general (Chybalski, 2016).

Pension reform modelling is very complex. That is why a numerous amount of studies cover this area. Some of them are narrow, another are very broad-based. Usually each study relies on a number of assumptions, which limit the reliability of research and its implementation. Almost all models are relevant for previous periods, but new challenges make them disputable. For improving the quality of scientific research, Barr and Diamond (Barr & Diamond, 2008) propose: the need for a holistic approach, the need to consider the redistributive effects of pensions, and the need to frame analysis in what economists call a second-best context.

1) Analysis requires a holistic approach. Pensions have effects on the labour market, economic growth, the distribution of risk, and the distribution of income, including by generation and gender. Analysis needs to consider the pension system as a whole, including its multiple objectives and all parts of the pension system.

It is a mistaken policy, for example, to be obsessed with the need for an actuarial earnings-related pension, given the need for a poverty-relief element elsewhere in the system. What is relevant for analysis is the combined effect of the system as a whole.

2) Any pension reform has distributional effects. Suppose policymakers are establishing a brand new pension system. If they introduce a Pay-As-You-Go (PAYG) system, the contributions of today's workers pay for the pensions of today's retirees; thus the first generation of retirees receives a pension. If, instead, policymakers introduce fully funded pensions, the contributions of today's workers go into their pension savings accounts; thus the first generation receives little or no pension. The same argument applies in a country that already has a PAYG system: a move toward funding through higher contributions or lower benefits redistributes from current generations to future ones. Thus any choice about how a pension system is financed is inescapably also a choice about the intergenerational distribution of income.

It is mistaken to ignore the fact that any policy choice between PAYG and funding necessarily makes choices about redistribution across generations and thus mistaken to present the gain to pensioners in later generations as a Pareto improvement3, since it comes at the expense of the first generation.

3) Analysis should be framed in a second-best context. What economists call first-best analysis is the world of rational economic man and woman. The assumptions of that model include perfect information, rational behaviour, complete markets (e.g. the ability to buy an indexed annuity that pays out at some future date), and no distortionary taxation. As emerges repeatedly in the next section, the market for pensions is characterised by multiple and serious failures of these assumptions, including the following.
    a. Imperfect information, addressed by the economics of information (for which the 2001 Nobel prize was awarded);
    b. Non-rational behaviour, addressed by behavioural economics (for which the 2002 Nobel prize was awarded);
    c. Incomplete markets and incomplete contracts (for which Peter Diamond"s work was cited in the 2010 Nobel Prize);
    d. Distortionary taxation, which is inherent in any system which includes poverty relief, and hence has to redistribute from richer to poorer people (this topic is addressed by the literature on optimal taxation for which the 1996 Nobel prize was awarded).

These failures are relevant not only to the analysis of pensions but to many other markets (Barr, 2012).

It is mistaken to use first-best analysis in a second-best context. First-best analysis is useful as an analytical benchmark, but is a bad basis for policy design (Barr & Diamond, 2008).

Conclusions

Assessment of pension reforms became relevant in the second half of the 20th century. Taking into consideration modern trends of demographic shift, it is reasonable to assume, that pension reform studies will become more vital in future. Recent studies of pension reforms may be characterised as follows:

1. The studies are very complex. Simple projection of public expenditures has evolved into simulation models. The latest approach to modelling is an attempt to combine micro and macro simulations.
2. Providing system's financial sustainability remains the main issue of scientist, however, recent simulation models take into consideration the impact of much more wider range of different factors, than previously. Researchers investigate the capacity to achieve financial sustainability in the context of traditional aims of pension system such as income redistribution and poverty relief.
3. The problem of poverty relief determines the new direction of research- investigating the adequacy of retirement income. Series of studies propose the range of parameters for estimating the adequacy of pension and consider the definition of the term.
4. New European and international initiatives emerge, new opportunities for improvement constantly create new challenges for researchers. Studies assessing the impact of OMC on the harmonization of European pension systems have been carried out recently. The European Pillar of Social Rights has been jointly signed by the European Parliament, the Council and the Commission on 17 November 2017. This framework is stricter than OMC and it will provide more rigid recommendations for strengthening European pension systems, therefore simulations will become more complex and scientist will have to take into account more extensive range of factors.

Bibliography

Alonso-Fernandez, J. et al., 2018. From the Replacement Rate to the Synthetic Indicator: A Global and Gender Measure of Pension Adequacy in the European Union. *Social Indicators Research,* 138(1), pp. 165-186.

Alonso-Garcia, J., Boado-Penas, M. & Devolder, P., 2018. Adequacy, fairness and sustainability of pay-as-you-go-pension-systems: defined benefit versus defined contribution. *European Journal of Finance,* 24(13), pp. 1100-1122.

Altiok, H. & Jenkins, G., 2018. The Pension Traps of Northern Cyprus. *Turkish Study,* 19(4), pp. 612-628.

Altiparmakov, N., 2018. Another look at causes and consequences of pension privatization reform reversals in Eastern Europe. *Journal of European Social Policy,* 28(3), pp. 224-241.

Arefjevs, I., 2017. *Aliansē ar bankām ietilpstošo pensiju līdzekļu pārvaldītāju darbības efektivitātes novērtējums.* Rīga: Banku augstskola.

Arza, C., 2008. The Limits of Pension Privatization: Lessons from Argentine Experience. *WORLD DEVELOPMENT,* 36(12), pp. 2696-2712.

Atalay, K. & Barrett, G. F., 2015. THE IMPACT OF AGE PENSION ELIGIBILITY AGE ON RETIREMENT AND PROGRAMDEPENDENCE: EVIDENCE FROM AN AUSTRALIAN EXPERIMENT. *REVIEW OF ECONOMICS AND STATISTICS ,* 97(1), pp. 71-87.

Barr, N., 2013. The Role of the Public and Private Sectors in Ensuring Adequate Pensions – Theoretical Considerations. *Conference on Designing Equitable Pension Systems in the Post Crisis World, 10-11 January 2013, Tokyo.*

Barr, N. & Diamond, P., 2008. *Reforming pensions: Principles and Policy Choices.* New York and Oxford: Oxford University Press.

Barr, N. & Diamond, P., 2009. Reforming pensions: Principles, analytical errors and policy directions. *INTERNATIONAL SOCIAL SECURITY REVIEW,* 62(2).

Bloom, D. A. & McKinnon, R., 2013. The Design and Implementation of Public Pension Systems in Developing Countries: Issues and Options. *IZA Policy paper No 59*, May, Issue 59.

Bōrsch-Supan, A., BUCHER-KOENEN, T., KUTLU-KOC, V. & GOLL, N., 2018. Dangerous Flexibility - Retirement Reforms Reconsidered , 33(94), pp.. *Economic Policy,* 33(94), pp. 317-355.

Castagnolo, F. & Ferro, G., 2010. On the closure of the Argentine fully funded system. *Pensions: An International Journal ,* 15(1), pp. 25-37.

Chybalski, F., 2016. The Multidimensional Efficiency of Pension System: Definition and Measurement in Cross-Country Studies. *Social Indicators Research,* 128(1), p. 15034.

Chybalski, F. & Gumola, M., 2018. The similarity of European pension systems in terms of OMC objectives: A cross-country study. *Social Policy and Administration,* 52(7), pp. 1425-1440.

Chybalski, F. & Marcinkiewicz, E., 2016. The Replacement Rate: An Imperfect Indicator of Pension Adequacy in Cross-Country Analyses. *Social Indicators Research,* 126(1), pp. 99-117.

Cottier, L., 2018. Culture, financial constraints, and retirement decision. *Labour Economics,* Issue 53, pp. 128-145.

Cui, J., De Jong, F. & Ponds, E., 2011. Intergenerational risk sharing within funded pension schemes. *JOURNAL OF PENSION ECONOMICS & FINANCE,* 10(1), pp. 1-29.

D'Addio, A. C., Keese, M. & Whitehouse, E., 2010. Population ageing and labour markets. *OXFORD REVIEW OF ECONOMIC POLICY,* 26(4).

Díaz-Giménez, J. & Díaz-Saavedra, J., 2009. Delaying Retirement in Spain. *Review of Economic Dynamics,* 12(1), pp. 147-167.

Disney, R., 2000. Crises in public pension programmes in OECD: What are the reform options?. *The Economic Journal,* Issue 110(461), pp. F1-F23.

Drahokoupil, J. & Domonkos, S., 2012. Averting the funding-gap crisis: East European pension reforms since 2008. *GLOBAL SOCIAL POLICY ,* 12(3), pp. 283-299.

Dundure, I., 2017. *Nosacīto noteikto iemaksu (NDC) vecuma pensiju shēmas pilnveidošana vecuma pensiju ilgtspējas nodrošināšanai.* Rīga: Latvijas Universitāte. Biznesa, vadības un ekonomikas fakultāte.

Duvvury, N., Ní Léime, Á. & Callan, A., 2018. Erosion of Pension Rights: Experiences of Oder Women in Ireland. *European Journal of Cultural and Political Sociology,* 5(3), pp. 266-294.

European Commission, 2018. *Employment, Social Affairs & Inclusion.* [Online].

European Commission, n.d. *Employment, Social Affairs & Inclusion.* [Online]
Available at: https://ec.europa.eu/social/main.jsp?langId=en&catId=750

EuropeanCommission & Committee, S. P., 2018. *The 2018 Pension Adequacy Report: current and future income adequacy in old age in the EU,* Luxembourg: Publications Office of the European Union.

Fehr, H. C. & Kindermann, F., 2008. Social Security with Rational and Hyperbolic Consumers. *Review of Economic Dynamics,* 11(4), pp. 884-903.

Fehr, H. & Habermann, C., 2010. Private Retirement Savings and Mandatory Annuitization. *Netspar Discussion Paper No. 05/2010-042*, 25 May.

Fehr, H., Kallweit, M. & Kindermann, F., 2012. Pension reform with variable retirement age: a simulation analysis for Germany. *Journal of Pension Economics and Finance,* 11(3), pp. 389-417.

Financial Stability Board, 2017. *Report on European Private Pension Schemes: functioning, vulnerabilities and future challenges.* [Online]
Available at: http://www.fsb.org/2017/10/report-on-european-private-pension-schemes-functioning-vulnerabilities-and-future-challenges/
[Accessed 22 october 2018].

Fredriksen, D., Holmøy, E., Strøm, B. & Stølen, N., 2015. Fiscal effects of the Norwegian pension reform – A micro-macro assessment. *Statistics Norway, Research Department*.

Fredriksen, D., Holmōy, E., Strōm, B. & Stōlen, N., 2019. Fiscal effects of the Norwegian pension reform – A micro–macro assessment. *Journal of Pension Economics and Finance*.

Galaasen, S., 2017. Pension Reform Disabled. *Norges Bank Working Paper 20/2017.*

Galaasen, S., Holmøy, E. & Stølen, N., 2014. Review on Nordic and international literature on pension systems and fiscal sustainability. *Draft*.

Grech, A., 2010. *Assessing the sustainability of pension reforms in Europe.* London: London School of Economics.

Grech, A., 2013. Assessing the sustainability of pension reforms in Europe. *Journal of International and Comparative Social Policy,* 29(2).

Grech, A., 2013. How best to measure pension adequacy. *LSE Research Online Documents on Economics* .

Greve, B., 2018. *Routledge Handbook of the Welfare State.* 2 ed. s.l.:Routledge.

Hanel, B. & Riphahn, R. T., 2012. The Timing of Retirement - New Evidence From Swiss Female Workers. *LABOUR ECONOMICS,* 19(5), pp. 718-728.

Harenberg, D. & Ludwig, A., 2015. Social security in an analytically tractable overlapping generations model with aggregate and idiosyncratic risks. *International Tax and Public Finance,* 22(4), pp. 579-603.

Hauner, D., Leight, D. & Skaarup, M., 2007. Ensuring fiscal sustainability in G-7 countries. *IMF Working Paper,* Issue No. 07/187.

Holzmann, R., 2012. Global Pension Systems and Their Reform: Worldwide Drivers, Trends, and Challenges. *IZA DP No. 6800*.

Imrohoroglu, S. & Kitao, S., 2010. Social Security, benefit claiming, and labor force participation: a quantitative general equilibrium approach. *Staff Report Federal Reserve Bank of New York,* Issue 436.

Jakimova, L., 2018. Modeling the impact of crises on evolution of pension systems. *Fractal Approaches for Modeling Financial Assets and Predicting Crises,* pp. 115-138.

Kennett, P. & Lendvai-Bainton, N., 2017. *Handbook of European Social Policy.* s.l.:Edward Elgar Publishing.

Komp, K., 2018. Shifts in the realized retirement age: Europe in times of pension reform and economic crisis. *Journal of European Social Policy,* 28(2), pp. 130-142.

Natali, D., 2008. *Pensions in Europe, European Pensions: The Evolution of Pension Policy at National and Supranational Level.* s.l.:Peter Lang.

Natali, D., 2011. The pensions OMC: Why did it emerge and how has it evolved?. *The Dynamics of Change in EU Governance.*

OECD, 2013. *Pensions at a Glance 2013: OECD and G20 Indicators.* [Online]
Available at: https://www.oecd-ilibrary.org/docserver/pension_glance-2013-4-en.pdf?expires=1548881696&id=id&accname=guest&checksum=D2683980A1C54402A7664EFCA6B1CFA4
[Accessed 10 november 2018].

Orenstein, M., 2013. Pension Privatization: Evolution of a Paradigm. *GOVERNANCE-AN INTERNATIONAL JOURNAL OF POLICY ADMINISTRATION AND INSTITUTIONS,* 26(2), pp. 259-281.

Orszag, P. R. & Stiglitz , J. E., 1999. Rethinking Pension Reform: Ten Myths About Social Security Systems. *World Bank Conference, "New Ideas About Old Age Security" September 14-15, 1999.*

Ponds, E. H. M. & Van Riel, B., 2009. Sharing risk: the Netherlands' new approach to pensions. *JOURNAL OF PENSION ECONOMICS & FINANCE,* 8(1), pp. 91-105.

Qi, H., Helgertz, J. & Bengtsson, T., 2018. Do notional defined contribution schemes prolong working life? Evidence from the 1994 Swedish pension reform. *Journal of the Economics of Ageing,* Volume 12, pp. 250-267.

Rajevska, O., 2016. *Doctoral Thesis: Adequacy and Equity of Pensions as a Function of Pension System Instituional Design: a Case of the Baltic States.* Rīga: Latvijas Universitāte.

Sánchez Martín, A. & Sánchez Marcos, V., 2010. Demographic Change and Pension Reform in Spain: An Assessment in a Two-Earner, OLG Model. *Fiscal Studies,* 31(3), pp. 405-452.

Saunders, P. & Wong, M., 2011. Pension Adequacy and the Pension Review. *The Economic and Labour Relations Review,* 22(3).

Schneider, O., 2009. Reforming pensions in Europe: Economic fundamentals and political factors. *CESifo Working Paper,* Issue No. 2572.

Tinios, P., 2012. Pensions and the Lisbon Strategy. In: P. Copeland & D. Papadimitriou, eds. *The EU's Lisbon Strategy: Evaluating Success, Understanding Failure.* s.l.:Springer, pp. 11-129.

Velculescu, D., 2011. *PENSION REFORMS IN EMERGING EUROPE: THE UNCERTAIN ROAD.* [Online]
Available at: https://www.ebrd.com/downloads/research/news/4441347_-

_Pension_Reforms_in_Emerging_Europe_The_Uncertain_Road_Ahead_(D.Velculescu)_-_1_-_DMSDR1S.pdf
[Accessed 10 December 2018].

Vidal-Melia, C., del Carmen Boado-Penas, M. & Settergren, O., 2009. Automatic Balance Mechanisms in Pay-As-You-Go Pension Systems. *GENEVA PAPERS ON RISK AND INSURANCE-ISSUES AND PRACTICE,* 34(2), pp. 287-317.

Voļskis, E., 2008. *Pensiju sistēmas pilnveidošanas problēmas Latvijā.* Rīga: Latvijas Universitāte. Ekonomikas un vadības fakultāte.

Whitehouse, E., D'Addio, A., Chomik, R. & Reilly, A., 2009. Two Decades of Pension Reform: What has been Achieved and What Remains to be Done?. *GENEVA PAPERS ON RISK AND INSURANCE-ISSUES AND PRACTIC,* 34(4), pp. 515-535.

World Bank, 1994. *Averting the old age crisis : policies to protect the old and promote growth (English)..* [Online]
Available at: http://documents.worldbank.org/curated/en/973571468174557899/Averting-the-old-age-crisis-policies-to-protect-the-old-and-promote-growth
[Accessed 10 November 2018].

World bank, 2018. *Population Estimates And Projections.* [Online]
Available at: https://datacatalog.worldbank.org/dataset/population-estimates-and-projections
[Accessed 22 October 2018].

World Economic Forum, 2017. *Global Pension Timebomb: Funding Gap Set to Dwarf World GDP.* [Online]
Available at: https://www.weforum.org/press/2017/05/global-pension-timebomb-funding-gap-set-to-dwarf-world-gdp/
[Accessed 22 October 2018].

Zartaloudis, S., 2014. The Fiscal Crisis on Greek and Portuguese Welfare States: Retrenchment before the Catch-up?. *Socia; Policy and Administration,* 48(4), p. 430.

ACCOUNTING POLICIES OF AGRO-INDUSTRIAL COMPLEX COMPANIES AS A KEY ELEMENT OF THE CONTROLLING SYSTEM IN THE CONDITIONS OF THE DIGITAL ECONOMY[1]

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Abstract. For the successful integration of agricultural enterprises in the digital economy, it is necessary to develop a set of measures to improve the enterprise controlling system.

The main objective of the study is the role of accounting policy as a key element of the accounting subsystem controlling an agricultural company that has a direct impact on the performance of its business activities, as well as largely determining the procedures and methods of management accounting, control, financial reporting, and preparation of information for adoption sound management decisions, as well as theoretical justification for the need to improve the rate of methodological and organizational basis for the formation of accounting policies based on the integration of automated systems into the financial accounting system in the context of its digital transformation.

The methodological basis of the research is general scientific and special methods of scientific research. The following abstract logical methods of research are used: methods of analysis and generalization, induction and deduction, statistical methods of analysis of economic phenomena, SWOT method of analysis.

The authors disclosed the legal basis for the formation of the accounting policies of agricultural organizations; identified the main approaches to the management of organizations of the agro-industrial complex in the transition to a digital economy, identified their strengths and weaknesses; formulated the objectives of the accounting policies of the organization in the context of the digital transformation of the economy. The existing concepts of accounting policy formation were refined in terms of presenting the financial results of the enterprise as part of improving the controlling system.

The theoretical and practical significance of the research lays in the development of the concept of formation the accounting policies of the organizations of the agro-industrial complex with aim to increasey its effectiveness for making strategic management decisions based on modern digital technologies.

Key words: *accounting policy, agribusiness, digital economy, controlling*

JEL code: M41 Accounting, Q14 Agricultural Finance

Introduction

The relevance of the article is that the development of a controlling system in the context of the transition to a digital economy allows increasing production efficiency and enterprise management, and also provides ample opportunities for

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developing and applying new models of management decisions based on forecasting technologies. Therefore, for the successful integration of agricultural enterprises in the digital economy, it is necessary to develop a set of measures to improve the enterprise controlling system at the conceptual and methodological level. The authors substantiated that accounting policy as a key element of the controlling system is a special system for managing all processes of an enterprise and has a wide range of modern tools to improve the quality of management.

The main objective of a research is the theoretical justification and development of methodological and organizational bases for the formation of accounting policies in order to build an effective controlling system of enterprises of the agro-industrial complex based on integration into the financial accounting system of automated systems and their digital transformation to ensuring adoption of reasonable administrative decisions are made on the basis of providing access to an array of current forecast and analytical data.

The methodological basis of the research is economics and its fundamental provisions, the basic concepts of various types of accounting and reporting, economic informatics. General scientific and special methods of scientific research, abstract logical methods of research are used: methods of analysis and generalization, induction and deduction, statistical methods of analysis of economic phenomena, SWOT method of analysis, tabular and graphical methods of data interpretation.

Research results and discussion

In Russian organizations, the basis for the formation and application of accounting policies of organizations at the legislative level is enshrined in the Accounting Regulation “Accounting Policy of an Organization” (PBU 1/2008), approved by Order of the RF Ministry of Finance of October 6, 2008 №106n (Ministry of Finance, 2008). However, it should be noted that defining the accounting policy the Regulation refers to Article 8 of the Federal Law “On Accounting” dated December 6, 2011 № 402-FZ, according to which the accounting policy is a combination of methods of accounting conducted by an economic entity (About accounting, 2011). At the same time, the Regulation reveals the definition of accounting policy as a set of accounting methods adopted by the organization and they are primary observation, cost measurement, current grouping and the final generalization of the facts of economic activity. The Regulation provides a list of accounting methods that includes methods of grouping and evaluating the facts of economic activity, repayment of assets, organization of workflow, inventory, application of accounts, organization of accounting registers, information processing.

The Regulation approves a list of issues resolved within the framework of accounting policies, which includes a working plan of accounts, the forms of primary accounting documents, accounting registers, and the documents for internal accounting reports, the procedure of inventory of assets and liabilities of the organization, appraisal of assets and liabilities, workflow system and technology of processing accounting information, procedure of control over business operations and other decisions necessary for the organization of accounting. The accounting policy of the organization has to meet the requirements of completeness, timeliness, prudence, priority of content over the form, consistency and rationality. In the case, when there are several ways of accounting the certain accounting issue which are allowed by the federal accounting standard, the organization chooses one of these methods, making an entry in its accounting policy.

International recommendations for the organization's accounting policies are formulated in International Financial Reporting Standard (IAS) 8 "Accounting policies, changes in accounting estimates and errors" (Ministry of Finance, 2015). This document provides the following definition of accounting policies: "Accounting policies are specific principles, fundamentals, generally accepted conditions, rules and practical approaches used by an organization in preparing and presenting financial statements." The Russian regulatory framework assumes that organizations disclosing

its consolidated financial statements prepared in accordance with IFRS are entitled to take into account the requirements of International Financial Reporting Standards when formulating accounting policies, in particular, without applying accounting methods established by the Federal Accounting Standard, if it conflicts with international financial reporting requirements. If Russian standards do not establish specific methods for a particular accounting issue, the organization has the right to devise such methods on their own, using, inter alia, international standards. IAS 8 supplements the requirements for the reflection of information in the accounting policies with the requirements of relevance, neutrality and truthfulness. Great attention in PBU 1/2008 and in IAS 8 is paid to changes in accounting policies. As possible reasons for this the International Standard indicates the changes in laws and regulatory rules of accounting, or the adoption by the organization new methods of accounting, related to improving the quality and reliability of accounting objects, and the Russian Regulation supplements this list with significant changes in the organization's business conditions, caused by its reorganization, changes in activities, etc.

Another regulatory document related to the accounting policy of the organization is the Tax Code of the Russian Federation, which establishes the existence of such a specific concept as Accounting Policy for tax purposes. Article 11 of this document gives the following definition: "accounting policy for tax purposes is a set of methods (ways) determined by the taxpayer for determining income and / or expenses, recognizing, appraising and distributing, and other necessary indicators required for tax purposes financial and economic activities of the taxpayer ". Thus, the tax policy for the purposes of taxation of the organization, being associated with the definition of its income and expenses, is directly related to the financial performance of the organization. The order of adoption by the organization of accounting policies for tax purposes is reflected in article 167 of the Tax Code of the Russian Federation on the procedure for determining the tax base for value added tax. The regulations of the organization's accounting policy for tax purposes determine issues related to the determination of the tax base for VAT, excise taxes, and corporate income tax, including those collected under the tax system when executing a production sharing agreement, a mineral extraction tax, and taxes levied on fulfillment.

The problems of accounting policy are very important for an agricultural organization (Stonciuviene N., 2014). The accounting policy of the organization directly affects the formation of the controlling system. In the Russian legislation, these issues are regulated by the Methodological Recommendations for the development of accounting policies in agricultural organizations, approved by the Ministry of Agriculture of the Russian Federation on 16.05.2005. These recommendations give their own definition of accounting policy as a document compiled annually by the chief accountant (accountant) and approved by the head of the agricultural organization, which should contain the basic rules for the organization of accounting and tax accounting. This document provides guidance to both accounting policies for accounting and tax accounting purposes of an agricultural organization (Ministry of Agriculture, 2005).

The specific features of accounting in agricultural enterprises are the following (Bychkova S., 2008): the specifics of accounting in this area arises due to the different nature of agricultural sectors: crop production, livestock, auxiliary production; The main production tool in agriculture is land, so there is a need for land accounting and financial investments in them; A variety of equipment is used in agriculture - reliable accounting of all machines and mechanisms is required; accounting should take into account and reflect the seasonality of work, costs and revenues; production may take more than a calendar year for some crops and animals, costs are incurred in the current reporting year, and products are received only in the next; part of the production goes to on-farm consumption: crop production – for seeds and animal feed; livestock products - for fertilizers in crop production. Therefore, it is necessary to reveal the movement of products at all stages of on-farm turnover; one culture or one type of livestock gives several types of products that causes the necessity of cost division in accounting. At agricultural enterprises many forms of primary documentation are used depending on the type of products produced, the methods of accounting, and the differentiation of production.

The regulations presented in the accounting policy of an organization are divided into categories relating to such aspects of its activities as organizational and technical (sometimes this section is divided into organizational and technical accordingly) and methodological aspects (Kaverina O., 2016).

The organizational and technical aspect of the accounting policy of an agricultural organization raises questions of the structure of the organization's accounting service, the level of centralization of accounting, regulatory support for accounting, accounting information processing technologies, the rights and obligations of the chief accountant and accounting personnel, the development of a working plan of accounts and the workflow method of accounting, the organization of the inventory of property and liabilities, the order of consideration, approval and presentation of the annual accounting (financial) statements.

The methodical aspect involves determining the limit of the value of fixed assets redeemed without depreciation, methods for evaluating assets and liabilities, methods for calculating depreciation of fixed assets and intangible assets, choosing methods of grouping, writing off costs and the method of accounting for production costs and calculating the cost of plant and animal production; determining the structure and composition of indirect costs, the method and basis of distribution between the objects of accounting and calculation, the method of assessing work in progress, as well as the valuation of agricultural products from biological assets.

Developing controlling procedures it is necessary to remember that international financial reporting standards almost do not affect organizational and technical aspects of accounting policy, but its methodological aspects on alternative ways of reflecting the facts of economic life in accounting, grouping and evaluating elements of accounting (financial) reporting are considered in detail: subsequent valuation methods, depreciation, useful life and impairment of intangible assets and fixed assets funds, criteria for distinguishing investment property and property owned by the owner, methods for subsequent evaluation of investments and significant assumptions used in determining their fair value, methods of depreciation of investment property in the case of its valuation at actual cost, current valuation of stocks and estimation of their cost, including calculation of costs, methods and assumptions used to determine the fair value of financial instruments, their impairment, hedging issues and risk management policies in managing financial instruments, methods used to determine revenue from a construction contract and methods used to determine the stage of completion of construction work under the contract, methods used to recognize revenue, determine the stage of completion in the provision of services, issues related to employee remuneration methods of recognizing and presenting government subsidies (Martirosianiene L., 2016), capitalizing borrowing costs, methods and significant methods and significant assumptions that are used in determining the fair value of biological assets, etc. (Osipova A., 2018).

In terms of controlling procedures, it is important that the choice of specific elements of the accounting policy the indicators of financial reporting and financial performance of the organization can have different values. Let's represent the main elements of accounting policies in the table 1 (Byckova S., Sadchenko K., 2018) and show their influence on the financial statements. If the element of the accounting policy increases the indicator on which it affects, then it is marked by the symbol «↑». If the element of the accounting policy reduces the value of the financial statements, then it corresponds to the symbol «↓». The presence of the symbol «↔» in the table indicates that the indicator is unchangeable and will have a constant value. Note that the mutual influence of the accounting policies and the financial results achieved by the organization is of a counter character. Thus, the organization's accounting policies are directly affected by its profitability (Lestari S., 2018).

As follows from the data in the table, the organizational and technical section of the accounting policy does not significantly affect the reporting figures, but is important in the internal organization of control over the maintenance of accounting and tax accounting (Kontsevaya S., 2017). On the contrary, the methodical section of the accounting policy

contains components that directly affect the reporting indicators. Thus, the choice of a non-linear depreciation method in the tax accounting of intangible assets and fixed assets increases the reported cost of production costs and lowers the amount of profit before tax, thereby reducing the amount paid on income tax. The principles of valuation of groups of homogeneous objects of fixed assets, also reflected in this section, affect the amount of fixed assets, equity and depreciation fund of the organization. The choice of methods for estimating reserves and calculating the actual cost of material resources included in production costs affects retained earnings, inventories and costs, and the choice of method for estimating fixed costs may affect the cost of an organization.

Table 1

The effect of accounting policies on financial performance indicators

Accounting policy element	Impact on reporting rates			
Organizational and technical section				
Accounting Method	Do not affect on reporting figures			
Chart of accounts	Do not affect on reporting figures			
Responsible accountant	Do not affect on reporting figures			
Document management	Do not affect on reporting figures			
Assets and liabilities' inventory	Avoids deliberate misrepresentation and abuse			
Organization of the system of internal accounting and control	Avoids deliberate misrepresentation and abuse			
The choice of accounting form (composition, structure, and the formation of accounting registers)	Do not affect on reporting figures			
Methodical section				
Depreciation method of intangible assets tax accounting		Profit	Expences	Cost price
	Linear	↔	↔	↔
	Nonlinear	↓	↑	↑
Depreciation method of fixed assets tax accounting		Profit	Expences	Cost price
	Linear	↔	↔	↔
	Nonlinear	↓	↑	↑
Methods of fixed costs estimation		Fixed assets	Own sources	Amortization
	Revaluation	↑	↑	↑
	Markdown	↓	↓	↓
Stock assessment methods and actual calculation the cost of material resources included in the cost of production		Retained earnings	Stocks	Cost price
	At the cost of the first time acquisition of inventories (FIFO method) in the face of rising prices	↑	↑	↓
	At the cost of each unit	↔	↔	↔
	At the average cost	↔	↔	↔
Methods for estimating fixed costs		Profit	Stocks	Cost price
	Inclusion in the cost price	↑	↑	↓
	Writing off in full amount as expenses of the reporting period	↓	↓	↓
The accounting treatment of the materials on the account 10	Does not affect reporting figures			
Information on joint activities	Impact on the “share capital”			

Source: compiled by the authors

For productive functioning of agricultural organizations, the most advanced management mechanism is needed, such as controlling system that includes planning, control and analysis subsystems, as well as accounting subsystem that relies primarily on management accounting (Bychkova S., Makarova N., Zhidkova E. Measurement of information ..., 2018).

Management accounting as a component of the controlling system is the main source of information support for making management decisions. The project controlling system includes: formation of accounting policies, contractual policies, communication policies of competitive strategies (Bychkova S., Makarova N., Zhidkova E. The system of ..., 2018). The project system also includes transactions (Shahab S., 2018).

Management accounting as a component of the controlling system is the main source of information support for making management decisions. When building a controlling system, the organization of the accounting system is of particular importance. There are practically no issues of organizing management accounting in the regulatory legal acts constituting the system of legislative regulation of the Russian Federation. Focusing on the need to develop accounting policies for management accounting, it should be noted that the existing small range of definitions and explanations of the term of "accounting policy for management accounting purposes" indicates an incomplete scientific debate on conceptual issues: management accounting objectives. In our opinion, accounting policy for management accounting is a complex of accounting and analytical techniques of individual processes in the deterministic state of the management accounting system with mandatory monitoring of external and internal factors affecting the process of its development and implementation. The problem of foundation of accounting policies for purposes of management accounting is relevant for agricultural organizations. At the same time, in the organizations of this industry the development of the concept of management accounting is difficult because of shortage of qualified personnel. The purposes of accounting policies for management accounting are the formation of management reporting that meets the criteria of completeness, convenience and efficiency, the formation of a system of indicators to which the organization's management should be guided when making management decisions, and the allocation, description and classification of management accounting and the order of reflection of business transactions in them. In the agricultural industry, the following factors influence on the formation of accounting policies for management accounting purposes: land as the main asset; living beings as a means of production; specifics of agricultural products valuation; disparity between working period and the production process; seasonality of agricultural production; getting several sorts of products from one culture or one type of animal; the territorial location of production associated with a large volume of transportation of manufactured products and material resources.

There are no prescriptions for regarding the definition, formation and disclosure of accounting policies for management accounting purposes. Obviously, the institutional structure of this accounting policy can be built not only on formalized provisions approved by normative acts, but also on informal restrictions and practices that are not officially sanctioned, but nevertheless determine the perception, interpretation and application of formal rules by subjects. At the same time, however, it should be remembered that, according to the results of economic research, the quality of accounting information is lower in weak regulated organizations than in enterprises with more strict regulation of the accounting system (Oh K., 2014; Sheng Shujun, 2018). Thus, taking the accounting policy for the purposes of management accounting, the company has to take measures to ensure the realization of its norms. In a holding structure, management accounting policies should has a corporate status, establishing the order and principles of accounting for all segments and activities of the holding, taking into account their specifics. Accounting policy for management accounting is a link between management and accounting in the controlling system. Accounting policy for the purposes of management accounting will allow economic agents to generate and convert information into a form that would answer the demands of managers. Any management decision is based on the analysis of information, which is prepared and ordered in the controlling system of the management accounting platform, which determines the pronounced connection between the success of the economic entity and the quality of information support of its management.

The management aspect of the accounting policy determines the principles of the accounting policy (assumptions and requirements), according to which management accounting is organized and maintained in the controlling system of the

economic entity. The task of the organization's accounting service for controlling information of long-term decisions, such as analyzing the competitiveness of production, supply of raw materials and materials, changing the range and development of new products, investments, etc., is conditioned by the principle of assuming the continuity of the organization's activities reflected in PBU 2008/1.

The main objectives of accounting policies for management accounting are disclosure of aspects related to management cost accounting, ensuring the adequacy of selected accounting methods for obtaining information of business processes for making management decisions (Costache S., 2017), determining methods of calculating indicators to the achievement of which the heads of departments are motivated, improving the quality and reliability of all types of reporting, harmonizing the methods of accounting (establishing their connections) within one accounting system and benefits related accounting systems, and also the defining of the boundary which separates the functions of the accounts (Zhidkova E., 2015).

Discussing about the impact of accounting policies for management accounting on the financial performance of the organization (Nukka, 2016), it should be noted that all the main articles reflected in the "Report on financial results" largely depend on the regulations of the adopted accounting policies. The first section of this form reflects income and expenses for ordinary activities, the formation of which is determined by the relevant regulations of the accounting policy. In addition, the formation of this section directly depends on the moment of sale, determined by the adopted accounting policies. The size of the articles of the second section, reflecting the operating income and expenses of the enterprise, may be significantly affected by the position of the accounting policy, which determines the reflection of exchange differences received during the financial period. The third section of form №2 of the reporting may be dependent on the adopted accounting policy in the event that this section is formed to a significant extent at the expense of income from rent payments from both the renter and the lessor. This is due to the procedure for the formation of revenue of the future periods and future spending, adopted by the accounting policies of the enterprise.

Forming the controlling system, the manager should take into account that in recent years, due to the expansion of information interaction, the innovation infrastructure of agriculture has received significant development. Information technologies gave rise to the development of remote interaction, the emergence of new Internet trading sites and the development of the innovation market. Information about research and development has become more accessible, there is a tendency to use the "Internet of things" in agriculture (Popov S., 2013), etc. Nowadays, an example of the introduction of electronic documents using the "Internet of Things" is the application of online cash registers, as well as the seller's obligation to provide a check at the buyer's request in electronic form. The large-scale introduction of information and computer technologies, including within the framework of organizing controlling at agricultural enterprises, as the most important component of the concept of innovative development, creates conditions for an accelerated response to external socio-economic changes, reducing the time lag in the process of making management decisions at various levels, and potential increase in production efficiency, including on an innovative basis. The widespread use of information technology causes qualitative changes at all stages of agricultural production: helps to reduce costs and final food prices not only by automating processes within the agricultural production cycle, but also by eliminating unnecessary intermediate links in the value chain. In accordance with the Strategy for the Development of the Information Society for 2017-2030 and the Program of the Digital Economy of the Russian Federation for 2017-2024, the actual problem is the digitalization of information. As described in previous studies by the authors (Bychkova S., Eliashev D., 2018), data on the indicators of innovative development of the agricultural sector, given in Table 2 indicate a significant lag in the share of organizations that carry out technological innovation, and the amount of costs allocated to technological innovation in agriculture, relative to industry-specific indicators.

For the agro-industrial sector, the digital economy is a aggregate of social and economic relations between economic entities, where electronic channels of interaction are used predominantly to reduce transaction costs in agricultural production and where usual relationships are replaced by electronic analog, and the development of new interaction formats leads to a change in the role and functions traditional institutions (Kadomtseva, 2013).

Table 2

Indicators of innovative development of the agricultural industry in 2017

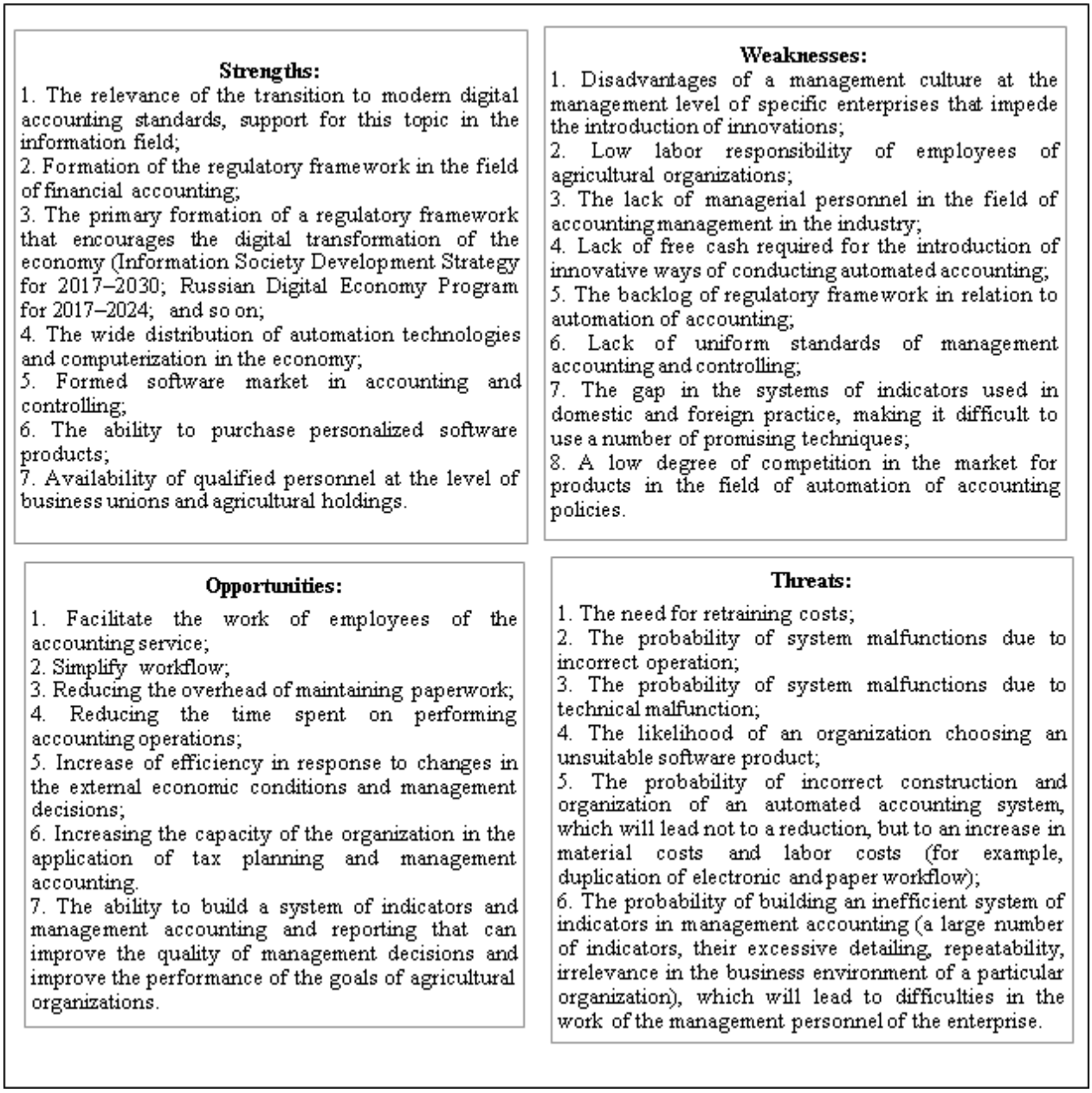
Index	Agriculture	Crop production	Livestock raising	In all branches
volume of innovative goods, works, services, million rubles.	288 446.0	16 602.3	11 843.6	41 669 986.7
costs of organizations for technological innovation, thousand rubles.	15806.0	6403.1	9402.9	1404985.3
the proportion of organizations that implemented technological innovation, %	no data	2.9	no data	7.5
specific weight of expenses for technological innovations in the total volume of shipped goods, works performed, services	no data	0.7	no data	2.4

Source: authors' calculations based on data from the Federal Statistics Service (Federal Statistics Service, 2018)

Of course, the digital transformation in agriculture should directly affect the organization's accounting system, increasing the efficiency of its internal control (Keune M., 2018). Accounting automation issues (Liu X., 2013; Qiao T., 2016 Hu Yan-ling, 2017) and controlling (Xing M., 2014) have been studied by many authors.

In Figure 1, we present the results of the SWOT analysis of the transition of Russian agricultural enterprises to automated accounting. As the data show, by now in the Russian economy, the transition of agricultural organizations to the digital transformation of accounting is associated with various positive and negative points. In our opinion, however, the most important factors determining the need for this transition are the objectivity of the development of technical progress that makes automated accounting technologies available, as well as the significant competitive advantages that it will help to achieve.

Guidelines for the development of accounting policies in agricultural enterprises indicate that the main forms of accounting for them are memorial-order, journal-order, simplified, automated. These forms of accounting can be divided into traditional (manual) and automated (Ministry of Agriculture, 2005 It should be noted that these guidelines were approved more than ten years ago, and in terms of recommendations regarding accounting information processing technology for computer-aided accounting, they refer to the document of the USSR Ministry of Finance and the Central Statistical Bureau of the USSR of February 20, 1981 № 35/34-R /426 "On guidelines for the organization of accounting using computer technology". Thus, we can argue that in addition to indicating the existence of automated forms of accounting, the regulatory framework for this aspect of accounting activity, adopted at the state level, does not meet the criteria of relevance and does not reflect the tasks of digital transformation of the modern economy. Meanwhile, studies were conducted, according to which agricultural enterprises have now almost completely switched to the use of automated accounting or to the partial use of automation equipment. At the same time, the most popular software product used in accounting for agricultural organizations are products united by the 1C brand (Osipova A., 2018). This situation has both advantages and disadvantages, since the use of similar software products leads to the unification of accounting principles, but the total leadership of products of one manufacturer indicates an underdeveloped competitive market.



Source: compiled by the authors

Fig. 1. **SWOT-analysis of the introduction of digital accounting automation systems in agriculture**

At present, enterprises largely concentrate the controlling information environment in data combined by various types of automated control systems. These systems have different tasks and integrate data on various processes of the enterprise, both local and affecting its activities from the maximum possible number of different parties. Among such systems, there are MRP-systems - automated systems for material requirements planning, MRP II systems - combining material requirements planning with capacity planning, FRP systems - financial planning systems. The combination of automated MRP II and FRP systems is called ERP systems - enterprise resource planning systems. In addition to the above, ERP systems can also include modules for marketing planning, supply chain management, benchmarking, etc. It is based on ERP systems that modern enterprises typically build controlling systems (Feng J., 2017). The Russian market presents a set of information management systems for enterprises based on ERP-systems, including extensive capabilities in terms of information support for the controlling system. These include the development of foreign companies "SAP R / 3", "SAS System", "Oracle Express", "Microsoft Dynamics", as well as the Russian systems "1C Enterprise", "Galaxy", "Parus", "Flagman", " M-2 "," Alef "and others.

Conclusions, proposals, recommendations

1. To date, the main approaches to the formation of accounting policies of agricultural organizations have been formed in Russian and international legislation. At the same time, there are certain discrepancies in the Russian and international approaches. At the national level, a clear understanding of the accounting policy of the organization, including the agricultural one for management accounting purposes, has not been formed, and the recommendations on the automation and computerization of accounting are outdated.

2. For effective activity of agricultural organizations, a controlling system is needed as the most effective management mechanism, which includes planning, control and analysis subsystems, as well as an accounting subsystem. For the development of a controlling system, the organization of an accounting system is of particular importance. Accounting policy for management accounting is a link between management and accounting in the controlling system, allowing economic agents to form and convert information into a form that would meet the needs of managers.

3. The choice of specific elements of the accounting policy determines the value of indicators of financial statements and financial performance of the organization. At the same time, the organizational and technical section of the accounting policy does not significantly affect the reporting figures, but is important in the internal organization of control over accounting and tax accounting.

4. In recent years, due to the expansion of information interaction, the innovation infrastructure of agriculture has received significant development. The widespread use of information technology provokes qualitative changes at all stages of agricultural production. In the Russian economy, the transition of agricultural organizations to the digital transformation of accounting is associated with a number of both positive and negative points. In our opinion, the most important factors determining the need for this transition are the objectivity of the development of technical progress that makes automated accounting technologies available, as well as the significant competitive advantages that it will help to achieve by improving the quality of management decisions made and, accordingly, the effectiveness of the implementation of the goals of agricultural organizations.

Bibliography

About accounting. Federal law of 06.12.2011 № 402-FZ. [Online] Available at: http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=312183&rnd=CD44DA9B1D9819A2A08C3D72AEEAEB24&dst=100067&fld=134#025501364265553805. [Accessed 10 December 2018]

Bychkova S.M., Badmaeva D.G., 2008, Accounting in agriculture. - M.: Eksmo. - 400 p.

Bychkova S.M., Makarova N.N., Zhidkova E.A., 2018. Measurement of information in the subsystem of internal control of the controlling system of organizations of the agro-industrial complex. Entrepreneurship and sustainability issues, № 6 (1), pp.35-44.

Bychkova S.M., Makarova N.N., Zhidkova E.A., 2018. The system of controlling organizations a agro-industrial complex from the position of the theory Tetrad, 2018. 13th International Forum on Strategic Technology, pp. 1136-1138.

Bychkova S.M., Sadchenko K.G., 2018. The elements of accounting policies and their impact on financial results. Conference on «Accounting and auditing in the globalized conditions: realities and prospects for development», VII Edition, April 19-20, Chişinău, pp.70-75.

Bychkova, S.M., Eliashev, D.V., 2018. Normative regulation of agrarian policy as the basis of a neo-system approach. Conference on 13th International Forum on Strategic Technology, pp.1122-1126.

Costache, C.I., 2017. Information in accounting for common agricultural policy decision making. Quality-access to success, vol. 18, app. 2, pp. 149-151.

Federal State Statistics Service [Online]. Available at: http://www.gks.ru [Accessed 10 December 2018]

Feng, J., 2017. Research on Internal Control of Accounting Information System in ERP Environment. Proceedings of the 2017 4th international conference on education, management and computing technology (ICEMCT 2017), vol. 101, pp. 1548-1552.

Ministry of Agriculture of the Russian Federation, 2005. Guidelines for the development of accounting policies in agricultural organizations [Online] Available at:

http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=93308&fld=134&dst=1000000001,0&rnd=0.08 01074691029715#08706380504012108. [Accessed 10 December 2018]

Hu Yan-ling, 2017 Analysis on the Internal Control of Enterprise Accounting under Computer Network Environment. 2017. IEEE international conference on computational science and engineering (CSE) and IEEE/IFIP international conference on embedded and ubiquitous computing (EUC), vol. 1, pp. 712-715.

Kadomtseva, M.E., 2013. Modernization of the institutional environment as a factor in the innovative development of the agri-food complex: dissertation for the degree of Candidate of Economic Sciences: 08.00.05. Institute of Agrarian Problems of the Russian Academy of Sciences. - Saratov.

Kaverina O., Lebedeva P., Terenteva T., 2016. Problematic issues of cost accounting policies in Russian companies. Proceedings of 2016 International Conference on Accounting, Auditing, and Taxation (ICAAT 2016). pp. 213-221.

Keune, M.B., Keune, T.M., 2018. Do Managers Make Voluntary Accounting Changes in Response to a Material Weakness in Internal Control? Auditing - a journal of practice & theory, vol. 37, Issue 2, pp. 107-137.

Kontsevaya, S., Alborov, R., 2017. Managerial accounting and agricultural efficiency control in Russia. Agrarian perspectives XXVI: competitiveness of european agriculture and food sectors, pp. 145-150.

Lestari, S.D., Riyadi, S., 2018. The Effect of Firm Size, Financial Leverage, and Profitability on Investment Opportunities Set Policy and Its Implications on Accounting Policy. Advanced science letters. vol: 24, Issue: 4, pp. 2342-2346.

Liu, X.H., 2013. Problems in Internal Control of Accounting Computerization and Countermeasures. Conference on 2013 International conference on economic, business management and education innovation (EBMEI 2013), vol. 19, pp. 290-294.

Martirosianiene, L., Stonciuviene, N., Zinkeviciene, D., 2016. *Formation of the accounting policy for subsidies in agricultural companies: impact on financial results*. Economic Science for Rural Development. Jelgava, LATVIA, vol. 43, pp. 314-322.

Nukka, A., Kasearu, M., 2016. *Fccounting policies and procedures in the preparation of the annual report*. Proceedings of the 5th international conference on accounting, auditing, and taxation (ICAAT 2016), vol. 27, pp. 382-387.

Oh, K., Choi, W., Jeong, S.W., Pae, J., 2014. The effect of different levels of internal control over financial reporting regulation on the quality of accounting information: evidence from Korea. Asia-pacific journal of accounting & economics. Vol. 21, Issue 4, pp. 412-442.

On Approval of Accounting Provisions (along with the "Accounting Regulations" Accounting Policy of the Organization "(PBU 1/2008)", "Accounting Regulations" Changes in Estimated Values "(PBU 21/2008)"). Order of the Ministry of Finance of Russia of 06.10.2008 № 106n. [Online] Available at: http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=221028&fld=134&dst=1000000001,0&rnd=0.7 00136071877250 5#020952631088050544. [Accessed 10 December 2018]

On the introduction of International Financial Reporting Standards and Explanations of International Financial Reporting Standards into effect on the territory of the Russian Federation and on the invalidation of certain orders (certain provisions of orders) of the Ministry of Finance of the Russian Federation. Order of the Ministry of Finance of Russia of 12.28.2015

№ 217n. [Online] Available at:
http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=193532&rnd=CD44DA9B1D9819A2A08C3D7 2AEEAEB24&dst=100010&fld=134#07322497689098704. [Accessed 10 December 2018]

Osipova A.I., 2018. Formation of accounting policies in agricultural organizations.Don State Agrarian University; Publishing and printing complex "Color". - 158 p.

Popov, S., Chernyy, E., 2013. Developing of energy resources accounting and controlling system for the Internet of Things. Conference on 14th Conference of Open-Innovations-Association (FRUCT), Espoo, Finland, Nov 11/15, pp. 107-112.

Shahab, S. Clinch, J. P.; O'Neill, E., 2018. Accounting for transaction costs in planning policy evaluation. Land use policy, vol. 70, pp. 263-272.

Sheng S. Analysis of the Influence of Internal Control Environment on Accounting Information Quality, 2018. Proceedings of the 2018 4th international conference on social science and higher education (ICSSHE 2018). Vol. 181, pp. 341-344.

Stonciuviene, N., Zinkeviciene, D., Martirosianiene, L., 2014. Principle-Based Agricultural Business Accounting Policy Formation . Business challenges in the changing economic landscape. Barcelona, spain, oct 23/25, vol. 1, pp. 37-58.

Qiao, N., 2016. Design on Software Function and Safety Control for Accounting Computerization. Proceedings of the 2016 international conference on economics, social science, arts, education and management engineering (ESSAEME), vol. 71, pp 722-727.

Xing, M., 2014. Enterprise Internal Control Optimization Research Based on the Accounting Information Perspective. Proceedings of 2014 IEEE workshop on advanced research and technology in industry applications (WARTIA), pp. 709-711.

Zhidkova E.A., 2015. Conceptual approach to the institutional format of management accounting policies in the controlling system. Economics and Management: Problems, Solutions. Vol. 2. № 11. pp. 18-28.

FORMATION OF INNOVATION AND INVESTMENT STRATEGY OF DEVELOPMENT OF AGRIBUSINESS BUSINESS STRUCTURES IN THE CONDITIONS OF ECONOMIC TRANSFORMATION[1]

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Abstract. In the conditions of transformation of the economy, decision-makers in organizations of the agro-industrial complex require an innovative view of the management decision-making process, the effectiveness of which is directly related to the share of systemic innovations in the structure of economic growth factors. The use of a modern controlling system in an enterprise contributes to the qualitative solution of this problem. At the same time, organizations of the agro-industrial complex in modern conditions need to take a step from the initial stages of introducing such a system to its transformation based on the transition from the state of effectiveness to the state of flexibility, in order to remain competitive. The aim of the study is to identify the controlling of innovations in the system of controlling agricultural enterprises and to characterize innovative activity in Russian agribusiness. As part of this study, it is proposed to characterize the conditions for controlling innovation in terms of economic transformation, determine the place of controlling innovation projects subsystem from the standpoint of tetrad theory, consider the regulatory regulation of innovation processes in the Russian Federation and the main directions of innovation activity in agriculture, and Russian agribusiness. As sources of information for research purposes are studies of Russian and foreign scientists in the considered area, regulatory documents and state statistics. The methodological basis of the study is economics and its main provisions; general scientific and special methods of scientific research, abstract logical methods of research are used: methods of analysis and synthesis, classification and generalization, induction and deduction, statistical methods of analysis of economic phenomena, tabular and graphical methods of data interpretation.

Key words: *innovation and investment strategy, business structures of the agro-industrial complex, controlling, economic transformation, development.*

JEL code: O12

Introduction

For the modern world economy, the process of transforming the type of reproduction, changing the forms of accumulation, methods and directions of capital investment, changing ideas about the criteria for economic development are typical. Today, the idea of efficiency involves the use of a comparative analysis of costs, techniques and methods of benchmarking, as well as the use of methods for predicting the future performance of an organization, assessing competitiveness and dynamics of business value, and scenario risk analysis. New requirements for agricultural production

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and the increasing role of applying environmentally friendly methods in it practically leave fewer opportunities for the application of conventional agricultural production methods. (Kubankova M., 2016). These tasks become especially relevant in the conditions of the development of crisis processes in the economy. Currently, agribusiness owners and top managers are required to take an innovative look at the goals and organization of business processes, technological processes and value chains that they own and manage. The quality of economic growth of business structures is the higher, the greater the share of systemic innovations in the structure of factors of this growth. It is advisable to solve problems of improving the quality of economic growth by improving the quality of management decisions made on the basis of a modern and responsive dynamic business environment of a management information system using a special system of techniques and methods known under the general name of "controlling". If until recently, the main task for Russian agribusiness organizations in the economic literature was the transition to the introduction of a controlling system, now they are faced with a new challenge related to the transformation of this system in the context of developing innovative controlling methods and their integration into automated information systems transition to a digital economy in order to increase the relevance and timeliness of information.

At the same time, the changing situation in the market, associated with the comprehensive achievements of scientific and technological progress, requires the integration into the controlling system of all new data related to innovative ways of doing business and, above all, technological processes that differ in the sector of agro-industrial production with particular specifics. The purpose of this study is to identify the controlling of innovations in the system of controlling agricultural enterprises and to characterize innovative activity in Russian agribusiness. As part of this study, it is proposed to characterize the conditions for controlling innovation in terms of economic transformation, determine the place of controlling innovation projects subsystem from the standpoint of tetrad theory, to consider the regulation of innovation processes in the Russian Federation and the main directions of innovation activity in agriculture, and Russian agribusiness. As sources of information for the purposes of this article studies of Russian and foreign scientists in the considered area, regulatory documents and state statistics are used. The methodological basis of the study is economics and its main provisions; general scientific and special methods of scientific research, abstract logical methods of research are used: methods of analysis and synthesis, classification and generalization, induction and deduction, statistical methods of analysis of economic phenomena, tabular and graphical methods of data interpretation.

Research results and discussion

It makes sense to consider any complex economic system as part of a systemic scientific approach as a combination of all elements, subsystems and communications between them, as well as processes ensuring the development of a given direction of organization functioning (Bychkova S., Makarova N., Zhidkova E. Measurement of information .. ., 2018). From the standpoint of the neosystemic approach, various options are offered for considering the totality of such subsystems in accordance with various principles: it seems promising to consider economic phenomena from the standpoint of tetrad theory, in which complex systems operating during economic processes are proposed to be grouped into complexes of four different types of subsystems, environmental, process and project. Object systems are characterized by the presence of known boundaries of the system's location in space, but there is no definite time limit for functioning. For process systems, boundaries in time are known, but spatial boundaries are not defined. For the design systems, both spatial and temporal boundaries are defined, and for environmental systems, the boundaries in space and in time are undefined. (Bychkova S., Makarova N., Zhidkova E. The system of ..., 2018).

In this regard, the fundamental issue is the identification of the place of innovation in the controlling system. V.V. Berdnikov speaks of "controlling innovation processes," which allows for innovation to be interpreted as a process and at the same time as an object of controlling. (Berdnikov V.V., 2009). Textbook A.M. Karminsky (Karminsky A.M., 2013)

also clearly identifies innovation as the object of controlling. Meanwhile, in our opinion, from the point of view of the above classification of controlling subsystems within the framework of the tetrads theory, innovation can hardly be considered a "process" or "object" as systems that have no limitations, spatial or temporal. Any innovation must be completed in time to avoid an endless "update for the sake of updates" and therefore cannot be an object within the accepted classification, and can also be attributed to any specific object of the enterprise's activities (speaking about controlling in the agro-industrial complex organizations we can distinguish For example, such objects as marketing, production technologies, finance, investments, logistics, personnel management, etc.), which has spatial boundaries, and therefore cannot be a process. Of course, within the framework of the innovative development of an enterprise, situations are possible when innovations will affect all spheres of its activity that make up the controlling objects, however, in the case of each particular object, these will undoubtedly be different innovations. As for the integration of data on these innovations into a single information system, which question should inevitably be asked in this case, this will be discussed here, in turn, about innovations in the areas of management and information technology. Thus, within the framework of the classification we are considering, innovations should be considered in the controlling system as a system of projects (Brad S., 2011; Puentes Alfonso D., 2018), implemented by the organization's management in the conditions of operation of a certain regulatory, organizational, technical and informational environment. Implementation of the processes of accounting, analysis, monitoring, control and regulation, implemented in the control system in relation to various objects. The place of controlling innovative projects in the controlling system is illustrated in Figure 1.

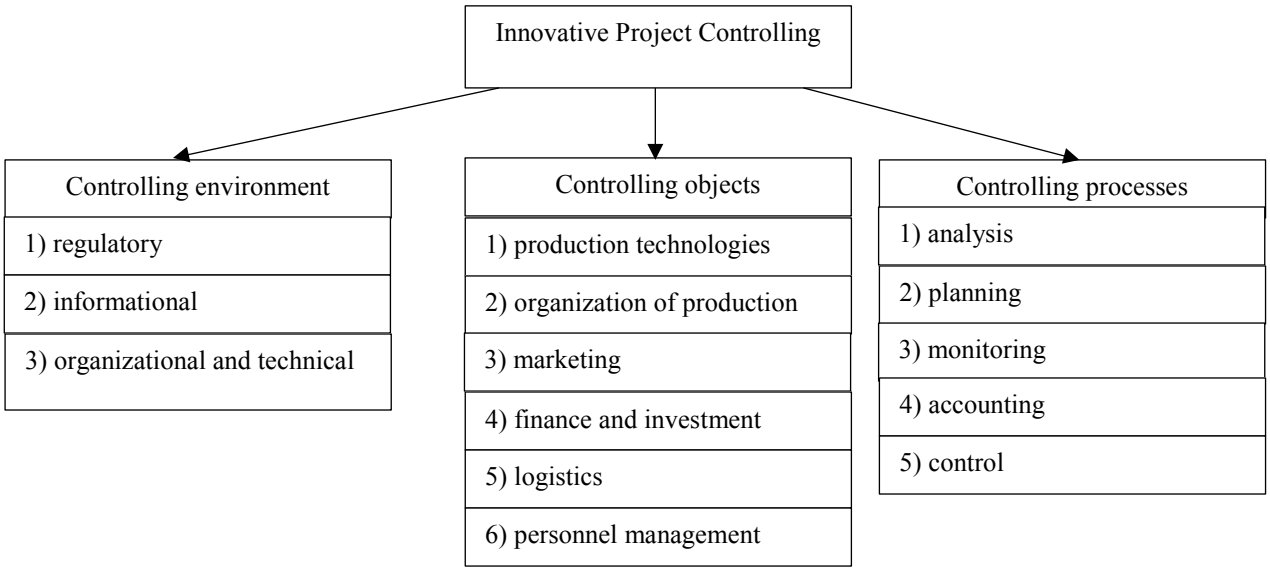


Fig. 1. **The place of controlling innovative projects in the system of controlling the organization**

According to the researchers, the innovative direction of the socio-economic development of the agro-industrial complex is manifested in a number of the following aspects: first, the intellectualization of business is a condition for economic growth. Secondly, the systemic nature of innovations must ensure their complementarity and guarantee, through a synergy effect, an increase in competitiveness (Lahovnik M., 2014) and efficiency. Thirdly, the goal of economic growth is to increase the share of human capital in the structure of national wealth, and intangible assets in the structure of business value. Fourth, and finally, the criterion for the quality of economic growth is an increase in the share of government spending, business structures and households on research and development, accumulation, saving and efficient use of human capital as one of the most important conditions for the creation and elements of national wealth, and the contribution of innovation to growth national income.

Successful innovations are the result of management, marketing, scientific, technological, organizational, financial, business and other types of activities (Zizlavsky O., 2016). Open approaches to innovation in agricultural production imply development through various network forms of cooperation, such as alliances, communities, consortia, ecosystems and platforms, requiring agricultural organizations to co-create value across the network based on the inclusion of external parties in the innovation transformation process or suppliers, as well as innovative intermediaries (Klerkx L., 2013). Thus, there is a removal of barriers between scientists and stakeholders in the agricultural system, between agricultural science and production practices, as well as between market participants in the agricultural sector and in other sectors of the economy (Adner R., 2010; Gardien P., 2014; Berthet ET, 2018). In the context of developing more sustainable agricultural and agri-food systems and taking into account such paradigms as multifunctional agriculture, biotechnology and the circular economy, agroecology, vertical agriculture and intelligent or digital agriculture (Pigford A.-AE, 2018), further development is considered appropriate, studying approaches to joint design and joint implementation in agriculture.

The joint implementation of innovative projects promotes cooperation between researchers and stakeholders for the implementation of combined technological and institutional innovations in individual agricultural organizations, agricultural production sectors, territories and value chains (Botha N, 2014; Botha N, 2017).

It should be noted that in recent years, an important task for an agricultural enterprise was the researchers directly considering the process of introducing controlling methods in agricultural enterprises. However, the processes of transformation of the economy that society faces are challenging the modernization of the controlling system itself in agriculture. According to V.V. Berdnikov, the direction of such a transformation in relation to the controlling of an agricultural enterprise should be its transfer from a state of efficiency to a state of flexibility. The state of flexibility differs from the state of efficiency by the following features of building a management system (Berdnikov V.V., 2009):

- the rapid dissemination of information about changes in the company's requirements and obligations, the definition and multi-criteria evaluation of the alternative scenarios of potential growth opportunities and operational, investment and financial risks associated with their implementation, instead of using budgeting as a financial management method;

- a marginal reduction in the time of the management cycle with the provision of instantaneous reactions to changes in the state of the economic environment instead of the process of searching for and eliminating bottlenecks in the system based on the final and operational analysis;

- empowering employees with the broadest possible powers and responsibilities, instead of monitoring the results of their activities following the results of the period of performance evaluation;

- introduction of a system of training cycles to innovations to ensure the most effective implementation of them instead of a system of measures to assess the internal effectiveness and efficiency of the activities of structural units and individual employees, followed by the identification and use of best practices.

The innovative management methods of controlling are called value and ABC analysis, simulation testing, and coaching; the use of such techniques and methods as change management, delegation of authority and responsibility directly to the level of executors, the transition from managing functions to managing value chains and “flat”, i.e. customer-oriented organizational and management structure, as well as measurement of the results of activity on the speed of adaptation and alternative management decisions.

V.V. Berdnikov (Berdnikov V.V., 2009) proposed a model for increasing the sustainable economic growth of agricultural enterprises due to the multiplying effect of innovation:

$$\text{SGR} = \frac{\text{EVA}}{\text{CE}} * (1 - \text{Div})^{((1\text{C}+1\text{Cinov}):1\text{C})}, \quad (1)$$

where EVA is economically added value;

CE - used capital, that is, the sum of own and attracted financial resources;

Div - the share of net profit allocated for the payment of dividends;

1C - expenses of the investment budget;

1Cinov - the cost of financing innovation.

According to the analysis of foreign studies, it was revealed (Coca O., 2017) that, as the general goals of innovation in agriculture, there are called, firstly, reducing the environmental impact, and secondly, reducing costs. The main agricultural innovations studied by researchers are those associated with reduced resource consumption, such as technological innovations in soil conservation and precise innovations. Evaluation of the innovation process is carried out mainly with the help of indicators that measure the level of production growth, the level of cost reduction and reduction of negative environmental impact. To support management decision-making, more and more tools are being offered based on advances in modeling and automatic data collection in the field, using access to tools provided by the Internet (Cerf M., 2012).

In modern conditions, the Russian agribusiness is characterized by the fact that growth is achieved mainly due to extensive factors, which is associated with a systemic underestimation of the cost of natural resources and labor in the domestic factor market, as well as weak demand for scientific research as an object of entrepreneurial activity. At the same time, the peculiarities of the agro-industrial sector in the context of innovations are the long duration of the research and development cycle, the considerable duration of the “maturity” stage of a successful product at low costs for improving innovations, and the high cost of R & D and the risks of their implementation. Low innovation, a tendency to extensive growth, in the face of increasing resource costs, reduces the market competitiveness and capitalization of Russian agribusiness (Kontsevaya S., 2016).

If we talk about the directions of innovation development in the agricultural sector of Russia, the researchers (Innovative development of ..., 2008) are, first of all, innovations in production technologies, innovative agricultural equipment, innovations in the field of breeding new plant varieties, and new breeds of animals, innovations in production of fertilizers and plant and animal protection products, new methods for the prevention and treatment of animals, new forms of organization, financing and crediting of production, as well as new approaches to training and retraining and staff development. Innovation activity in agriculture by the state is determined by the Decree of the President of the Russian Federation "On measures to implement the state scientific and technical policy in the interests of agricultural development" and the Government of the Russian Federation Decree "On approval of the Federal Scientific and Technical Program for the Development of Agriculture for 2017-2025". In accordance with the first (President of the Russian Federation, 2016), in order to provide scientific and technical support for the development of agriculture and reduce technological risks in the food sector, it is prescribed to develop and implement a set of measures aimed at creating and introducing competitive domestic technologies based on the latest achievements of science and providing:

- production of original and elite seeds of agricultural plants, pedigree products (material) in the areas of domestic plant growing and livestock breeding, currently having a high degree of dependence on seeds or breeding products (material) of foreign production;

- production of high-quality feed, feed additives for animals and medicines for veterinary use;

- diagnosis of pathogens of agricultural plants, production of pesticides and agrochemicals of biological origin for use in agriculture;

- production, processing and storage of agricultural products, raw materials and food;

- quality control of agricultural products, raw materials and food and the examination of genetic material.

In pursuance of this decree, a program has been developed (Government of the Russian Federation, 2017), the goal of which is to ensure stable growth in agricultural production, obtained through the use of seeds of new domestic varieties and pedigree products (material), technologies for the production of high-quality feed, feed additives for animals and medicines for veterinary use, pesticides and agrochemicals of biological origin, processing and storage of agricultural products, raw materials and apprehension, modern diagnostic tools, methods for monitoring the quality of agricultural products, raw materials and food and the examination of genetic material. The program declares that for the next 10 to 15 years, the directions of the scientific and technological development of the Russian Federation should allow, at the expense of the scientific and technical results obtained, to create technologies that ensure the transition to a highly productive and environmentally friendly agricultural and aquatic economy, developing and implementing systems for rational use of resources chemical and biological protection of agricultural plants and animals, storage and efficient processing of agricultural products, the creation of safe and high-quality, including isle functional, food.

At the same time, as the risks, it declares technological risks caused by a lag in the technological development level of the domestic production base from the production base of developed countries, differences in food safety requirements and the organization of a system for monitoring compliance with them, as well as the lack of application of the most demanded domestic agricultural production technologies based on the latest achievements of science.

The program involves financing such activities as the creation of scientific and scientific and technical results and products for the agro-industrial complex, the transfer of scientific and scientific and technical results and products for practical use and the advanced training of participants in scientific and technical support for agricultural development, as well as the commercialization of scientific and technological scientific and technical results and products for the agro-industrial complex. Also, the Russian authorities have developed a system of information support for the agricultural sectors, including data on innovative development based on the introduction of the latest automated systems (Bychkova S.M., Zhidkova E.A., Eliashev D.V., 2018)

To characterize the level of innovation activity in the agribusiness, it is advisable to use state statistics. Thus, a single interdepartmental information and statistical system contains data on investments in fixed capital in areas of investment in the agricultural sector, presented in Table 1. Analyzing the data presented, it can be concluded that, in terms of the capacity of innovations, the indicators of computer and telecommunication equipment”and“Intellectual property”. It should be noted here that these indicators do not occupy a significant place in the structure of investments in the fixed capital of agricultural organizations: their share in the aggregate is only 0.23% of the total volume of investments. At the same time, according to the available data (and at the moment they are presented for an incomplete year), there is a noticeable decrease in the indices of investing in these objects with a general tendency towards the growth of investments in fixed capital.

Table1

Data on investments in fixed capital investment in crop production, livestock, hunting and the provision of related services in these areas, carried out in large and medium-sized enterprises of the Russian Federation

Investment direction	Investment in 2017, million rubles.	Share in total investment,%	Index of investment growth 2018 by 2017 (according to data for January-September)
Residential buildings and premises	1881167	0.50	0.58
Buildings (except residential)	89464564	23.69	1.42
Land Improvement Costs	1319593	0.35	1.29
Facilities	55682865	14.75	1.51
Information, computer and telecommunication equipment	580432	0,15	0.52
Vehicles	21416176	5.67	1.03
Other machinery and equipment, including household equipment, and other objects	135665366	35.93	0.98
Intellectual Property	308619	0.08	0.17
Other	71296301	18.88	1.18
Total	377615083	100.00	1.16

Source: author's calculations based on data from the Unified interdepartmental information - statistical system (EMISS) (Unified interdepartmental information… , 2019)

Another group of indicators characterizing the level of innovation activity can be considered an indicator of the volume of innovative goods (as well as works and services) produced or executed in a particular industry and its share in the total value created. The corresponding data are presented in table 2. As we see from this table, the share of innovative products in most branches of agricultural production exceeds that in all types of economic activity as a whole. The presented data give an idea of the sectorial structure of innovation activity in agribusiness, where livestock farming is the leader. From the point of view of the share of innovative products, a specific and science-intensive area of agricultural activity, like growing seedlings, undoubtedly comes to the first place.

Table2

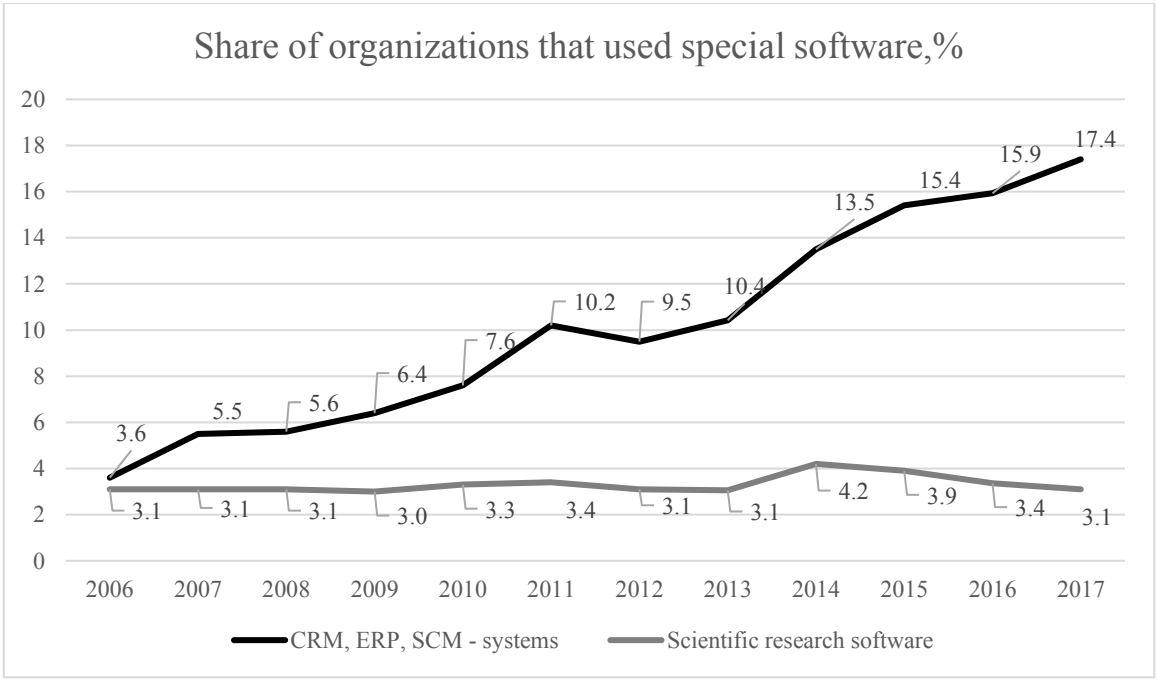
The volume of innovative goods, works, services in the Russian Federation in 2017

Types of economic activity	Innovative goods of own production were shipped, innovative works and services were completed, mln. Rub.	Share in the total volume of goods shipped, work performed and services,%
For all types	4 166 998.7	0.1
growing annual crops	10 625.8	1.93
growing perennial crops	442.5	3.07
growing seedlings	457.3	21.39
animal husbandry	16 602.3	1.72
mixed farming	-	0.00
auxiliary activities in the field of crop production and post-harvest processing of agricultural products	318.1	1.84

Source: authors' calculations based on data from the Federal Statistics Service (Federal Statistics Service, 2019)

From the point of view of the practice of introducing innovative controlling methods into the management system of organizations of the agro-industrial complex, an important role is played by automated information and analytical systems requiring the application of specialized software in management practice.

In the agricultural sector, decision support systems are represented by software, usually based on computer models that describe various biophysical processes in farming systems and how they react to different management methods (for example, irrigation, fertilizers, planting and harvesting terms) and / or climate change (for example, temperature and precipitation). (Jakku E., 2010). If, from the point of view of innovative development of organizations, it seems necessary to use specialized research and development support, then for effective functioning of the controlling system in domestic and foreign practice, it is common practice to use customer relationship management systems (CRM), enterprise resource planning systems (ERP) (Cermak K., 2013), as well as supply chain management systems (SCM). Figure 2 presents data collected by the Federal State Statistics Service of the Russian Federation on the use of such information support in the Russian Federation (among the organizations surveyed). As we can see, the share of organizations using specialized research software for the period under review has not undergone significant changes, while the share of organizations using modern systems associated with management practices has increased several times, having increased from 3.6 % in 2006 to 17.4% in 2017. At the same time, it is worth noting that the most active growth of this share was in the crisis periods of 2008-2011 and 2014-2016.



Source: authors' calculations based on data from the Federal Statistics Service (Federal Statistics Service, 2019)

Fig. 1. **Share of organizations using specialized software in the Russian Federation**

The main target tasks of controlling innovation processes are orientation of innovations to the strategic goals of the enterprise, determination of mutual influence and coordination in areas of activity associated with the innovation direction, informational support and control over the progress of innovative projects. The main principles of controlling innovative projects are called (Karminsky A.M., 2013):

- forecasting and planning the future progress of the implementation phases of the innovation project should be based on the current state of the system, while the past state is forgotten;

- planning and control of the parameters of the innovation project are carried out only on "bottlenecks", i.e. attention is focused not on everyone, but only on the project's defining parameters;

- control of planned values and analysis of arising deviations are carried out on the basis of a comparison of three values: plan - fact - desired perspective;

- control of the correctness of the objectives of the innovation and the achieved result of the innovation project;

- systematic assessment of the results obtained on individual phases of the innovation project.

The tasks of the project-controlling include the supervision of the project implementation, control and information support of effective project management. The main function of controlling innovative projects is information-analytical and methodological support for the planning, accounting, control, and analysis of project parameters, as well as advising management on making decisions regarding the future progress of the project phases.

Conclusions, proposals, recommendations

1. In the conditions of transformation of the economy, decision-makers in organizations of the agro-industrial complex require an innovative view of the management decision-making process, the effectiveness of which is directly related to the indicator of the share of systemic innovations in the structure of economic growth factors. The use of a modern controlling system in an enterprise contributes to the qualitative solution of this problem. At the same time, organizations of the agro-industrial complex in modern conditions need to take a step from the initial stages of introducing such a system to its transformation based on the transition from the state of effectiveness to the state of flexibility, in order to remain competitive.

2. An important role in this regard is played by the identification of the concept of controlling innovation and determining its place in the system of controlling an organization. Despite the fact that many researchers adhere to the notion that innovations are the object of controlling, in our opinion, determining the place of the controlling subsystem of innovations in the controlling system described from the point of view of the theory of tetrads, it can be defined as a design subsystem the project is unique, refers to a specific object or group of objects and has clearly defined moments of beginning and end, that is, it is limited in space e and time, which corresponds, in our understanding of design subsystems, so it is appropriate to use "controlling innovative projects" term.

3. The government bodies of the Russian Federation have now formulated a concept and developed a program for the innovative development of the agricultural sector, with the main regulatory conditions being formulated only recently, in 2016-2017. The main areas of innovative development in the field of agriculture were the use of seeds of new domestic varieties and domestic breeding products, technologies for the production of high-quality feed, feed additives for animals and medicines for veterinary use, pesticides and agrochemicals of biological origin, innovative technologies for processing and storing agricultural products, raw materials and food, modern diagnostic tools and agricultural quality control methods products, raw materials and food.

4. In the conditions of conducting business activities, Russian agricultural organizations do not pay enough attention to innovation development issues. The low-level activity, the tendency to extensive growth, the long duration of the research and development cycle, the lag in the technological development level of the domestic production base from the production base of developed countries are referred to as problematic issues. State statistics indicate that investments in information, computer and telecommunications equipment, as well as intellectual property do not have a significant share in the structure of investments in fixed capital in industries related to agricultural production. At the same time, in the structure of industries that most actively produce innovative products among all branches of agricultural production,

animal husbandry leads in absolute terms, and from the point of view of the share of innovative products, seedling cultivation holds the first place.

Bibliography

Adner R., Kapoor R. Value creation in innovation ecosystems: how the structure of technological interdependence affects firm performance in new technology generations. Strateg. Manag. J., 31 (2010), pp. 306-333

Berdnikov V.V. Business performance controlling: Monograph. - M .: RUDN, 2009. - 452 p.

Berthet E.T., Hickey G.M. Klerkx L. Opening design and innovation processes in agriculture: Insights from design and management sciences and future directions. Agricultural systems, vol.: 165, 111-115.

Botha N., Klerkx L., Small B., Turner J.A. Lessons on transdisciplinary research in a co-innovation programme in the New Zealand agricultural sector. Outlook Agric., 43 (3) (2014), pp. 219-223

Botha N., Turner J.A., Fielke S., Klerkx L. Using a co-innovation approach to support innovation and learning: cross-cutting observations from different settings and emergent issues. Outlook Agric., 46 (2017), pp. 87-91

Brad, Stelian; Pitic, Lucian. Quality cost-based adaptive control approach for conducting process innovation, Quality and Innovation in Engineering and Management (QIEM), Cluj Napoca, Romania, 2011, 237-241.

Bychkova S.M., Makarova N.N., Zhidkova E.A. Measurement of information in the subsystem of internal control of the controlling system of organizations of the agro-industrial complex. // Entrepreneurship and sustainability issues/ 2018, 6 (1), pp.35-44.

Bychkova S.M., Makarova N.N., Zhidkova E.A. The system of controlling organizations a agro-industrial complex from the position of the theory Tetrad // 2018 13th International Forum on Strategic Technology, 1136-1138.

Bychkova, Svetlana M.; Zhidkova, Elena A.; Eliashev, Dmitrii, V. Informational support as an element of state control of agriculture. Foods and raw materials, 2018, vol.: 6, Issue: 2, 467-473.

Cermak, Karel. Innovation in controlling. // 7th International Days of Statistics and Economics, 2013, 271-278.

Cerf M., Jeuffroy M.-H., Prost L., Meynard J.-M. Participatory design of agricultural decision support tools: taking account of the use situations. Agron. Sustain. Dev., 32 (2012), pp. 899-910

Coca O. The evaluation of innovation in agriculture. A meta - analytical study of literature. Scientific papers-series management economic engineering in agriculture and rural development, 2017. Vol.: 17, Issue: 1, 111-119.

Federal State Statistics Service [Online]. Available at: http://www.gks.ru [Accessed 10 January 2019]

Gardien P., Djajadiningrat T., Hummels C., Brombacher A .Changing your Hammer: The Implications of Paradigmatic Innovation for Design Practice. INTERNATIONAL JOURNAL OF DESIGN. Vol.: 8, Issue: 2, 119-139

Innovative development of the agro-industrial complex of the constituent entities of the Russian Federation: experience and problems. Ed. I.G. Ushacheva, I.S. Sandu, V.G. Savenko. - M .: LLC Stolichnaya Printing House, 2008. - 154 p.

Jakku E., Thorburn P.J. A conceptual framework for guiding the participatory development of agricultural decision support systems. Agric. Syst., 103 (2010), 675-682/

Karminsky A.M., Falko S.G., Zhevaga A.A., Ivanova N.Yu. Controlling: textbook / A.M. Karminsky, S.G. Falco, A.A. Chews. N. Yu. Ivanova; by ed. A.M. Karminsky, S.G. Falco. - 3rd ed., Dorab. - M .: PH «FORUM»: INFRA-M, 2013. - 336 p.

Klerkx L., Aarts N. The interaction of multiple champions in orchestrating innovation networks: conflicts and complementarities Technovation, 33 (2013), pp. 193-210.

Kontsevaya, Stanislava; Alborov, Rolan; Kontsevaya, Svetlana. Estimation of current status of internal economic control in Russianagriculture // New dimensions in the development of society marketing and sustainable consumption finance and taxes . 2016. Vol.: 43, 290-295.

Kubankova M., Hajek M., Votavova A. Environmental and social value of agriculture innovation. Agricultural economics-zemedelska ekonomika, 2016. Vol.: 62, Issue: 3, 101-112.

Lahovnik, M, Breznik, L., Technological innovation capabilities as a source of competitive advantage: A case study from the home appliance industry, Transformations in Business & Economics, 2014, Vol. 13, №. 2,. 144-160.

On approval of the Federal Scientific and Technical Program of Agricultural Development for 2017-2025. Resolution of the Government of the Russian Federation of 08.25.2017 № 996. [Online] Available at: http://www.consultant.ru/document/cons_doc_LAW_223631. [Accessed 10 January 2019]

On measures to implement the state scientific and technical policy in the interests of agricultural development. Decree of the President of the Russian Federation of 07.21.2016 № 350. [Online] Available at: http://www.consultant.ru/document/cons_doc_LAW_202183. [Accessed 10 January 2019]

Pigford A.-A.E., Hickey G.M., Klerk L. Beyond agricultural innovation systems? Exploring an agricultural innovation ecosystems approach for niche design and development in sustainability transitions. Agric. Syst., 164 (2018), pp. 116-121.

Puentes Alfonso, Deisy; Gonzales Perez, Maricela. Procedure of registration, control and analysis of economic impact indicators of businessinnovation // AVANCES, 2018. vol: 20, Issue: 1, 52-65 .

Unified interdepartmental information - statistical system (EMISS) [Online] Available at: https://fedstat.ru [Accessed 10 January 2019]

Zizlavsky, Ondrej. The use of financial and nonfinancial measures within innovation management control: experience and research // ECONOMICS & SOCIOLOGY, 2016. Vol.: 9, Issue: 4, 41-63.

BITCOIN AND STOCK MARKET INDICES: ANALYSIS OF VOLATILITY'S CLUSTERS DURING THE BITCOIN BUBBLE BASED ON THE DYNAMIC CONDITIONAL CORRELATION MODEL

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Abstract. The market of virtual currencies, called cryptocurrency, has grown immensely since 2008 in terms of market capitalisation and the numbers of new currencies. Bitcoin is one of the most famous cryptocurrency with an estimated market capitalisation of nearly $ 69 billion. The fact that Bitcoin prices have fallen about 70% from their peak value and most indices were down double-digit year to date (2018) with a high daily volatility create the appearance that there has to be a correlation.

The purpose of this paper is to investigate the contagion effect between Bitcoin prices and the leading American, European and Asian equity markets using the dynamic conditional correlation (DCC) model proposed by Engle and Sheppard (2001).

Contagion is defined in this context as the statistical break in the computed DCCs as measured by the shifts in their means and medians. Even it is astonishing that the contagion is lower during price bubbles, the main finding indicates the presence of contagion in the different indices among the three continents and proves the presence of structural changes during the Bitcoin bubble. Moreover, the analysis shows that specific market indices are more correlated with the Bitcoin price than others.

Key words: *BitCoin, Financial Contagion, Dynamic Conditional Correlation Model, Volatility*

JEL code: G13, G41, F39

Introduction

The Cryptocurrency markets have recently experienced increased growth leading to some suggesting that they may be seen as a new category of investment assets. For the period from May 2014 to December 2018 the market capitalisation of the oldest and best known, Bitcoin, increased from $ 1.5 billion to $ 68.6 billion, while the price jumped from 103 to 3829 US dollars, with a peak end of 2017 with nearly $ 20.000 per one Bitcoin (Coinmarketcap, 2019). Therefore, it is not surprising that investors, which are attracted by high growth of cryptocurrencies, seek to achieve abnormal returns. These high returns may be a rational response to their high volatility, see Katsiampa (2017). Bitcoin is characterised by anonymity (Bariviera et al., 2017) and tend to be a speculative bubble (Cheah and Fry, 2015). Historical price bubbles, like the Dutch tulip mania in the 1640s or the Dot-Com bubble of the early 2000s, may, in turn, spread contagion and weaken financial stability (Yarovaya et al., 2016, Abreu and Brunnermeier, 2003). Therefore, it is crucial to identify patterns of cryptocurrencies markets and other tradeable asset classes, for instance, stock markets.

The cryptocurrency has become an increasingly important topic widely covered by the media and discussed by governments, businesses and academic communities. Besides the numerous policy papers and reports (European Central Bank, 2012), there were significant attempts by financial scholars to analyse cryptocurrencies as investment assets. Recently, the focus of the research has expanded from the technical aspects and stylised facts of cryptocurrency markets

(e.g. Dwyer, 2015) to a variety of issues, such as hedging behaviour of cryptocurrencies (Bouri et al., 2017), speculation (Blau, 2017) or market efficiency (Urquhart, 2016). The majority of these papers, however, focused solely on Bitcoin. Furthermore, there is a lack of research on potential contagion effects between Bitcoin and other markets. To fill this gap, this paper examines the return, and volatility transmission across Bitcoin and three market indices, namely: Dow Jones Industrial Average, STOXX Europe 600 and as well Hang Seng Index. As a robustness check, a dynamic conditional correlation (DCC) model proposed by Engle and Sheppard (2001) should answer the key research are: Is Bitcoin correlated with stocks markets?

This paper is organised as follows. Section 2 provides a brief introduction to the area of financial contagion. Chapter 3 presents our data and descriptive statistics, and Section 4 briefly introduces the methodology. The empirical results are analysed in section 5. Finally, Section 6 concludes the paper.

Financial Contagion

The literature about the contagion effect in financial markets is that extensive to review here shortly. The surveys from Kindleberger (1978) or Kaminskyet al. (2003) are only some of those, which have to be mentioned. In general, the focus of most literatures is the contagion effect across countries. Therefore, the spread of crises from one country to another has been one of the most discussed issues in international finance since the last decades. This is caused by the frequent occurrence of the previous crisis. Financial contagion characterises situations in which local shocks are transmitted to other financial sectors or even countries. One of the most known definition explains a contagion as a "structural change in the mechanism of the proliferation of shocks arising from a particular event or group of events associated with a particular financial crisis", see Arruda and Pereira (2013). Applied to a financial crisis means this that a specific shock can propagate like a virus, starting in a country and overlapping even to other continents.

The above table gives a short overview of the different researches, which mainly focus on the effect of financial crisis on emerging markets. Filleti et al. (2008) analysed the contagion between the Latin American economies and two emerging markets. Armada et al. (2011) tested the contagion effect between the financial markets of nine developed countries and Azad (2009) for the Asian market. Arruda and Pereira (2013) analysed the contagion effects during the US Subprime crisis. Regarding the technology-bubble, Anderson et al. (2010) studied the proliferation of the technology-bubble. Most of the studies applied variations of Engle and Sheppards' (2001) DCC model. Koehn and Valls (2017) analysed the contagion effect between American and European indices during the technology-bubble. Corbet et al. (2018) was one of the first study, which analysed a correlation between Bitcoin and gold.

Table 1

Empirical researches for financial contagion or volatility spillover effects using multivariate Garch models

Author(s)	Year	Model	Specific topic
Chiang, Jeon and Li	2007	DCC 8 Asian FMs	Financial crisis in Asia in 1997, the effect of credit-rating agencies on the structure of correlation dynamic.
Kuper and Lestano	2007	DCC 6 Asian FMs	Effect of financial crisis on the interdependence of financial and FX markets
Cheung, Fung and Tam	2008	DCC 11 EMEAP and US	Interdependence of financial markets, Contagion risk of in EMEAP region
Cho and Parhizgari	2008	DCC 8 Asian FMs	East Asian financial contagion under DCC–GARCH
Beirne, Caporale, Ghattas, Spagnolo	2009	MGARCH-in-mean 41 FMs: Asia, Latin America, Middle East	Global and Regional volatility spillover
Frank, Gonzalez-Hermosillo und Hesse	2009	DCC, GARCH US: LIBOR, S&P500, ABCP	Transmission of Liquidity Shocks: Evidence from the 2007 Subprime Crisis
Munoz, Marquez and Chulia	2010	TSFA, DCC 19 FMs: North America, Europe, Asia	Asian financial crisis, Dot-com crisis, Global financial crisis
Yiu, Ho and Choi	2010	PCA, ADCC 11 EMEAP and US	Dynamic correlation analysis of financial contagion in Asian markets in global financial turmoil
Naoui, Khemiri and Liouane	2010	DCC 10 FMs: Asia, Latin America and US	Sub-prime crisis 2007
Kenourgios, Samitas and Paltalidis	2011	AG-DCC, copula-DCC BRIC, UK, US	Five recent financial crises
Marcal, Valls, Martin and Nakamura	2011	DCC 9FMs: Argentina, Brazil, South Korea, US, Singapore, Malaysia, Mexico and Japan	Evaluation of contagion or interdependence in the financial crisis of Asia and Latin America, considering the macroeconomc fundamentals
Kazi, Guesmi and Kaabia	2011	DCC 17FMs: OECD countries	Contagion Effect of Financial Crisis on OECD Stock Markets
Celik	2012	DCC GARCH 8 FMs: Japan, Malaysia, Denmark, India, Canada, China, Australia, Brazil	The more contagion effect on emerging markets: The evidence of DCC-GARCH model
Chittedi	2015	DCC GARCH India and US	Financial Crisis and Contagion Effects to Indian Stock Market: DCC–GARCH Analysis
Koehn and Valls	2017	DCC GARCH US and Europe	Speculative bubbles and contagion: Analysis of volatility's clusters during the DotCom bubble based on the dynamic conditional correlation model
Corbet, Meegan, Larkin, Lucey and Yarovaya	2018	DCC GARCH Bitcoin and Gold	Exploring the dynamic relationships between cryptocurrencies and other financial assets

Source: author's construction

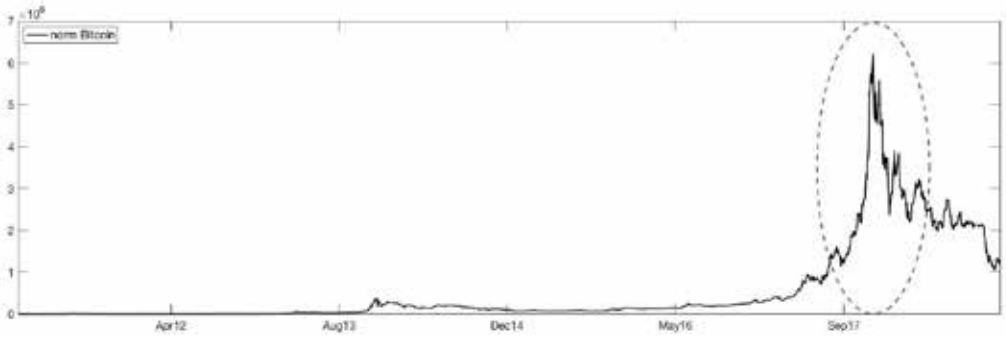
This paper will focus on the contagion within different countries and Bitcoin during the Bitcoin bubble. The presence of a contagion effect can be determined by the increase in conditional correlations of the indices during the period of crisis compared to the previous periods.

A first look at the data

The data on stock market prices consists of the Dow Jones Industrial Average (INDU), STOXX Europe 600 Index (SXXP) and as well Hang Seng Index (HSI). The reason for choosing this group of countries is the idea of having three representatives for American, European and as well as Asian markets. Besides those stock market prices, the daily bitcoin price is also collected. All daily data are collected over the period from January 3, 2011 to December 31, 2018.
All data are obtained from Bloomberg. Daily data are used in order to retain a high number of observations to adequately capture the rapidity and intensity of the dynamic interactions between markets.

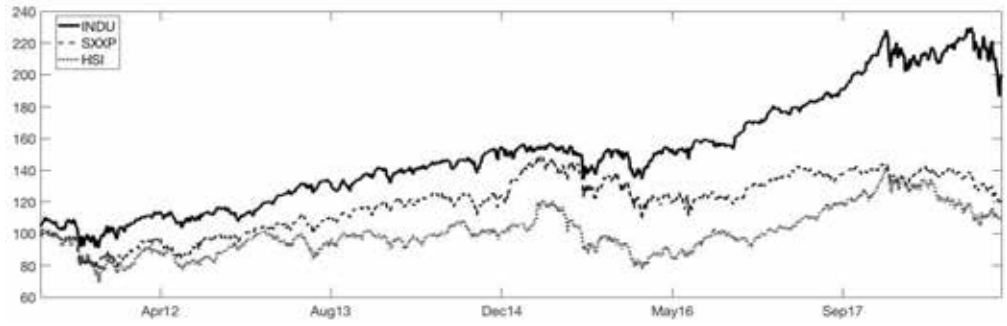
Figure 1 illustrates the normalized Bitcoin prices over a time period between 2011 and 2018. Because of the extreme high normalized price, the market indices have to illustrate separately. Consequently, figure 2 presents the normalised

stock market indices with an interesting pattern. Using normalised stock market prices; the figure illustrates better the relative performance of the initial value of each index than plotting all indices naturally. In that specific time frame, Bitcoin nearly 1.500.000x its value, where the best index (INDU) just doubled its value.



Source: author's construction based on data from Bloomberg

Fig. 1. **Normalized Bitcoin Prices**



Source: author's construction based on data from Bloomberg

Fig. 2. **Normalized Stock Market Indices**

Regarding the sample definition, the intention was to select an extensive set of historical data with approximately a 7-year period, which amounted to 2,086 observations for four series. Compounded market returns (i for index, respective Bitcoin) at time t are computed as follows:

$$r_{i,t} = \log(\frac{P_{i,t}}{P_{i,t-1}})$$

where $P_{i,t}$ and $P_{i,t-1}$ are the closing prices for day t and t -1, respectively. Figure 3 indicates those compounded market returns and identifies some clusters. As figure 3 clearly shows, the volatility cluster for Bitcoin is extremely high. Furthermore, in periods of high volatility Bitcoin clusters, it seems that stock indices have a lower volatility. Interestingly, one can identify three Bitcoin volatility clusters. Looking at the stock indices, they do not show the same high volatility cluster during that time. One can argue, combining some of the data from figure 1 and figure 3, that there could be a bitcoin bubble in the timeframe from 2017 to 2018.

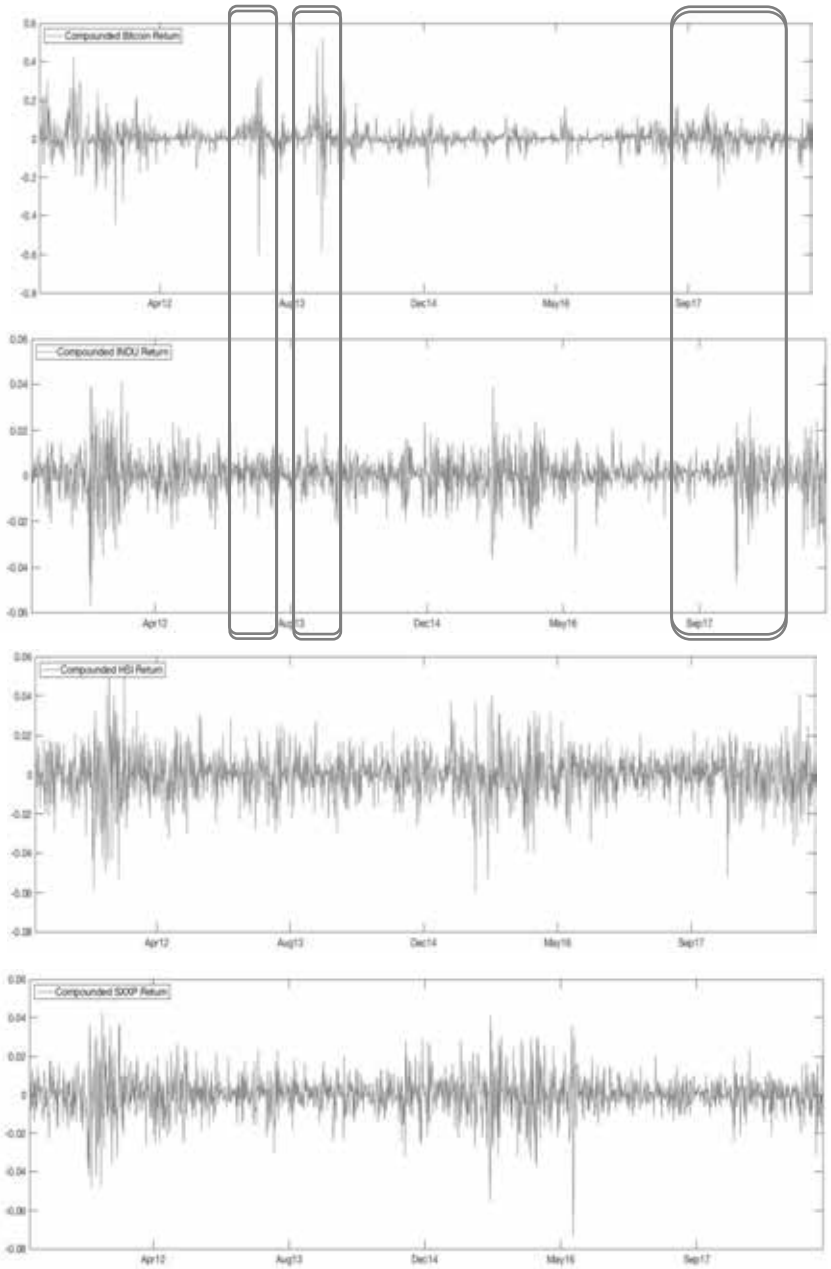


Fig. 3. **Compounded Market Indices as well Bitcoin Returns – Full Sample**

The descriptive statistics of the data are given in the above table, which is divided into two panels A and B. As seen from panel A, the mean value for each return series is close to zero and for each return series the standard deviations are more significant than the mean values and varies from 0.87% to 6.36%. The minimum alters from -5.71% to -60.09% and the maximum ranges from 4.28% to 51.70%. Each compounded market return displays a small negative amount of skewness and a large amount of kurtosis - varies between 5.92 to 19.15 - indicating that there are bigger tails than the normal distribution and therefore, the returns are not normally distributed.

In panel B, unconditional correlation coefficients in stock market index returns as well with Bitcoin returns indicate strong pairwise correlations. The correlations within the different continents and their indices are highly positive over the full sample. Every correlation is bigger than 22.46%. Nevertheless, the correlation between Bitcoin and these three indices are quite low or even negative. The high positive unconditional correlations within the stock indices are the first indicators for a contagion effect. But the low or even negative correlation with Bitcoin disagrees this assumption.

Table 2

Descriptive Statistics of Compounded Stock Market and Bitcoin returns

Panel A: Descriptive statistic							
	Mean	Min.	Max.	Std.dev.	Kurtosis	Skewness	Jarque-Bera
Bitcoin	0,0045	-0,6009	0,5170	0,0636	19,1502	-0,2514	22681,58
INDU	0,0003	-0,0571	0,0486	0,0087	7,6554	-0,5157	1975,25
SXXP	0,0001	-0,0729	0,0428	0,0100	6,9767	-0,4431	1442,04
HSI	0,0000	-0,0602	0,0552	0,0112	5,9291	-0,3302	783,27

Panel B: Summary of unconditional correlation matrix of compounded market returns				
Full sample				
	Bitcoin	INDU	SXXP	HSI
Bitcoin	1,0000	0,0405	0,0272	-0,0359
INDU		1,0000	0,6050	0,1919
SXXP			1,0000	0,4128
HSI				1,0000

The results of the unit root tests for the returns are summarised in table 3. The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are used to explore the existence of unit roots in individual series. The results of unit root tests have rejected the null hypothesis of the unit root for all market returns, indicating that the return series are trend stationary.

Table 3

Unit root test: ADF and PP

Stock market and Bitcoin returns				
	ADF statistics			PP statistics
	None	Constant	Time Trend	
Bitcoin	-43,821	-43,621	-43,909	-44,072
INDU	-46,886	-46,807	-46,855	-46,978
SXXP	-43,564	-43,571	-43,558	-43,561
HSI	-44,714	-44,724	-44,706	-44,704

Figure 4 depicts the plots between every indices and Bitcoin. Visually, one can see a higher relationship between American and European indices than Bitcoin and those indices. It is not a perfect relationship, because not all points are lying exactly on the straight lines. The closer they are to the line (taken all together), the stronger would be the relationship between the variables. These relationships between the series are linearly fitted by straight lines.

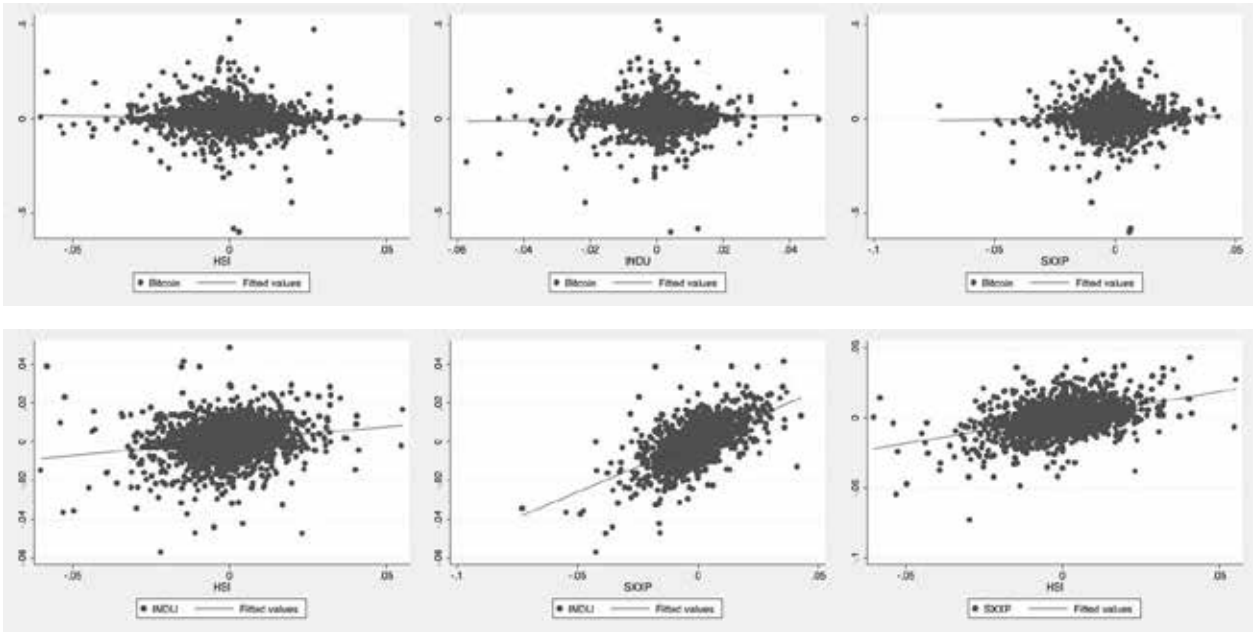


Fig. 4. **Scatter Plot Every Indices and Bitcoin with each other**

Methodology

The econometric method is based on the modelling of multivariate time-varying volatilities. One of widely used models is the Dynamic Conditonal Correlation (DCC) of Engle and Sheppard (2001) as well as Tse and Tsui (2002), which captures the dynamic of time-varying conditional correlations. The main idea of this models is that the covariance matrix, H_t, can be decomposed into conditional standard deviations, D_t, and a correlation matrix, R_t. D_t as well R_t are designed to be time-varying in the DCC GARCH model. The specification of the DCC model can be explained as follows:

$$r_t = \mu + \sum_{s=1}^{p} \phi_s \, r_{t-s} + \varepsilon_t \;\; for\; t = 1, \dots, T \; and \; \varepsilon_t | \Omega_{t-1} \sim N(0, H_t)$$

where r_t is a 4×1 vector of stock market index returns. The error term, ε_t, from the mean equations of stock market indices can be presented as follows with z is a 4×1 vector of i.i.d errors:

$$\varepsilon_t = \left(\varepsilon_{Bitcoin0,t}, , \varepsilon_{INDU,t}, \varepsilon_{SXXP,t}, \varepsilon_{HSI,t}\right)' = H_t^{\frac{1}{2}} z_t$$

$$with \; z_t \sim N(0, I_4).$$

H_t is the conditional covariance matrix and is given by following equation:

$$H_t = E(\varepsilon_t \varepsilon_t{}' | \Omega_{t-1})$$

Therefore, equation can be written for the 4 different data sets:

$$\begin{bmatrix} r_{Bitcoin,t} \\ r_{INDU,t} \\ r_{SXXP,t} \\ r_{HSI,t} \end{bmatrix} = \begin{bmatrix} \mu_{Bitcoin,t} \\ \mu_{INDU,t} \\ \mu_{SXXP,t} \\ \mu_{HSI,t} \end{bmatrix} + \sum\nolimits_{s=1}^{p} \begin{bmatrix} \phi_{11}^s & \phi_{12}^s & \phi_{13}^s & \phi_{14}^s \\ \phi_{21}^s & \phi_{22}^s & \phi_{23}^s & \phi_{24}^s \\ \phi_{31}^s & \phi_{32}^s & \phi_{33}^s & \phi_{34}^s \\ \phi_{41}^s & \phi_{42}^s & \phi_{43}^s & \phi_{44}^s \end{bmatrix} \begin{bmatrix} r_{Bitcoin,t-s} \\ r_{INDU,t-s} \\ r_{SXXP,t-s} \\ r_{HSI,t-s} \end{bmatrix} + \begin{bmatrix} \varepsilon_{Bitcoin,t} \\ \varepsilon_{INDU,t} \\ \varepsilon_{SXXP,t} \\ \varepsilon_{HSI,t} \end{bmatrix}$$

Applying Engle and Sheppard's (2001) dynamic conditional correlation model, the $r_t = \left(r_{Bitcoin,t}, r_{INDU,t}, r_{SXXP,t}, r_{HSI,t}\right)'$ is a 4×1 vector of stock market returns, such that $r_{Bitcoin}$ is the return of Bitcoin, respectively the indices with $r_t | \Omega_{t-1} \sim N(0, H_t)$.

The conditional covariance matrix H_t is defined by two components on the CCC model, which are estimated independent of each other: The sample correlations H_t and the diagonal matrix of time varying volatilities D_t. Therefore, the covariance forecast is given by following equations:

$$H_t = D_t R_t D_t$$

where $D_t = diag\left(\sqrt{h_{Bitcoin,t}}, \sqrt{h_{INDU,t}}, \sqrt{h_{SXXP,t}}, \sqrt{h_{HSI,t}}\right)$ is a 4×4 diagonal matrix of time varying standard deviations from the univariate GARCH models, for

$$h_{i,t} = \omega_i + \alpha_i \varepsilon_{i,t-1}^2 + \beta_i h_{i,t-1}$$

$for \;\; i = Bitcoin, INDU, \; SXXP, HSI$ and the time varying conditional correlation matric is defined by:

$$R_t = \{\rho_{i,t}\}$$

Getting the DCC-GARCH model, two steps have to be taken. The first one is to estimate a univariate GARCH model. The second stage is to define the vector of standardized residuals, $\eta_{i,t} = \frac{r_{i,t}}{\sqrt{h_{i,t}}}$ to develop the DCC correlation specification:

$$R_t = diag\left(q_{11}^{-\frac{1}{2}}, \dots, q_{44}^{-\frac{1}{2}}\right) Q_t \; diag\left(q_{11}^{-\frac{1}{2}}, \dots, q_{44}^{-\frac{1}{2}}\right)$$

where $Q_t = (q_{i,j,t})$ is a symmetric - positive defined - matrix. Q_t varies according to a GARCH-type process as follows:

$$Q_t = (1 - \theta_1 - \theta_2)\tilde{Q} + \theta_1 \eta_{t-1} \eta_{t-1}' + \theta_2 Q_{t-1}$$

The variables, θ_1 and θ_2, are positive, $\theta_1 \geq 0 \; and \; \theta_2 \geq 0$ and, therefore, $\theta_1 + \theta_2 < 1$. $\theta_1 \; and \; \theta_2$ define scalar parameters, which capture the effects of previous shocks and previous dynamic conditional correlation on current dynamic conditional correlation. $\tilde{Q}$ explains the 4×4 unconditional variance matrix of all standardized residuals $\eta_{i,t}$ with a

correlation estimation like following: $\rho_{i,j,t} = \frac{q_{i,j,t}}{\sqrt{q_{i,i,t}\, q_{j,j,t}}} \leq 1$

Empirical results

Table 4 reports the final prediction error (FPE), Akaike's information criterion (AIC), Schwarz's Bayesian information criterion (SBIC), and the Hannan and Quinn information criterion (HQIC) lag order selection statistics for a series of vector autoregressions of order 1 through a requested maximum lag. The equation for the FPE is given by Luetkepohl (2005), with T as the number of observations and K as the number of equations: $FPE = |\Sigma_u| \left(\frac{T+Kp+1}{T-Kp-1}\right)^K$

AIC, SBIC and HQIC are computed according to their standard definitions, see for those equations Akaike (1974), Schwarz (1978) and Hannan and Quinn (1979):

$$AIC = -2\left(\frac{LL}{T}\right) + \frac{2t_p}{T}; SBIC = -2\left(\frac{LL}{T}\right) + \frac{\ln(T)}{T}t_p \text{ and } HQIC = -2\left(\frac{LL}{T}\right) + \frac{2\ln(\ln(T))}{T}t_p$$

where LL is the log likelihood and t_p indicates the total amount of parameters in the model. Table 4 is the result as pre-estimation. This pre-estimation version is later used to select the lag order for the MGARCH-model.

Table 4

Obtain Lag-Order Selection Statistics

Sample: 10 -2085 Number of obs: 2075

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
1	23642.4	.	16	.	1.5e-15	-22,7724	22,7565*	-22,7289*
2	23659.5	34	16	0.005	1.5e-15	-22,7735	-22,7417	-22,6866
3	23680.7	42	16	0.000	1.5e-15	-22,7785	-22,7307	-22,6481
4	23701.9	42	16	0.000	1.5e-15*	-22.7835*	-22,7198	-22,6096
5	23716.7	29,707*	16	0.020	1.5e-15	-22,7824	-22,7027	-22,5650

Endogenous: Bitcoin INDU SXXP HSI
Exogenous: _cons

The "*" indicates the optimal lag. Even, the FPE is not an information criterion; the prediction error has to be minimized. Therefore, it is included in the lag selection discussion and is selected by the lag length with the lowest value. Measuring the difference between given model and true model, the AIC has to be as low as possible, shown by Akaike (1973). A similar interpretation provides the SBIC and the HQIC. Luetkepohl (2005) discussed the theoretical advantage of SBIC and HQIC over the AIC and the FPE. In the data series of 3 indices and Bitcoin, the likelihood-ratio (LR) tests selected a model with 5 lags. HQIC and SBIC have chosen a model with only one lag, whereas FPE and AIC have selected a model with four lags. Consequently, a one ARCH term and one GARCH term is used for the conditional variance equation of each indices. In following, table 5 shows the DCC estimation with GARCH(1) and ARCH(1).

Table 5

Dynamic Conditional Correlation (DCC)

log likelihood 24746,82

		Coef.	OPG Std.Err	z	P>|z|	[95% Conf.	Interval]
ARCH_Bitcoin	arch L1	0,1309	0,0148	8,86	0,000	0,1019	0,1598
	garch L1	0,8760	0,0117	74,90	0,000	0,8531	0,8989
	_cons	0,0000	0,0000	4,74	0,000	0,0000	0,0000
ARCH_INDU	arch L1	0,1521	0,0166	9,19	0,000	0,1197	0,1846
	garch L1	0,7995	0,0199	40,22	0,000	0,7605	0,8384
	_cons	0,0000	0,0000	6,35	0,000	0,0000	0,0000
ARCH_SXXP	arch L1	0,0879	0,0108	8,15	0,000	0,0668	0,1091
	garch L1	0,8861	0,0140	63,15	0,000	0,8586	0,9136
	_cons	0,0000	0,0000	4,50	0,000	0,0000	0,0000
ARCH_HSI	arch L1	0,0468	0,0075	6,28	0,000	0,0322	0,0614
	garch L1	0,9347	0,0110	84,95	0,000	0,9132	0,9563
	_cons	0,0000	0,0000	3,44	0,001	0,0000	0,0000
	corr(Bitcoin,INDU)	0,0155	0,0302	0,51	0,607	-0,0437	0,0748
	corr(Bitcoin,SXXP)	0,0230	0,0301	0,76	0,445	-0,0361	0,0821
	corr(Bitcoin,HSI)	-0,0127	0,0298	-0,43	0,671	-0,0710	0,0457
	corr(INDU,SXXP)	0,6018	0,0191	31,56	0,000	0,5644	0,6392
	corr(INDU,HSI)	0,2003	0,0287	6,98	0,000	0,1441	0,2565
	corr(SXXP, HSI)	0,3930	0,0251	15,68	0,000	0,3439	0,4421
Adjustment	lambda1	0,0079	0,0026	3,02	0,002	0,0028	0,0131
	lambda2	0,9642	0,0116	82,82	0,000	0,9413	0,9870

As table 5 shows, 5 of these 6 estimated conditional quasi-correlations are positive between the volatilities of the 4 different data sets. For instance, the estimated conditional correlation between Bitcoin and INDU is 0.0155. This means that high volatility in the Bitcoin is related to a high volatility in the INDU and vice versa. The only estimated conditional correlation which is negative, is the correlation between HIS and Bitcoin. Finally, table 5 presents the results for the adjustment parameters λ_1 and λ_2. Both estimated values for λ_1 and λ_2 are statistically significant.

Table 6

Wald-Test

1)	[Adjustment]lambda1 - [Adjustment]lambda2 = 0
2)	[Adjustment]lambda1 = 0

chi2(2)	10497.65
Prob > chi2	0,0E+00

The Bitcoin bubble is timed - as figure 1 shows –between April 2016 to December 2018. An interesting finding can be even seen in table 7. This tables indicate the different conditional correlation matrix and compared them with the null hypothesis that the correlation between different markets (indices respective Bitcoin) is lower during a bubble than sometimes else. The table on the right hand indicates that hypothesis. "Yes" means, that the null hypothesis is right and is not rejected. Meaning that during the Bitcoin-Bubble the correlation between the different data sets were lower than in the time without bubble. "No" indicates that the conditional correlation is higher during the Bitcoin bubble.

Table 7

Dynamic Conditional Correlation- Full-Sample vs Bitcoin

Dynamic Conditional Correlation (DCC): Full Sample

	Bitcoin	INDU	SXXP	HSI
Bitcoin	1	0,0155	0,0230	-0,0127
INDU	0,0155	1	0,6018	0,2003
SXXP	0,0230	0,6018	1	0,3930
HSI	-0,0127	0,2003	0,3930	1

Dynamic Conditional Correlation (DCC): Bitcoin Bubble

	Bitcoin	INDU	SXXP	HSI
Bitcoin	1	0,0365	0,0147	-0,0142
INDU	0,0365	1	0,5481	0,2171
SXXP	0,0147	0,5304	1	0,3886
HSI	-0,0142	0,2171	0,3886	1

DCC: Full Sample vs Bitcoin Bubble

	Bitcoin	INDU	SXXP	HSI
Bitcoin	1	NO	**YES**	**YES**
INDU	NO	1	**YES**	NO
SXXP	**YES**	**YES**	1	**YES**
HSI	**YES**	NO	**YES**	1

Ho: The correlation between different stock markets is lower during a bubble.

Figure 5 visualizes the computed individually DCC plots for pair-wise data sets with the different contagion sources. An interesting outcome is that it seems - even with a general high correlation among some of the data sets - that during the Bitcoin bubble the contagion decreases. This holds for indices, like SXXP and HIS. Nevertheless, the correlation between Bitcoin and INDU is not lower during the Bitcoin bubble in April 2016 to December 2018.

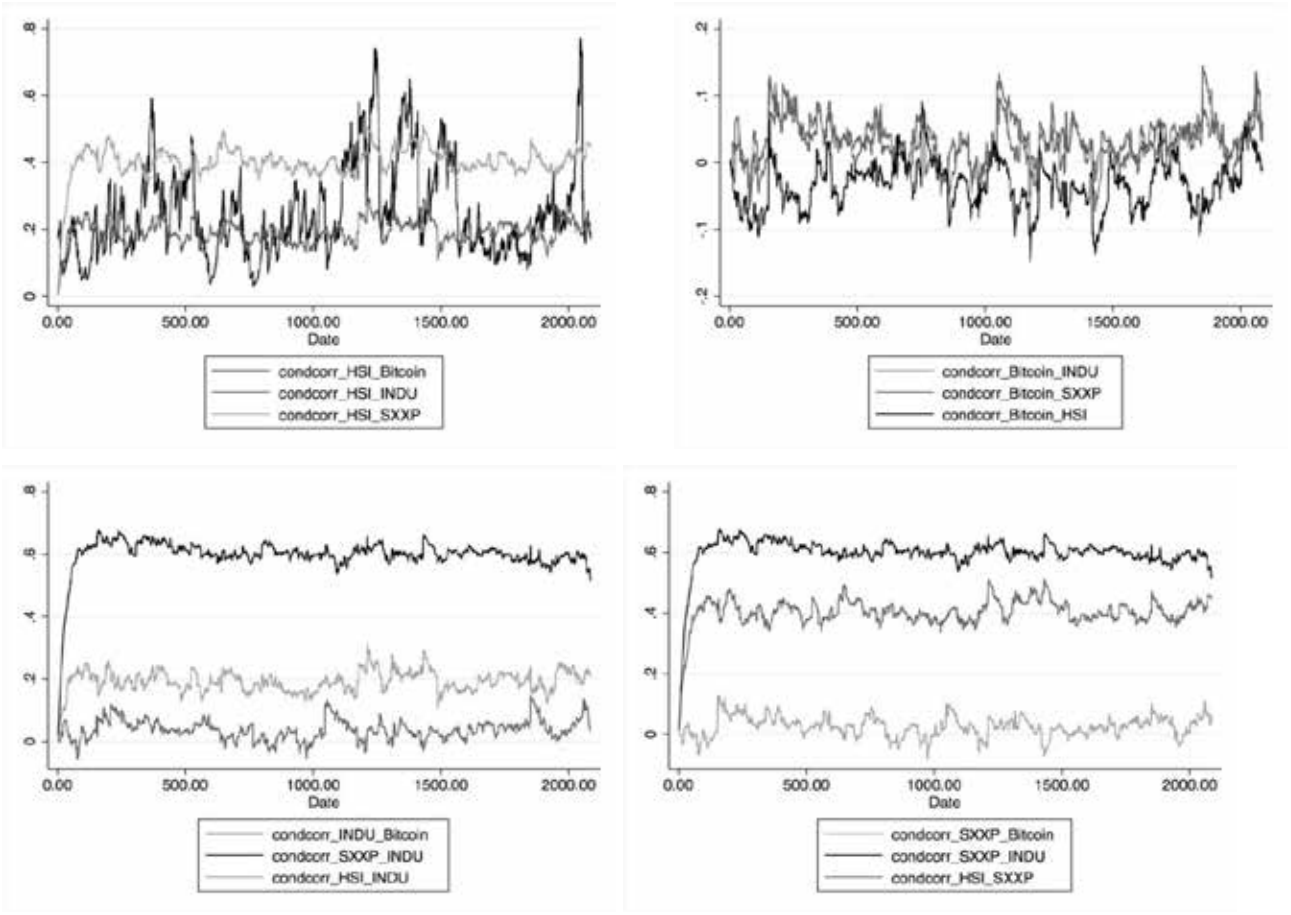


Fig. 5. **Estimated Dynamic Correlation Coefficients**

Conclusions

Given the main objective of this paper to analyse the phenomenon of financial contagion between stock market returns of different continents and the cryptocurrency. The DCC-GARCH by Engle and Sheppard (2001) is used as a multivariate conditional correlation volatility model. Throughout this work, this methodology is applied to daily returns of SXXP (Europe), INDU (United States), HSI (Asia) and Bitcoin for the period from 2011 to 2018 and confronted with other models most widespread in the literature on the subject.

First, we found that Bitcoin is relatively isolated from market-driven external shocks and one of the key findings is those specific market indices are more correlated with the Bitcoin price than others. INDU as well SXXP are positively correlated to the Bitcoin price, whereas HSI is negatively correlated to Bitcoin.

Contagion is defined as the statistical break in the computed DCCs as measured by the shifts in their means and medians. The result does not reject the hypothesis of higher contagion between American and Asian stock markets during the Bitcoin Bubble. Nevertheless, the result does reject the hypothesis of higher contagion in American and European stock markets during that time. Therefore, the contagion test does not show clearly that multivariate estimates are significant for all returns in those models. It demonstrates that there are some changes in the structure of dependence between American, Asian, European markets and Bitcoin. This can be caused by different facts, like micro- and

macroeconomic factors or even investors behaviour. Without any doubt, those impacts can distort the efficient allocation of investment portfolios and should take into consideration regarding a potential diversification analysis.

Our research has indicated that cryptocurrencies are relatively isolated from market shocks and are decoupled from popular financial market indices. This brings the question if Bitcoin could play a role in an investor portfolio with excess volatility and high returns on the one hand, and with low stock market correlations on the other hand. Further research is needed to observe the behaviour of cryptocurrencies. Furthermore, our work has to be repeated with a longer timeframe of cryptocurrencies or even other financial asset classes, like gold or currencies.

Bibliograph

Abreu, D. and Brunnermeier, M., 2003. Bubbles and Crashes. *Econometrica*, pp. 173-204.

Akaike, H., 1974. A New Look at the Statistical Model Identification. *IEEE Transactions and Control*, pp. 716-723.

Anderson, K., Brooks, C., Apostolos Katsaris, A., 2010. Speculative bubbles in the S&P 500: Was the tech bubble confined to the tech sector? *Journal of Empirical Finance*, pp. 345-61.

Armada, M., Leitao, J., Lobao, J., 2011. The contagion effects of financial crisis on stock markets: What can we learn from a cointegrated vector autoregressive approach for developed countries? *Revista Mexicana de Economıa y Finanzas*, pp. 29-53.

Arruda, B. and Valls, P., 2013. Analysis of the volatility's dependency structure during the subprime crisis. *Applied Economics*, pp. 5031-5045.

Azad, S., 2009. Efficiency, cointegration and contagion in equity markets: Evidence from China, Japan and South Korea. *Asian Economic Journal*, pp. 93-118.

Bariviera, A., Basgall, M., Hasperue, W., Naiouf, M. 2017. Some stylized facts of the bitcoin market. *Physica*, pp. 82-90.

Blau, B., 2017. Price dynamics and speculative trading in bitcoin. *Research in International Business and Finance*, pp. 493-499.

Bouri, E., Gupta, R., Hosseini, S., Lau, C., 2017. Does global fear predict fear in BRICS stock markets? Evidence from a Bayesian Graphical Structural VAR model. *Emerging Markets Review*, pp. 124-142.

Cobert, S., Megan, A., Larkin, C., Lucey, B., Yarovaya, L. 2018. Exploring the dynamic relationships between cryptocurrencies and other financial assets. *Economics Letters.*

Coinmarketcap, 2019. [Online] Available at https://coinmarketcap.com [Accessed 4 January 2019]

Cheah, E. and Fry, J., 2016. Speculative bubbles in Bitcoin markets? An Empirical investigation into the fundamental value of Bitcoin. *Economics Letters*, pp. 32-36.

Dwyer, G. 2015. The economics of bitcoin and similar private digital currencies. *Journal of Financial Stability,* pp. 81-91.

Engle, R., and Sheppard, K., 2001. Theoretical and Empirical Properties of Dynamic Conditional Correlation Multivariate Garch. *NBER Working Paper*.

Europa Central Bank. 2012. [Online] Available at https://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf [Accessed 2 January 2019]

Filleti, J., Hotta, L., Zevallos, M., 2008. Analysis of Contagion in Emerging Markets. *Journal of Data Science*, pp. 601-626.

Hannan, E. and Quinn, B., 1979. The Determination of the Order of an Autoregression. *Journal of the Royal Statistical Society*, pp. 190-195.

Kaminsky, G., Reinhart, C., Vegh, C., 2003. The Unholy Trinity of Financial Contagion. *NBER Working Paper.*

Katsiampa, P., 2017. Volatility estimation for bitcoin: A comparison of garch models. *Economics Letters*, pp. 3-6.

Kindleberger, C., 1978. Economic Response: Comparative Studies in Trade, Finance, and Growth. Cambridge: Harvard University Press.

Koehn, M. and Valls, P., 2017. Speculative bubbles and contagion: Analysis of volatility's clusters during the DotCom bubble based on the dynamic conditional correlation model. *Cogent Economics & Finance. Vol. 5.*

Luetkepohl, H., 2005. New Introduction to Multiple Time Series Analysis. Michigan: Lutz Kilian.

Schwarz, G., 1978. Estimating the Dimension of a Model. *Annals of Statistics*, pp. 461-464.

Tse, Y. and Tsui, A., 2002. A Multivariate Generalized Autoregressive Conditional Heteroscedasticity Model With Time–Varying Correlations. *Journal of Business & Economic Statistics*, pp. 351-362.

Urquhart, A. 2016. The inefficiency of bitcoin. *Economics Letters*, pp. 80-82.

Yarovaya, L., BrzeszczyÅDski, J., Lau, C., 2016. Intra- and interregional return and volatility spillovers across emerging and developed markets: Evidence from stock indices and stock index futures. *International Review of Financial Analysis*, pp. 96-114.

THE GOALS OF WASTE FRAMEWORK DIRECTIVE AS MECHANISM SECURING TRANSITION TO CIRCULAR ECONOMY

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Abstract. Circular economy is seen as economy's development direction expected to lead to a more sustainable development and a harmonious society. It covers at least five different business models, one of which is resource recovery, tackling benefits of industrial symbiosis. In order to achieve a circular economy, there must be a greater understanding of the links between economic activity and waste generation. A consensus exists on the vital role of waste and resource management in achieving transition from a linear model to a circular one where the value of materials and resources are maintained in the supply chain. Waste systematically emerges throughout the supply chain as a result of economic activities and trade. Systemic and transformative change is also reflected in the growing number of case studies analysing innovative solutions based on new systemic thinking like "cradle to cradle" and "industrial symbiosis". The aim of the research is to analyse existing Circular economy strategies in the European Union, in order to identify main priority areas and objectives. The Authors have also assessed that the three Baltic States currently have not developed circular economy strategies, but nevertheless the authors were able to gather and analyse a range of examples of circular economy companies. In order to achieve this, following methodology has been applied by the authors: critical analysis, case studies, synthesis and comparative analysis. As a result of the research, the authors identify best practices, impact of the municipalities, allowing to identify further necessary steps for the transition to circular economy.

Key words: *business models, circular economy, sustainable development, waste management*

JEL code: M21, Q57

Introduction

The rapid growth in world population over the last 50 years has caused an immense increase in the demand for food. It has been estimated that the world population will reach 9 billion by 2050, requiring a 60–70% increase in food production (Moraes *et al*., 2014). However, the Food and agriculture organization of the United Nations (Fao) estimates that more than 1.3bt of food are wasted every year (Bräutigam *et al*., 2014). This means that significant quantities of resources spent for food production are used in vain and generate a significant environmental impact, such as an increase in the quantity of greenhouse gases generated (Fao, 2011). Therefore, the European commission has promoted the reutilization of waste by means of the circular economy (Laso et al., 2016). As highlighted by Morone, Navia (2016), the purpose of consumption is to increase consumer's utility and/or enhance social welfare. However, at each stage of the supply chain, waste is produced. to some extent this waste might be recycled and reconverted into resources, reducing the need to mine virgin resources and, through this, the economy becomes circular. Yet, not all waste can be recycled or is recyclable, partly owing to missed opportunities and partly owing to basic physical and thermo-dynamical laws. The amount of waste that can be recycled depends crucially on the capacity of the environment to assimilate residuals from the economic system. Once the assimilative capacity is exceeded, environmental damage occurs. It has to be noted

that circular economy concepts have already been adopted on national levels. For example, in China, where environmental protection is a very important issue, a circular economy law was already passed and entered into force in 2009. Austria, Germany, and the Netherlands have to some extent already developed strategies compatible with circular economic activities (Heck, 2006; Goorhuis *et al*., 2012). It is essential to understand that current trends foresee focus on circular economy as a solution for a range of emerging problems, including waste management. Circular economy is believed to be a means of achieving harmony between economy and environment. Since nature and economy have been in conflict for many years, it is impossible to give priority to one without damaging the other (Grigoryan, Borodavkina, 2017). As Waste Package, adopted on May 30 2018 foresees a range of very ambitious targets to be achieved by Member States, the authors see it crucial to understand how circular economy framework can stimulate reaching of the targets. Under the revisions to the Waste Framework Directive, Member States will have to ensure they recycle at least 55% of their municipal waste by 2025. This target rises to 60% by 2030 and 65% by 2035. Under the revisions to the Landfill Directive further pressure will be exerted to divert waste from landfill. The target is to cut landfilled municipal waste to 10% by 2035. Member States will be required to ensure that 65% overall of product packaging is recycled by 2025, and rising to 70% in 2030 (within this there are individual packaging materials targets; for example, the target is 30% for wood, 55% for plastic, 75% for glass and 85% for paper in 2030) (EC, 2018). All this leads to a significant scientific problem, which stems from the Directive targets as well as from the comprehension that business as usual model will no linger work in long-term for sustainability goals – a new approach to economic development has to be found and both country and union-wide economies need to undertake a transition to be able to use maximum potential and economic efficiency of the existing resources already available within the economy, not tackling primary resources in the amounts as it has been done up to now.

Research results and discussion

The authors have assessed currently available policy documents on circular economy in European Union Member States and provide below a summary of the main concepts, set in the corresponding strategies, roadmaps or action plans. The necessity of a circular economy action plan is well justified in the figure below. Many see circular economy as primary linked with waste management issues, although, it must be noted, that implementation of circular economy concepts is crucial in order to secure achievement of waste management goals.

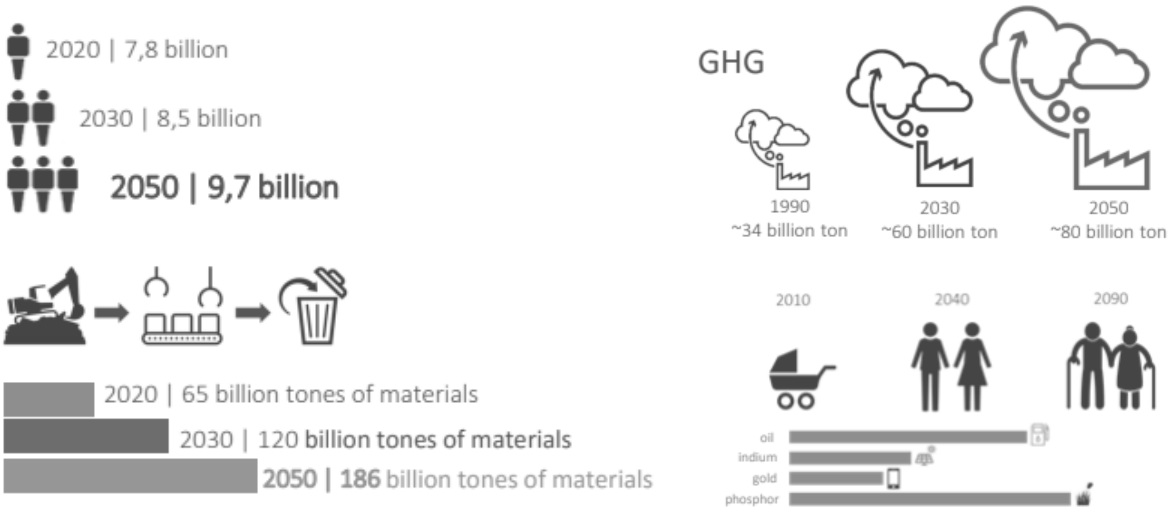

Fig. 1**. Risks and scarcity of linear economy**.

Source: World Resources Institute 2017, UNEP, 2016, OECD, 2012

Belgium. ***Circular Flanders*** developed in 2017 is the hub and the inspiration for the Flemish circular economy. It is a partnership of governments, companies, civil society, and the knowledge community that will take action together. These organisations are the core of our partnership. Each one has committed to carrying out a specific action. The Government of Flanders has set the circular economy as one of the seven transition priorities and appointed the OVAM (the Public Waste Agency of Flanders) as the initiator of Circular Flanders. The operational team, which is responsible for the day-today operation, is embedded in the OVAM. By 2050, the government of Flanders wants to create a region that: is social, open, resilient, and international, creates prosperity and wellbeing in an innovative, sustainable manner and includes everyone.

Key areas of the document are: production, consumption, waste management, secondary raw materials, innovation and investments.

Priorities highlighted within the kick-off statement are:

- circular purchasing;
- circular City;
- circular Business (Vlaanderen Circulair, 2017).

Belgium. Brussels Regional Programme for Circular Economy was developed in 2016. The Brussels Regional Programme for Circular Economy is an integrated strategy involving 111 measures aimed at delivering circular patterns at the city level.

Key priority areas include: waste management, secondary raw materials, innovations and investments.

The main objectives of the regional programme are:

- to transform environmental objectives into economic opportunities;
- to anchor economic activities within Brussels' borders, maximising resource circularity and boosting entrepreneurship, and
- to create new employment opportunities (Brussels-Capital Region, 2016).

Finland. The road map will make Finland a leading circular economy country by 2025. This change will emphasise the state's role as a facilitator and supporter, research, development and innovation activities, and a strong company, export and technology orientation combined with the search for comprehensive solutions and co-operation covering the entire value chain.

Key areas of the road map are: sustainable food system, technical loops, forest-based loops, transport and logistics.

In order to further systemic change, policy actions rea required, implementation of key projects and pilots in all focus areas and other actions to promote change. The priorities set within the roadmap foresee following blocks:

- sustainable food system;
- forest-based loops and the related innovations;
- technical loops (sustainable use of non-renewable natural resources, lengthening the product life cycle, determining how the waste produced during material processing and product manufacturing and the materials in the product at the end of its life can be returned to the loop);
- transport and logistics. (Stira, 2016).

Finland - Päijät-Häme. Road map on circular economy developed in 2017 as part of Päijät-Häme's regional economic strategy for 2018–2021. Whereas Finland's national framework for a circular economy provides an outline for this transition, the Päijät-Häme regional roadmap, a joint strategy for nine municipalities, implements the national aims with actions at the regional level.

Key areas of the roadmap are: production, consumption, waste management, secondary raw materials, innovation and investment.

Roadmap has five main themes, with regional goals and actions set for each. The overarching themes are:

- closed loops of technical streams to create added value;
- sustainable business from bio circular economy;
- towards energy self-sufficiency by sustainable transport and energy solutions;
- shared economy generates new consumption models and business opportunities;
- piloting and demonstrating innovative circular economy solutions (Päijät-Häme, 2017).

France. Circular Economy roadmap of France: 50 measures for a 100% circular economy was developed in 2018. This transition is a genuine societal project whose aim is to move away from the throw-away society. It invites us to change the way we lead our lives and to invent new and more sustainable production and consumption methods. The French roadmap includes four key priority areas: better production, better consumption, better waste management, and engaging all stakeholders.

Key areas of the roadmap are: production, consumption, waste management, secondary raw materials, innovation and investments.

The priorities and objectives set within the roadmap are:

- *better Production.* Promote upgrading and differentiation of products through better environmental performance. Produce better with less non-renewable resources. Incorporate more recycled raw materials, in particular for plastics. Create jobs and meet training needs for new occupations or new skills in the circular economy;
- *better Consumption.* Give consumers the means for more responsible consumption. Increase the life span of products. Create sustainable jobs in the repair sector, particularly from the social and solidary economy. Combat food waste;
- *better Waste Management*. Aim to collect 100% of recyclable waste. Make the sorting of waste much easier. Take biowaste out of bins. Accelerate the introduction of pricing incentives for waste management. Ensure that companies and government agencies that produce large quantities of waste meet their obligations with regards to sorting the five most easily recyclable types of waste. For construction waste: set sorting and recycling targets during demolitions but also during the construction phase;
- *mobilize all Actors.* Inform, educate and train all actors about the circular economy. Rely on the key driver of public procurement. Mobilize local authorities and businesses in the regions. Establish sustainable governance. Support the transition to a circular economy with appropriate financing (Ministry for Ecological and Solidary Transition, 2018).

Germany. German Resource Efficiency Programme II: Programme for the sustainable use and conservation of natural resources was issued in 2016. The programme's focus is not only on enhancing resource efficiency, but also on showing how in many cases the use of raw materials – such as in environmental technologies – can actually conserve natural resources. As part of the Resource efficiency programme, a National Resource Efficiency Platform (NaRess) was launched on 17 September 2013. Initially comprising the Federal Government and industry associations, membership of NaRess was extended in March 2015 to further groups such as environmental organisations, unions and local authority associations. NaRess serves as a platform for sharing information on members' resource efficiency activities and supports the implementation and onward development of progress.

Key areas of the programme are: production, consumption, waste management, secondary raw materials, investments and innovation.

Priorities set in the action plan are:

- securing a sustainable raw material supply;

- increasing resource efficiency in production;
- making production and consumption more resource-efficient;
- developing a resource efficient circular economy;
- sustainable building and sustainable urban development;
- resource-efficient information and communication technology;
- cross-cutting instruments;
- exploiting synergies with other policy areas and resolving goal conflicts (Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, 2016).

Greece. Action plan on circular economy was adopted in 2018. Greece's Governmental Economic Policy Council endorsed a National Action Plan on Circular Economy in early 2018 to set the country on a path towards the long-term adoption of circular economy principles. This supports Greece's economic strategy in its key quest to "Green" the economy in a way that creates jobs, especially for women and youth, and supports long-term equitable and inclusive growth based on resource efficiency, promotion of small and medium enterprises, innovation and investment in new technologies, and strengthening of the "social economy" potential.

Key areas of the action plan are: production, consumption, waste management, secondary raw materials, innovation and investment.

The priorities set within the action plan are as follows:

- regulatory and legislative interventions to lift bureaucratic constrains for widely applying circular economy principles;
- earmarking of existing funds;
- further enhancing knowledge, understanding, education, awareness and communication;
- improving governance structures (Governmental Economic Policy Council, 2018).

Italy. Towards a Model of Circular Economy for Italy - Overview and Strategic Framework, was adopted in 2017. The document calls for a "change of paradigm" for Italy's economy, for a new way to consume, produce and do business. There is a need for a new industrial policy aimed at sustainability and innovation capable of increasing the competitiveness of products and manufacturing. Considering the importance of the document, the Italian government decided to collect the contributions of all institutions, firms, experts and citizens who deal with the issue to develop a document that is the result of a shared and participatory process.

Key areas of the strategy are: production, consumption, waste management, secondary raw materials, investments and innovation.

Priorities set in the strategy are:

- rethinking the Concept of Waste;
- promoting Sustainable Models of Production and Consumption;
- the Public Sector (Green Public Procurement and Minimum Environmental Criteria);
- resources and Products - Traceability of Sources, Products, Services, Production Chains; Efficiency in the Use of Resources (Ministry for the Environment, Land and Sea Ministry of Economic Development, 2017).

Netherlands. A Circular Economy in the Netherlands by 2050 was developed in 2016. The Government-wide programme for a Circular Economy is aimed at developing a circular economy in the Netherlands by 2050. The ambition of the Cabinet is to realize, together with a variety of stakeholders, an (interim) objective of a 50% reduction in the use of primary raw materials (minerals, fossil and metals) by 2030. With this objective for the use of raw materials, the Netherlands sets its ambitions at a level adopted in comparable countries. The transition to a circular economy requires a

transformation in the way we use raw materials. To transform the Dutch economy into a circular economy at an accelerated pace, strategic goals have been formulated in the Government-wide programme.

Key areas of the strategy are: production, consumption, waste management, secondary raw materials, investments and innovation.

Priorities set in the programme are:

- biomass and food;
- plastics;
- the manufacturing industry;
- construction sector;
- consumer goods (Government of the Netherlands, 2016).

Portugal. Leading the transition: A circular economy action plan for Portugal was developed in 2017. The ambition set out for Portugal 2050 was designed to leverage and spur development of work within the Action Plan for the Circular Economy and must be appropriated by the various ministries, civil society and private organisations. It consists of the following elements:

- a carbon neutral economy that is efficient and productive in its use of resources: neutral GHG emissions and effective use of materials (a significant fall in the extraction and importing of materials, a significant fall in final waste generated, better management and value extraction from the resources in circulation);
- knowledge as impulse: focusing on research and innovation creates solutions – in products, services, business models, consumption/use, behaviour – with lower emissions and resource intensity, integrated into business models that spur job creation, efficient and effective use of mobilised resources, and their lasting economic value;
- inclusive and resilient economic prosperity: economic development that impacts all sectors of society, is resilient against price and risk volatility and gradually decoupled from negative environmental and social impacts;
- a flourishing, responsible, dynamic and inclusive society: an informed, participative and more collaborative society – a society guided by being and caring, rather than wanting and possessing and which conserves and cares for its natural capital.

Key areas of the action plan include: production, consumption, secondary raw materials, investments and innovation.

Priorities set in the action plan are:

- design, Repair, Reuse: extended producer responsibility;
- incentivising a circular market;
- educating for a circular economy;
- eat without waste: sustainable production for sustainable consumption;
- a new life for waste;
- regenerating resources: water and nutrients;
- researching and innovating for a circular economy (Ministry of Environment, Portugal, 2017).

Slovenia. The Roadmap towards the Circular Economy in Slovenia was developed in 2018 and it sets the path for Slovenia to become a circular economy front runner in the region. The Roadmap introduces the Circular Triangle, a model which unites three inseparable elements – Circular Economy (business models), Circular Change (government policies) and Circular Culture (citizens), three interdependent aspects that are at the core of systemic change from a linear to a circular economy in Slovenia.

Key areas of the roadmap are: food system, forest-based value chains, manufacturing and mobility.

The goals of the road map are:

- outline the potentials that establish Slovenia as the leader of the transition into the Circular Economy in Central and Eastern Europe;
- involve stakeholders to identify and connect circular practices;
- create recommendations for the Government of the Republic of Slovenia to facilitate a more efficient transition;
- identify circular opportunities for the strengthening of international economic competitiveness and quality of life for all (Ministry of Environment and Spatial Planning, Republic of Slovenia & Circular Change Platform, 2018).

Slovenia. Municipality of Maribor. The basic idea of the Strategy for the transition of the City of Maribor (developed in 2018) to the circular economy as well as the Wcycle project is its own innovative model as a system for managing all the resources available in the Municipality of Maribor and the wider urban area. The Wcycle Maribor project covers innovative urban circular economy system as a new business and economic model of the city in the field of efficient resource management, which has not existed anywhere yet and complements the principles of sustainable mobility and co-operative economy. The Strategy, as a basic document at local government level, makes it easier to implement the project and gives a clear signal that Maribor, as one of the first cities in the European Union, is also at the strategic level being completely directed into the circular economy.

Key areas of the strategy are: waste management, secondary raw materials, innovation and investments.

The priorities set within the strategy are as follows:

- use of processed soil and construction and demolition waste in urban building;
- management of surplus heat and renewable energy;
- sustainable mobility - Urban transport and joint service;
- reuse of recycled water and alternative water resources;
- sustainable land management and regeneration of degraded areas;
- cooperative economy network (Wcycle Institute Maribor, 2018).

United Kingdom. Making Things Last: a circular economy strategy for ***Scotland*** was developed in 2016. This strategy sets out our priorities for moving towards a more circular economy - where products and materials are kept in high value use for as long as possible.

Key priority area of the strategy is mostly focused on consumption. It builds on Scotland's progress in the zero waste and resource efficiency agendas. A more circular economy will benefit: the environment - cutting waste and carbon emissions and reducing reliance on scarce resources; the economy - improving productivity, opening up new markets and improving resilience; and communities - more, lower cost options to access the goods we need with opportunities for social enterprise.

The priorities set within the strategy are:

- food and drink, and the broader bio-economy;
- remanufacture;
- construction and the built environment;
- energy infrastructure, such as the reuse of equipment from wind turbines and decommissioned oil and gas platforms (The Scottish Government, 2016).

United Kingdom. ***London***'s circular economy route map was developed in 2017. The route map is an action-orientated document with a vision for London – a circular city which capitalises on these opportunities to become a more resilient, resource-efficient and competitive city of the future. The route map outlines a vision of a capital city thriving through the adoption of the principles of circular economy: an economy which keeps products, components and materials at their highest use and value at all times.

Key areas of the roadmap include: production, consumption, waste management, secondary raw materials, innovation and investments.

Main priorities of the roadmap are:

- built environment;
- food;
- textiles;
- electricals;
- plastics (LWARB, 2017).

From the analysis performed, it is clearly seen that circular economy issues started to gain topicality quite recently, as the framework documents start from 2016 and the authors have assessed that a range of member states are also working on similar documents. When turning to the Baltic States, none of the countries has yet developed a circular economy document, thus the work on such is ongoing. Assessment of different policy documents on circular economy allows to conclude that despite unified concept, Member States tend to adopt the concept to their geographical, political, demographical and economic conditions, in order to be able to develop ambitious, thus achievable and country-specific targets. Although in the Baltic States there is not a developed framework, it does not mean that the economy is not implementing the shift towards circular economy. In this context the authors have assessed certain examples of already operating companies within three countries, which show the circular economy elements being implemented into practice. It has to be noted that in certain cases the local municipalities play also an important role in stimulating the entrepreneurs for the transition to circular economy. The authors tended to gather some examples of companies, which already have adopted certain circular economy concepts, which are provided in the table below.

Table 1.

Examples of circular economy in practice in the Baltic States

Company	Country	Business model	Resource efficiency facilitator	Business model sub-type	Product description
Toom Tekstiil	Estonia	Circular supply	Closed material cycles	Cradle to Cradle	Company deals with management of textile waste and manufacturing of products that are made from 100% textile waste.
Okka	Estonia	Resource recovery	Closed material cycles	Upcycling	Company produces handmade pine needle wall panels made of natural materials. Usually as the forest is being worked up, the needles stay useless to moulder, but Okka creates additional value from them.
Stella Soomlais	Estonia	Closed material cycles/ Product as a service	Narrow resource flow	Industrial symbiosis/ Sharing	Company makes handmade leather products (bags, accessories, wallets). The designs are crafted to minimize the cutting leftovers. The larger cutting leftovers are used for creating smaller accessories. The company also offers rental of the products.
Dagöplast	Estonia	Resource recovery	Closed material cycles	Upcycling	Company produces both compostable plastic, recycled plastic and green polyethylene for waste management, retail, HORECA, industry and agriculture. Recycled polyethylene is made from recycled plastic, collected from throughout Europe, and reused to create new plastic bags.

Company	Country	Business model	Resource efficiency facilitator	Business model sub-type	Product description
Carguru	Latvia	Sharing platform	Narrow resource flow	Shared access	Carguru is a car sharing service. The usage fee includes all costs, including fuel, parking and insurance.
Valmiermuiža	Latvia	Resource recovery	Closed material cycles	Upcycling	Main by-product from beer brewing is brewing grain. The company has developed a beer snack, which has gained popularity by the consumers and is being produced by bakeries.
Otra elpa	Latvia	Product life extension	Slow material cycles	Direct re-use, repair	Company is a pioneer of social entrepreneurship in Latvia since 2009. It is a charity platform that connects people and things in a simple way. People are able to donate clothes, books, furniture etc., which are repaired and offered in the shops. The revenues are channeled to charity.
Getlini EKO	Latvia	Closed material cycles	Narrow resource flow	Industrial symbiosis	Biggest waste landfill in the Baltic States provides heat and electricity for a greenhouse, where tomatoes and cucumbers are grown. An excellent example of industrial symbiosis.
Polymere Recycling	Lithuania	Resource recovery	Closed material cycles	Upcycling/ Downcycling	first company not only in Lithuania, but even in Baltic countries, which recycles tetra packs and other combined packaging waste and produces panels for construction sector. New products are ecological, competitive on the market and have wide usability.
Stikloporas	Lithuania	Resource recovery	Closed material cycles	Recycling	Company focuses on the production of expanded glass granules from recycled glass. It produces foam glass - an organic thermo-insulating granular material from breakdown glass, for construction industry.
Birštonas Mineral Water	Lithuania	Circular supply	Closed material cycles	Cradle to Cradle	Company has been steadily reducing the amount of plastic used for the products (the plastic itself being 100% recycled) and is now developing a paper-based bottle for their products.

Source: by authors

The Table 1 provides only a small sample of the identified examples of circular economy, but with this the authors want to stress that even without a fixed framework it is possible for the entities to start their transition towards circular economy and here a certain role is also played by the municipalities. As they are also developing the environment for the entities and may offer stimulus for circular economy to be implemented.

Conclusions, proposals, recommendations

The topic of circular economy, as emerged from the previous section, is relatively new, as the strategies and frameworks are dated starting from 2016, although during recent years it has become obvious that this concept is here to stay in the long-term. The assessment of the strategies, developed by the authors, is significant for the policy-makers of the countries, which are currently working in the direction of development of a framework.

It is of vital importance to ensure involvement of all main stakeholders into the transition process to circular economy. Of course, the countries need to have a strategy, roadmap or action plan in place, but at the same time it is

advised that for example the municipalities already start to evaluate the possibilities for this transition. For instance, it is advised for the municipalities to undertake following measures:

1. To assess, at which stage the biggest impact can be created, i.e. which could be the fields, where municipality itself can provide the demand for circular products or services. It is considered to revise certain areas such as: policy, public procurement, construction regulations, communication, financing, knowledge base, etc.
2. To map the incoming and outgoing material flows from municipal companies and promote cooperation between companies on material recovery. This is the easiest way to promote industrial symbiosis. Moreover, providing own example – starting with municipal or public companies, would also allow attracting private companies to the initiative, providing them with the economic benefit estimations.
3. To tend to limit building, production or purchasing of absolutely new goods, and to assess the possibility to repair, upgrade and modernize existing infrastructure and goods.
4. To understand the attitudes of the population and entrepreneurs towards circular economy issues, to improve the communication, create certain knowledge base and to show tangible benefits both for the society and the economy from the engagement into circular economy.
5. To involve the society as a Stakeholder in certain municipality initiatives.
6. To create and maintain a reliable feedback system, so that entities and society can provide their input into circular economy development within the municipality or region.

The authors plan to analyse further the topic of enablers for the transition to circular economy and to develop a set of recommendations for the policy-makers, which can be used to stimulate the entities to initiate the transition.

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Bibliography

Bräutigam, K.R., Jörissen, J., Priefer, C. (2014) The extent of food waste generation across EU-27: Different calculation methods and the reliability of their results. Waste Management & Research 32: 683–694.

Brussels-Capital Region (2016). Brussels Regional Programme for Circular Economy. Available at: http://document.environnement.brussels/opac_css/elecfile/PROG_160308_PREC_DEF_FR - assessed December 6, 2018.

European Commission (2018). Implementation of the Circular Economy Action Plan. Available at: http://ec.europa.eu/environment/circular-economy/index_en.htm - assessed January 4, 2019.

FAO (2015) Globefish. The canned seafood sector in Spain. Available at: http://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/338172/ - accessed 27 November 2015.

Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (2016). German Resource Efficiency Programme II: Programme for the sustainable use and conservation of natural resources. Available at: https://www.bmub.bund.de/fileadmin/Daten_BMU/Pools/Broschueren/german_resource_efficiency_programme_ii_bf.pdf - assessed January 4, 2019.

Goorhuis, M., Reus, P., Nieuwenhuis, E., Spanbroek, N., Sol, M., van Rijn, J. (2012) New developments in waste management in the Netherlands. *Waste Management & Research* 30(9) Supplement 67–77.

Governmental Economic Policy Council (2018). National Action Plan on Circular Economy. Available at: https://government.gov.gr - accessed January 20, 2019.

Government of the Netherlands (2016). A Circular Economy in the Netherlands by 2050 Available at: https://www.government.nl/documents/policy-notes/2016/09/14/a-circular-economy-in-the-netherlands-by-2050 - assessed December 22, 2018.

Grigoryan, A., Borodavkina, N. (2017). The Baltics on their way to a circular economy. *Baltic Region*, Vol. 9 Issue 3, p7-22. 16p.

Heck, P. 2006. Circular Economy Related International Practices and Policy Trends: Current Situation and Practices on Sustainable Production and Consumption and International Circular Economy Development Policy Summary and Analysis. *Institute for Applied Material Flow Management (IfaS), Environmental Campus Birkenfeld*.

Laso, J., Margallo, M., Celaya, J., Fullana, P., Bala, A., Gazulla, C., Irabien, A., Aldaco, R. (2016) Waste management under a life cycle approach as a tool for a circular economy in the canned anchovy industry *Waste Manag Res August 2016 34: 724-733*

LWARB (2017). London's Circular Economy Route Map. Available at: https://www.lwarb.gov.uk/what-we-do/circular-london/circular-economy-route-map/ - assessed December 22, 2018.

Ministry for Ecological and Solidary Transition (2018). Circular Economy roadmap of France: 50 measures for a 100% circular economy. Available at: https://www.ecologique-solidaire.gouv.fr/sites/default/files/FREC%20anglais.pdf - assessed December 16, 2018.

Ministry for the Environment, Land and Sea Ministry of Economic Development (2017). Towards a Model of Circular Economy for Italy - Overview and Strategic Framework. Available at: http://consultazione-economiacircolare.minambiente.it/il-documento - assessed January 4, 2019.

Ministry of Environment and Spatial Planning, Republic of Slovenia & Circular Change Platform (2018). Proposal for a uniform document on the potentials and opportunities for the transition to a circular economy in Slovenia. Available at: http://www.vlada.si/fileadmin/dokumenti/si/projekti/2016/zeleno/ROADMAP_TOWARDS_THE_CIRCULAR_ECONOMY_IN_SLOVENIA.pdf - accessed January 12, 2019.

Ministry of Environment, Portugal (2017). Leading the transition: A circular economy action plan for Portugal Available at: https://dre.pt/web/guest/pesquisa/-/search/114337039/details/maximized - assessed January 4, 2019.

Morone, P., Navia, P. (2016) New consumption and production models for a circular economy. *Waste Management & Research* 2016, Vol. 34(6) 489–490.

Moraes C., A., M, Fernandes I., J., Calheiro D. (2014). Review of the rice production cycle: By-products and the main applications focusing on rice husk combustion and ash recycling. *Waste Management & Research 32: 1034–1048*.

OCDE (2012). OECD Environmental Outlook to 2050. Available at: http://www.oecd.org/env/indicators-modellingoutlooks/oecd-environmental-outlook-1999155x.htm - assessed January 5,2019.

Päijät-Häme (2017). Päijät-Häme roadmap towards a circular economy. Available at: http://www.kohtikiertotaloutta.fi/english/ - accessed January 10, 2019.

Stira (2016). Finnish road map to a circular economy 2016-2025. ISBN 978-951-563-978-3 (PDF) www.sitra.fi

The Scottish Government (2016). Making Things Last: a circular economy strategy for Scotland. Available at: https://beta.gov.scot/publications/making-things-last-circular-economy-strategy-scotland/ - assessed January 5,2019.

UNEP – International Resource Panel (2016). Resource Efficiency: Potential and Economic Implications. Available at: http://www.resourcepanel.org/reports/resource-efficiency accessed December 22, 2018.

Wcycle Institute Maribor (2018). Strategy for the transition to circular economy in the municipality of Maribor. Available at: https://wcycle.com/ - accessed December 22, 2018.

World Resources Institute (2017). CAIT- Climate Date Explorer. Available at: http://cait.wri.org/ - assessed January 18,2019.

Vlaanderen Circulair (2017). Circular Flanders kick-off statement. Available at: http://www.vlaanderen-circulair.be/nl - assessed January 4, 2019.

VULTURE INVESTING IN ITALY

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Abstract. In mature capital markets high segmentation and specialization are normal. Every phase in the life cycle of companies corresponds to specific investors. So, even for companies in decline, it should be somehow easy to find investors willing to buy out their shares, in order to verify the possibility of a turnaround or relevant portions of corporate debts to carry out arbitrages of value. As it is not an easy job, great economic returns are expected and this probably explains the great attention paid by professionals and the press and why these funds have never been popular. In the U.S. since the '80s they have been called *"vulture"* like large birds eating flesh of dead animals. While economic literature about venture capital is very articulated, this is not the case with vulture funds, as only few academic papers have been dedicated to the topic. The purpose of this paper is to provide an updated overview of turnaround financing in Italy, meaning operations regarding distressed or troubled companies, carried out by professional private equity investors. This analysis springs from and is compared to similar studies carried out a few years ago trying to investigate whether there has been an improvement. From a methodological point of view, the ongoing research consists in a qualitative analysis, based on one to one interviews, with the main market players. The results, even if not always statistically significant because of the size of the sample, represent an important part of the universe of Italian vulture funds and offer interesting qualitative points of view regarding the operational aspects. Despite a more developed private equity market, the development of a big NPLs market involving international funds and the reform of the bankruptcy law the Italian market still shows only few dedicated operators and a general lack of interest for this private equity niche.

Key words: *Vulture Funds, Corporate Restructuring*, *Distress Financing*

JEL code: G24 Venture Capital

Introduction

The paper aims to explore the issue of vulture investors, narrowing down the topic to the Italian context. The analysis starts with an overview of the, still scarce, academic literature in the field in order to define the issue and its perception. Even if *"vultures"* take the name from the bird eating the flesh of dead animals, highlighting the poor reputation these kinds of operators have, a few academic contributions show how they can play a significant role in improving the efficiency of the market. Within the broader class of distressed securities, the interest of the research has been narrowed down to the category of *Non-Performing-Exposures (NPEs)*, also known as *Non-Performing Loans* (*NPLs*), of which, with a stock of Euro 264 billion, Italy had the highest amount in Europe in 2017. Nevertheless, despite an increase of the transactions concerning *NPLs* in the last few years, the Italian market is still underdeveloped. In this context, and starting from the few previous academic contributions on the issue, the paper proposes an innovative qualitative investigation, based on one to one in-depth interviews, with the main players of the market, divided into funds, banks and advisors, aiming at understanding if it would be possible to develop an efficient NPLs market in the Italian scenario, analyzing the critical success factors and with the purpose of proposing ideal models. The preliminary results, even if not always statistically significant as the research is still ongoing and because of the restricted sample, offer interesting and positive headlines on the evolution of this market, highlighting also the room for further scientific research in the field.

1. Origin and definitions: literature overview

The origin of vulture investing is deeply rooted into the "Great Depression", the economic and financial crisis that shocked the United States in 1929: its dramatic impacts on the vast majority of American companies created the favourable conditions for the birth of vulture capital. Max Heine (1911-1988) has been generally considered the pioneer in the vulture capitalists scenario. In the years following the crisis, in fact, he developed the "Mutual Shares Fund", in order to exploit the inefficiencies of the market. In a period characterised by high uncertainty and nebulous expectations about the future, distressed securities were significantly undervalued and Heine began taking advantage from the gap between the price of those securities and the real value behind the assets of the companies. The phenomenon had then its peak during the '80s: in those years, in fact, a severe economic crisis affected several industries in the United States, such as energy and steel businesses, and many companies suffered from this dramatic situation, faced financial difficulties and attracted vulture capitalists' interest; moreover, in 1978 the American bankruptcy code was revised creating a more favourable environment for vulture investors. In 1987, the stock market crashed, offering a new upsurge of opportunities to vulture investors, who began purchasing the majority of the distressed securities of a company in order to control the creditors' committee and influence the restructuring process. This is where the term "vulture" comes from: according to Cambridge Dictionary, a "vulture" is *"a large bird with almost no feathers on its head or neck, which eats the flesh of dead animals";* same word describes also *"a person or organization that is eager to win an advantage from other people's difficulties or problems".* The choice of this kind of term in order to describe the activity of these kinds of investors clearly shows the poor reputation they had, which follows them still today as, according to The Venture Capital Report Guide, vulture capital represents *"a description of venture capital used by those who believe that venture capitalists take too much and offer too little when they invest".*

While academic literature about venture capital is very articulated, only a few contributions have been dedicated to vulture investors. According to Rosenberg (2000), they have been so named because of their preference for investing in companies that are dying are already dead, being their target represented by firms in financial or competitive distress, in liquidation, close to or already in bankruptcy. In this scenario, stocks, bonds or debts of distressed companies are traded at a significantly low price, in the hope of a significant capital gain in the future[*]. Similar is the definition provided by Gilson (2001), according to whom vultures are typically institutional investors such as hedge funds, private equity firms, investment banks, public pension funds and other entities as university endowments and foundations whose activity consists in investing in companies that have already filed for bankruptcy or are undertaking a corporate turnaround in order to avoid it. Perrini (1997), instead, considers vulture capitals as a part of the larger category of venture capitals, defining them as a standard investing activity, which targets firms suffering from financial unbalances. As a consequence, the activity of vulture capital should not be opposed, in a pejorative sense, to the one of venture capital, representing instead a portion of them: while venture capitalists may operate in different businesses, markets, geographic regions or product categories, vulture capitalists focus instead exclusively on a single phase of the business lifecycle, represented by the decline stage, being specialized in the so-called *"turnaround financing"*[†]. In this specific context, according to Altman and Hotchkiss (2006), the formula for being successful consists in *"a difficult set of skills involving fundamental valuation of debt and equity assets and technical, legal and fixed income knowledge complemented by a patient, disciplined and highly proactive approach to asset management".* Regardless of the strategy adopted, some common key factors may determine the success of a vulture investment. They consist in the accuracy of valuation of target company's assets, the

[*] This is the reason why vultures are also called *"discount investors"* or *"distressed securities buyers".*

[†] *"An activity, very similar to private equity, that consists in investing in distressed companies needing to undertake a restructuring process to get back to profitability"* (Danovi, 2009).

negotiating and bargaining skills, the reputation and image of the vulture investor itself and the ability to manage the risks deriving from vulture investing.

Even if vulture investors have been mainly seen as controversial and negative figures, they can also bring positive effects to the market. More specifically, according to Gilson (2001), through the involvement of a vulture investor banks can get rid of *Non-Performing Loans* and "free" their balance sheets from the capital requirements set by regulators. Also, vulture investors contribute to improve market efficiency by investing only in companies with a reasonable probability of recovery, as only those kinds of firms can guarantee a fair return on their investments. More specifically, as shown by the empirical survey carried out by Lim (2015), who analyzed a sample of 469 financially distressed companies that undertook a turnaround between 2001 and 2011, the involvement of vulture funds in the reorganization of distressed companies led to a faster restructuring process and a superior debt reduction. Also Harner (2013) explored the funds' impact on restructuring efforts in distressed companies, finding out a positive relationship between vulture investors' involvement in turnaround and the probability of *emergence* of the distressed company from the crisis. Jiang et al. (2012) analysed a sample of 474 Chapter 11 cases in the period between 1996 and 2007. They found out that the presence of hedge funds in the governance of Chapter 11 firms increased both the likelihood of a successful reorganization and the probability of recovery, provoking also a positive market response. Overall, they believe that vulture funds have a positive effect on distressed firms' total value and they can achieve this remarkable result by alleviating financial constraints, avoiding inefficient liquidation and mitigating the conflicts among different classes of claims. In addition, vulture capitalists can bring new financial and managerial resources into the distressed companies, as it is crucial to support and foster the turnaround with both money and new ideas. In 1997, Hotchkiss and Mooradian carried out an investigation about the role of vulture capital in the governance and restructuring of 288 distressed companies. They found out that vulture investing had a positive impact on the post-restructuring operating and financial performance of target firms and, according to them, the positive effects of vulture investing are due to their propensity to speed the restructuring process up, dramatically increasing the probability of recovery. In conclusion, taking into account all the elements mentioned so far, it would be possible to argue that the poor public image of vulture investors is not entirely justified by empirical evidence: a considerable portion of the scholars supports in fact the idea that vulture investors could be able to add value to distressed companies when they get involved into the restructuring process. As suggested by Goldschmid (2005), distressed investors are *phoenixes* rather than *vultures*, since they could play a useful and ameliorative role in the recovering context.

2. Non-Performing Exposures

The activity of vulture investors differentiates on the basis of the categories of financial instruments they invest in.

According to Perrini (1997) "*troubled security funds"* invest in distressed equity securities, as stocks of companies with financial troubles, while "*vulture funds"* invest in distressed debt securities, as corporate bonds and debt of distressed companies. Among the financial instruments used by vulture investors to take control of distressed firms, Gilson (2001) and Altman, Hotchkiss (2006) mention bank loans, public bonds, but also trade payables, private debt, asset-backed securities and even real-estate mortgages. Depending on the type of financial claim, vulture investors define their objectives and their investing strategies differently. Altman (2004) identifies two macro-segments within the market for distressed securities, distinguishing between *defaulted securities* and real *distressed securities.* The former category is made up of stocks, bonds and debt of companies facing a financial crisis, which did not fulfil their obligations, failing either to pay the interests or to reimburse the capital. As a consequence, these firms file for bankruptcy or undertake a

restructuring procedure. The latter segment is composed by corporate bonds and debt securities traded at a price significantly lower than their face value[‡].

Within the broader class of distressed securities, the present analysis focuses on the category of *Non Performing-Exposures (NPEs)*, also known as *Non-Performing Loans* (*NPLs*).

The European Banking Association (EBA) defined *Non-Performing Exposures* (*NPEs*) in 2013, when it published the Implementing Technical Standards (ITS) on the *NPEs*, in order to align the different definitions provided by European countries' legislations.

According to the ITS, *NPEs* consist in exposures that fulfil at least one of the following two criteria:

- significant exposures expired since 90 days or more;
- exposures characterised by the risk of not being fully reimbursed without the enforcement of the coverage, regardless of the fact that they are past due or not (*unlikeliness to pay*).

Some of the elements commonly considered as indicators of the *unlikeliness to pay* are the following:

- the debtor stopped reimbursing the interests to the lender (bank);
- the credit has been impaired in the lender's balance sheet;
- the lender sold the credit at a discount and recorded a loss due to the poor debtor's credit rating;
- the lender agreed to restructure the credit, recording an economic loss;
- the debtor filed for bankruptcy or other similar procedures.

In March 2017 the European Central Bank (ECB) published also the "*Guidance to banks on NPLs",* dedicated to both the Significant Institutions under the direct supervision of the EBC and the banks with a remarkable *NPL Ratio* in order to provide guidelines on six main topics:

- the strategy for *NPLs'* reduction;
- governance, business models and organizational models;
- forbearance measures;
- the models for the classification of *NPLs*;
- the policies for the *provisioning*, *impairment* and *write-off* of distressed securities;
- models and processes for evaluating real estate coverages.

In July 2017, the EU Commission published the *Action plan to tackle non-performing loans (NPLs) in Europe,* identifying a set of measures aiming at:

- ensuring a sufficient loss coverage for banks;
- fostering the acceleration of the recovery of distressed credits through out-of-court enforcements;
- creating an efficient secondary market for *NPEs*;
- providing a blueprint for the creation of systemic Asset Management Companies for *NPEs*[§].

In particular, the Action plan identified three main measures: the Capital Requirements Regulation, the improvement and the regulation of the credit servicing and purchasing market and the development of systemic Asset Management Companies for *NPEs*.

The Italian legislation has fully embraced the taxonomy of *NPEs* provided by the EBA in 2013, providing also an additional distinction of distressed securities into three micro-classes on the basis of their risk:

- *bad loans*: credits whose reimbursement is uncertain since the debtors are insolvent;

[‡] A security, in order to be considered part of the distressed securities segment, needs to provide a financial return at least 10 per cent higher than the equivalent treasury bonds.

[§] In particular, the Action plan identified three main measures: the Capital Requirements Regulation, the improvement and the regulation of the credit servicing and purchasing market and the development of systemic Asset Management Companies for *NPEs*.

- *unlikely to pay*: exposures whose reimbursement is unlikely without the enforcement of the coverages;
- *past due*: exposures expired for more than 90 days.

In 2018, Banca d'Italia published its guidelines, slightly differing from those provided by ECB, being them exclusively dedicated to less significant banks. In March 2018, the European Commission proposed some modifications to the ECB guidelines in order to strengthen the level of provisions for the newly originated *NPEs*, publishing the *Addendum* in order to specify the prudential provisioning backstop for *NPEs*[**].

Vulture investors could be classified on the basis of their approach to *NPEs* management. In this context, a significant categorization is the one provided by Altman (2006), who divides vulture investors in *active/control*, *active/non control* and *passive* investors, depending on their will to play a leading role into the restructuring process. *Active/control* investors usually employ a significant amount of financial resources to purchase distressed securities in order to get the control of the company. Investors belonging to this category often have a quite long, sometimes even indefinite, time perspective and they may aim to an *equity- for-debt* exchange in order to get the full control of the company, once the turnaround has been completed. After that, they may decide either to run the company or to re-sell it after 2-3 years for a higher price. Investors pursuing an *active/control* strategy generally favour large or mid-cap companies[††]. Despite being the most profitable approach, as expected returns are on average between 20 and 25 per cent, the *active/control* strategy is doubtless the most demanding approach, both in terms of resources and competences required. *Active/non control* investors, instead, take actively part in the target company's turnaround, even without assuming the control of the company itself or leading the restructuring process. They may enter the creditors' committee, contribute to the draft of the reorganization plan and provide the financial support required by the process. The active/non control investors may also consider appointing some members of the Board of Directors, but they do not aim to get the control of the company. They have a short time-perspective, usually between six months and two years. Such a strategy entails less capital requirement compared to the *active/control* one. Therefore, also the return on capital is lower, between 15 and 20 per cent. Finally, *passive* vulture investors are traders who decide to specialize in the purchase of distressed securities. As speculators, the main driver of their investments is the price, as they buy distressed companies' bonds or loans at a discount price[‡‡], betting on the fact that the firm will recover in the near future and will not go bankrupt, but they do not pursue any specific actions either to influence or to control the turnaround process, assuming a *passive* approach. Passive investors typically have a limited time horizon, less than one year in many cases, and settle for lower returns, usually less than 15 per cent[§§].

The interest of this research has been narrowed down to active vulture investors, as they are actively and fully involved in the restructuring process, being therefore able to contribute to the efficiency of the market, while there is no interest in investigating operators moved exclusively by a speculative approach.

[**] While the EU Commission's initiatives are binding for all the European institutions and will apply only to the credits that have been originated since March 14th, the ECB *Addendum* addresses only the significant institutions (and those with a significant *NPL Ratio*) and applies only to credits that have become *non-performing* since April 1st.

[††] This strategy is very similar to the one of private equity firms. The initial vehicle used to get the control of the target represents the real element of differentiation: bank loans and public bonds instead of equity. However, such a strategy often requires a subsequent injection of equity in order to foster the rehabilitation of the company. Not surprisingly, many private equity firms adopt this strategy when investing in the market of distressed securities.

[‡‡] Usually 50-60 per cent of the face value.

[§§] Perrini (1997) agrees with the categorization proposed by Altman, but, besides active (control/non control) and passive investors, he adds a third class of vultures: the *aggressive* investors. Not only do they adopt a proactive strategy in order to take part in the decision-making process concerning the turnaround, they also purchase the vast majority of corporate bonds and debt to influence the restructuring process and block any undesired initiative that may damage their interests.

3. The Italian scenario

The financial crisis of 2008 significantly impacted on the European market for vulture investments creating favourable conditions as the number of bankruptcies in the majority of European countries increased and the level of corporate indebtedness peaked during the years following the crisis.

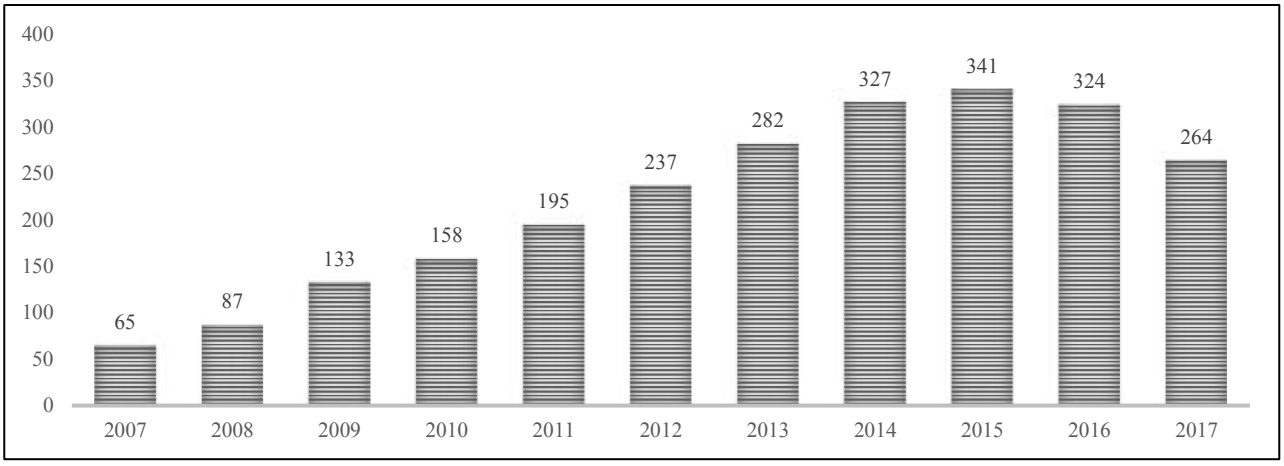
Spain and Italy represent the countries that have suffered the most because of the crisis, as shown by the growth both in the number of companies that filed for bankruptcy and of the level of corporate indebtedness. Since 2011, Italian companies are the riskiest among the European countries, with the highest level of corporate debt, which almost reaches 50 per cent of the capital employed. The number of bankruptcies in Italy grew by 11.5 per cent between 2007 and 2015, reaching 14.681 bankruptcies in 2015 (Carluccio e Conca, 2017).

According to Carluccio and Conca (2017), the Italian situation is characterised by:

- the raising pressure on banks' balance sheets, due to the uncertainty in the corporate environment;
- the increasing risk of insolvencies and bankruptcies, in particular for those companies with a significant leverage;
- the necessity of a restructuring of the overall financial structure of Italian companies.

Focusing on *Non-Performing Exposures*, the related European market accounts for Euro 1.203 billion[***]. The market is significantly concentrated, with the first five European countries, represented by Germany, France, Italy, U.K. and Spain, that make up almost 70 per cent of the overall market. In this scenario, Italy is at the bottom of the league, having the largest portion of distressed securities among European countries, with a market share of 28 per cent, and an incidence of 22.2 per cent on the GDP.

Although the Italian economy has slightly improved in the last few years, the consequences of the financial crisis are still evident. Moreover, the worsening of the quality of the credit system had a negative impact on Italian banks' balance sheets and contributed to the raise of the problem of *NPLs*. In this context, with a stock of Euro 264 billion, in 2017 Italy had the highest amount of NPLs in Europe, according to 2018 KPMG report on NPLs in Italy. Despite the slight reduction occurred in the past two years, the current stock of *NPLs* is five times higher than the pre-crisis one: the *NPL Ratio* in 2017 was above 13 per cent, while the European average is around 5 per cent.



Source: author's construction based on KPMG. 2018. *I Non-Performing Loan in Italia. Trend in atto e prospettive future*, p. 10.

Fig. 1. **NPLs Stock in Italy (Euro/billion)**

The increase of the transactions concerning *NPLs* demonstrates the huge potentiality of the development of the Italian market, still underdeveloped but growing: according to KPMG, transactions have increased in the last three years, reaching almost Euro 80 billion in 2017.

[***] Data available refer to 2015 (Carluccio and Conca, 2017).

Over years, a few contributions tried to analyze the Italian scenario. Perrini investigated on the reasons behind the underdevelopment of the market more than twenty years ago (1997), summarized in:

- the lack of a structured financial market;
- a tight relationship between the economic-industrial context and the political framework[†††];
- the inadequacy of the regulatory framework to encourage the development of a market for vulture investments[‡‡‡];
- the financial structure of Italian companies[§§§];
- the lack of operators with sufficient and adequate competences, willing to invest in this market.

Also Danovi (2001) contributed to the debate, identifying the factors causing the underdevelopment of the Italian market for distressed securities as:

- the regulatory framework;
- the focus on social issues rather than the industrial ones as, for instance, the protection of the employment;
- the financial structure of Italian firms;
- the high risks associated to vulture investing.

In the first decade of 2000 the drivers guiding the Italian market significantly changed: private equity investments were slightly growing; the regulatory framework was reformed and the financial crisis of 2007 shocked the economy. In that scenario, Danovi (2009) carried out a second analysis in order to asses if the new circumstances were impacting on the evolution of the market. The research was based on a questionnaire submitted to a sample of 84 firms, selected among both the members of AIFI[****] and some foreign operators, aiming at understanding the degree of participation and the interest of investors in the market for distressed securities; the impact of the new regulatory framework on the market, the opinions about the future perspectives and the operational models employed by the investors who participated in the market. The results highlighted the reasons preventing the permanent development of the market as:

- the high perceived risk associated with investments in distressed companies;
- the lack of the specific skills needed to successfully manage a turnaround;
- the underdevelopment of the internal market for corporate bonds.

Danovi argued that the operators were facing the main challenge of the shift from a mere financial reorganization towards a real turnaround, represented by a process entailing both financial, strategic, organizational and operational restructuring. Nevertheless, given the peculiarities of the Italian context, Danovi forecasted the development of an "Italian-style" market for turnaround financing, characterised by two main aspects:

- the solid presence of the banking sector in the definition of the reorganization plans and in the restructuring deals;
- the pivotal role of courts in the turnaround process.

In 2015, also Carluccio and Conca carried out a survey in order to explore the Italian market for distressed securities. They agree with previous researchers (Perrini, 1997 and Danovi, 2001, 2009) on the fact that, despite having favourable conditions, the market for vulture investments still finds some difficulties to consistently develop. According to the results of their survey, which addressed both banks and potential investors, the vast majority of operators believe that a market for distressed securities could potentially develop in Italy, identifying in the *bid-ask gap,* represented by the difference

[†††] Often, the restructuring of distressed companies follows a social-political logic rather than an industrial one. For instance, turnaround may be driven by the principle of protecting the level of employment and not according to an economic logic.
[‡‡‡] Indeed, Italian procedures were directed more towards the liquidation of the distressed companies rather than the restructuring.
[§§§] Italian companies strongly rely on the banking system to finance their businesses. As a consequence, the market for corporate bonds is historically weak.
[****] Italian Private Equity, Venture Capital and Private Debt Association.

between the expected selling price and the expected returns of investors, the main obstacle to its expansion[††††]. The results showed also that one third of the private equity funds interviewed is potentially interested in investing in distressed companies while the majority of the funds are not allowed to pursue such investments because of internal regulations[‡‡‡‡]. On the other hand, all the originators, represented by the banks, declared to be ready to the disposal of *NPLs* and the majority of them can rely on an internal department specialized in the management of the deals, while some prefer to outsource the activity to more expert and specialized operators, such as the servicers.

In conclusion, despite being the first market for volume in Europe and having some incontestably appealing characteristics, Italy still does not attract vulture investors, mainly because of some peculiarities of the country[§§§§]and because of the *bid-ask gap*. Nevertheless, according to Carluccio and Conca (2017), since the financial crisis of 2007, the servicing market in Italy has considerably grown and the competition has significantly increased. In fact, new players entered the market and the business models evolved. According to the study carried out by PwC (2018) on the Italian *NPLs* market, the evolution in the regulatory framework and the significant supply of *NPLs* will contribute to the further growth of the market and to the consolidation of players in the near future.

4. The perspective for the Italian market: an empirical analysis

The paper aims at investigating if it would be possible to develop a proper and efficient vulture capitals market in Italy, as the level of NPLs allows the existence of several operators.

In 2009, Danovi identified the lack of operators specialized in vulture investments as one of the main obstacles to the development of the market for distressed securities in Italy. However, in the last decade, some players entered the market and started investing in distressed companies. Such funds do not pursue a general strategy and differ from other private equity firms since they focus exclusively on the specific stage of the business lifecycle represented by the decline. They operate in a niche of the larger market for private equity investments. Moreover, other kinds of operators have been emerging in the last few years. Banks are developing *in-house* procedures to manage their portfolios of *NPLs* and a new business model is getting growing attention in the banking sector: the so-called challenger bank, which provides the banking industry with an innovative business model, entailing the large use of technologies and digital instruments[*****]. The servicing market has been grown too and some players have been able to establish a solid market leadership[†††††]. Given these considerations, it would be possible to state that currently a significant number of players operates in the sector of distressed securities, contributing to the development of a proper and consistent market.

As a consequence, Italy undoubtedly has the conditions for the development of an efficient turnaround market. The abundance of offer has in fact attracted international players, willing to take over and manage *Non-Performing Exposures* as well as created a new category of local players, bringing to the generation of a consistent segment of the market.

Considering the evolutions experienced by the sector and the scarcity of recent scientific contributions, the research undertaken aims at investigating the role turnaround funds are currently playing in dealing with *Non-Performing Loans* in the Italian context. More specifically, in order to analyze the impact that vulture investors can bring to the market, the interest has been exclusively put on companies able to return *in bonis*. Under a methodological point of view, the research origins from a deep analysis of the market and of the previous academic contributions in the field, described above. In consideration of the growth of the sector, the analysis has been based on a mapping of the players operating in the Italian

[††††] The results showed also that one third of the private equity funds interviewed is potentially interested in investing in distressed companies while the majority of the funds are not allowed to pursue such investments because of internal regulations as some charters may prevent the fund to invest in assets with an extreme risk profile, which is the case with vulture investments.
[‡‡‡‡] Some charters may prevent the fund to invest in assets with an extreme risk profile, which is the case with vulture investments.
[§§§§] Inadequacy of the regulatory framework, financial structure of firms and the underdevelopment of the market for corporate bonds.
[*****] In this context, this operative model represents a concrete alternative to address the issue of *NPLs* for banks.
[†††††] Nowadays, the market leader is represented by DoBank.

market, investigating also the most significant case studies in the field. Attention has been especially put on the funds working in restructuring procedures, but also on banks, advisors and consultants operating in the sector, in order to develop a consistent sample of players to interview with the purpose to generate ideal models by highlighting critical success factors. In order to achieve the goal, the qualitative research has been based on in-depth one to one interviews conducted with each component of the sample, divided into three categories represented by funds, banks and advisors.

The main areas of interest of the interviews are represented by:

- *Context:* background of the operator, structure, capital and organizational features;
- *Target:* types of investments, target market, geographical and sectorial interests;
- *Investment:* deal flow, amount of new finance per operation, additional resources provided, IRR, NPLs per operation, *bid-ask gap*, qualitative aspects of the restructuring process, timings, risks and regulations;
- *Perspectives:* focus on the future of the market, taking into consideration also innovative models as *common restructuring funds.*

The research is still ongoing and the data-set will be complete by mid 2019. The preliminary headlines highlight an optimistic attitude towards the restructuring procedures and an improved trust towards the operators in the field. The growth of the number of players enhances the possibilities of the development of a consistent and efficient market, as argued by a considerable part of the operators interviewed. A positive perception has been highlighted also in relation to the improvements in laws and regulations and in the adoption of innovative models, as common restructuring funds. The key elements for the success of a turnaround process still lies in timing and managerial skills.

Conclusions

According to the analysis undertaken, the main headlines of the paper could be summarized in the following statements:

1. Vulture investors have always had a poor reputation, as underlined by the name *"vulture"* itself, but also by the main definitions provided by academic literature. Nevertheless, a few academic contributions based on market researches highlight how their activity could improve the efficiency of the market.
2. The issue related to *Non-Performing Exposures* has become increasingly significant, as also the European Bank Association, the European Central Bank and Banca d'Italia have issued directives and guidelines in order to face the problem. In this context, it would be necessary to evaluate the possibility to practically carry out the regulations provided as a base for the development of an efficient European market.
3. Although the Italian economy has slightly improved in the last few years, the consequences of the financial crisis are still evident. In fact, with a stock of Euro 264 billion in 2017, Italy has the highest amount of *NPLs* in Europe. Despite the slight reduction occurred in the past two years, the current stock of *NPLs* is five times higher than the pre-crisis one: the *NPL Ratio* in 2017 was above 13 per cent, while the European average is around 5 per cent. The huge presence of *Non-Performing Loans* highlights the necessity of efficient market models, operators and dynamics able to tackle consistently and efficiently the issue.
4. Considering the evolutions experienced by the Italian market and the scarcity of recent scientific contributions, the paper proposes a qualitative research, based on in-depth one to one interviews to the main operators in the market, in order to explore the role turnaround funds are currently playing in dealing with *Non-Performing Loans* and the potentiality of the market. The analysis, still ongoing, demonstrates an optimistic evolution of the market and an improved trust towards the operators in the field. The growth of the number of players enhances the possibilities of the development of a consistent and efficient market, while a positive behaviour has been

highlighted also in relation to the improvements in laws and regulations and in the adoption of innovative models, as common restructuring funds.

5. The preliminary results of the research offer interesting and positive headlines on the evolution of the market of *NPLs* in Italy. Headlines, even if not always statistically significant because of the restricted sample, demonstrates the need to expand the research to additional players, highlighting also the room for further scientific research in the field, proposing also a model that could be applied internationally in order to investigate the issue in comparable countries as well.

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Bibliography

AIFI, 2017. *Il mercato italiano del private equity, venture capital e private debt.*

Altman, E. I., 2004. Defaulted bond & bank loan. Markets and Outlook in *GFA Seminar: Investing in distressed companies.* New York City.

Altman, E. I., Hotchkiss, E., 2006. *Corporate financial distress and bankruptcy.* Hoboken, New Jersey: Wiley & Sons, Inc.

Barbagallo, C., 2017. I crediti deteriorati delle banche italiane: problematiche e tendenze recenti. *Primo Congresso Nazionale FIRST CISL: La fiducia tra banche e Paese: NPL, un terreno da cui far ripartire il dialogo.* Roma: Banca d'Italia.

Baudino, P., & Yun, H., 2017. *Insights on policy implementation No. 3 - Resolution of non-performing loans - policy options.* Financial Stability Institute (Bank for International Settlements).

Bufacchi, I., 2018, *Bce verso la fine del Qe: ecco cosa accadrà dopo. Guida alle mosse che oggi annuncerà Draghi, ilsole24ore.com*, June 14th, [Online] Available at: http://www.ilsole24ore.com. [Accessed 18 August 2018]

Carluccio, E., Conca, V., 2017. *Il mercato dei NPLs tra domanda e offerta.* Milano: Egea.

Carpinelli, L., Cascarino, G., Giacomelli, S., Vacca, V., 2016. La gestione dei creditit deteriorati: un'indagine presso le maggiori banche italiane. *Questioni di Economia e Finanza*.

Cerved., 2018. *Osservatorio su fallimenti, procedure e chiusure di imprese.* Cerved Group Spa.

Constancio, V., 2017. Resolving Europe's NPL burden: challenges and benefits. *Tackling Europe's non-performing loans crisis: restructuring debt, reviving growth.* Brussels.

Danovi, A., 2010. Private Equity for distressed companies in Italy. *Esperienze d'impresa*, 125-143.

Danovi, A., 2001. L'attività di Vulture capital in Italia. Primi dati da un'indagine empirica. *Rivista dei dottori commercialisti*, 885-899.

Danovi, A., 2014. *Procedure concorsuali per il risanamento d'impresa.* Milano: Giuffrè Editore.

Danovi, A., 2009. L'attività di turnaround financing in Italia in *Finanza, Marketing e Produzione*, 58-77.

European Central Bank, 2018. *Addendum alle Linee guida della BCE per le banche sui crediti deteriorati (NPL): aspettative di vigilanza in merito agli accantonamenti prudenziali per le esposizioni deteriorate.* ECB.

European Central Bank, 2017. *Lineee guida per le banche sui crediti deteriorati (NPL).* ECB.

European Commission, 2018. *Action plan to tackle non-performing loans (NPLs) in Europe.*

European Commission, 2018. *Commission staff working document, AMC Blueprint.*

European Commission, 2018. *Directive of the European Parliament and of the Council on credit servicers, credit purchasers and the recovery of collateral.*

European Commission, 2018. *Regulation of the European Parliament and of the Council on amending Regulation (EU) No 575/2013 as regards minimum loss coverage for non-performing exposures.*

Feder, W. H., Lagrange, P. C., 2002. Considerations for investors before investing in bankrupt companies in *The Journal of Private Equity*, 38-41.

Gilson, S. C., 2001. *Creating value through corporate restructuring: case studies in bankruptcies, buyouts and breakups.* New York City: Wiley & Sons, Inc.

Gilson, S. C., Hotchkiss, E. S., Ruback, R. S., 2000. Valuation of Bankrupt Firms in *The Review of Financial Studies*, 43-74.

Goldschmid, P. M., 2005. More phoenix than vulture: The case for distressed investor presence in the bankruptcy reorganization in *Columbia Business Law Review*, 191-274.

Greco, A. (2017), "Sofferenze, ecco i fondi ristrutturatori: una caccia al tesoro da 130 miliardi", *repubblica.it*, 14th March, [Online] Available at: http://www.repubblica.it/economia/affari-e-finanza/2016/03/14/news/sofferenze_ecco_i_fondi_ristrutturatori_una_caccia_al_tesoro_da_130_miliardi-135505572/ [Accessed: 1 August 2018].

Harner, M. M., Griffin, J. M., Ivey-Crickenberger, J., 2013. Activist investors, distressed companies, and value uncertainty in *ABI Law Review*, 22: 167-194.

Hotchkiss, E. S., Mooradian, R. M., 1997. Vulture investors and the market for control of distressed firms in *Journal of Financial Economics*, 43: 401-432.

Jiang, W., Li, K., Wang, W., 2012. Hedge funds and Chapter 11. *The Journal of Finance*, 67: 513-559.

KPMG., 2018. *I Non Performing Loan in Italia. Trend in atto e prospettive future.* KPMG.

Krasoff, J., O'Neill, J., 2006. The role of distressed investing and hedge funds in turnarounds and buyouts and how this affects middle-market companies in *The Journal of Private Equity. Special Turnaround Management Issue*, Vol. 9, No. 2, 17-22.

Kucher, A., Meitner, M., 2004. Private equity for distressed companies in Germany in *The Journal of Private Equity*, Vol.8 No.1, 55-62.

Lim, J., 2015. The role of activist hedge funds in financially distressed firms in *Journal of Financial and Quantitative Analysis*, 50: 1321-1351.

Noe, T., H., Rebello, M., J., 2003. Reputation and the Market for Distressed Firm Debt in *The Journal of Financial and Quantitative Analysis*, 38 (3): 503-521.

Perrini, F., 1997. Vulture Capital: investire in aziende in crisi in *Economia & Management*, 21-35.

PwC. 2018. *The Italian NPL market. What's next?* PwC.

Rosenberg, H., 2000. *The vulture investors.* New York City: Wiley & Sons, Inc.

ECONOMIC ANALYSIS IN LEGAL ARGUMENTATION OF UNFAIR COMMERCIAL PRACTICE

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Abstract. In recent years, the question of the applicability of the three-year limitation period (laid down in Article 406 of the Commercial Law of Latvia) to the compulsory land lease relationship between consumer and merchant has been substantially raised in the legal and economic environment of Latvia. The discussion between law scientists about the resolution of the issue is controversial and sharp because the solution will have a significant impact on Latvia's future economic, legal and social development. Considering the legal discourse and ambiguity of the application of the limitation period, as well as the significance of the predicted economic impact in Latvian society and sustainable development of the state, researchers and appliers of law enforcers (including the court) in the process of dispute solving must be considered the principles of fairness and proportionality. Estimation of these principles should also include the use of economic considerations and economic analysis. The conclusions of economic analysis should be a significant argument in the legal settlement of the dispute. So far, there is not much developed legal and economic science cooperation in resolving such disputes in Latvia. It has often led to unfair and disruptive legal solutions to the Latvian economy and society.

The aim of the research is to analyse the place of economic considerations in legal argumentation in the light of a case of unfair commercial practice in Latvia. To reach the aim, system analysis, comparison, historical, case study, forecasting, and scientific publications research methods were carried out.

After summarizing findings of the study, it was concluded that the result of application and understanding of limitation period framework will have a significant impact on the successful economic development, the favourable business environment in Latvia and public loyalty to the state. It is important for the appliers of law to choose the fairest and most proportionate solution to this dispute considering all the circumstances. Therefore, the main conclusion is drawn that in the legal disputes, which is significant for public and where the law does not give a clear answer the appliers of law must particular evaluate necessary of using economic analysis of law and if it is needed – must use it.

The research results are applicable for modernization of understanding and application of normative acts and promotion of cooperation between law and economic sciences. The theses of his study have the potential for future research.

Key words: *economic analysis, consumer, unfair commercial practice, limitation period*

JEL code: D11, D18, 030

Introduction

The theory of economic approach to law is novel for the Latvian legal system and legal theory. The new law and economics in Latvia began topical in time of the economic post-crisis. In law practice, for the first time, directly and clearly an economic analysis of law is named by the Constitutional Court of Republic of Latvia judge Rezevska D. in her dissenting opinion of case No. 2016-14-01 (The dissenting opinion of Rezevska D., 2017). With this moment the theory of economic analysis of law become visible to a sufficiently broad range of appliers of law. However, the using of

economic considerations in legal argumentation in Latvia has been studied poorly. The most remarkable study of this subject in Latvia has been carried out by Pētersons M. as part of his master's thesis (Pētersons M., 2012). Also, the contemporary theory of economic analysis of law is not widely recognised in the other newcomer states of the European Union. Mainly the ideas on this theory in Eastern Europe are taken from the Common law countries, for example, the author of United States of America Posner R. A., or European countries which are rich with old legal and durable free market traditions.

With the process of globalization and technological development merges not only national economics but bet also such conservative phenomenon as national legal systems. For example, in Continental European and Civil Law legal system become actual judge-made law which is a traditional element of the Common Law legal system. As well have appeared first attempts to apply the economic analysis of law in Latvian legal practice. The economic analysis of law in Latvia with years will become more necessary for the concept of contemporary democratic legal country, which includes the development of an economic and business. In other words, the appliers of law will not be able to avoid from economic analysis of law in practice, arguing that the use of economic and political considerations in legal argumentation is not allowed. Therefore, studies of economic analysis of law from the side of the interdisciplinary field, a namely economic and juridical viewpoint of Latvia is actual and novel. The research verified a hypothesis that in the legal disputes, which is significant for public and where the law does not give a clear answer the appliers of law must consider not only ordinary legal arguments but evaluate necessary of using economic analysis of law and if necessary, apply it to reach a fair decision.

The **aim of the research** is to analyse the place of economic considerations in legal argumentation in the light of a case of unfair commercial practice in Latvia.

The theory of economic approach to law is wide, which cannot be qualitatively covered and analysed within the scope of this research. For an efficient understanding of economic analysis of law, it has been suggested to study it in light of specific case (Ratniece L., 2012). Therefore, the case of unfair commercial practice in Latvia has been selected in light of which the place of economic considerations in legal argumentation has been examined in this research. This case was chosen from a field of consumer law concerning unfair commercial practice, because this violation directly harms consumers' economic interests, hereby indirectly harms the economic interests of legitimate competitors and create many barriers affecting business. In short, one of largest owners of land under apartment houses in Latvia in 2017 began to demand land rent from consumers (apartment owners) for the period from 1 January 2008 – it is almost ten-year-old land rent. The Consumer Rights Protection Centre of Latvia stated that the merchant practice is unfair because he did not consider the applicability of the three-year limitation period. This was one of the most important and complicated cases in the history of contemporary Consumer Rights Protection Centre. The case is still running in court and its' finding will have a significant impact on the society's public interests and development of Latvian economic. At this moment there is no any statement which could indicate that the appliers of law were used economic analysis of law. Therefore, this case will be an actual, contemporary and suitable example for analysing the place of economic considerations in legal argumentation.

The **main tasks of the research** are: to analyse the application of the economic analysis of law in legal perspective; to discover the role of economic analysis in light of the chosen example, namely case of unfair commercial practice; to analyse and compare the role of economic analysis and its' non-used consequences in similar case of unfair commercial practice in history of Latvia.

To reach the aim, system analysis, comparison, historical, case study, forecasting, and scientific publications **research methods** were carried out. As **main information sources** are used forecasting and scientific publications, case law and legal regulations. The **research period** is from 2018 October till 2019 January.

The research results are applicable for modernization of understanding and application of normative acts and promotion of cooperation between law and economic sciences. The theses of this research have the potential for future research.

Research results and discussion

1. The principle of fair commercial practice and the economic analyses of law

Unfair Commercial Practices Directive concerns unfair business-to-consumer commercial practices in the internal market of the European Union. The Article 5 Point 2 determines that a commercial practice shall be unfair if it is contrary to the requirements of professional diligence, and it materially distorts or is likely to materially distort the economic behaviour with regard to the product of the average consumer whom it reaches or to whom it is addressed, or of the average member of the group when a commercial practice is directed to a particular group of consumers (The European Parliament …, 2005). The Directive was the basis for the implementation of the Unfair Commercial Practices Prohibition Law, which has been adopted by the Parliament of the Republic of Latvia on 22 November 2007. The purpose of the law is to ensure the protection of the rights and economic interests of the consumers by prohibiting the performers of commercial practices from using unfair business-to-consumer commercial practices. The law came into force on 1 January 2008. This can be considered as the *de jure* moment of the birth of the modern institute of the prohibition of unfair commercial practice in Latvian law. With this, the principle of fair commercial practice was established in writing law. This is a big step for securing the concept of contemporary democratic legal country, which includes the development of economic, management, business innovations and the competitiveness of Latvia in Europe.

The principle of fair commercial practice is narrower than the principle of good faith which was used generally so far in Latvia concerning also to trade. Namely, the written application of the principle of good faith directly to trade in Latvia was regulated for the first time in the regulations "On Combating Unfair Competition" adopted by the Cabinet of Ministers on October 4, 1927. The regulations were developed according to German, Austrian, Norwegian and Polish law and French case law (Bite E., Bastian V, 1927). They "forbade the practice of opposing good morals or industrial and commercial habits" by providing for civil and criminal liability (The Cabinet of Ministers, 1927). The principle of fair commercial practice does not contain non-market-related moral implication, such as taste, decency, culture, but the principle of good faith includes a broad moral spectrum. Therefore, the principle of fair commercial practice is directly linked to the contemporary economic, management and business innovations. However, there is no priority order among these principles, but they complement each other according to the specific situation. Sometimes in legal science, the fair commercial practice which is mentioned in the Unfair Commercial Practices Directive and the Unfair Commercial Practices Prohibition Law is called a general clause. It is not wrong. Therefore, it is legally important to point distinguish between the concepts of general principles of law and general clauses. General clauses or standards are legal rules which are not precisely formulated, terms and concepts which in fact do not even have a clear core (Grundmann S., Mazeaud D., 2005). In turn, general principles of law are principles which are derived from the basic norm – a democratic legal country – functioning in the legal system of a democratic country under the rule of law and generally accepted in a field of law, legal system or group of law (Rezevska, 2015). Considering that fair commercial practice meets both: general principles of law (because fair commercial practice is a statement that expresses the Latvian market, the highest values of the functioning of trading processes) and general clauses (as it is included in written law), within this research so both concepts are used, applying them to the appropriate places in the article, which will specify and explain certain aspects of the research.

Latvian merchants, society and sometimes even officials do not understand the scope of the term "commercial practice". Namely, the term "commercial practice" has been expanded. The use of this incorrect notion of term

"commercial practice" can lead to legal and economically unfavourable consequences for different types of legal subjects, including merchants and consumers. Commercial practice describes the way in which the business module is displayed between the merchant and the consumer. Therefore, it is not justified in Latvia to talk about commercial practices between two merchants (as it would be appropriate to do, for example, in Germany), in such cases, the terms of "commercial activity", "economic activity", "competition" should be used.

The general clause of fair commercial practice consists of two parts: refers to the requirements of the professional diligence and to the economic behaviour of the consumer. Professional diligence means the standard of special skill and care which a trader may reasonably be expected to exercise towards consumers, commensurate with honest market practice and/or the general principle of good faith in the trader's field of activity (The European Parliament …, 2005). Historically, the flexibility of the concept of commercial practice, which is contrary to the requirements of professional diligence, has made it difficult for lawyers to work, because it has a variety of commercial morals that depend on the place, time and people (Lubbe K., 1929). The Unfair Commercial Practices Directive seeks to solve this problem, but the national peculiarities of each country and the different trading practices and principles of it have not been able to ensure a single understanding of fair commercial practice across the European Union.

To sum up, the violation of the principle of fair commercial practice directly harms consumers' economic interests, indirectly harms the economic interests of legitimate competitors and create many barriers affecting business. Therefore, in the legal argumentation which is used to combat unfair commercial practice is very necessary to consider an economic analysis of law. Only in this way it is possible to achieve a fair solution of the case, ensure equality and proportional distribution of benefits.

2. The compulsory land lease relationship between consumer and merchant

In recent years, the question of the applicability of the three-year limitation period (laid down in Article 406 of the Commercial Law of Latvia) to the compulsory land lease relationship between consumer and merchant has been substantially raised in the legal and economic environment of Latvia. Particularly this problem has plummeted, because one of the largest owners of land under apartment houses in Latvia has suddenly begun demanding land rent from consumers (apartment owners) for the period from 1 January 2008 – it is almost ten-year-old land rent. The total amount of land rented per consumer is significant, therefore many consumers cannot pay the land rent for all these years in one payment, as it is required by the landowner. It should be noted that many apartment owners are new families with credit-bought apartments and retirees, who have low incomes.

The discussion between law scientists about the resolution of the issue is controversial and sharp. The opinions of law scientists and lawyers on the most appropriate legal solution to this problem are different. For example, the docent of University of Latvia and lawyer Karklins J. points out that the three-year limitation period of the Commercial Law applies to compulsory land lease relations (Kārkliņš J., 2018), but the lawyer Sipe A. argues that a general ten-year limitation period of the Civil law applies to compulsory land lease relations (Snipe A., 2017). It promotes legal insecurity. Also, there is no common case law. Namely, even at the level of regional courts, judgments are diametrically opposed. For example, the three-year limitation period of the Commercial Law has been applied by the Riga Regional Court inthe case no. C30454917, 11 October 2017; no. C30474217, 10 November 2017; no. C30478417, 3 January 2018. But the ten-year limitation period of the Civil Code has been applied by the Courland Regional Court in case no. C03471317, 19 December 2017 and by the Latgale Regional Court in the judgment of 22 November 2017, the case no. C30428016. This uncertainty not only brakes civil circulation and worsens the business environment in Latvia, but also has a significant impact on the economic situation and equality of consumers. With the newest case law of the Supreme Court of the Republic of Latvia increases problem more. The court decided that the courts do not have *ex officio* competence to assess whether the

limitation period is applied if a consumer did not ask to decide it (the Supreme Court of Republic of Latvia, 2018). That means that depending on the activity and knowledge of the consumer, the court decisions may be diametrically opposite in the same circumstances of the case. This undermines legal stability, consumer equality and brake the development of contemporary economic, management and business innovations.

It is presumed that the legal discussion of the limitation period did not become actual if the owner of land prevents the accumulation of land rent for several years. Generally, consumers do not avoid paying rent for land. However, consumers are not able to sweep large sums of money immediately. Thus, the actions of the landowner, allowing the accumulation of such amounts over several years, indicates the characteristics of unfair commercial practice.

The limitation period, in this case, can evolve in different ways, depending on the methodology of the legal interpretation and application. In such legally uncertain cases, the solution should be sought not only in legal science but also in the economic analysis of law and economic impact of the situation on the overall society. In traditional legal analysis is used the *ex-post* perspective, but the economic analysis is using the *ex-ante* perspective. In other words, opposite to legal analyses, the economic approach is oriented towards the future consequences of today's actions (Butler H. N., 1998). Therefore, questions are raised: if ten-years limitation period of the Civil law is economically justified nowadays; would it be fair to adopt ten-years limitation period in this situation where the land owner 's allowed to accumulate of land rent in the considerable amount; is the landowner omission conform with fair commercial practices; how answers on those questions could influence the future of the contemporary democratic legal country, which includes development of economic, management, business innovations and the competitiveness of Latvia in Europe?

The general principles of law are the determinants of the content of written legal norms and the criterion of legitimacy, therefore their role should be decisive both in determining the validity of the written law and its content, as well as in the drafting of the legal act (Rezevska D., 2015). Thus, before the court decides on the limitation period of the obligations (ten-years of the Civil Law or three-years of the Commercial Law), the person applying for the right must verify the legitimacy of the norms with the general principles of law relevant to the case. As a result, the principles of fairness, proportionality, legal equality and economic efficiency require weighing and comparison. In order to fully assess the place and weight of the principle of economic efficiency, economic analysis should also play a role in this process. In the case of a conflict of law principle, it is not reasonable to look for a priority order, for example, that justice will always be superior to efficiency or *fiat iustitia pereat mundus* – let justice be done, though the world perish! (Iljanova D., 2003).

In the Consumer Rights Protection Centre Decision no. 22-pk (Consumer Rights Protection Centre of Latvia, 2017) of 7 September 2017 the institution has recognized the commercial practice of the landowner demanding from apartment owners land rent without respecting the limitation period of commercial transaction obligations set out in the Commercial Law unfair. This Decision is very progressive and courageous step by the public authority in defending the interests of consumers and secure the smooth functioning of the internal market. The section of the Decision on the three-year limitation period has broad legal argumentation. The authority's arguments based on different sources of law, including legal doctrine and secondary sources of law, but no economic analysis of law has been used. On 21 December 2018, the District Administrative Court of Latvia judged on an application for the annulment of the Decision (The District Administrative Court of Latvia, 2018). The court ruled to reject the application by joining the arguments of the Consumer Rights Protection Centre. Also, in this case, the Court did not pay attention to economic analysis, did not evaluate the place of general principles of law, including the principles of economic efficiency and fairness in this dispute. The Court's judgment has been passed but has not yet entered into force and is expected to be appealed, so that a valid court decision on the application of the three-year limitation period will have to wait at least one year or more in this situation.

The economic considerations should be considered in this case as an important argument. Rights are exercised in society and created by society, so both the legislator and the appliers of law when working with law, must consider the

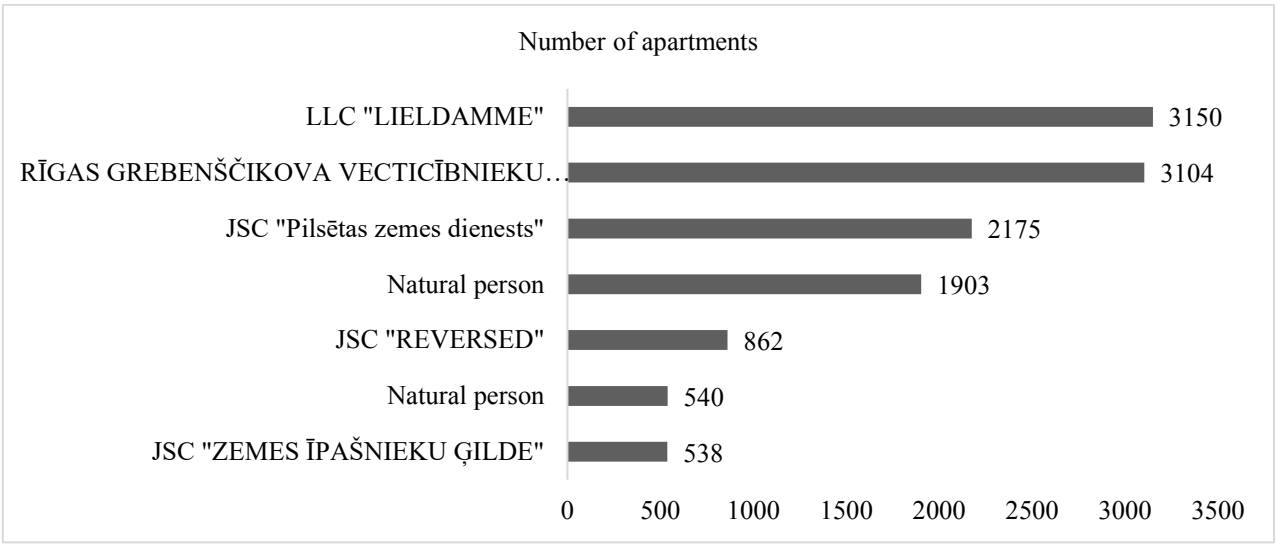
needs of society and, in some cases, even expectations of society. The principles of fairness, proportionality and legal equality in contemporary legal system require of legislator and appliers of law to take economic efficiency decisions as regards the regulation of demos life. The economic analysis of law is important, because every law must promote economic efficiency (Posner R. A., 2003), especially in areas of law that has been created to protect the economic interests of a group or individual, as is the case with consumer rights (see the purpose of the Unfair Commercial Practices Prohibition Law). For example, if the ten years limitation period of the Civil law were applied to apartment owners, this would create an economically unbearable and disproportionate financial burden for consumers. Thus, even if such a burden were recognized as legal from a written law point of view (because Latvian law is still strongly influenced by the positive law school), it would not be in line with Latvian society values, sense of justice and needs. To paraphrase the Latin phrase "*fiat iustitia pereat mundus*", the justice would no longer be necessary if the world had perished! Thus, this situation needs to be considered more broadly, considering the general principles of law that embody the perspectives of multiple sciences and their interaction.

Overall there is no single approach or methodology to use the economic analysis of law, but there exist some basic cornerstones which create the framework for its practical application, for example, use of economic principles and tools (Ratniece L., 2012). The theory of economic approach to law is novel and still unfamiliar for many lawyers in the Common law system (Posner R. A., 2003), but in Civil law countries, it is just new-made. Therefore, the role of economic analysis of law in the Latvian legal system is unclear. This is the reasons why Latvian lawyers do not use the theory of the economic approach to law in practice. The economic analysis of law in Latvia will become more necessary for the concept of contemporary democratic legal country, which includes the development of the economic and business. There is a need for some time and practice. Latvian legal traditions and needs are changing fast and radically, because of globalization and development of technology.

3. The economic analyses of law in the situation of the landowner and consumers

The Consumer Rights Protection Centre points out that from 1 January 2017 to 31 June 2017, it is within 6 months, it has received 44 consumer applications of the action of the landowner, demanding land lease contrary to regulatory requirements. The average amount of land lease fee requested by the landowner from one apartment owner is approximately EUR 454.53. According to the information provided by the manager of some Riga apartment houses there are affected at least 47 apartment houses in Riga, with a total population of 3000 consumers (LLC Rīgas namu pārvaldnieks, 2017). The Consumer Rights Protection Centre information shows that consumers are also affected in other cities of Latvia (for example, in Ventspils, Liepaja), as well as consumers whose apartment houses are managed by other managers. At the same time, the Consumer Rights Protection Centre assumes that part of the affected consumers did not submit an application to the authority, therefore the amount of consumer un there loses are considerably higher (Consumer Rights Protection Centre of Latvia, 2017). It has been proven that at least 3 000 apartment owners in Riga have been affected within 6 months by the landowner action, claiming an average debt of at least EUR 454.53 for the period from 1 January 2008 to 1 April 2014. Considering that the merchant started debiting at the beginning of 2017, it can be concluded that the above-mentioned debts could be subject to the three-year limitation period lay down in the Commercial Law (although there is still a dispute over this in practice). Therefore, it can be demonstrated that the merchant has claimed at least EUR 1 363 590 per lend-lease service from consumers, but the legal question remains whether this has occurred without respecting the limitation period. This is only a verifiable amount, but the real amount is much more significant. Namely, JSC “Pilsētas zemes dienests" is the third largest owner of the land, on which is located apartment houses of other owners (see Fig. 1). At the same time, JSC “Pilsētas zemes dienests”, JSC “Reversed”, JSC “Zemes īpašnieku ģilde” have purposefully acquired land under multi-apartment residential houses, and this characterizes the fact that receiving

the lease from the residents of the house is a purposeful business (The State Land Service of Latvia, 2015). In this study, the analysis of the practice of JSC "Pilsētas zemes dienests" has been carried out, because it is the landowner who has emerged with a particularly aggressive commercial practice including delaying the demand for land lease from consumers for the almost ten-year period.



Source: author's construction based on the information of the State Land Service of Latvia

Fig. 1. **Owners of the lands in 2015**

As an example, let's look at the economic relations between JSC "Pilsētas zemes dienests" as the land owned of Lielvardes Street 117, Riga and the apartment house with the address Lielvardes Street 115, Riga. These properties have been taken as an example because of the 27 June 2018 judgment of the Supreme Court in case no SKC-5/2018, which establishes the case-law on the obligation to include the Value Added Tax in the land lease amount, and this case has been publicly heard in the media, raising public interest in it (The Supreme Court of Republic of Latvia, 2018). The land area is 3120 m^2 and the cadastral value for the year 2018 was EUR 53.354. Taking into account that according to the law the land lease price is 5% of the land cadastral value and the land tax is paid by the apartment owners, in the year 2018 the landowner obtained from the land property EUR 2 667.70 as the land lease. From this amount the Value added tax, which amount is 21% (it is EUR 560.22), must be deducted, so the land owner's income from the land property in Lielvardes Street 117, Riga in 2018 was EUR 2 107.48. Average one owner of an apartment in Lielvardes Street 115, Riga (totalling 71 apartments in this house) must pay EUR 37.57 per year for the land lease and in addition to cover the land tax.

Considering the facts from Fig. 1. (that at least 2175 apartments are located on the JSC "Pilsētas zemes dienests" land), from the example of the case of Lielvardes Street it is possible to get a generalized estimate of the possible revenue from the lease payment for the year, which is 64 554, 65 EUR per year 2018. However, it should be considered that the amount of land rent for 2018, which is 5% of the land's cadastral value, is the lowest in recent years, as the legislator reduces it permanently every year. Thus, the revenue of the previous years should be significantly higher.

The economic analysis of these cases shows that revenues from compulsory land lease can reach significant levels, especially if this business is implemented in a strategic and thoughtful manner. For example, the landowner does not allow the accumulation of land lease debts, clarifies and communicates with the apartment owners in a timely manner, therefore, it is not necessary to spend financial resources for clarification of apartment owners in the Office of Citizenship and Migration Affairs. Land that provides the opportunity to receive land lease is a low-risk asset that does not require substantial investment and do not have economic risk, so the economic status of landowners is much better than that is to apartment owners who have to pay not only lease, land tax, but in most cases it is also necessary to maintain the property

of the land itself, for example, to mow grass, to clean snow, to repair roads. In addition to these relationships must be considered that there is involved a sensitive object – housing. Mostly apartment is the only property of many consumers which is the guarantee of the human rights of man, namely the right to housing. Therefore, encumbering this object with compulsory payments must be treated with special care, but large additional payments, such as the accumulation of land lease debts, threaten the human rights of apartment owners.

The fact that the land lease is an objective burden when it is due to be paid for several years is also recognized by the representative of JSC "Pilsētas zemes dienests" (Constitutional Court of Latvia, 2018). In the public space and in the media it has been reported that the merchant has deliberately delayed demanding land leases from apartment owners for several years, because, for example, they wanted: to bypass the right of first refusal of apartment owners to buy the land under their house; to receive a higher land lease than the law determine it for the moment (Kučinskis J., 2017). Regardless of whether the landowner has knowingly or unconsciously prevented to demand land lease for several years, this situation must be seen in conjunction with legal and economic justice. Land lease services for apartment owners are not prohibited or illegal. It can bring financial benefits and economic satisfaction to both – landowners and apartment owners – and to the state and society. However, the contemporary management of business must be done in accordance with the principle of good faith and fair trade, including fair commercial practices. Namely, it is not fair and honest to accumulate large land lease amounts, especially in this situation, which has historically been the opposite of a free market economy model, and where most apartment owners are not at all aware that they should make such payments or that their house is on foreign land. In such cases, the merchant must delete the losses, because it is not economically and legally justified to transfer losses (which caused by the merchant delay to demand land lease form consumers) to a legal and economically vulnerable subject – the consumer. By refusing to analyse the economic situation of the parties and the criteria based on it, the law enforcer and court negatively influence justice in Latvia that directly affects all aspects the development of contemporary economic, management, business innovations, the wellbeing of society and undermines the state's international competitiveness.

Miller G. P. explains that the economic analysis of law is the use of economic principles and reasoning to understand legal material (Miller G. P., 2011). The analysed case example applying the ten-year limitation period laid down in the Civil Law to the compulsory land lease relationship between consumer and merchant is not conforming with economic principles. In addition, the ten-year limitation period is outmoded, and it is no longer in line with today's public and national requirements, especially concerning to speed of economic and civil circulation. Consequently, raised the question: whether different approaches to the same case can create different outcomes? In other words, if the law applier, in this case, can reach justice, without using tools of economic analyses? It is presumed – yes, but with tools of economic analyses it would be unmistakable and according to the modern approach.

4. Déjà vu and the role of application of economic analysis

This is not the first case in Latvia when a law in the critical cases for society are interpreted and applied to disregard the entire legal system and without assessing the impact and role of economic analysis of law. It is brightly characterized by the years of the economic crisis in Latvia and after the crisis when significant amounts of the contractual penalty were demanded and recovered by consumers along with the main debt, interest on late payments and losses. The result was that many consumers lost their homes and were still owed creditors. This promoted the exodus of Latvians as economic refugees to other countries. Overall, the Latvian economy was severely undermined, and the negative consequences of this process are still felt. If in this case the courts when interpreting and applying the law on contractual penalties paid attention to the economic imbalances of the involved parties (the merchant and the consumer) and analyzed the possible consequences for society, assessed the general principles of law and set their role in certain disputes, then consumers did

not economically destroy. Namely, consumers probably lose their houses, but they did not additionally press to pay disproportionately high contractual penalties, which is mostly every case where deliberately cultivate by the merchants for a long period. Now it is possible to assess this situation neutrally. All circumstances show that these cases were not confirmed with economic principles. In short, disproportionately high contractual penalties did not conform with the normal economic situation in the country, they were not bearable not only to consumers but also to other merchants. If in these cases the law appliers were used tools of economic analysis, it is presumed that the outcome would be different. That affirms that there can be a situation when different approaches to the same case can create different outcomes.

In these circumstances there were also brave lawyers who decide to turn down requirements of a merchant to recover disproportionate contractual penalties, motivating it by the delay of creditors to demand a contractual penalty in time (The Parliament of the Republic of Latvia, 2013). However, with some brave lawyers in the legal system was not enough, therefore, to deal with the legal and economic crisis in field of contractual penalties the Parliament of the Republic of Latvia was forced on 4 July 2013 to adopt amendments to the Civil Law of the Republic of Latvia, limiting the amount of the contractual penalty. The amendments to the Civil Law prevent further repetition of such situations, but as shows, the case of compulsory land leases specific amendments to the law do not prevent similar situations from happening again in the future.

The case of contractual penalty brightly outlines the similarity with the current land lease situation in Latvia. The practice so far has shown that the problems of the circulation of civil relations in Latvia are solved through legislation, it is by amending the regulatory framework. This contributes to the uncertainty of the business environment and this process is long-lasting and will not be applicable to all types of cases, as it is believed that, after a land lease case a controversial legal situation might appear in practice again. It is therefore not necessary to amend the written law, but to change the understanding of the interpretation and application of legal norms, namely, in such legal disputes, where the law does not give a clear answer and when case is significant for public, the economic analysis based on the supreme role of general principles of law in the interpretation of legal norms should be included in the interpretation process. The liability to use economic analysis of law in cases with public interests derive from the principles of fairness which is stated in the Constitution of Latvia. Economic consideration in legal argumentation allows to apply microeconomic theories in legal norms interpreting process. Every law must promote economic efficiency (Posner R. A., 2003) because its efficiency affected the stability/instability of the national legal system (Popa M.-F., 2013). The economic analysis of law as an element of the clarification of the principle of fairness can be used by all law enforcers directly, and there is no need for the written legal processual norm.

Conclusions, proposals, recommendations

1. The economic analysis of law derives from the principle of fairness as its clarification element. The principle of fairness is one of the relevant general principles of law which is stated in the Constitution of Latvia – Satversme.
2. The result of the economic analysis of law as one of legal argument and the economic analysis of law as a tool can be used by all appliers of law directly. Namely, there is no need for the written legal processual norm, which could be a legal ground for using this tool and argument. Exactly the applier of law needs to decide if the economic analysis of law is required in particular case. If it is necessary it must be used, otherwise, there is a risk of carrying the unjustified finding of the case.
3. Legal understanding and traditions currently prevailing in Latvia could accept the following thesis put forward in this research. Namely, in the legal disputes, which is significant for the public and where the law does not give a clear answer the appliers of law must particular evaluate necessary of using economic analysis of law.

4. The economic approach can be used in all legal fields: civil law, criminal law, administrative law etc., but especially the use of the economic analysis of law is recommended in a law which is related to economic. For example, consumer law, commercial law, insurance law, competition law etc.
5. With the process of globalization and technological development are merging not only national economics but also such conservative phenomenon as national legal systems. The economic analysis of law in Latvia will become more necessary for the concept of contemporary democratic legal country, the economic approach of law is part of the legal and modern country. Acceptance of the economic analysis of law in practice will influence the development of economic, business and contemporary management. The interdisciplinary cooperation of sciences is an important part of the successful future of the country, and the economic analysis of law is one of the components. Finally, the examples which have been analysed in this research proved that the lack of economic analysis of law can lead to unjustified findings of the cases. Therefore, in future, the appliers of law will not be able to avoid using economic analysis of law in practice.

Bibliography

Bite E., Bastjānis V., 1927. Paskaidrojums par noteikumiem par negodīgu konkurenci (Explanation of the rules on unfair competition). Latvian State Historical Archives, 5485. f., 1. apr., 6. l. Riga.

Butler H. N., 1998. *Economic Analysis for Lawyers*. Carolina Academic Press, pp.66.

Constitutional Court of the Republic of Latvia, 2018. Latvijas Republikas Satversmes tiesas sēdes lietā Nr.2017-17-01 stenogramma (Case 2017-17-01 verbatim of the Constitutional Court of the Republic of Latvia). [Online] Available at: http://www.satv.tiesa.gov.lv/web/viewer.html?file=http://www.satv.tiesa.gov.lv/wp-content/uploads/2017/07/Stenogramma_2017-17-01_4_dala.pdf#search=dal%C4%ABtais%20%C4%ABpa%C5%A1ums [Accessed 9 January 2019].

Constitutional Court of the Republic of Latvia, 2011. *Sonia Traub*. [2011]2010-22-01. [Online] Available at: http://www.satv.tiesa.gov.lv/wp-content/uploads/2016/02/2010-22-01_Spriedums.pdf [Accessed 4 January 2019].

Consumer Rights Protection Centre of Latvia, 2017. Lēmums patērētāju kolektīvo interešu pārkāpuma lietā (Decision in the event of infringement of the collective interests of consumers). No. 22-pk. [Online] Available at: http://www.ptac.gov.lv/sites/default/files/pilsetas_zemes_dienests_07092017_izraksts.pdf [Accessed 8 January 2019].

Grundmann S., Mazeaud D., 2005. *General clauses and standards in European contract law: comparative law, EC law, and contract law codification. Private law in European context series*. The Hague: Kluwer Law International, pp. 15.

Iļjanova D., 2003. Tiesību normu un principu kolīzija (Conflict of laws and principles). In: E. Meļķisis, ed., Juridiskās metodes pamati. 11 soļi tiesību normu piemērošanā (The basics of the legal method. 11 steps in the application of legal provisions). Riga: University of Latvia, pp. 102.

Kārliņš J., 2018. Noilgums piespiedu nomas attiecībās komerctiesībās (Limitation period in rental relationships in commercial law). *Jurista Vārds*, Volume 9 (1015). [Online] Available at: http://www.juristavards.lv/doc/272273-noilgums-piespiedu-nomas-attiecibas-komerctiesibas/ [Accessed 4 January 2019].

Lubbe K., 1929. Negodīga konkurence (Unfair competition). *Jurists*, Volume 2. [Online] Available at: http://www.periodika.lv/periodika2-viewer/view/index-dev.html?lang=fr#issueType:P|issue:/p_001_juri1929n02|article:DIVL85|query:negod%C4%ABgo%2520konkurenci%2520negod%C4%ABg%C4%81s%2520konkurences%2520negod%C4%ABg%C4%81s|panel:pa [Accessed 2 January 2019].

Miller G. P., 2011. Law and Economics versus Economic Analysis of Law. *American Bankruptcy Institute Law Review*, pp. 459.

Kučinskis J., 2017. Zemes piespiedu noma: īss ceļvedis par Normunda Šlitkes darbības mērogiem un īpatnībām (Land forced rental: a short guide on the scale and specificities of Normunds Šlikte). [Online] Available at: https://pietiek.com/raksti/zemes_piespiedu_noma_iss_celvedis_par_normunda_slitkes_darbibas_merogiem_un_ipatnibam [Accessed 9 January 2019].

Pētersons M., 2012. *Considerations of economic efficiency as the facility of legal argumentation*. Master thesis. Riga: University of Latvia. [Online] Available at:

file:///C:/Users/Zanda/Mani%20Dokumenti/Doktorantura/Konferences/2018_2019/201805_Ekonomistu%20konference/Petersons_Martins_mp07036.pdf [Accessed 8 January 2019].

Posner Richard A., 2003. *Economic analysis of law* (6th ed.) New York, Aspen Publisher, pp. 23-28.

Ratniece L., 2012. An economic analysis of the duty to inspect goods pursuant to the CISG and CESL. *RGSL Research Papers*, No. 8. [Online] Available at: https://www.rgsl.edu.lv/uploads/research-papers-list/15/rp-8-ratniece-final.pdf [Accessed 8 January 2019].

Rezevska D., 2015. *Vispārējo tiesību principu nozīme un piemērošana* (*Meaning and application of the general principles of law*). Riga: Daigas Rezevskas izdevums, pp. 146.

LLC Rīgas namu pārvaldnieks, 2017. Par zemes nomas maksas paziņojumiem (On land rental statements). [Online] Available at: https://www.rnparvaldnieks.lv/lv/jaunumi/par_zemes_nomas_maksas_pazinojumiem [Accessed 8 January 2019].

Snipe A., 2017. Par saistības un prasības noilgumu saistībai, kas radusies uz likuma pamata (Concerning the limitation period of liability and requirement for an obligation arising on the basis of the law). *Jurista Vārds*, Volume 40 (994). [Online] Available at: http://www.juristavards.lv/doc/271383-par-saistibas-un-prasibas-noilgumu-saistibai-kas-radusies-uz-likuma-pamata/ [Accessed 4 January 2019].

The Cabinet of Ministers, 1927. Noteikumi par negodīgas konkurences apkarošanu (Rules on Combating Unfair Competition). *Likumu un Ministru kabineta noteikumu krājums*, Volume 20. [Online] Available at: http://www.periodika.lv/periodika2-viewer/view/index-dev.html?lang=fr#panel:pa|issue:/lmkn1927n20|article:DIVL241|query:par%20negod%C4%ABgas%20konkurences%20par%20negod%C4%ABgas%20konkurences|issueType:P [Accessed 2 January 2019].

The dissenting opinion of Rezevska D., 2017. Constitutional Court of the Republic of Latvia. "On Compliance of Section 3, 5, 6, 7 and 9 of the law "On Solidarity Tax" with the First Sentence of Article 91 and Article 109 of the Satversme of the Republic of Latvia". [2017] 2016-14-01. [Online] Available at: http://www.satv.tiesa.gov.lv/en/cases/?case-filter-years=&case-filter-status=&case-filter-types=&case-filter-result=&searchtext=2016-14-01 [Accessed 9 January 2019].

The District Administrative Court of Latvia, 2018. *JSC Pilsētas zemes dienests vs. Consumer Rights Protection Centre of Latvia.* [2018] A42-00985-18/3. [Online] Available at: https://manas.tiesas.lv/eTiesasMvc/lv/nolemumi [Accessed 8 January 2019].

The European Parliament and the Council, 2005. Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market and amending Council Directive 84/450/EEC, Directives 97/7/EC, 98/27/EC and 2002/65/EC of the European Parliament and of the Council and Regulation (EC) No 2006/2004 of the European Parliament and of the Council ('Unfair Commercial Practices Directive'). [Online] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32005L0029 [Accessed 2 January 2019].

The Parliament of the Republic of Latvia, 2013. Likumprojekta "Grozījumi Civillikumā" anotācija (Annotation of "The Amendments to the Civil Law Act"). [Online] Available at: http://titania.saeima.lv/LIVS11/SaeimaLIVS11.nsf/0/3C0A3795A906DBBBC2257AFB0040E85C?OpenDocument [Accessed 9 January 2019].

The Parliament of the Republic of Latvia, 2007. Unfair Commercial Practices Prohibition Law. [Online] Available at: https://likumi.lv/ta/en/en/id/167759-unfair-commercial-practices-prohibition-law#_ftn1&pd=1 [Accessed 2 January 2019].

The State Land Service, 2015. Nekustamā īpašuma tirgus pārskats. Dalītais īpašums un piespiedu noma daudzdzīvokļu mājās Latvijā (Real estate market report. Distributed property and forced rental inmulti-apartment houses in Latvia). [Online] Available at: http://kadastralavertiba.lv/wp-content/uploads/2018/05/Parskats_15052015_gala.pdf [Accessed 8 January 2019].

The Supreme Court of Republic of Latvia, 2018. Augstākā tiesa: Zemes piespiedu nomas maksas apmēru neietekmē tas, vai zemes īpašnieks ir PVN maksātājs (The Supreme Court: The amount of land-forced rents is not affected by whether the landowner is a Value Added taxpayer). [Online] Available at: http://at.gov.lv/lv/jaunumi/par-tiesu-lietam/augstaka-tiesa-zemes-piespiedu-nomas-maksas-apmeru-neietekme-tas-vai-zemes-ipasnieks-ir-pvn-maksatajs-9193? [Accessed 9 January 2019].

The Supreme Court of Republic of Latvia, 2018. *LLC „Attīstības finanšu institūcija Altum" vs. [person A.]*. [2018] SKC-292/2018. [Online] Available at: http://www.at.gov.lv/lv/judikatura/judikaturas-nolemumu-arhivs/civillietu-departaments/hronologiska-seciba?year=2018 [Accessed 9 January 2019].

THE IMPACT OF INTERNATIONAL TRADE ON EU MEMBER STATES PERFORMANCE

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Abstract. One of European Commission priority is to achieve balanced and progressive trade policy that ensures boosting EU economic growth. However, growing international trade flows do not necessarily guarantee economic growth. The impact of international trade on the growth of countries is a rather widely discussed issue. Previous empirical investigations have shown heterogonous results. Some of the previous studies examining effect of international trade have revealed that export and/or import had a positive impact on countries economic performance. However, the results of other studies indicate that international trade impact on countries growth is insignificant or even negative. In this study, we create the hypothesis that the effect may vary according to the level of productivity achieved by the countries and that it may occur after a certain period of time. The aim of this investigation is to evaluate impact of international trade on EU countries performance depending on the level of productivity achieved by the countries and taking into account long-term effects. Moreover, in the last decade two different paradigms of the impact of foreign trade on growth have emerged: export led growth (ELG) and import led growth (ILG). The study made it possible to test these theories empirically. We used: i) the cluster analysis for divide countries into groups by productivity level; ii) ordinary lest square (OSL) and fixed effect (FE) estimator, in regressions model including countries dummies and times lags, for investigation international trade impact. Investigation results reveal that both import and export positively influenced performance of EU member states and there is no significant difference on impact depending on productivity level of the country in case of export, bur import impact is stronger in more developed countries with higher productivity level. Moreover, statistically significant effect was found to occur in the first year and lasts for two years.

Key words: *economic openness, export, import, productivity, growth*

JEL code: O11, O47, P45

Introduction

International trade (IT) is perceived as one of the main sources of economic growth in the countries. Therefore, one of European Commission (EC) priority is to achieve balanced and progressive trade policy that ensures boosting EU economic growth. However, the question is whether or not the growing international trade flows are having a positive effect. International trade effects on growth is theoretically grounded in classical, neoclassical and modern economic theories. However, empirical investigations show that the impact of international trade on countries growth is ambiguous: IT can effect countries performance positively (Frankel J. A. & Romer D., 1996; Alcala F. & Ciccome A., 2004; Awokuse T. O. 2008; Sun P. & Heshmati A., 2010; Saha S., 2012; Velnampy T. & Achchuthan S., 2013; Keho Y. 2017), negatively (Abdulkadhim Altaee H. H., Al-Jafari M. K. & Khalid M. A., 2016), or impact can be insignificant (Bakari S. & Mabrouki M., 2015). The analysis of previous studies revealed, that investigation results may vary depending on: i) IT indicators was used (export (E) or import (I), IT balance (E-I), economic openness indicator ((E+I)/GDP); ii) research method was used (parametric or non-parametric; Ordinary List Square (OLS), Fixed Effect (FE), Random effect (RE) estimator;

Difference-in-difference estimator, etc.); iii) investigation period (shor-term or long-term). However, in this work we assume that the impact of international trade may not occur in the current year, but after a certain period of time. It should be noted that we have found only two studies (Hung J., Salomon M. & Sowerby S. 2004; Girma S., Greenaway D. & Kneller R., 2004) investigating the lagged effects of international trade. Moreover, we also rise hypothesize that the impact may depend on the level of productivity achieved by the country. Given in to account, that level of economic development in EU countries is uneven, it is appropriate to identify differences in the impact of IT on performance. So, the aim of this study is to evaluate international trade impact on EU member states performance taking into account lagged effect and countries productivity level. Hence, the impact of international trade is often discussed in scientific work, our investigation contributes scientific knowledge, whereas it explains the differences of international trade impact on the economic performance, which are insufficiently discussed and investigated in scientific studies. Moreover, the investigation enabled to carry out verification of current competing theories: export lead growth (ILG) theory and import lead theory, whereas it revealed differences in the impact of export and import. It should be noted, that as main performance indicator we used productivity expressed by value added per employee. According B. Van Ark and E. Monnikhof (2000), productivity is the most important indicator of economic performance.

To achieve aim of the study, in the first part we provide theoretical background of international trade impact on economic growth and analyse previous investigations results. In this part of the study we identified IT effects transmission channels and causes of variety of investigations results. In the second part, we describe and justify research methodology and date. In the third part, we present and discuses results of investigation. Last part concludes findings.

For theoretical part of the study we applied methods of scientific literature analysis: synthesis, comparison of approaches, providing insights, generalization and conclusion. For investigation we applied clustering and regression analysis: Ordinary list square and Fixed effect estimators.

1. The impact of foreign trade on economic performance: theoretical background

International trade can affect economic growth through various channels. M.-A. Muendler (2004) discussed three transmission channels for the impact of foreign trade on productivity. First of all, foreign trade fosters competition in the product market, which stimulate producers to innovate, leading to productivity growth. This is called "competitive push". Secondly, foreign trade companies can use cheaper or/and more advanced capital goods that allow them to implement new production methods and change factors that are relatively more expensive. This leads to an increase in capital, a reduction in the use of labour as a production factor, which increases productivity. This is called "foreign input push". Thirdly, there is a "competitive elimination" effect at industry and/or sector level. Increased foreign competition is forcing the least efficient companies to close, and the most efficient companies gain additional market share, resulting in increased average productivity across the country.

L. Andersen and R. Babula (2008) also notes that international trade can lead to productivity growth through three transmission channels: 1) it gives access to foreign intermediate production factors or indirectly to technology; 2) it extends the size of the market and induce the diversity of new products; 3) facilitate the international dissemination of common knowledge.

As A. Pareeka and J. Wolszczak-Derlacz (2013) point out, the micro-level analysis, focusing on exporting companies, reveals that exporters have greater productivity through different channels: 1) "self-selection" - usually the exporter has achieved higher productivity even before entering foreign markets, therefore the higher productivity of the company entering the foreign market when compared to other companies is often mistakenly treated as a consequence of export activity; 2) "earning by exporting" - the performance of the exporter over time improves through the learning process, as companies entering export markets acquire new knowledge and experience that increases the company's productivity

level; 3) manifests redistributive effect that determines productivity growth in the economy sector; 4) lower productivity companies close because of increased competition, which increases macro-level productivity.

The redistribution effect of export activities has been discussed more extensively by M. J. Melitz (2003). According to D. Greenaway and R. Kneller (2007), this is one of the first models to explain the relationship between productivity and international trade. According this model, the company with made decision to export, experiencing the unprofitable costs of entering foreign markets. So, company has to relocate part of its production from production to the domestic market for production to foreign markets. This can only be done by a company with a high level of productivity. Hence, exporting companies are already more productive at the starting point. Starting export activity, the company's profit increases. This attract other companies in the sector, but the cost of their entry to the export market is already increasing, so potential exporters have to achieve even higher productivity, i.e. the threshold for entry into foreign markets is increasing. At the same time, companies that already participate in international markets must achieve (or keep) the same productivity level. Thus, exports provide the basis for large companies to expand, while smaller ones can gain access to foreign markets. This has the effect of redistributing the economy within the economy and increasing the overall productivity of the sector. This has the effect of redistributing the economy within the economy and increasing the overall productivity of the sector.

Nevertheless, foreign trade includes not only exports but also imports. However, in scientific literature, more attention is paid for investigation of the impact of export on productivity. And the is the lack of investigation of import impact on productivity and growth, as notes A. B. Bernard, J. B. Jensen and P. K. Schot (2006), T. O. Awokuse T. (2008). As A. Vogel and J. Wagner (2010) point out, research into the links between import and productivity has been focused only since 2005. However, quite a lot of this kind of research has been done since this period. For example, A. Vogel and J. Wagner (2010) investigated the relationship between import and labour productivity, expressed in terms of sales turnover per employee, using German industry enterprises date for the period 2001-2005. The study identified a positive relationship between import and labour productivity, i.e. increasing import amount leads to productivity growth. R. C. Acharya and W. Keller (2008) conducted a study whose main purpose was to determine whether imports affect the productivity of the host country due to the technology deployment effect. They used macro and industry level data of the 17 industry-oriented countries in 1973-2002 period. The study concluded that the liberalization of imports in the short term (three years in the case of the investigation) has a positive impact on the productivity of the country, but in the long run the impact is negative due to the selection effect. They also found that the import of technologies positively influences the productivity of the country both directly and through the development of technological knowledge. A. Lindbom (2009) conducted investigation using 1997-2006 period data of US private business sector and separate industry sector. The investigation revealed that, due to imported intermediate products used in production, labour productivity in the US private business sector grew by 14 percent and in the industry sector by 24 percent. L. Halpen, M. Koren and A. Szeidl (2015) investigated import impact on total factor productivity (TFP) using 1993-2002 data of Hungarian manufacturing firms and conclude that Hungary's productivity growth can be explained by a decrease in the cost of production factors used due to a change in the proportion of domestic and imported factors. J. Blaum, C. Lelarge and M. Peters (2016), using micro data from the French industrial sector, have investigated the links between import and productivity and found that the direct impact of imports on productivity is low.

Based on the scientific publications (Bernard A. B., Jensen J. B. & Schot P. K. 2006; Acharya R. C. & Keller V. 2008; Lindbom A. 2009; Eldridge P. & Harper J. 2010; Vogel A. & Wagner J. 2010; Foster-McGregor A., Isaksson A. & Kaulich F. 2013; Halpen L., Koren M. & Szeidl A. 2015; Blaum J., Lelarge C. & Peters M. 2016), the main channels of the impact of imports on productivity can be distinguished:

- The positive import effect on productivity is due to usage of cheaper imported raw materials compared to local raw materials, which allows to reduce production costs and increase productivity;
- The positive import effect on productivity is due to usage of cheaper imported intermediate products in production, which also reduces production costs and increases productivity;
- A positive import effect on productivity also occurs when the quality of imported raw materials or intermediate products is higher than the alternative local raw material;
- The positive import effect on productivity is due to the usage of imported modern production tools, ICT, innovative business management models and applications;
- The implementation of new imported technologies and other production tools in production leads to the take-up and diffusion of knowledge from more advanced countries, which also increases productivity.

Thus, imports allow countries to take advantage of specialization. In addition, as M. Andersson, H. Lööf and S. Johansson (2008) argue, if imports increase productivity and/or company's produced better quality and competitive products due the usage better quality imported raw materials and intermediates, this may lead to increased export opportunities. Export development also increases productivity, resulting in a double positive foreign trade effect on productivity.

It shout be noted, that authors examining the impact of international trade on productivity, as independent variable often used an indicator combining import and export volumes (for example (E+I)/GPD). However, in most cases, authors (Bernard A. B. & Wagner J. 1997; Clerides S., Lach S. & Tybout J. 1998; Yan A. B., Chung S. and Roberts M. J. 2000; Girma S., Greenaway A. & Kneller R. 2004; Fariñas J. C. & Martín-Marcos A. 2007; De Loecker J. 2007; Hansen T. 2010; Cassiman B.; Golovko E. & Martinez-Ros E. 2010; Yu M. & Dai M. 2011; Ugochukwu U. S. & Chinyere U. P. 2013; Newman C. *et al.* 2016; Gkypali A. & Love J. H. 2018; etc.) examine the relationship just between export and productivity. Jet, in some cases the effects of both exports and imports are examined separately (Awokuse T. O. 2008; Saha S., 2012; Velnampy T. and Achchuthan S. 2013; Abdulkadhim H. H., Al-Jafari, M. K. & Khalid, M. A. 2016; Keho, 2017; etc.), The results of some retrospective analysis of international trade, even named as trade openness, impact on productivity are systematised and presented in Table 1.

Table 1

The estimated effects of international trade on economic performance: summary of previous studies

Researcher(s)	Period	Sample and level	Method	IT variable	Outcome variable	Main results
J. A. Frankel and D. Romer (1996)	1985	Macro level / 63 countries	Cross-country regressions, OLS* estimator	(E+I)/GDP	Income per person	Foreign trade has a strong, statistically significant, positive impact on national income.
D. Rodrik (1998)	1980-1989, 1990-1992	Macro level / 23 OECD countries	Semi logarithmic regression	(E+I)/GDP	Government consumption as share of GDP	The openness of the economy positively influences country's public spending and, through this, has an impact on GDP growth.
C.-H. Lee and B.-N. Huang (2002)	1961-2001 (vary)	Macro level / 5 Asian countries	Regression analysis, TAR model*	Export growth	GDP growth	The study did not confirm Export-led growth theory except Hong-Kong.
J. Hung, M. Salomon & S. Sowerby (2004)	1996-2001	Mezo level / 40 manuf. industries	Panel and time-series regressions (FE, RE)	I/(shipment+ +I-E), E/shipment, Import price change (%)	Labour productivity and TFP growth (%)	Import price decrease has a positive impact on productivity growth after 1-2 years. Exporting doesn't promote productivity growth.

F. Alcala and A. Ciccome (2004)	1985, 1990, 1998	Macro and mezo level / 138 countries	Regression analysis, GMM*	(E+I)/GDP	Labour productivity (GDP / Workforce)	International trade impact on average labour productivity is large, significant and robust.
S. Girma, D. Greenaway and R. Kneller (2004)	1988-1999	Micro level, UK, data of 8992 enterprises	Difference-in-difference estimator	Export growth rate	TFP and employment growth rate	Exporting can boost productivity. After entering foreign markets, the positive impact of exports on both employment and TFP growth rate occurs only after 1 year.
J. de Loecker (2007)	1994-2000	Micro level / 7915 Slovenia manufacturing firms	Regression analysis: OLS	Export	Labour productivity (value added per worker)	Exports have a positive impact on value added per worker of Slovenian manufacturing companies, but the impact is higher in case of exports to countries with higher income.
T.O. Awokuse (2008)	1990, 1993, 1994, 2002	Macro level / Argentina, Colombia, Peru	OLS, VAR* Granger causality test	Real export and import	Real GDP growth	Both export and import stimulate GDP growth, but effect of import is much stronger comparing with export.
J. P. Damijan, J. de Sousa and O. Lamotte (2009)	1995–2002	Micro level / Bosnia-Herzeg., Bulgaria, Croatia, Macedonia, Romania, Slovenia	Regression analysis with time and sector dummies, OLS, GMM* estimator	Shares of regional import and import at the sector level	Productivity (value added)	Exports to advanced markets have a positive impact on productivity growth in 4 countries. Exports to less competitive markets are negatively effects productivity in 3 countries. The impact of imports on productivity, as a result of learning, is the same as in the case of exports.
T. Hansen (2010)	1994-2003	Micro level / German & Austria, data of 660 firms	OLS with time and industry and firm dummies	Exporting ratio as a percentage of firm sales	TFP	Exporters are about 40% more productive than non-exporting companies. Average productivity growth in exporting companies is 1-1.5% higher than in non-exporting.
P. Sun and A. Heshmati (2010)	2002-2007	Regional level / 31 provinces of China	DEA*; SFA*; regression analysis	Net export / GDP, high technology export / GDP	Real GDP, TFP	International trade amount and structure have a positive impact on productivity of China regions.
S. Saha (2012)	1961-2008	Macro level / India	Time series data: simple regression analysis	(E+I)/GDP, export/GDP, Import/GDP	TFP	Trade openness has a significant positive impact on TFP of India.
T. Velnampy and S. Achchuthan (2013)	1970-2010	Macro level / Sri Lanka	Time series: simple regression analysis	Export income, import expenses	GDP growth rate	Export income and import expences have a significant positive effect on GDP growth. Export and import have a significant impact on each other.
W. Ali and A. Abdullah (2015)	1980-2010	Macro level / Pakistan	ADF* test, VECM*, JCo-int and Granger causality tests	Trade openness (indicator not specified)	Real GDP	Trade openness have a positive impact on Pakistan GDP growth in a short-run. The results of long-run analysis indicate a negative impact of trade liberalization on growth. the economic growth of country.
S. Bakari & M. Mabrouki (2015)	1980-2015	Macro level / Panama	VAR model and Granger causality tests	Export and import of goods and services	GDP	The cointegration test and VAR model estimations results show that that exports and imports do not influences GDP growth of Panama.
H. H. Abdulkadhim Altaee, M. K. Al-Jafari & M. A. Khalid (2016)	1980-2014	Macro level / Kingdom of Saudi Arabia	ARDL* model, ECM* method	Real export, real import	Real GDP	Export causes economic growth in the long-run as well as in the short-run. Import effect real GDP growth negatively both in long-run and short-run.
Y. Keho (2017)	1965–2014	Macro level / Ivory Coast	ADLB* test, VAR, GC* test	Real export per capita + real import per capita	Real GDP per capita	Foreign trade has positive effects on economic growth both in the short and long run.

Note: *OLS - Ordinary list square, GMM - Generalized method of moments, VAR - Variance-Covariance method, TAR model - threshold autoregressive model, DEA - Data envelopment analysis, SFA - Stochastic frontier analysis, ADF test - Augmented Dickey Fuller test, VECM - Vector Error Correction model, JCo-int test - Johanson Co-integration test, ARDL - Autoregressive distributed lag model, ECM - Error correction method, ADLB test - Autoregressive Distributed Lag bounds test, GC test – Granger causality test.

Source: author's construction based on literature analysis

Analysis of retrospective studies revealed that both the export and import can contribute productivity growth at micro, mezzo and macro level, but not in all cases. International trade effects on productivity may depend on many factors. In case of export the results vary depending on: i) the size of the exporting company exporting; the stage of the internationalization of the exporter; markets to which the analysed companies export; the export volume, when evaluating the impact at the micro level; ii) the nature of economic activity and export amount of the previous period, when assessing the impact at sector level; iii) the country's level of development; the pattern of economic activity to target export countries, when evaluating the effects at the macro level. Results of investigations may also depend on the period and number of observation, on the indicators used for measure of international trade and output and on method used.

Therefore, there is no basis for making unambiguous conceptual conclusions on foreign trade as a key source for growth. The study must be conducted for a particular country or group of countries, evaluating export and import impact separately. Especially because there are two contradictory theories: Export lead growth (ELG) and Import lead growth (ILG). Representatives of ILG approaches (Awokuse T. O. 2008; Mahadevan R. & Suardi S. 2008; Palley T. I. 2011, etc.) criticize the views of the ELG theory and argue that imports are more likely to increase the country's production capacity comparing with export and import can stimulate economic growth in the long term. According to T. I. Palley (2011), countries should refuse their export-based economic growth strategy. This does not mean that they need to completely reject their exports. Countries will always export goods and services in order to pay for the imported raw materials, production, but it should not be further promoted (Palley T. I. 2011). T. O. Awokuse (2008) confirmed ILG theory and denied ELG approach by investigation with was conducted using 1990-2002 quarterly data of Argentina, Colombia and Peru.

From our point of view, which is based on theoretical insights, both exports and imports can stimulate productivity growth in countries, but the potency of the effect may vary. Furthermore, export performance may be negligible or even negative in the first year of exporting. This was taken into account when forming the research model.

2. Research methodology and data

In various studies, the international trade is measured by different indicators: export amount, import amount, export growth rate, import growth rate, export-GPD ratio, import-GDP ratio, net export, net export-GDP ratio, export and import sum – GDP ratio. In our investigation we have used standard indicators: total export amount and total import amount. The productivity we have expressed also by standard indicator - added value per employee. We have used 1995-2016 period EU member states panel data form World bank data base (original or calculated by authors).

In order to evaluate international trade impact on EU member states performance, taking into account productivity level achieved by countries and lagged effect, *in the first stage* of investigations EU countries were divided into two clusters: i) low productivity countries (LPC) and high productivity countries (HPC). This was done by cluster analysis, using clustering steps performed by B. S. Everitt et al. (2001).

In the *second stage of investigation*, we aim to examine impact of international trade on productivity taking into account possibly lagged effect. We seek determine when, if any, the effect manifests and for how long it lasts. In this respect, we are testing the first hypothesis: H1 – both export and import positively affects productivity, but the effect does not appear in the current year but in a certain period of time. We chose six-year period to examine the impact of international trade on productivity, according to initial testing results. According to the highlighted ILG approach, we also testing second hypothesis: H2 – import have a stronger positive effect on productivity comparing with export. For testing hypothesis, we used multiple regression analysis. We applied two regressive models suitable for panel data - Pooled ordinary least squares (OLS) and Fixed effects (FE) - to ensure the reliability of the results obtained. We can't

apply Random effects (RE) model, which is also suitable for panel data, because the number of objectives was to small in accordance with number of variables.

Model applying FE method:

$$\ln(VApe_{i,t})=\alpha+\delta_8 td2002_t+\ldots+\delta_{22} td2016_t+\beta\ln(EXPtot_{i,t})+\beta_1\ln(EXPtot_{i,t-1})+\beta_2\ln(EXPtot_{i,t-2})+\beta_3\ln(EXPtot_{i,t-3})+$$
$$+\beta_4\ln(EXPtot_{i,t-4})+\beta_5\ln(EXPtot_{i,t-5})+\beta_6\ln(EXPtot_{i,t-6})+\lambda\ln(IMPtot_{i,t})+\lambda_1\ln(IMPtot_{i,t-1})+\lambda_2\ln(IMPtot_{i,t-2})+\lambda_3\ln(IMPtot_{i,t-3})+$$
$$+\lambda_4\ln(IMPtot_{i,t-4})+\lambda_5\ln(IMPtot_{i,t-5})+\lambda_6\ln(IMPtot_{i,t-6})+v_{i,t} \quad (1)$$

Model applying OLS method:

$$\Delta\ln(VApe_{i,t})=\alpha+\delta_9 td2003_t+\ldots+\delta_{22} td2016_t+\beta\Delta\ln(EXPtot_{i,t})+\beta_1\Delta\ln(EXPtot_{i,t-1})+\beta_2\Delta\ln(EXPtot_{i,t-2})+\beta_3\Delta\ln(EXPtot_{i,t-3})$$
$$+\beta_4\Delta\ln(EXPtot_{i,t-4})+\beta_5\Delta\ln(EXPtot_{i,t-5})+\beta_6\Delta\ln(EXPtot_{i,t-6})+\lambda\Delta\ln(IMPtot_{i,t})+\lambda_1\Delta\ln(IMPtot_{i,t-1})+\lambda_2\Delta\ln(IMPtot_{i,t-2})+$$
$$+\lambda_3\Delta\ln(IMPtot_{i,t-3})+\lambda_4\Delta\ln(IMPtot_{i,t-4})+\lambda_5\Delta\ln(IMPtot_{i,t-5})+\lambda_6\Delta\ln(IMPtot_{i,t-6})+v_{i,t} \quad (2)$$

where:

– $Vape_{i,t}$ – productivity expressed as value added per employee in the country i in the period t;

– $EXPtot_{i,t}$ – total export amount (USD) in the country i in the period t;

– $IMPtot_{i,t}$ – total import amount (USD) in the country i in the period t;

– β – the coefficient that reflects export influence on productivity in current time;

– β_1 ... β_6 – the coefficients that reflects export influence on productivity after one to six years;

– λ – the coefficients that reflects import influence on productivity in current time;

– λ_1 ... λ_6 – the coefficients reflect import influence on productivity after one to six year.

In the *third stage* of the investigation, we aim to evaluate the impact of international trade on productivity growth taking into account productivity level achieved by the countries. We seek to identify the impact differences, if they are, in LPC and HPC clusters. Based on assumptions that more developed countries with relatively higher productivity is more open, e.g. international trade is more intensive, we are testing hypothesis: H3 – both export and import positively affects productivity in LPC cluster, as well as in HPC cluster, but in the high productivity countries impact is stronger. Seeking the reliability of the results, we conducted two econometric models (FE and OLS) for hypothesis testing. In regression models we used LPC cluster as the base category that will be the starting point for impact assessments. In this group, the determined impact coefficient will be evaluated directly, and for the HPC cluster, the assessed coefficient will show the impact difference from the base category. We chose a use one period time lag for estimations, taking into account the results achieved in the second stage of the investigation.

Model applying FE method:

$$\ln(VApe_{i,t})=\alpha+\delta_3 td1997_t+\ldots+\delta_{22} td2016_t+\beta_{01}\ln(EXPtot_{i,t})+\beta_{02}\ln(EXPtot_{i,t})\cdot hPRD_{i,t}+\beta_{11}\ln(EXPtot_{i,t-1})+$$
$$+\beta_{12}\ln(EXPtot_{i,t-1})\cdot hPRD_{i,t}+\lambda_{01}\ln(IMPtot_{i,t})+\lambda_{02}\ln(IMPtot_{i,t})\cdot hPRD_{i,t}+\lambda_{11}\ln(IMPtot_{i,t-1})+\lambda_{12}\ln(IMPtot_{i,t-1})\cdot hPRD_{i,t}+v_{i,t}$$
(3)

Model applying OLS method:

$$\Delta\ln(VApe_{i,t})=\alpha+\delta_4 td1998_t+\ldots+\delta_{22} td2016_t+\beta_{01}\Delta\ln(EXPtot_{i,t})+\beta_{02}\Delta\ln(EXPtot_{i,t})\cdot hPRD_{i,t}+\beta_{11}\Delta\ln(EXPtot_{i,t-1})+$$
$$+\beta_{12}\Delta\ln(EXPtot_{i,t-1})\cdot hPRD_{i,t}+\lambda_{01}\Delta\ln(IMPtot_{i,t})+\lambda_{02}\Delta\ln(IMPtot_{i,t})\cdot hPRD_{i,t}+\lambda_{11}\Delta\ln(IMPtot_{i,t-1})+$$
$$+\lambda_{12}\Delta\ln(IMPtot_{i,t-1})\cdot hPRD_{i,t}+v_{i,t} \quad (4)$$

where:

– $VApe_{i,t}$ – productivity expressed as value added per employee in the country i in the period t;

– $EXPtot_{i,t}$ – total export amount (USD) in the country i in the period t;

– $IMPtot_{i,t}$ – total import amount (USD) in the country i in the period t;

– β_{01} – the coefficient that reflects export impact on productivity in the LPC cluster in the current year;

– β_{02} – the coefficient that reflects the difference between the impact of export on productivity in the HPC cluster comparing to the LPC cluster, in the current year;

– β_{11} – the coefficient that reflects export impact on productivity in the LPC cluster in the second year;

– β_{12} – the coefficient that reflects the difference between the impact of export on productivity in the HPC cluster comparing to the LPC cluster, in the second year;

– λ_{01} – the coefficient that reflects import impact on productivity in the LPC cluster in the current year;

– λ_{02} – the coefficient that reflects the difference between the impact of import on productivity in the HPC cluster comparing to the LPC cluster, in the current year;

– λ_{11} – the coefficient that reflects import impact on productivity in the LPC cluster in the second year;

– λ_{12} – the coefficient that reflects the difference between the impact of import on productivity in the HPC cluster comparing to the LPC cluster, in the second year.

3. Estimation results and discussion

In the *first stage* of investigation EU countries (except Luxembourg and Croatia) were divided into two clusters (low productivity and high productivity) according 1995-2016 productivity (expressed by value added per employee) data (see Table 2).

Table 2

Clusters of EU countries by valued added per employee

Name of cluster	Countries that are assigned to a cluster
LPC cluster	Bulgaria, Cyprus, Czech Republic, Estonia, Greece, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, Hungary.
HPC cluster	Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Spain, Sweden, United Kingdom.

Source: author's compose based on results of clustering analysis with SPSS

The clustering of countries was done using the SPSS program. The dendogram obtained during the clustering process is not provided because to the article volume limitation.

In the *second study stage*, using regression analysis (FE and OLS estimations) effect of export and import on EU member states productivity were examined in order to deny or confirm H1 and H2 hypothesis. Results of this estimations are provided in Table 3 (1 and 2 model). The result of investigation denied H1. The results of assessment using both methods (FE and OLS) indicate that export and import growth positively influence productivity changes. This effect manifests in the current year and lasts for a total of two years, e.g. the is no need time for effect to occur. The results of estimation revealed, that increase of the export by 1% leads increase productivity on average by 0.29% (based on the OLS estimator) to 0.43% (based on the FE estimator) in two statistically significant year of impact. The increase of the import by 1% leads productivity increase on average by 0.36% (based on the OLS estimator) to 0,44% (based on FE estimator), over two years. Comparing the strength of the impact of export and import on productivity, estimation results revealed that imports effect is slightly higher (on 0,04%). This results confirmed H2 hypothesis and are in line with Import-lead growth theory. However, it should be noted that ILG theory states that the growth of countries is mainly determined by the increase in import volumes, and exports have no significant impact, but the results of this research reveal that exports remain a significant source of economic growth.

In the last stage of the study, we assessed differences in foreign trade effects on productivity in EU member states low productivity and high productivity countries clusters. The calculations were made taking into account that, significant

impact of export and import occurs at the first year and last next year also. Table 3 summarizes results of those estimations (3 and 4 estimations).

Table 3

Summarizing research finding on the impact of international trade on productivity in EU member states

Coefficients	1 and 2 estimations		Coefficients	3 and 4 estimations	
	FE	OLS		FE	OLS
α	-8,887***	0,056***	α	-7,219***	-0,042***
δ_8	0,050***	-	δ_3	-0,051**	-
δ_9	0,160***	0,053***	δ_4	-0,034*	0,062***
…	…	…	…	…	…
δ_{21}	-0,017	-0,115***	δ_{22}	-0,093*	0,067***
δ_{22}	0,012	-0,011	β_{01}	0,081**	0,085**
β	0,268***	0,182***	β_{02}	-0,030**	0,018
β_1	0,163*	0,110**			
β_2	-0,099	0,068	β_{11}	0,063**	0,035*
β_3	0,098	-0,003	β_{12}	-0,018**	-0,034
β_4	-0,093	0,005			
β_5	0,046	0,063	λ_{01}	0,042**	0,025**
β_6	0,047	0,009	λ_{02}	-0,023**	-0,015**
λ	0,233*	0,236***			
λ_1	0,205*	0,130**	λ_{11}	0,034**	0,037**
λ_2	0,005	0,072	λ_{12}	-0,028**	-0,016**
λ_3	0,019	0,076			
λ_4	0,209	-0,075			
λ_5	-0,015	-0,044			
λ_6	-0,069	-0,036			
n	416	390	n	546	520
$R^2_{kor.}$	0,973	0,874	$R^2_{kor.}$	0,965	0,786
DW	1,454	1,816	DW	1,898	1,901
Schwarz	-735	-1084	Schwarz	-786	-1349
Akaike	-934	-1185	Akaike	-1012	-1471
Hannan-Quinn	-853	-1145	Hannan-Quinn	-924	-1423

Note: * indicates significance at the 10 percent level; ** indicates significance at the 5 percent level; *** indicates significance at the 1 percent level.

Before discussing the results of the estimation, first of all it should be noted that, according to information criteria, realized OLS and FE models differ in reliability. According to S. Konishi and G. Kitagawa (2008), results have a higher reliability when value of Akaike, Hannan-Quinn and Schwarz criteria is lower. So, based on values of these criteria, it was determined that the results are more reliable using OLS model comparing with FE. For this reason, the following discussion of the results are based on the impact estimations using OLS model.

After the implementation of 3 and 4 models, it was conformed again that the increase in both export and import flows has a positive impact on productivity. Estimation results revealed that the increase in total export by 1% leads the average increase in valued added per employee by 0.12% in the base group of countries (LPC) during two years (a statistically significant period of impact). As the coefficients β_{02} and β_{12} are insignificant is considered that, the effect of the increase export in HPC cluster don't differ significantly from effect in LPC cluster. It is not in line to prove H3 hypothesis. Meanwhile, differences in import impact on productivity between LPC and HPC clusters are statistically significant. After increase in total import amount by 1%, value added per employee increases by 0.06% in LPC cluster and by 0.09% in HPC cluster in two years. This results not surprise and is in line with H3 hypothesis. More advanced countries with higher productivity are more likely to import cheaper raw materials and intermediate products comparing with less advanced countries with relatively lower productivity. In the latter case, low productivity countries are the exporters of these cheaper

raw materials and intermediate products, and the importers of finished product. It was surprising that after realizing 3 and 4 models contradictory results were obtained comparing to results of 1 and 2 estimations. Results of 3 and 4 estimations revealed that export have a greater impact on productivity than imports (by 0,06% in low productivity countries and by 0,03% in high productivity countries). But this again confirms the assumption that the impact may vary depending on the level of productivity achieved by the countries. In any case, both exports and imports can contribute countries' performance. In addition, the differences in the impact of exports and imports on productivity are not essential and there is no reason to give priority to the ELG or ILG theory. Thus, it can also be said that countries should form import development strategies, as well as export development strategies. In scientific literature, the authors propose a range of modern export promotion ways. First of all, firms must correctly choose export channel (Fernández-Olmos, M., & Díez-Vial, I., 2015). Attention must also be paid to the fact that the export intensity and it promotion tools depend on the nature of the business activity and the size of the company (Mac An Bhaird C. and Curran D., 2016); innovation capabilities (Ribau, C., Moreira, A., & Raposo, M., 2017), management quality (Galdeano-Gómez E., Perez-Mesa J. C., & Aznar-Sánchez J. A., 2016); companies participation in government promotion programs (Wang et al. (2017) and other factors. In addition, there is a need to reduce export barriers, which have a significant impact on export volumes (Silva J., Franco, M. & Magrinho, A., 2016). However, the analysis of international promotion factors is not the purpose of this study - but it could be a direction for further research, especially focusing on the analysis of import factors, because it is lack of this kind of the investigations.

Conclusions

1. Theoretical analysis reveals that international trade can contribute countries performance by several channels. Export can lead productivity growth through effect of the “self-selection”, “competitive push”, “foreign input push”, “competitive elimination”. Import may improve productivity growth due usage of the cheaper and/or higher quality imported raw materials and/or intermediate products in compare to local; due usage of the imported innovations and diffusion of knowledge.

2. In the last ten years, two competing approaches related to international trade effects on countries performance have emerged: export lead growth (ELG) and import lead growth (ILG). The authors of these approaches bases his insights on empirical research, the results of which are also contradictory, and therefore questions about ELG and ILG approaches priority remain the objective of the discussions.

3. Although the positive impact of international trade on the economy is justified, results of the empirical investigations vary. They may depend on research methods, sample and level, indicators used and others parameters. According analysis of the previous studies, authors assumed, that international trade impact may depend on productivity level achieved by countries and that it takes time for this effect to occur.

4. Results of examining the impact of international trade on productivity, expressed by value added per employee, reveal significant positive impact which manifested in current year and last by two years in total. Results also indicate that export contribute productivity similarly in both EU member states clusters: low productivity countries and high productivity countries. However, there are differences in effects of import on productivity growth: impact is bigger in countries with high productivity level compared with countries that characterized by low productivity level. This confirms the assumption that the impact may vary depending on the level of productivity achieved by the countries.

5. The results of the investigations did not allow us to draw conclusions about the priority of ILG and ELG approaches, because the implementation of different regression analysis models revealed contradictory results. The results of estimation international trade impact on productivity in EU-26 countries taking into account lagged effect has shown

stronger positive impact of import comparing to export. The results of estimations impact differences between low productivity (EU-14) and high productivity countries (EU-12) are reverse. So, it can be concluding, that countries have to take their own situation into account in order to formulating their international trade strategy. Moreover, analysis highlighted necessity for a more detailed study of the international trade impact on EU member states performance taking into account the structure of export and import.

Bibliography

Abdulkadhim Altaee, H. H.; Al-Jafari, M. K. & Khalid, M. A. 2016. Determinants of Economic Growth in the Kingdom of Saudi Arabia: An Application of Autoregressive Distributed Lag Model. *Applied Economics and Finance*, 3(1), 83–92.

Acharya, R. C. & Keller, W. 2008. *Estimating the productivity selection and spillover effects of imports.* NBER working paper 4079. [Online] Available at: https://www.nber.org/papers/w14079.pdf [Accessed 27 January 2019].

Alcalá, F. & Ciccone, A. 2004. Trade and Productivity. *The Quarterly Journal of Economics*, 119(2), 613–646. https://doi.org/10.1162/0033553041382139

Ali, W. & Abdullah, A. 2015. The Impact of Trade Openness on the Economic Growth of Pakistan: 1980-2010. *Global Business and Management Research: An International Journal*, 7(2), 120–129.

Andersen, L. & Babula, R. 2008. The Link Between Openness and Long-Run Economic Growth. *United States International Trade Commission Journal of International Commerce and Economics,* 24, 1–20.

Andersson, M., Lööf, H., & Johansson, S. 2008. Productivity and international trade: Firm level evidence from a small open economy. *Review of world economics*, 144(4), 774–801.

Awokuse, T. O. 2008. Trade openness and economic growth: is growth export-led or import-led? *Applied economics* 40(2): 161–173. DOI: 10.1080/00036840600749490.

Bakari, S. & Mabrouki, M. 2017. Impact of exports and Imports on Economic Growth: New Evidence from Panama. *Journal of Smart Economic Growth,* 2(1): 67–79.

Bernard, A. B. & Wagner, J. 1997. Exports and Success in German Manufacturing. *Weltwirtschaftliches Archiv*, 133(1), 134−57.

Bernard, A. B., Jensen, J. B. & Schott, P. K. 2006. Trade costs, firms and productivity. *Journal of Monetary Economics,* 53, 917–937. doi:10.1016/j.jmoneco.2006.05.001.

Blaum, J., Lelarge, C. & Peters, M. 2016. *The Gains from Input Trade with Heterogeneous Importers*. Banque de France Working Paper No. 612. [Online] Available at: http://dx.doi.org/10.2139/ssrn.2887409 [Accessed 27 January 2019].

Cassiman, B.; Golovko, E. & Martinez-Ros, E. 2010. Innovation, export and productivity. *International Journal of Industrial Organization*, 28(4), 372–376.

Clerides, S., Lach, S. & Tybout, J. 1998. Is Learning-by-Exporting Important? Micro-Dynamic Evidence from Colombia, Mexico, and Morocco. *Quarterly Journal of Economics,* 113(3), 903–47.

Damijan, J. P.; de Sousa, J. & Lamotte, O. 2009. Does international openness affect the productivity of local firms? Evidence from south-eastern Europe. *Economics of Transition* 17(3): 559–586.

De Loecker, J. 2007. Do exports generate higher productivity? Evidence from Slovenia. *Journal of International Economics,* 73: 69–98.

Eldridge, L. P. & Harper, M. J. 2010. Imported Inputs and Productivity: Effects of imported intermediate inputs on productivity. *Monthly Labor Rewiev* (2010 June), 1–15.

Everitt, B. S., Landau, S., Leese, M., & Stahl, D. 2001. *Cluster analysis (5th ed.).* London: John Wiley & Sons.

Fariñas, J. C. & Martín-Marcos, A. 2007. Exporting and Economic Performance: Firm-Level Evidence of Spanish Manufacturing. *The World Economy*, 30(4), 618–646. http://dx.doi.org/10.1111/j.1467-9701.2007.01007.x

Fernández-Olmos, M., & Díez-Vial, I. 2015. Intangible resources, export channel and performance: is there any fit?. *Journal of Business Economics and Management*, 16(5), 1013–1033. https://doi.org/10.3846/16111699.2012.726928

Foster-McGregor, N., Isaksson, A. & Kaulich, F. 2013. Importing, Productivity and Absorptive Capacity in Sub-Saharan African Manufacturing Firms. WIIW Working Paper No. 105.

Frankel, J. A. & Romer, D. 1996. *Trade and Growth: An Empirical Investigation*. Working Paper No. 5476, Cambridge, MA: National Bureau of Economic Research.

Galdeano-Gómez, E., Perez-Mesa, J. C., & Aznar-Sánchez, J. A. 2016. Internationalisation of SMEs and simultaneous strategies of cooperation and competition: an exploratory analysis. *Journal of Business Economics and Management*, 17(6), 1114–1132. https://doi.org/10.3846/16111699.2014.959040

Girma, S., Greenaways, D. & Kneller, R. 2004. Does Exporting Increase Productivity? A Microeconometrisc Analysis of Matched Firms. *Review of International Economics* 12(5), 855–866. https://doi.org/10.1111/j.1467-9396.2004.00486.x

Gkypali, A. & Love, J. H. 2018. *Export status and SME productivity: learning-to-export versus learning-by-exporting*. ERS Research Paper 71.

Greenaway, D. & Kneller, R. 2007. Firm heterogeneity, exporting and foreign direct investment. *The Economic Journal,* 117(517), F134–F161. https://doi.org/10.1111/j.1468-0297.2007.02018.x.

Halpern, L., Koren, M. & Szeidl, A. 2015. Imported Inputs and Productivity. *American Economic Review*, 105(12), 3660–3703. DOI: 10.1257/aer.20150443.

Hansen, T. 2010. *Exports and Productivity: An Empirical Analysis of German and Australian Firm-Level Performance*. University of Munich Discussion Paper No. 317.

Hung, J.; Salomon, M. & Sowerby, S. 2004. International trade and US productivity, *Research in International Business and Finance*, 18(1): 1–25.

Keho, Y. 2017. The impact of trade openness on economic growth: The case of Cote d'Ivoire. *Cogent Economics & Finance*, 5, 1–14. https://doi.org/10.1080/23322039.2017.1332820

Konishi, S. & Kitagawa, G. 2008. *Information criteria and statistical modelling*. Kyushu University: Springer. https://doi.org/10.1007/978-0-387-71887-3

Lee, C.-H. & Huang, B.-N. 2002. The Relationship between Exports and Economic growth in East Asian Countries: A Multivariate Threshold Autoregressive Approach, *Journal of Economic Development*, 27(2), 45–68.

Lindbom, A. 2009. Regional Productivity and Import Accessibility: Investigating the effect of imported goods on labour productivity levels at the municipal level. Master thesis. Stockholm: Jönköping University JIBS. [Online] Available at: http://hj.diva-portal.org/smash/get/diva2:209514/FULLTEXT01.pdf [Accessed 28 January 2019].

Mac An Bhaird, C., & Curran, D. 2016. Sectoral differences in determinants of export intensity. *Journal of Business Economics and Management*, 17(2), 299–313. https://doi.org/10.3846/16111699.2015.1070196

Mahadevan, R. & Suardi, S. 2008. A dynamic analysis of the impact of uncertainty on import- and/or export-led growth: The experience of Japan and the Asian Tigers. *Japan and the World Economy*, 20 (2), 155–174.

Melitz, M. J. 2003. The impact of trade on intra-industry reallocations and aggregate industry productivity. *Econometrica*, 71(6), 1695–1725.

Muendler, M.-A. 2004. *Trade, Technology and productivity: A Study of Brazilian Manufacturers 1986-1998*. SESifo Working Paper 1148. [Online] Available at: https://econweb.ucsd.edu/muendler/papers/brazprod.pdf [Accessed 27 January 2019].

Newman, C., Rand, J., Tarp, F. & Tue Anh, N. T. 2016. Exporting and Productivity: Learning from Vietnam. Journal of African Economies, 26(1), 67–92. https://doi.org/10.1093/jae/ejw021.

Palley, T. I. 2011. The Rise and Fall of Export-led Growth. Levy Economics Institute of Bard College. Working Paper No. 675. [Online] Available at: http://www.levyinstitute.org/pubs/wp_675.pdf [Accessed 28 January 2019].

Parteka, A. & Wolszczak-Derlacz, J. 2013. The Impact of Trade Integration with the European Union on Productivity in a Posttransition Economy: The Case of Polish Manufacturing Sectors. *Emerging Markets Finance & Trade,* 49(2), 84–104. DOI: 10.2307/23437647.

Rodrik, D. 1998. Why Do More Open Economies Have Bigger Government? *The Journal of Political Economy* 106(5): 997–1032.

Saha, S. 2012. Productivity and Openness in Indian Economy, *Journal of Applied Economics and Business Research* 2(2): 91–102.

Silva, J., Franco, M., & Magrinho, A. 2016. Empirical investigation of the effects of industry type and firm size on export barriers. *Journal of Business Economics and Management*, *17*(6), 1052–1065. https://doi.org/10.3846/16111699.2016.1143874

Sun, P.; Heshmati, A. 2010. *International Trade and its Effects on Economic Growth in China*. IZA Discussion Paper No. 5151.

Ugochukwu, U. S. & Chinyere, U. P. 2013. The Impact of Export Trading on Economic Growth in Nigeria. *International Journal of Economics, Business and Finance* 1(10), 327–341.

Van Ark, B. & Monnikhof, E. J. 2000. *Productivity and unit labour cost comparisons*. [Online]. Employment paper 2000/5. Geneva: ILO. Available at: http://www.ilo.org/public/english/employment/start/pub/ep00-5.htm.

Velnampy, T. & Achchuthan, S. 2013. Export, Import and Economic Growth: Evidence from Sri Lanka. *Journal of Economics and Sustainable Development*, 4(9), 147–155.

Vogel, A. & Wagner, J., 2010. Higher Productivity in Importing German Manufacturing Firms: Self-Selection, Learning From Importing, or Both? *Review of World Economics*, 145(4), 641–665. https://doi.org/10.1007/s10290-009-0031-4.

Wang, X., Chen, A., Wang, H., & Li, S. 2017. Effect of export promotion programs on export performance: evidence from manufacturing SMEs. *Journal of Business Economics and Management*, 18(1), 131–145. https://doi.org/10.3846/16111699.2016.1278031

Yan, A. B., Chung, S. & Roberts, M. J. 2000. Productivity and Turnover in the Export Market: Micro-level Evidence from the Republic of Korea and Taiwan (China). *World Bank Economic Review* 14, 65–90.

Yu, M. & Dai, M. 2011. *Pre-export R&D, exporting and productivity gains: evidence from Chinese firms* (China Trade Research Group Working Paper series, 11). Beijing: Peking University.

INCOME DISPROPORTION BETWEEN CENTRAL AND EASTERN EUROPE REGIONS

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Abstract. In 2004 the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia joined EU. Those seven Central and Eastern Europe economies were far behind "old" EU countries in terms of economic development. Considerable differences were also inside countries, where the regions with capitals were significantly distinguished in terms of income and development over the remaining regions. In the same time idea of regional cohesion gain in importance in EU. Nowadays, one of the main EU's priorities is to reduce disparities between regions and improve economic well-being of delayed areas through actions under cohesion policy.

The purpose of the research is to verify whether accession to EU helped to reduce income disproportions between CEE regions and also the effectiveness of EU fund usage by CEE regions. In the first part of the article, Author will present literature review about income inequity issue at the regional level. In the second part, EU regional policy will be discussed and actions that aim to reduce disproportions between EU regions. Then paper highlights the key statistics about income from Eurostat by NUTS2. The research period covers years from 2004 to 2015 due to availability of data for EU funds "real" expenditure. The main method is comparative analysis, which will be supplemented with descriptive statistics methods (in particular, time series analysis, including structure and dynamics analysis, distribution measures, including average measures). Moreover, to assess efficiency of funds usage the method of development pattern was used, which defines a linear hierarchy of objects based on their distance from the so-called development pattern. In the last part of the article, Author will analyse income gap between CEE regions.

Research confirmed that income inequity was changing with different speed and directions over CEE counties. Huge disproportions can be also noticed inside individual countries, where capital regions were always the most developed regions with the highest income. Gross Domestic Product by PPS compared to EU average increased in all regions in analysed period. Only four regions with capital cities achieved GDP exciding EU average: Praha, Közép-Magyarország, Mazowieckie and Bratislavský kraj. Moreover, hypothesis about spatial autocorrelation was not confirmed. Regions near strong capital regions did not achieve high level of GDP. The highest growth in disposable income was noticed in Slovakia, Latvia, Lithuania and Estonia, where income doubled in analysed period. However, all three Baltic countries are still behind EU average. The most efficient in transforming EU funds into GDP growth are capital regions: Praha, Közép-Magyarország, Bratislavský kraj and Mazowieckie. Regions, despite diminishing EU aid, are able to maintain a high level of GDP per capita. However, high EU expenditures are not causing proportional increase in GPD per capita level. Result of this research confirmed that cohesion policy actions are no fully effective in CEE regions. There are still huge income inequalities and this trend seems to continue. Policy makers should ensure proper policy is implemented to reduce income disproportions.

Key words: *Inequality, Income distribution, Comparative studies, Cohesion policy*

JEL code: D31, D63, O15, R11

Introduction

Income disproportion is a frequent subject undertaken in the scientific literature. Nowadays, globalization process accelerates economic growth, and at the same time increases disproportions in income. The income differences are

particularly visible between developed and developing countries. In 2004 seven CEE countries: the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia joined EU. In terms of income and development level they were far behind "old" EU countries. In the literature popular is concept of two-speed Europe. The old EU members are more developed and with higher income, while new members countries are representing post-transition economies on the lower stage of development and lower incomes. Significant differences are also inside countries, where the regions with capitals are much more developed compared to other regions. In the same time idea of regional cohesion gain in importance in EU. Nowadays, one of the main EU's priorities is to reduce disparities between regions and improve economic well-being of delayed areas through actions under cohesion policy.

The purpose of the research is to verify whether accession to EU helped to reduce income disproportions between CEE regions and also the effectiveness of EU fund usage by CEE regions. In the first part of the article, Author will present literature review about income inequity issue at the regional level. In the second part, EU regional policy will be discussed and actions that aim to reduce disproportions between EU regions. Then paper highlights the key statistics about income from Eurostat by NUTS2. The research period covers years from EU accession in 2004 to 2015. The main method is comparative analysis, which will be supplemented with descriptive statistics methods, in particular, time series analysis, including structure and dynamics analysis, distribution measures, including average measures.

Income inequity - literature review

The issue of income inequality and related theories are nowadays one of the most important economic topics. Globalization has intensified differences in income levels between countries and regions. The issue of income inequality is extensively described in the scientific literature. Economic inequality is the result of various forces: geography, technology, financial and trade globalization, changes in labour market regulations and redistributive policies (Dobrzanski, 2018b). According to Kuznets (1955) income inequality ordinarily rises in the early stages of economic development and declines in the latter. There is no one generally acceptable view of the impact of inequality on economic growth. Some studies indicate that income-related inequities negatively affect economic growth (Alesina and Rodrik, 1994), while others show positive relationship between the rise of inequality and economic growth (Forbes, 2000).

Results of research about income convergence, growth and inequality depends on the chosen methods of an analysis, regions and periods. Studies are dealing with convergence issue using different empirical approaches. Especially the beta-convergence framework is frequently used. Beta-convergence occurs when poor economies/regions grow faster than rich ones. Beta-convergence was introduced to the empirical studies by Barro and Sala-i-Martin (1991), who analyzed a sample of 73 Western European regions over the period 1950–1985. They estimated that beta-convergence was roughly 2% a year during 35 years period. Cuadrado-Roura (2001) and López-Bazo (2003) examined the absolute beta-convergence for EU12 regions for the periods 1977-1994 and 1975-1996 and conclude that for analyzed economies small absolute convergence rate can be observed, which is slower than 2 % yearly. They also emphasized that regions with initial value below-average of income per capita tend to have an above-average growth rate. Moreover, they underline that convergence rate is diminishing, which was also underlined in other empirical studies of Martin (2001) and Fagerberg and Verspagen (1996). Diminishing convergence rate was not confirmed by studies of Yin et al. (2003), Niebuhr and Schlitte (2004) and Geppert et al. (2005), who stated that convergence speed is U-shaped with the minimum lays at the beginning of the 1980s. Azomahou et al. (2011) analyzed 255 EU regions in a semiparametric analysis for period 1998-2007 and noticed that richer and poorer regions exhibiting different convergence processes. Petrakos et al. (2011) concluded that convergence occurs at early stage of development and divergence at higher stage of development.

Another framework used in empirical studies is sigma–convergence, which refers to a reduction in the distribution of levels of income across economies/regions. Sigma-convergence only occurs, if beta-convergence takes place, but the existence of beta-convergence is not a sufficient condition for sigma-convergence. Boldrin and Canova (2001) and Yin et al. (2003) confirmed sigma-convergence for period 1980-1996 and 1960-1995. On the other hand, studies of Neven (1995), Barrios and Strobl (2005), Cappelen et al. (2003) rejected the sigma-convergence hypothesis for all European regions.

Another concept of convergence is the club convergence hypothesis. Convergence clubs are regions, which will converge to a similar steady state value. Canova (2004) identified four homogeneous clubs, with different convergence rates and steady-states values highlighting North–South or poor–rich dimensions, the initial conditions influencing the probability of belonging to a club. Badinger and Tondl (2005) used spatial econometric analysis for European regions over the period 1993-1999. Their research indicated that regions tend to cluster with respect to their growth performance. Moreover, they noticed that regions with a high economic growth are often surrounded by regions, which are growing above-average. Studies of Greunz (2003) distinguished three different growth patterns. One third of the regions are converging to the steady state of the richest European regions. More than half of the European regions are on their own steady state path, which is close to the one of the converging regions. The backward regions will only achieve 18 per cent of the steady state value from the first group.

Literature indicates many factors that affect income inequalities. Studies of Gustafsson and Johansson (1997) pointed out structure of the economy and share of private and public sector as factors influencing income differences between countries. Their studies indicated that when large part of the population moves to more advance sector, inequality will increase. Snower (1999) emphasized importance of technological change, that can cause dispersion of wages. Kaasa (2003) also pointed out some macroeconomic factors, like inflation, unemployment, the size of government's expenditure, external debt, foreign reserves and changes in the exchange rate. Lam (1997) pointed out demographic variables differentiating populations across time and space such as age structure of population, the growth and density of population. Studies of Gregorio and Lee (2002) indicated that educational factors play a significant role in making income distribution more equal. Mushinski and Pickering (2000) underlined also impact of cultural characteristics of a society to income inequality. Mihaylova (2015) concluded that FDI has the potential to exert influence on income inequality, however effect varies depending on the level of education and economic development of the host countries. Caminada and Goudswaard (2001) found negative relationship between the extent of social transfers or income redistribution and income inequality. In case of European Union undeniably EU funds have a significant impact on income differences between Member States countries and regions and this will concern further analysis in this article.

EU regional policy

Sustainable regional development through social and economic cohesion is one of the main goals of the EU. For this purpose, EU uses two policies: regional policy and cohesion policy. EU regional policy is a strategic investment policy targeting all EU regions and cities in order to boost their economic growth and improve people's quality of life (European Commission, 2014b). Another EU policy focused on regional growth is cohesion policy, which aims to targets all regions and cities in the European Union in order to support job creation, business competitiveness, economic growth, sustainable development, and improve citizens' quality of life. Most of the regional development and cohesion funds are allocated to less developed regions of the EU and are intended to help these regions to reach their economic potential, and reduce the economic, social and territorial disparities in the light of regional disparities, both in the EU and within Member States (European Commission, 2014a).

The objective of the EU Cohesion Policy is not simple income redistribution, but increasing investment to achieve higher growth and are not specifically concerned with expanding consumption directly or with redistribution of income (Marzinotto, 2012). Assumptions of European Cohesion Policy rejects the idea of a trade-offs between efficiency and equity, suggesting that it is possible maximizing overall growth while achieving continuous convergence of outcomes and productivity in Europe's regions. However, due to growth of divergence trend between regions, it is clear that cohesion policy has changed the path of development from what would happen in the absence of intervention (Farole et al., 2011). Regional policy makers are under pressure of short-term outputs, while regional policies contain many positive elements, there is still a necessity for more long-term policy (Huggins and Williams, 2011). Recently, EU interest has grown in the competitive performance of regions and cities, with identifying the key determinants of regional and urban competitiveness, and with developing policies that promote and support these determinants (Kitson et al., 2004). Development of regions is strongly dependent by enterprises, which exert impact on regional infrastructure, local labor market conditions, and the region's competitiveness. Majority of EU capital regions are the most competitive in meber states countries, as capitals are attracting the most investments, entrepreneurs and have the largest labor force (Dobrzanski, 2018a).

Regional income disproportions and convergence in the EU is frequently undertaken subject of scientific articles. As spending on regional policy is the largest part of the EU budget, control on its effectiveness is crucial. Cappelen et al. (2003) confirmed that structural funds had a significant and positive impact on the economic growth of 105 European regions in period 1980-1997, and therefore are contributed to greater equality in income. However, EU policy and targets are more often criticized. According to research of Paas & Schlitte (2006), which was carried for 861 NUTS3 regions and period 1995-2003, EU-25 regional income analysis shows significant regional disparities in both the EU-15 and new member states. Moreover, convergence analysis shows that the regional catching-up process was very slow. Basile et al. (2006) noticed inefficiency of EU cohesion policy. Their research confirmed that during the period 1988-98 the relative movements in the regional distribution of per capita incomes, productivity levels and employment rates registered have no positive relation with the allocation of Structural Funds. Pittau & Zelli (2006) analyzed EU12 regions for period 1977-1996. Main conclusion of their research was very slow process of convergence of the poorest regions with the richer ones and a process of shifting away of a small group of very rich regions. Studies of Marzinotto (2012) proved that EU regional policy is not fully efficient in order to achieve the convergence objectives. EU countries and EU regions are converging, but, within countries, regional disparities are on the rise. Salverda (2015) emphasized that market-income inequalities are growing and this growth will be more difficult to neutralize by redistribution. EU policy goals do not provide a legally binding framework for the Member States. The expectations for future trends are a continued increase in the inequality of market incomes.

The accession of new member states considerably increased the range of income disparities within the EU, not only between countries, but also between regions. Inequity refer to not only to the increasing gaps between countries and regions, but also to diverging trends. There is no homogeneous European model of inequity, as the inequity level in each EU Member State is different (OECD, 2017). Further empirical analysis is necessary, especially for new Member States regions.

Methodology

Method employed in the research is linear ordering method. Among the methods of classification linear ordering enable ordering the objects from the best one to the worst one, according to a considered criterion, by creating classes corresponding to the levels of the ordering criterion to which individual objects will be assigned. In the research method

of development pattern was used, which defines a linear hierarchy of objects based on their distance from the so-called development pattern. After the unification of features, it is assumed that the maximum values of the observed features are for the development pattern and the minimum values for the anti-pattern. The following formulas were used (Walesiak, 2002):

$$p_w = \sum_{j=1}^{m} max\, z_{ij}$$

$$p_A = \sum_{j=1}^{m} max\, z_{ij}$$

where: p_w–value of the development pattern
p_A–value of the development anti-pattern
z_{ij} –standardized value of the variable j for the region i

The obtained values are reference points for results determined for individual regions. For each region calculation of standardized sums was made based on the values of individual diagnostic variables according to the formula:

$$p_i = \sum_{j=1}^{m} z_{ij}$$

where: p_i–value of the standardized sum for the region i
z_{ij} – standardized value of the variable j for the region i

The results obtained serve to determine the development measures of individual regions, which are calculated in accordance with the formula:

$$r_i = \frac{p_i - p_A}{p_w - p_A}$$

where: p_i– value of the development pattern for region i
p_w–value of the development pattern
p_A– value of the development anti-pattern
p_i – value of the standardized sum for the region i

Development measures take values from the range of [0,1], while for the development pattern this measure is equal to 1, and for the anti-pattern is 0. This allowed for the compilation of regions in terms of efficiency of EU funds used. Ranking for years 2004-2015 is presented in table 3.

Research results and discussion

European Statistical Office (EUROSTAT) database was used in constructing data, which provides, Gross domestic product (GDP) at current market prices by NUTS 2 regions using Purchasing power standard (PPS) per inhabitant, Gross domestic product (GDP) at current market prices by NUTS 2 regions using Purchasing power standard (PPS) per inhabitant in percentage of the EU average in CEE for the research period from 2004 to 2015, due to lack of the newest data for all countries. Statistics for the Czech Republic, Estonia, Latvia, Lithuania, Hungary, Poland and Slovakia (CEE) regions are included in four tables. One of them with data is included in the appendix, while three remaining tables that show changes in GDP, GDP per capita as percentage of EU average and ranking of the effectiveness of funds usage by NUTS 2 regions in the CEE.

Table 1

Change in Gross domestic product (GDP) at current market prices by NUTS 2 regions. Purchasing power standard (PPS) per inhabitant in CEE (2004-2015)

GEO/TIME	2015/04	2005/04	2006/05	2007/06	2008/07	2009/08	2010/09	2011/10	2012/11	2013/12	2014/13	2015/14
European Union	**1.29**	**1.04**	**1.06**	**1.06**	**1.00**	**0.94**	**1.04**	**1.03**	**1.02**	**1.01**	**1.03**	**1.05**
Ceská republika	**1.44**	**1.06**	**1.05**	**1.10**	**1.02**	**0.95**	**1.01**	**1.03**	**1.01**	**1.02**	**1.06**	**1.06**
Praha	1.44	1.07	1.06	1.11	1.02	0.94	1.01	1.01	1.00	1.02	1.04	1.10
Strední Cechy	1.35	1.02	1.08	1.09	1.01	0.92	0.99	1.05	1.02	1.01	1.10	1.04
Jihozápad	1.36	1.06	1.05	1.05	0.98	0.99	1.01	1.02	1.01	1.05	1.06	1.04
Severozápad	1.31	1.04	1.05	1.08	1.01	0.99	0.98	1.02	1.01	1.01	1.04	1.06
Severovýchod	1.41	1.05	1.05	1.08	1.01	0.96	1.02	1.03	1.00	1.02	1.07	1.06
Jihovýchod	1.53	1.05	1.06	1.11	1.03	0.96	1.01	1.04	1.03	1.04	1.06	1.05
Strední Morava	1.49	1.04	1.06	1.09	1.04	0.96	1.01	1.04	1.01	1.02	1.09	1.04
Moravskoslezsko	1.48	1.10	1.03	1.10	1.03	0.93	1.03	1.06	1.02	0.98	1.08	1.05
Estonia	**1.78**	**1.15**	**1.14**	**1.14**	**0.99**	**0.87**	**1.06**	**1.12**	**1.06**	**1.03**	**1.04**	**1.03**
Latvia	**1.80**	**1.15**	**1.10**	**1.15**	**1.03**	**0.83**	**1.05**	**1.11**	**1.08**	**1.04**	**1.05**	**1.05**
Lithuania	**1.97**	**1.12**	**1.11**	**1.15**	**1.04**	**0.84**	**1.12**	**1.12**	**1.08**	**1.05**	**1.06**	**1.04**
Hungary	**1.45**	**1.06**	**1.04**	**1.04**	**1.04**	**0.96**	**1.05**	**1.04**	**1.02**	**1.03**	**1.04**	**1.05**
Közép-Magyarország	1.38	1.07	1.06	1.04	1.04	0.97	1.03	1.02	1.02	1.02	1.01	1.04
Közép-Dunántúl	1.43	1.05	1.01	1.05	1.01	0.89	1.09	1.07	1.01	1.05	1.06	1.08
Nyugat-Dunántúl	1.51	1.02	1.06	1.00	1.03	0.93	1.11	1.07	1.01	1.03	1.11	1.06
Dél-Dunántúl	1.33	1.04	1.02	1.03	1.06	0.97	1.03	1.05	1.02	1.03	1.03	1.02
Észak-Magyarország	1.46	1.07	1.02	1.02	1.02	0.94	1.03	1.05	1.00	1.06	1.08	1.10
Észak-Alföld	1.39	1.03	1.03	1.02	1.04	1.00	1.02	1.08	1.01	1.01	1.06	1.03
Dél-Alföld	1.47	1.04	1.02	1.01	1.06	0.95	1.03	1.07	1.03	1.04	1.08	1.05
Poland	**1.75**	**1.04**	**1.06**	**1.10**	**1.05**	**1.01**	**1.09**	**1.07**	**1.05**	**1.01**	**1.04**	**1.06**
Lódzkie	1.79	1.05	1.06	1.10	1.05	1.01	1.09	1.07	1.05	1.01	1.05	1.06
Mazowieckie	1.85	1.06	1.07	1.11	1.03	1.04	1.10	1.07	1.05	1.01	1.04	1.06
Malopolskie	1.79	1.05	1.08	1.09	1.06	1.00	1.07	1.09	1.04	1.01	1.04	1.08
Slaskie	1.63	1.01	1.05	1.10	1.06	1.01	1.08	1.08	1.03	0.99	1.04	1.06
Lubelskie	1.70	1.04	1.05	1.11	1.06	0.98	1.09	1.07	1.06	1.02	1.02	1.05
Podkarpackie	1.72	1.04	1.06	1.09	1.06	0.99	1.08	1.08	1.03	1.02	1.04	1.07
Swietokrzyskie	1.59	1.01	1.08	1.12	1.08	0.97	1.07	1.06	1.02	0.98	1.04	1.05
Podlaskie	1.70	1.05	1.05	1.13	1.03	1.01	1.08	1.07	1.02	1.03	1.03	1.04
Wielkopolskie	1.78	1.05	1.05	1.10	1.05	1.03	1.06	1.07	1.05	1.02	1.04	1.08
Zachodniopomorskie	1.65	1.05	1.06	1.08	1.07	0.98	1.07	1.05	1.04	1.00	1.05	1.08
Lubuskie	1.66	1.07	1.05	1.10	1.02	0.99	1.07	1.05	1.05	1.01	1.05	1.06
Dolnoslaskie	1.94	1.07	1.10	1.13	1.04	1.01	1.13	1.08	1.04	1.00	1.04	1.06
Opolskie	1.67	1.02	1.04	1.14	1.08	0.98	1.07	1.06	1.04	1.00	1.05	1.06
Kujawsko-Pomorskie	1.64	1.03	1.06	1.10	1.04	0.98	1.08	1.05	1.04	1.01	1.03	1.07
Warminsko-Mazurskie	1.66	1.05	1.04	1.10	1.05	1.00	1.07	1.07	1.03	1.01	1.04	1.06
Pomorskie	1.72	1.05	1.06	1.10	1.01	1.04	1.07	1.07	1.06	0.99	1.02	1.08

GEO/TIME	2015/04	2005/04	2006/05	2007/06	2008/07	2009/08	2010/09	2011/10	2012/11	2013/12	2014/13	2015/14
Slovakia	**1.74**	**1.10**	**1.11**	**1.12**	**1.07**	**0.94**	**1.09**	**1.03**	**1.03**	**1.02**	**1.04**	**1.05**
Bratislavský kraj	1.87	1.18	1.06	1.13	1.05	0.99	1.08	1.05	1.01	1.04	1.02	1.05
Západné Slovensko	1.69	1.10	1.16	1.09	1.06	0.92	1.08	1.06	1.04	1.00	1.05	1.01
Stredné Slovensko	1.70	1.04	1.11	1.13	1.10	0.93	1.09	1.01	1.04	1.02	1.04	1.05
Východné Slovensko	1.64	1.06	1.07	1.10	1.10	0.90	1.09	1.02	1.05	1.01	1.05	1.06

Source: author's calculations based on EUROSTAT

Change in Gross domestic product (GDP) at current market prices by NUTS 2 regions was presented in Table 1. During the analyzed period, the highest dynamic growth could be observed in Lithuania, which obtained 197% (11 000 EUR per inhabitant in 2004, 21 700 EUR per inhabitant in 2015). The dynamic of GDP was not so significant in the Czech Republic regions, but the highest GDP per capita across all regions was noted in 2015 and obtained 25 300 EUR. It is worth to underline that almost all CEE regions are still behind average EU. The average GDP per capita in EU was 29 000 EUR in 2015, while in 2004 – 22 500 EUR. The average EU growth (29%) was not significant comparing to growth rates achieved by CEE regions. Only four CEE regions gained GDP per capita above EU average. It is worth to highlighted that capitals are found in all these regions. The highest GDP per capita in 2015 was observed in Bratislavský kraj (54 200 EUR), on the second place Praha region (53 200 EUR), on the third place Mazowieckie region (31 700 EUR) and last region which obtain better result than UE average was Közép-Magyarország (30 400 EUR). It is worth emphasizing that the dynamics of less developed regions are improving, but many more years are needed to enable these regions to compete with more developed ones.

Table 2

Gross domestic product (GDP) at current market prices by NUTS 2 regions. Purchasing power standard (PPS) per inhabitant in percentage of the EU average in CEE (2004-2015)

GEO/TIME	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
European Union	100	100	100	100	100	100	100	100	100	100	100	100
Czech Republic	**78**	**79**	**79**	**82**	**84**	**85**	**83**	**83**	**82**	**84**	**86**	**87**
Praha	164	169	170	179	183	183	179	175	172	174	175	183
Střední Cechy	75	73	75	78	79	77	73	75	75	75	79	78
Jihozápad	72	73	73	73	71	75	73	73	72	75	77	76
Severozápad	63	64	63	64	65	68	64	64	63	63	64	64
Severovýchod	66	67	66	68	68	69	68	69	67	68	71	71
Jihovýchod	68	69	69	73	75	76	74	75	76	79	81	81
Střední Morava	61	61	61	63	66	68	66	67	67	68	72	71
Moravskoslezsko	63	67	65	68	70	69	69	71	71	70	72	72
Estonia	**54**	**60**	**64**	**69**	**69**	**63**	**65**	**71**	**74**	**75**	**76**	**75**
Latvia	**46**	**50**	**53**	**57**	**59**	**52**	**53**	**57**	**60**	**62**	**64**	**64**
Lithuania	**49**	**53**	**55**	**60**	**63**	**56**	**60**	**66**	**70**	**73**	**75**	**75**
Hungary	**61**	**62**	**61**	**60**	**63**	**64**	**65**	**66**	**66**	**67**	**68**	**68**
Közép-Magyarország	98	101	101	100	104	108	107	107	107	108	106	105
Közép-Dunántúl	57	58	56	56	56	53	56	58	58	60	62	63
Nyugat-Dunántúl	63	61	62	59	61	60	64	67	66	68	73	73
Dél-Dunántúl	43	43	41	40	43	44	44	44	45	45	45	44

GEO/TIME	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Észak-Magyarország	40	41	40	38	39	39	39	40	39	41	43	45
Észak-Alföld	40	40	39	38	39	41	41	43	42	42	44	43
Dél-Alföld	43	43	41	40	42	42	42	44	45	46	48	49
Poland	**50**	**50**	**51**	**53**	**55**	**60**	**62**	**65**	**67**	**67**	**67**	**68**
Lódzkie	46	46	47	49	51	55	58	60	62	63	63	64
Mazowieckie	76	78	79	82	85	93	99	103	107	107	108	109
Malopolskie	44	45	46	47	50	53	55	58	59	59	60	62
Slaskie	56	54	54	56	59	64	67	70	71	70	70	71
Lubelskie	35	35	35	37	39	41	43	45	47	47	47	47
Podkarpackie	36	36	36	37	40	42	43	46	47	48	48	48
Swietokrzyskie	40	39	40	42	46	47	48	50	50	49	49	49
Podlaskie	37	37	37	39	40	44	46	48	48	49	49	49
Wielkopolskie	54	54	54	56	59	64	66	68	71	72	72	74
Zachodniopomorskie	45	46	46	47	50	52	53	55	56	56	57	58
Lubuskie	44	46	45	47	48	51	53	54	55	56	57	57
Dolnoslaskie	51	52	54	58	60	65	70	74	76	75	76	76
Opolskie	43	42	41	45	48	50	51	53	54	54	55	55
Kujawsko-Pomorskie	44	44	44	46	48	50	52	53	54	55	55	56
Warminsko-Mazurskie	38	38	38	39	41	43	45	47	48	48	48	48
Pomorskie	49	50	50	52	53	58	60	63	65	65	64	66
Slovakia	**57**	**60**	**63**	**67**	**71**	**71**	**74**	**75**	**76**	**77**	**77**	**77**
Bratislavský kraj	129	146	147	158	165	174	182	185	184	189	187	187
Západné Slovensko	54	57	62	65	68	66	69	71	73	72	73	71
Stredné Slovensko	46	46	49	53	58	57	60	58	60	60	61	61
Východné Slovensko	42	43	44	46	50	48	51	51	52	52	53	54

Source: author's calculations based on EUROSTAT

In terms of GDP per capita as percentage of EU average huge disproportion between regions can be observed. Just 4 out of 39 regions achieved better score than the EU average and those are regions of Praha, Bratislavský kraj, Mazowieckie and Közép-Magyarország, all of them are containing capital cities. The worst values are obtained by regions located in Hungary, i.e. Észak-Alföld, Dél-Dunántúl, Észak-Magyarország. These regions obtained accordingly (43, 44, 45 in 2015) and their performance has not changed over the years, as in 2004, these regions exploited ratings (40, 43, 40, 41). Poor results can also be observed in other regions of the CEE countries. For example, in Poland Warminsko-Mazurskie, Podlaskie, Swietokrzyskie maintained very poor results, below 50. A better situation can be observed in other analysed countries where values of regions are over 60. Moreover, lower growth rate can be noticed of almost all neighbouring regions with the capitals.

To assess effectiveness of EU funds converting into growth of GDP per capita data from Eurostat and European Structural and Investment Funds were used. EU funds includes: Cohesion Funds, European Agricultural Fund for Rural Development, European Regional Development Fund and European Social Fund. EU funds are presented according to data for modelling of "real" expenditure. As the yearly breakdown of the dataset follows the cycle of the European Commission payments to the Member States and not the date on which real expenditures took place on the ground. Therefore, in order to develop a more realistic estimate of the annual profile of real expenditure, the Commission introduced modelling of the "real" annual expenditure. Efficiency ranking was calculated according to method of development pattern for indicator GDP per capita / EU funds for year 2004-2015.

Table 3

Ranking of the effectiveness of the use of funds NUTS 2 regions in the CEE (2004-2015)

NUTS2_ID	NUTS2_name	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	average 2004-2015 (GDP per capita/Funds)
LT00	Lietuva	32	31	29	22	29	37	28	24	19	19	14	1	119,63
EE00	Eesti	37	36	28	20	27	35	29	15	30	27	10	2	101,83
HU10	Közép-Magyarország	6	9	5	3	3	3	3	3	3	3	2	3	231,35
PL41	Wielkopolskie	9	14	15	5	4	6	6	7	5	4	4	4	167,62
CZ01	Praha	1	2	2	1	1	1	1	1	1	1	1	5	552,45
PL52	Opolskie	19	20	26	19	10	18	23	21	14	13	7	6	116,39
PL22	Śląskie	11	11	14	8	6	4	5	5	6	7	6	7	158,76
PL12	Mazowieckie	8	8	12	7	8	5	4	4	4	5	5	8	175,20
PL51	Dolnośląskie	26	19	17	13	12	15	7	11	7	8	9	9	120,41
PL21	Małopolskie	20	18	19	16	13	13	16	16	11	14	12	10	119,26
PL63	Pomorskie	16	17	18	17	14	12	15	17	13	17	16	11	119,35
PL11	Łódzkie	38	38	38	26	20	19	17	20	16	21	17	12	82,25
PL42	Zachodniopomorskie	21	23	31	24	18	20	18	22	18	20	20	13	103,08
PL43	Lubuskie	27	27	36	30	30	26	24	28	17	18	19	14	91,46
PL61	Kujawsko-Pomorskie	15	15	16	15	17	17	19	19	15	15	15	15	121,25
SK01	Bratislavský kraj	2	1	1	2	2	2	2	2	2	2	3	16	433,13
PL33	Świętokrzyskie	22	21	21	25	32	31	34	34	31	31	27	17	90,98
PL31	Lubelskie	23	22	24	33	36	33	33	32	35	32	31	18	86,15
PL34	Podlaskie	35	26	27	27	28	27	30	30	29	28	28	19	81,66
PL32	Podkarpackie	24	24	23	35	33	32	35	35	34	33	34	20	83,78
LV00	Latvija	36	37	37	28	25	29	27	29	28	24	25	21	74,78
PL62	Warmińsko-Mazurskie	29	28	30	34	31	28	31	31	32	34	33	22	78,43
CZ05	Severovýchod	4	4	4	4	7	8	9	6	9	9	11	23	207,36
HU22	Nyugat-Dunántúl	13	13	13	23	26	25	25	27	22	29	29	24	114,62
SK02	Západné Slovensko	18	16	11	10	5	10	13	10	8	6	8	25	128,50
CZ06	Jihovýchod	7	6	7	9	11	11	11	12	10	10	22	26	156,80
HU21	Közép-Dunántúl	14	12	10	14	23	24	26	26	24	30	32	27	117,79
CZ03	Jihozápad	5	7	9	18	19	9	12	18	27	23	21	28	157,45
CZ04	Severozápad	10	5	6	11	15	16	14	9	21	26	30	29	148,85
SK04	Východné Slovensko	30	30	22	29	22	21	21	25	20	11	13	30	87,67
CZ02	Střední Čechy	3	3	3	6	9	7	8	8	12	12	18	31	218,54
CZ07	Střední Morava	17	25	20	21	24	23	20	13	25	22	26	32	99,78
HU23	Dél-Dunántúl	25	29	25	31	35	34	36	36	33	35	35	33	77,57
CZ08	Moravskoslezsko	12	10	8	12	16	14	10	14	26	25	24	34	135,41
HU31	Észak-Magyarország	34	35	35	36	34	30	32	33	36	36	36	35	67,67
SK03	Stredné Slovensko	28	32	32	32	21	22	22	23	23	16	23	36	82,94
HU33	Dél-Alföld	31	34	33	37	38	38	38	38	38	37	37	37	63,16
HU32	Észak-Alföld	33	33	34	38	37	36	37	37	37	38	38	38	62,90
Spread of grades (max-min)		1821	1287	945	450	363	347	377	251	222	239	181	471	
Coefficient of variation		0,77	0,83	0,79	0,71	0,70	0,83	0,90	0,75	0,74	0,78	0,57	0,75	

Source: author's calculations based on EUROSTAT

Considering the entire research period region of Praha was the most efficient in transforming EU funds into GDP growth. Also other three regions containing capital cities Közép-Magyarország, Bratislavský kraj and Mazowieckie performed very good. The effectiveness of spending funds was systematically improving in the following regions: Dolnośląskie, Opolskie, Śląskie, Wielkopolskie and Małopolskie. It is worth noting that all these regions belong to Poland. It may be astonishing that a lot of Czech provinces such as: Střední Čechy, Severovýchod, Moravskoslezsko, Jihozápad, which occupied top positions in the rankings at the beginning of the research period, were on the last places in the rankings for 2014 and 2015. This is caused by huge amount of EU funds expensed in 2014 and 2015, which not caused proportional increase in GPD per capita. Lietuva and Eesti achived the best scores in 2015 as they maintained growing GDP per capita due to small amount of EU funds expensed in this year. Moreover, blurring of differences between regions can be noticed, which is indicated by the value of the spread of grades index (max-min). In 2004 and 2005 it was 1821 and 1287. This indicator improved year by year until 2014, when it amounted to only 181, while in 2015 it increased to 471. Coefficient of variation indicates that there is wide variation between regions.

Conclusions, proposals, recommendations

This study aims to analyse income disproportions between regions in Central and Eastern Europe. Based on literature review and conducted research, the author makes the following conclusions and recommendations:

1. Research confirmed that income inequity was changing with different speed and directions over CEE counties.
2. Huge disproportions can be also noticed inside individual countries, where capital regions were always the most developed regions with the highest income.
3. Gross Domestic Product by PPS compared to EU average increased in all regions in analysed period.
4. Only four regions with capital cities achieved GDP exciding EU average: Praha, Közép-Magyarország, Mazowieckie and Bratislavský kraj.
5. Moreover, hypothesis about spatial autocorrelation was not confirmed. Regions near strong capital regions did not achieve high level of GDP.
6. The highest growth in disposable income was noticed in Slovakia, Latvia, Lithuania and Estonia, where income doubled in analysed period. However, all three Baltic countries are still behind EU average.
7. The most efficient in transforming EU funds into GDP growth are capital regions: Praha, Közép-Magyarország, Bratislavský kraj and Mazowieckie
8. Regions, despite diminishing EU aid, are able to maintain a high level of GDP per capita. However, high EU expenditures are not causing proportional increase in GPD per capita level.
9. Result of this research confirmed that cohesion policy actions are no fully effective in CEE regions. There are still huge income inequalities and this trend seems to continue. Policy makers should ensure proper policy is implemented to reduce income disproportions.

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Bibliography

Alesina, A., Rodrick, D. 1994. Distributive Policies and Economic Growth, Quarterly Journal of Economics, 109 (2), 465-490.

Azomahou, T.T., El Ouardighi, J., Nguyen-Van, P. & Pham, T.K.C., 2011. T*esting convergence of European regions: A semiparametric approach*. Economic Modelling, 28(3), 1202-1210.

Badinger, H., Tondl G., 2005. *The Factors behind European Regional Growth. Trade, Human Capital and Innovation*. Jahrbuch für Regionalwissenschaft, Vol. 25(1), 67-89.

Basile, R., de Nardis, S., & Girardi, A., 2006. *Regional Inequalities and Cohesion Policies in the European Union*. SSRN Electronic Journal. doi:10.2139/ssrn.936319.

Barrios, S., Strobl E., 2005. *The Dynamics of Regional Inequalities*. Brussels: Economic Papers of the European Commission, no. 229.

Barro, R. J., Sala-i-Martin X., 1991. *Convergence across States and Regions*. Brookings Papers on Economic Activity, Vol. 1(1), 107-182.

Boldrin, L., Canova F., 2001. *Inequality and Convergence in Europe's Regions. Reconsidering European Regional Policies*. Economic Policy, Vol. 16(32), 207-253.

Caminada, K., Goudswaard, K., 2001. *International Trends in Income Inequality and Social Policy*, International Tax and Public Finance, No. 8, 395-415.

Canova, F., 2004. *Testing for Convergence Clubs in Income per Capita. A Predictive Density Approach*. International Economic Review, Vol. 45(1), 49-78.

Cuadrado-Roura, J. R., 2001. *Regional Convergence in the European Union. From Hypothesis to the Actual Trends*. Annals of Regional Science, Vol. 35(3), 333-356.

Cappelen, A., Castellacci, F., Fagerberg, J., & Verspagen, B., 2003. *The Impact of EU Regional Support on Growth and Convergence in the European Union*. JCMS: Journal of Common Market Studies, 41(4), 621–644. doi:10.1111/1468-5965.00438.

Dobrzanski, P. 2018a. *Dependence of the location of the European capitals and competitiveness of the regions*. The 12th International Days of Statistics and Economics : Conference Proceedings, MELANDRIUM, 355–363.

Dobrzanski, P., 2018b. *Income inequality in EU countries*. *New Challenges of Economic and Business Development – 2018*. International Conference, Riga, Latvia, May 10–12, 2018: Proceedings. Riga: University of Latvia, 134–142.

European Commission, 2014a. *An introduction to EU Cohesion Policy 2014-2020*, [Online] Available at: https://europa.eu/european-union/topics/regional-policy_en, [Accessed 21 Jan 2019].

European Commission, 2014b. *Regional policy*, [Online] Available at: https://europa.eu/european-union/topics/regional-policy_en, [Accessed 21 Jan 2019].

Eurostat, 2019. *General and regional statistics*. [Online] Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php/General_and_regional_statistics,_EU_policies. [Accessed 27 January 2019]

Fagerberg, J., Verspagen B., 1996. *Heading for Divergence? Regional Growth in Europe Reconsidered*. Journal of Common Market Studies, Vol. 34(3), 431-448.

Farole, T., Rodríguez-Pose, A., Storper, M., 2011. *Cohesion Policy in the European Union: Growth*, Geography, Institutions. JCMS: Journal of Common Market Studies, 49(5), 1089–1111. doi:10.1111/j.1468-5965.2010.02161.x

Forbes, K.J., 2000. *A Reassessment of the Relationship between Inequality and Growth*, American Economic Review, 90 (4), 869-887.

Geppert, K., Happich M., Stephan A., 2005. *Regional Disparities in the European Union: Convergence and Agglomeration*. Berlin: DIW Working Paper, no. 525.

Greunz, L., 2003. *Geographically and Technologically Mediated Knowledge Spillovers between European Regions*. Annals of Regional Science, Vol. 37(4), 657-680.

Gregorio, J. D., & Lee, J.-W., 2002. *Education and Income Inequality: New Evidence From Cross-Country Data.* Review of Income and Wealth, 48(3), 395–416. doi:10.1111/1475-4991.00060.

Huggins, R., Williams, N., 2011. *Entrepreneurship and regional competitiveness: The role and progression of policy*. Entrepreneurship & Regional Development, 23(9-10), 907-932.

Johansson, M., Gustafsson B., 1997. *In Search for a Smoking Gun: What Makes Income Inequality Vary Over Time in Different Countries?*, LIS Working papers 172, LIS Cross-National Data Center in Luxembourg.

Kaasa, A., 2003. Factors Influencing Income Inequality in Transition Economies. SSRN Electronic Journal . doi:10.2139/ssrn.419940.

Kitson, M., Martin, R., & Tyler, P. (2004). *Regional Competitiveness: An Elusive yet Key Concept?* Regional Studies, 38(9), 991-999.

Kuznets S. 1955. *Economic growth and income inequality*. American Economic Review 45, 1–28.

Lam, D., 1997. *Demographic variables and income inequality*. Handbook of Population and Family Economics Volume 1, 1015–1059. doi:10.1016/s1574-003x(97)80010-4

López-Bazo, E., 2003. *Growth and Convergence Across Economies. The Experience of the European Regions*. In: B. Fingleton, A. Eraydin, R. Paci (eds.), Regional Economic Growth, SMEs and the Wider Europe, Aldershot et al., 49-74.

Martin, R., 2001. *EMU Versus the Regions? Regional Convergence and Divergence in Euroland*. Journal of Economic Geography, Vol. 1 (1), 51-80.

Marzinotto, B., 2012. *The growth effects of EU cohesion policy: A meta-analysis*, Bruegel Working Paper, No. 2012/14, Brussels: Bruegel.

Mihaylova S., 2015. *Foreign direct investment and income inequality in Central and Eastern Europe*. Theoretical and Applied Economics, Vol. 2(603), 23-42.

Mushinski, D. W., Pickering, K., 2000. *Inequality in Income Distributions: Does Culture Matter? An Analysis of Western Native American Tribes*. Journal of Economic Issues, 34(2), 403–412. doi:10.1080/00213624.2000.11506279

Neven D, Gouyette C., 1995. *Regional convergence in the European community*. J Common Market Stud 33, 47–65.

Niebuhr, A., Schlitte F., 2004. *Convergence, Trade and Factor Mobility in the European Union. Implications for Enlargement and Regional Policy*. Intereconomics, Vol. 39(3), 167-176.

OECD – Centre for opportunity and equality, 2017. *Understanding the socio-economic divide in Europe,* [Online] Available at: http://www.oecd.org/inclusive-growth/about/centre-for-opportunity-and-equality/cope-divide-europe-2017-background-report.pdf, [Accessed 27 January 2019].

Paas, T., Schlitte, F., 2006. *Regional Income Inequality and Convergence Processes in the EU-25*, HWWA Discussion Paper, No. 355, Hamburg: Hamburg Institute of International Economics (HWWA).

Petrakos, G., Kallioras, D., Anagnostou, A., 2011. *Regional convergence and growth in Europe: understanding patterns and determinants*. European Urban and Regional Studies, 18(4), 375-391.

Pittau, M. G., Zelli, R., 2006. *Empirical evidence of income dynamics across EU regions*. Journal of Applied Econometrics, 21(5), 605–628. doi:10.1002/jae.855

Salverda W., 2015. *EU Policy Making and Growing Inequalities*, European Economy - Discussion Papers 2015 - 008, Directorate General Economic and Financial Affairs (DG ECFIN), European Commission.

Snower, D. J., 1999. *Causes of Changing Earnings Inequality*. IZA Discussion Paper No. 29.

Yin, L., Zestos G. K., Michelis L., 2003. *Economic Convergence in the European Union*. Journal of Economic Integration, Vol. 18(1), 188-213.

Walesiak, M., 2002. Uogolniona miara odleglosci w statystycznej analizie wielowymiarowej, Wroclaw: Wydawnictwo AE we Wroclawiu.

Table A1

Gross domestic product (GDP) at current market prices by NUTS 2 regions. Purchasing power standard (PPS) per inhabitant in CEE (2004-2015)

GEO/TIME	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
European Union	**22 500**	**23 400**	**24 700**	**26 100**	**26 100**	**24 500**	**25 500**	**26 200**	**26 600**	**26 800**	**27 600**	**29 000**
Ceská republika	**17 600**	**18 600**	**19 600**	**21 500**	**21 900**	**20 900**	**21 100**	**21 700**	**22 000**	**22 400**	**23 800**	**25 300**
Praha	37 000	39 700	41 900	46 700	47 700	45 000	45 500	45 800	45 900	46 700	48 400	53 200
Strední Cechy	16 900	17 200	18 500	20 200	20 500	18 900	18 700	19 600	19 900	20 000	21 900	22 800
Jihozápad	16 300	17 200	18 100	19 000	18 600	18 400	18 600	19 000	19 100	20 000	21 200	22 100

GEO/TIME	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Severozápad	14 300	14 900	15 600	16 800	16 900	16 700	16 300	16 700	16 800	16 900	17 600	18 700
Severovýchod	14 800	15 600	16 400	17 700	17 800	17 000	17 300	17 900	17 900	18 300	19 600	20 800
Jihovýchod	15 400	16 200	17 100	19 000	19 500	18 800	18 900	19 700	20 300	21 200	22 400	23 600
Střední Morava	13 800	14 400	15 200	16 600	17 300	16 600	16 800	17 500	17 700	18 100	19 800	20 500
Moravskoslezsko	14 200	15 600	16 100	17 700	18 300	17 000	17 500	18 600	18 900	18 600	20 000	21 000
Estonia	**12 200**	**14 000**	**15 900**	**18 100**	**17 900**	**15 600**	**16 500**	**18 500**	**19 600**	**20 200**	**21 000**	**21 700**
Latvia	**10 300**	**11 800**	**13 000**	**14 900**	**15 400**	**12 800**	**13 400**	**14 900**	**16 100**	**16 700**	**17 600**	**18 500**
Lithuania	**11 000**	**12 300**	**13 600**	**15 700**	**16 400**	**13 800**	**15 400**	**17 200**	**18 600**	**19 600**	**20 800**	**21 700**
Hungary	**13 700**	**14 500**	**15 100**	**15 700**	**16 300**	**15 700**	**16 500**	**17 200**	**17 500**	**18 000**	**18 800**	**19 800**
Közép-Magyarország	22 000	23 600	25 000	26 100	27 100	26 400	27 300	27 900	28 400	28 900	29 300	30 400
Közép-Dunántúl	12 900	13 600	13 800	14 500	14 700	13 100	14 300	15 300	15 400	16 100	17 000	18 400
Nyugat-Dunántúl	14 100	14 400	15 300	15 300	15 800	14 700	16 300	17 500	17 600	18 100	20 100	21 300
Dél-Dunántúl	9 600	10 000	10 200	10 500	11 100	10 800	11 100	11 600	11 800	12 200	12 600	12 800
Észak-Magyarország	9 000	9 600	9 800	10 000	10 200	9 600	9 900	10 400	10 400	11 000	11 900	13 100
Észak-Alföld	9 000	9 300	9 600	9 800	10 200	10 200	10 400	11 200	11 300	11 400	12 100	12 500
Dél-Alföld	9 600	10 000	10 200	10 300	10 900	10 400	10 700	11 500	11 900	12 400	13 400	14 100
Poland	**11 300**	**11 800**	**12 500**	**13 800**	**14 500**	**14 600**	**15 900**	**17 000**	**17 800**	**17 900**	**18 600**	**19 800**
Lódzkie	10 400	10 900	11 600	12 800	13 400	13 500	14 700	15 800	16 600	16 700	17 500	18 600
Mazowieckie	17 100	18 200	19 400	21 500	22 100	22 900	25 300	27 000	28 400	28 800	29 900	31 700
Malopolskie	10 000	10 500	11 300	12 300	13 000	13 000	13 900	15 100	15 700	15 900	16 600	17 900
Slaskie	12 600	12 700	13 300	14 600	15 500	15 700	17 000	18 300	18 900	18 700	19 400	20 600
Lubelskie	8 000	8 300	8 700	9 700	10 300	10 100	11 000	11 800	12 500	12 700	13 000	13 600
Podkarpackie	8 200	8 500	9 000	9 800	10 400	10 300	11 100	12 000	12 400	12 700	13 200	14 100
Swietokrzyskie	9 000	9 100	9 800	11 000	11 900	11 500	12 300	13 000	13 300	13 100	13 600	14 300
Podlaskie	8 300	8 700	9 100	10 300	10 600	10 700	11 600	12 400	12 700	13 100	13 500	14 100
Wielkopolskie	12 100	12 700	13 300	14 600	15 300	15 800	16 700	17 900	18 800	19 200	20 000	21 500
Zachodniopomorskie	10 200	10 700	11 300	12 200	13 000	12 700	13 600	14 300	14 900	14 900	15 600	16 800
Lubuskie	10 000	10 700	11 200	12 300	12 600	12 500	13 400	14 100	14 800	14 900	15 700	16 600
Dolnoslaskie	11 400	12 200	13 400	15 100	15 700	15 900	17 900	19 400	20 200	20 100	20 900	22 100
Opolskie	9 600	9 800	10 200	11 600	12 500	12 300	13 100	13 900	14 400	14 400	15 100	16 000
Kujawsko-Pomorskie	9 900	10 200	10 800	11 900	12 400	12 200	13 200	13 900	14 500	14 700	15 200	16 200
Warminsko-Mazurskie	8 500	8 900	9 300	10 200	10 700	10 700	11 500	12 300	12 700	12 800	13 300	14 100
Pomorskie	11 100	11 700	12 400	13 600	13 800	14 300	15 300	16 400	17 400	17 300	17 700	19 100
Slovakia	**12 800**	**14 100**	**15 600**	**17 400**	**18 600**	**17 400**	**19 000**	**19 500**	**20 100**	**20 500**	**21 300**	**22 300**
Bratislavský kraj	29 000	34 300	36 400	41 200	43 100	42 800	46 300	48 400	48 800	50 600	51 600	54 200
Západné Slovensko	12 100	13 300	15 400	16 800	17 800	16 300	17 600	18 600	19 300	19 300	20 200	20 500
Stredné Slovensko	10 500	10 900	12 100	13 700	15 100	14 000	15 200	15 300	15 900	16 200	16 900	17 800
Východné Slovensko	9 500	10 100	10 800	11 900	13 100	11 800	12 900	13 200	13 800	14 000	14 700	15 600

Source: author's calculations based on EUROSTAT

STRUCTURAL CHANGE PATH AND ECONOMIC GROWTH PERFORMANCE OF POLISH ECONOMY

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Abstract. In 1990, Poland and later other Eastern European countries moved away from the centrally planned economy system by implementing a package of stabilization and structural reforms IMF and WB (SAPs). Poland with strong political support from the Solidarity Movement has decided for a radical break with the old system. The first half of the 90's was marked by economic stabilization policies. High inflation, inefficient public enterprises sector, external debt threatened social explosion and chaos difficult to control. The political determination of the Solidarity movement and the strong desire of the society to break communism have contributed to the application of shock therapy to change the system.

In our paper we present analysis of systemic changes in the first period of implementation of the principles of the Washington Consensus. We focus on structural policy aimed at modernizing the economic structure and creating competitive capacity on international markets in the ongoing globalization process. We consider changes taking place in the structures of economy in the period 1992-2008. Transition period can be divided into three periods. This first period till 1995 was stabilization phase. In the second period form 1996 till 2003 the elements of aqui communautaire set in the EU accession were consistently implemented. The third period contains years after accession 2004-2008.

The aim of our analysis is to answer the question: what effects resulted from the implementation of a shock therapy in the sphere of productivity. The paper presents changes in labour productivity caused by structural changes and those that were the result of modernization of production technology. Authors used Shift-Share Analysis and decomposition equation for labour productivity growth. Labour productivity growth in an economy can be achieved by technological change, improvement of production process etc. (pure labour productivity growth) or by moving labour from low-productivity sectors to high-productivity sectors (structural labour productivity growth).

The analysis shows that Poland improved both pure labour and structural productivity growth thanks to the changes and modernization of economic structures. In analysed period productivity increased in all sectors, however the most significant rise was noted in financial intermediation; real estate, renting and business activities. Simultaneously employment decreased the most in agriculture, hunting and forestry; fishing – the sector with the lowest productivity. In all analysed years pure productivity indicator was positive. However, structural productivity indicator was negative after first years after transition, that obtain the highest value after accession to EU. The research can be used by the Government agencies for industrial development policies.

Key words: *transition economies, structural changes, economic growth, competitiveness*

JEL code: D24, G34, L33

Introduction

The collapse of the communist system of centrally planned economy, which took place in the late 80's, as well as political changes and the Comecon dissolution, opened the space for the transformation of political and economic system.

Analyses regarding the policy of deriving the economy from the deep crisis and creating conditions for effective structure ensuring development have taken on a broader dimension since the framework of the policy of stabilization and restructuring of the economy by Polak (1957), then developed by experts. Despite many critical assessments of the effects of such policies in the 1980s in developing countries, a set of actions called Washington Consensus were implemented in post-socialist countries. Such approaches were criticizing for too rigorous monetary policy and large social costs of transformation. After a brief discussion on the reform path, in 1990 Poland and later other Eastern European countries moved away from the centrally controlled economy system introducing a package of stabilization and structural reforms proposed by International Monetary Fund and World Bank (SAPs) and signing the association agreement with the European Communities in 1991. The shock therapy method was chosen by Poland with strong political support of the Solidarity Movement (Lipton, et al., 1990). Main reforms have indicated full openness of market to domestic and foreign trade, the Polish zloty has become convertible, prices have been liberalized, subsidies for state owned enterprises have been cut, privatization has started and banking sector reform accelerated (Balcerowicz 1995).

The period of economic downturn, lasted until the mid-90s. During this time Poland was reaching stabilization and could intensively prepare for EU membership. In the run to EU accession in 2004, a two blocks of other structural reforms had been adopted by Polish policy makers, which were very important for the further development of Polish economy. The goal of first set of reforms was macroeconomic stabilization, price and import liberalization and through introduction of a well-functioning financial sector, privatization, reforms of labour market and social policies, of the corporate and personal income tax system and the development of civil legislation. These reforms released the creativity of new private and state-owned enterprises to restructuring process, i.e. to modify the production process, to engage in marketing and to reduce unproductive labour. The second set of reforms was implemented in 1999, which changed ineffective institutions to improve the competitiveness of the Polish economy and to ensure sustainable government finances (Lehmann, 2012). After 30 years of structural change in Eastern Europe, a more complete assessment of the basic aspects of SAP programs is possible.

Main goal of the article is analysis of productivity performance of Poland economy in period 1992-2008. Research period was chosen for two reasons. Firstly, analysis of years right after transition will help to answer the question if increasing productivity was caused mainly by rise in labour productivity or structural changes. Secondly, those „newly free" market economies in 90's had handled for the first time the traps and opportunities of globalization. Analysed period can be divided into three sub-periods. This first period from 1992 till 1995 was stabilization phase. During second period 1996-2003 Poland was implementing the elements of aqui communautaire set necessary for EU accession. The third period contains years after accession till financial crisis 2004-2008.

Main research methods employed for theoretical background is critical review of the literature. For productivity assessment Shift-Share methodology and decomposition equation for labour productivity growth were used. Statistical analysis was done based on OECD database.

Structural change and economic growth - the theoretical framework

Structural changes are one the most important factors of economic growth (Kuznets, 1966). Structural change can be simply define as reallocation of labour across sectors. Modernization process of economic activities causes increase of labour and other production factors in modern economic activities and decrease of utilization of production factors in less modern and traditional ones. Increasing share of modern economic activities with high productivity levels such as

manufacturing and high quality services triggers wage and salary improvements and has a positive impact on economic growth. (Yilmaz, 2015)

Reduction of productivity gaps between sectors is especially important for developing economies. Lewis (1954) pointed dual nature of economy and emphasized productivity disparities between capitalist and subsistence sectors of the economy. Lewis' model explains the growth of a developing economy in terms of a labour transition between those two sectors. Dual economy model distinguished rural low-income subsistence sector with surplus population and expanding urban capitalist sector. The urban sector is absorbing labour from rural areas, holding down urban salaries, until the rural surplus is exhausted. This results in increased production per employee, which shifts from the subsistence sector to the capitalist sector. Dual economy model assumes overpopulated surplus labour, which means that the supply of unqualified labour in the capitalist sector is unlimited. It gives the opportunity to create new industries and expand existing ones at the current level of wages (Ranis, 2004).

Robinson (1971) also offered a model, which explained aggregate growth with transfer of resources between agriculture and non-agricultural sectors using cross-country data. Feder (1986) in contrast focused on the contribution to aggregate growth of transfers of resources between non-exports and export sectors. Fagerberg (2000) also emphasized importance of structural change for overall productivity growth. He stated that nowadays structural change still matters, but in a different way than before. New technologies are playing key role in generating structural change by expanding productivity at a very rapid rate, particularly in the electrical machinery industry, but without a similarly large increase in the share of that industry in total employment.

Today, the most developed countries are those that are able to diversify away from agriculture and other traditional products. The speed of structural transformation is the key factor that determine competitiveness of the economy. Developing economies can be characterized by large productivity gaps between different parts of the economy. Inefficient allocation reduce overall labour productivity. However, potentially such disparities can be an important engine of economic growth. When labour and other production resources move from less productive to more productive activities, the economy grows even if there is no productivity growth within sectors. Growth enhancing structural change may be an significant contributor to overall economic growth. High-growth countries are typically those that have experienced extensive growth enhancing structural change (McMillan & Rodrik, 2011)

The Structural change: Implications for productivity. Shift-Share Analysis

Shift-share is purely descriptive technique that attempts to decompose the change of an aggregate into a structural component, reflecting changes in the composition of the aggregate, and changes within the individual units that make up the aggregate (Fagerberg, 2000). Precursor of shift-share analysis measuring reallocation of labour among sectors for growth is Fabricant (1942). There have been many reviews and extensions of shift-share use, especially for regional analysis. Esteban-Marquillas (1972) proposed the use of a homothetic employment in sector and region, leading to the identification of an additional, allocation effect. Arcelus (1984) and Haynes & Machunda (1987), emphasised the importance of the homothetic employment and allocation effect. On the other hand Keil (1992) and Loveridge and Selting (1998) proved some empirical shortcomings of the homothetic idea. Barff & Knight (1988) discussed dynamic version of shift-share analysis, which eliminates some problems associated with the traditional static form of the method. Thanks to implementation of continuous change in both the regional industrial mix and the size of the employment base, the dynamic approach offers a more accurate allocation of job change. Also Knudsen (2000) pointed out that the Arcelus

extension and dynamic shift-share have reduced the technique's dependence on the assumed long-term linearity of regional dynamics. Esteban (2000) underlined that regional specialization has a very insignificant role and that interregional differences can essentially be explained by uniform productivity gaps only. Nazara, & Hewings (2004) introduced to shift-share analysis recognition of spatial structure, emphasizing that location of particular region is an important element in the growth accounting.

Although, shift-share methodology has some limitations, some variants of shift-share model were applied to understand structural change patterns along with their repercussions on growth. Labour productivity growth in an economy can be achieved by technological change, improvement of production process etc. (pure labour productivity growth) or by moving labour from low-productivity sectors to high-productivity sectors (structural labour productivity growth). The basic shift-share equation proposed by McMillan & Rodrik (2011) decomposes the change in aggregate productivity into a pure and structural change effect.

$$\Delta AP_t = \sum_i \varphi_{i,t-k}\, \Delta SP_{i,t} + \sum_i SP_{i,t}\, \Delta\varphi_{i,t}$$

In the equation, APt represents aggregate labour productivity and SPi,t demonstrates labour productivity level of sector-i at time t. Labour productivity is calculated as ratio of aggregate/sectoral real output to the corresponding employment. Employment share of a sector-i at time t in overall employment is represented $\varphi i,t$. In the decomposition equation, the first term on the right side represents the "pure" productivity growth component and the second term demonstrates the "structural change" component of the aggregate productivity growth. Pure labour productivity growth can be calculated as weighted sum of productivity growth within individual sectors, where the weights are the employment share of each sector. Structural labour productivity growth is related to labour re-allocations across different sectors. If changes in employment shares are positively correlated with productivity levels, this term will be positive, and structural change will increase economy-wide productivity growth.

Research results and discussion

In constructing our data, we took as our starting point the Organization for Economic Co-operation and Development (OECD) database, which provides gross value added and employment statistic for Poland disaggregated into 6 sectors for the period from 1992 to 2008. Data for gross value added in the sectoral breakdown is shown in Table In all sectors, an increase in gross value added could be observed, however the highest dynamic was observed in Financial intermediation sector, which obtain 2609% growth during analyzing period. The Agriculture sector scored the lowest dynamic in gross value added (530%). The second most dynamic sector turned out to be the Wholesale and retail trade, repairs sector, which obtain 1271% growth. This sector in the last years of the analyzed period obtained the highest values. For example in 2008 obtained 293 114 mln [PLN] and was 7% higher than second Industry sector, 27% and 28% higher than 3rd Financial intermediation and 4th Other service activities sectors. It is worth to underline that Wholesale and retail trade, repairs sector obtained the highest average gross value added (163 268 mln [PLN]).

Table 1

Total gross value added at basic prices (Poland 1992-2008)

	1. Agriculture, hunting and forestry; fishing	2. Industry, including energy	3. Construction	4. Wholesale and retail trade, repairs; hotels and restaurants; transport	5. Financial intermediation; real estate, renting and business activities	6. Other service activities	7. Total gross value added
1992	7856	39229	9084	23056	8167	27231	114624
1993	10437	51341	10324	34159	10164	32518	148943
1994	13423	60189	14617	56403	18298	38140	201069
1995	18657	85184	19839	74703	25071	54181	277636
1996	21760	101548	25477	97191	33324	69563	348862
1997	30115	118977	32887	120324	69815	82906	455024
1998	31770	133044	42385	142443	87702	96541	533885
1999	30663	144145	47822	158504	99390	106031	586555
2000	32823	158750	51225	180606	119642	119169	662215
2001	35459	156303	48551	194320	127118	133504	695255
2002	32300	159795	45340	203875	131302	142460	715072
2003	32699	176530	43505	205787	135687	150149	744357
2004	41940	207299	45406	225383	144471	157166	821665
2005	39235	213836	52207	237546	156797	166708	866329
2006	39930	229903	59777	255297	170577	175695	931179
2007	44553	252226	73459	272851	195808	190545	1029442
2008	41670	271981	84927	293114	212976	209923	1114591
% change 1992-2008	530%	693%	935%	1271%	2608%	771%	972%
Average Gross value added 1992-2008	29723	150605	41578	163268	102724	114849	602747

Source: author's calculations based on OECD

Data for total employment in the sectoral breakdown is shown in Table 2, where the movement of labour from low-productivity to high-productivity activities raises economy-wide labour productivity. During the analyzed period, a drop of 1.5 million people have been made in the agricultural sector, while increases could be seen in other sectors like: Wholesale and retail trade, repairs; hotels and restaurants; transport from 2.86 mln to 3.67 mln inhabitants, Financial intermediation from 0.72 mln to 1.35 mln inhabitants, other service activeness from 2.51 to 3.57 mln inhabitants. In construction sector the increase was not so significant from 1 mln to almost 1.2 mln inhabitants. In industry, there was a similar number of employed people. It could be noticed a decline at the beginning of the 21st century, however, after joining the EU, this situation was improving and the number of people employed in this sector again returned to that of the 90s.

Table 2

Total employment, in full-time equivalents (Poland 1992-2008)

	1. Agriculture, hunting and forestry; fishing	2. Industry, including energy	3. Construction	4. Wholesale and retail trade, repairs; hotels and restaurants; transport	5. Financial intermediation; real estate, renting and business activities	6. Other service activities	7. Total employment
1992	3782	3784	1024	2864	716	2507	14677
1993	3704	3671	853	2910	716	2476	14330
1994	3901	3641	820	2906	710	2498	14475
1995	3849	3757	841	2897	820	2573	14735
1996	4021	3730	843	2953	860	2612	15021
1997	3997	3740	908	3131	976	2687	15439
1998	3981	3701	961	3330	1093	2735	15800
1999	3955	3430	923	3210	1092	2765	15374
2000	3943	3223	869	3129	1103	2751	15018
2001	3927	3100	848	3128	1201	3042	15247
2002	2661	3093	845	3034	989	3144	13766
2003	2506	3090	797	3007	976	3231	13606
2004	2480	3184	781	3055	1070	3203	13773
2005	2445	3276	828	3118	1115	3293	14075
2006	2290	3436	904	3259	1163	3478	14530
2007	2236	3612	1035	3511	1315	3465	15174
2008	2208	3754	1195	3672	1348	3571	15747

Source: author's calculations based on OECD

Table 3 shows labour productivity gaps between different sectors. The highest productivity can be observed in sector 5 (Financial intermediation; real estate, renting and business activities), while the lowest productivity is shown in sector 1 (Agriculture, hunting and forestry; fishing). This disproportion is very large. It is worth to underline that productivity in all sectors increase in analysed period. The highest change, which is 1385% is in the Financial intermediation sector. The lowest changes are observed in Industry and Other service activities sectors, which obtain almost 700% and 541%. In 2008 labour productivity in financial intermediation was eight times larger than in agriculture and more than twice as high as other sectors. Analysing the above statistics, it can be concluded that all employees should work in the financial sector. Of course, such a situation cannot take place. However, it can be more meaningful to compare productivity levels across sectors with similar potential to absorb labour. In all analysed years labour productivity in agriculture comparing to all other sectors with similar potential to absorb labour is three or four times less. For example, average labour productivity in construction in years 1992-2008 is more than four times productive than agriculture. Industry ratio obtains the same score ratio.

Table 3

Sector productivity in Poland (1992–2008)

	1. Agriculture, hunting and forestry; fishing	2. Industry, including energy	3. Construction	4. Wholesale and retail trade, repairs; hotels and restaurants; transport	5. Financial intermediation; real estate, renting and business activities	6. Other service activities	7. Total gross value added
1992	2.08	10.37	8.87	8.05	11.41	10.86	7.81
1993	2.82	13.98	12.10	11.74	14.20	13.13	10.39
1994	3.44	16.53	17.84	19.41	25.79	15.27	13.89
1995	4.85	22.67	23.60	25.79	30.58	21.06	18.84
1996	5.41	27.22	30.23	32.91	38.73	26.63	23.23
1997	7.53	31.81	36.23	38.43	71.50	30.86	29.47
1998	7.98	35.95	44.11	42.77	80.26	35.29	33.79
1999	7.75	42.03	51.82	49.38	91.05	38.35	38.15
2000	8.32	49.25	58.95	57.72	108.50	43.32	44.10
2001	9.03	50.42	57.25	62.12	105.83	43.88	45.60
2002	12.14	51.66	53.64	67.20	132.72	45.32	51.94
2003	13.05	57.14	54.59	68.43	139.05	46.47	54.71
2004	16.91	65.10	58.12	73.78	135.08	49.07	59.66
2005	16.04	65.28	63.08	76.19	140.66	50.62	61.55
2006	17.44	66.91	66.14	78.33	146.63	50.52	64.09
2007	19.92	69.84	70.99	77.71	148.89	54.99	67.84
2008	18.87	72.45	71.09	79.82	158.04	58.79	70.78
% change 1992-2008	908%	699%	801%	992%	1385%	541%	906%
Average productivity 1992-2008	10.21	44.04	45.80	51.16	92.88	37.32	40.93

Source: author's calculations based on OECD

In the early 1990s in Poland negative productivity can be seen. Then Poland returned to growth since 1995, but productivity growth was not that high. The highest productivity growth can be observed when Poland joined EU in 2004. Since 2004, Poland obtain very good results, both pure and structural productivity were positive and together remained above 5%. The highest change in productivity could be observed in 2007 and it was 18% (Table 4).

Table 4

Decomposition of productivity growth in Poland (year over year 1993-2008)

	Pure productivity	Structural productivity	Labour Productivity Growth % (Component due to: Pure and Structural productivity)
1993	0.345	-0.881	-0.537
1994	0.332	-1.750	-1.418
1995	0.361	4.180	4.541
1996	0.212	-0.019	0.193
1997	0.269	9.368	9.638
1998	0.116	9.111	9.227
1999	0.098	0.959	1.058
2000	0.137	0.556	0.694
2001	0.041	5.648	5.689
2002	0.112	7.846	7.958
2003	0.052	-0.762	-0.709
2004	0.117	9.394	9.511
2005	0.015	5.206	5.221
2006	0.032	7.016	7.048
2007	0.056	18.214	18.270
2008	0.029	5.417	5.446

Source: author's calculations based on OECD

Table 5 presents decomposition of productivity growth in Poland into 3 periods: 1992–1995, 1996-2003, 2004-2008. It can be noticed that from period to period productivity in Poland increased. In first sub-period average productivity obtained was 1,89%, while in second sub-period the average increased by 2.3% and was at the level of 4.2% From accession to UE (3rd period) average labour productivity growth achieved 9,1%. Considering the entire analysed period (1992-2008) Poland experienced rapid (labour) productivity growth of almost 5% per annum, roughly most of which was accounted by structural change.

Table 5

Decomposition of productivity growth in Poland, sub-periods: 1992–1995, 1996-2003, 2004-2008 and 1992-2008 (unweighted averages)

Period	Pure productivity	Structural productivity	Labour Productivity Growth % (Component due to: Pure and Structural productivity)
1992-1995	0.346	1.549	1.894
1996-2003	0.130	4.088	4.218
2004-2008	0.050	9.049	9.099
1992–2008	0.145	4.969	5.114

Source: author's calculations based on OECD

Conclusions, proposals, recommendations

This study aim to analyze changes in productivity of Polish economy. Based on literature review and conducted research, authors make the following conclusions and recommendations:

1. Changes in labour productivity were twofold. Preliminary results of the analysis show that there are changes in productivity in two areas. The shift and increase in productivity resulted from the reallocation of employees to driving sectors in the economy, ie. more modern and technologically advanced. In the same time labour

productivity growth in an economy was achieved by technological changes and improvement of production process. This effect also causes convergence in economy-wide labour.

2. Share of high-technology sectors in overall production increase over research period. Structural changes have played an important role in Polish economy and made a positive contribution to overall growth.
3. Poland improved both pure labour and structural productivity growth thanks to the changes and modernization of economic structures. However, impact of pure labour productivity was much smaller than structural productivity.
4. In analysed period productivity increased in all sectors, however the most significant rise was noted in financial intermediation; real estate, renting and business activities. Simultaneously employment decreased the most in agriculture, hunting and forestry; fishing – the sector with the lowest productivity.
5. In all analysed years pure productivity indicator was positive. However, structural productivity indicator was negative after first years after transition during stabilization phase and then obtained the highest value after accession to EU.

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Bibliography

Arcelus, F., 1984. *An extension of shift-share analysis*. Growth and Change 15, 3-8.

Balcerowicz L., 1995. *Socialism, Capitalism, Transformation*. Central European University Press.

Barff, R. A., & Knight , P. L. III, 1988. *Dynamic Shift-Share Analysis*. Growth and Change, 19(2), 1–10.

Esteban-Marquillas, J.M. 1972. *A reinterpretation of shift-share analysis*. Regional and Urban Economics 2: 249-255.

Esteban, J., 2000. *Regional convergence in Europe and the industry mix: a shift-share analysis*. Regional Science and Urban Economics, 30(3), 353–364.

Fabricant, S., 1942. *Employment in Manufacturing*, 1899-1939. NBER, New York.

Fagerberg, J., 2000. *Technological progress, structural change and productivity growth: a comparative study*. Structural Change and Economic Dynamics, 11(4), 393–411.

Feder, G., 1986, *Growth in Semi-Industrial Countries: a Statistical Analysis*, in H. Chenery, S. Robinson, and M. Syrquin, (eds), Industrialization and Growth: a Comparative Study, Oxford: Oxford University Press.

Haynes, K., & Machunda Z.B., 1987. *Considerations in extending shift-share analysis: Note*. Growth and Change, 69-78.

Keil, S.R., 1992. *On the value of homotheticity in the shift-share framework*. Growth and Change 23, 469-493.

Kuznets, S., 1966. *Modern Economic Growth: Rate, Structure and Spread*. Yale University Press, London.

Knudsen, D. C., 2000. *Shift-share analysis: further examination of models for the description of economic change*. Socio-Economic Planning Sciences, 34(3), 177–198.

Lehmann, H., 2012. *The Polish Growth Miracle: Outcome of Persistent Reform Efforts*, IZA Policy Paper No. 40, Bonn.

Loveridge, S., & Selting A.C., 1998. *A review and comparison of shift-share identities*. International Regional Science Review, 21, 37-58.

Lipton D., Sachs J., Fischer S., Korani J., 1990. *Creating a market economy in Eastern Europe. The case of Poland*, Brookings Papers in Economic Activity, Issue 1 (1990), Washington.

Lewis, W. A., 1954. *Economic Development with Unlimited Supplies of Labor*, Manchester School of Economic and Social Studies, Vol. 22, 139-91.

Nazara, S., & Hewings, G. J. D., 2004. *Spatial Structure and Taxonomy of Decomposition in Shift-Share Analysis*. Growth and Change, 35(4), 476–490.

OECD, 2018. *National Accounts of OECD Countries - Statistics, main aggregates, 1990-2004*. [Online] Available at: http://www.oecd.org. [Accessed 11 January 2019]

McMillan, M. & Rodrik, D., 2011. *Globalization, Structural Change, and Productivity Growth*. NBER Working Paper 17143.

Polak, J. J., 1957. *Monetary Analysis of Income Formation and Payments Problems*, IMF Staff Papers, Vol. 6, 1–50.

Ranis G., 2004. *Arthur Lewis' Contribution to Development Thinking and Policy*, Working Papers 891, Economic Growth Center, Yale University.

Robinson, S., 1971. *Sources of Growth in Less-Developed Countries: a Cross-Section Study*, Quarterly Journal of Economics, Vol. 85, 391–408.

Yilmaz G., 2015. *Decomposition of Labor Productivity Growth: Middle Income Trap and Graduated Countries*, Working Papers 1527, Research and Monetary Policy Department, Central Bank of the Republic of Turkey.

THE EVALUATION OF MARKETING COMMUNICATIONS AND THE AWARENESS ABOUT HIV AMONG THE RESIDENTS OF LATVIA

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Abstract. In recent years, thanks to the work and the contribution of the global community to limiting the spread of HIV, not only the number of newly diagnosed HIV cases, but also the number of deaths from AIDS-related illnesses has started to decrease globally. One of the most important tools that has made it possible to limit the spread of HIV is a well-targeted and socially effective marketing communications, developed by public and non-governmental healthcare organizations, which, in meeting its goals, encouraged society education about HIV infection.

Despite the approved action plan and its content, Latvia steadily takes the leading position among the European Union countries in the number of newly diagnosed HIV cases. The increasing trend of the number of newly diagnosed HIV cases indicates that the society lacks information and education possibilities about HIV and how to protect themselves from the virus.

The aim of the study, which is based on evaluation of results of previous studies of implemented HIV spread control measures and marketing communications addressed to society, is to analyse the actual awareness about HIV and available educational opportunities about it among the residents of Latvia, as well as to find out the marketing communication sources of true and false information about HIV.

Such methods as survey, content analysis and correlation analysis are used in the study, and its results are based on the data obtained during the survey of the residents of Latvia.

The results of the study show the actual situation regarding the awareness of residents of Latvia about HIV and educational opportunities about it. In spite of the fact that majority of respondents self-assess their knowledge about HIV as good, it must be emphasized that the results of the study show that the majority of respondents are not able to identify all possible ways of infection by HIV. The data correlation shows marketing communication channels through which respondents most often obtain true or false information about HIV. Thus, the findings of the study will help to improve the content of marketing communications and use of an appropriate communication channel suitable for the certain target audience, in order to achieve its social efficiency.

Key words: *HIV, marketing communications, social efficiency, social marketing*

JEL code: M31

Introduction

In recent decades, the HIV / AIDS *(Human Immunodeficiency Viruses / Acquired Immune Deficiency Syndrome)* pandemic has become one of the most actual international issues and requires the participation of all countries. 2015 is marked as a year of special success, when the world community made progress in the fight against HIV / AIDS. Not only the number of newly diagnosed HIV cases, but also the number of deaths from AIDS-related illnesses has started to decrease globally. This success was possible mostly thanks to the Millennium Development Goal Number 6 of the world leaders at the UN *(United Nations)* General Assembly Millennium Summit in 2000 and the Declaration of Commitment on HIV / AIDS adopted in 2001, which set out a number of measures to limit the spread of the virus at national and global

level (UN, 2018). The Declaration of Commitment on HIV / AIDS determines that strong management at all levels of society is crucial to an effective response to the epidemic. In turn, government leadership in the fight against HIV / AIDS is very important and their efforts should be complemented by the full and active participation of civil society, the business community and the private sector (UN, 2001).

In order to limit the spread of HIV it's necessary to provide an advanced system of virus prevention which would include fast diagnostics of HIV, the treatment of already infected patients and informing and education of society about virus. The Latvian Public Health Guidelines 2014-2020 aims to extend the number of healthy life years of the Latvian population and prevent premature death by maintaining, improving and restoring health. One of the sub-goals defined in the Public Health Guidelines 2014-2020 is to reduce the incidence of infectious diseases, including HIV (MK 589, 2014).

In order to achieve the Public Health Guidelines 2014-2020 target for the incidence of infectious diseases the Action Plan for Preventing the Prevalence of HIV, Sexually Transmitted Infections, Hepatitis B and C for 2018-2020 was developed and it includes:

- To develop policy on infection prevention, thereby giving greater attention to the risk of HIV infection, including the early diagnostics and treatment of infectious diseases in specific risk groups.
- To encourage interinstitutional cooperation ensuring greater involvement of non-governmental organizations in the field of HIV prevention.

As one of the problems the government identifies insufficient public and professional awareness of transmission infectious diseases, including infections associated with the risks of blood, vertical transmission and sexual transmission, and measures to prevent them. Therefore, the action plan foresees that the involvement of non-governmental organizations will encourage public education on the risks of HIV infection and early diagnostics (MK 630, 2017).

However, despite the fact that the Government of Latvia has approved an action plan to prevent the spread of HIV which supports the joint cooperation of governmental and non-governmental health organizations and implementation of preventive measures, including the use of marketing communication tools, it should be noted that Latvia currently holds the leading position in the number of newly diagnosed HIV cases in European Union (ECDC / WHO, 2018). Such negative statistics on the number of newly diagnosed HIV cases may indicate that the public may be lack of information about HIV and understanding of how to protect themselves from viral infection.

For these reasons, the author of the paper formulates research **hypotheses** as follows: (*H1)* respondents can't fully identify all possible ways of infection by HIV and *(H2)* there is statistically significant correlation that indicates the marketing communication channels through which respondents obtain true or false information about HIV.

The **aim of the study**, which is based on the evaluation of results of previous studies of implemented HIV spread control measures and marketing communications addressed to society, is to analyse the actual awareness about HIV and available educational opportunities about it among the residents of Latvia, as well as to find out the marketing communication sources of true and false information about HIV.

To achieve the aim of the study, the following **tasks** are set:

- To analyse academic and specialized literature on the theoretical aspects of marketing communications and its peculiarities in the healthcare sector.
- To evaluate the results of previous studies of implemented HIV spread control measures and marketing communications addressed to society.

- To conduct a survey of residents of Latvia with the aim to find out the actual awareness about HIV and available educational opportunities, as well as to find out the marketing communications sources of true and false information about HIV.
- Based on the results of the study, draw conclusions and develop proposals for improving marketing communications to raise awareness about HIV among the residents of Latvia.

The **object** of the research is HIV control measures and marketing communications addressed to society.

The **subject** of the study is the impact of marketing communications addressed to society on awareness about HIV.

Such methods as survey, content analysis and correlation analysis are used in the research. Its results are based on evaluation of the results of previous studies of implemented HIV spread control measures and marketing communications addressed to society and the data obtained during the survey of residents of Latvia.

Theoretical background is based on the review of specialized literature and regulatory acts on the peculiarities of marketing communications in the healthcare sector.

Theoretical background

Nowadays, integrated marketing communication is an essential part of business, whether it is a company aiming at profit or a non-governmental organization that aims to educate the public in a health issue. In order to succeed in their field, governmental and non-governmental health care organizations also need to develop thoughtful and targeted socially effective marketing communications that will help to achieve set goals and encourage the well-being and education of society, change its attitude on any issue or influence public behaviour (Donovan R., Henley N., 2010). Such marketing communications aimed at influencing the behaviour of society and its well-being rather than making a profit is called social marketing (Kotler Ph. & Lee N. R., 2008). Social marketing communication messages are recognized as one of the most important contributors to public health and well-being (Liang B. & Scammon, 2011), regardless of whether or not these messages are created with purpose of encouragement of treatment or prevention of disease, marketing communications has long been used to change the attitude of society or specific target audience in a health-related issue or to persuade the public to engage in health-related behaviour (Dias M. & Agante L., 2011; Liang B. & Scammon, 2011; Martin I. M. & Kamins M. A., 2010; Marshall D., O'Donohoe S. & Kline S., 2007).

The same as in case of profit organizations also governmental and non-governmental health care organizations apply the principles of traditional marketing communications (Thomas R. K., 2010). To create marketing communications and achieve the set goals organizations use 4P marketing mix. Applying the 4P mix to the development of socially effective marketing communications of governmental and non-governmental health organizations, it can be determined that the product in this case will be an idea, program or project that the organization supports. Price is a budget, the costs of project or program. The price can be expressed not only in monetary terms, but also as a result of the adoption of the idea supported by the organization or the consequences of non-acceptance, which directly reflects the quality of life of the target audience. Promotion refers to all communication methods that an organization can use to provide information about product to all stakeholders. Place points to the simplicity of an audience access to the product, hence the organization needs to maximize access of target audience to the product (idea), including the choice of communication channels which is based on habits of usage of communication channels of target audience (Kotler Ph. & Lee N. R., 2008).

Health care organizations apply traditional marketing communication mix, which includes a range of different communication channels and tools to reach the target audience (Fortenberry J. L., 2013). Marketing communication mix includes four elements: advertising, sales promotion, public relations and direct sales. And nowadays it has been supplemented with additional marketing communication mix elements such as internet marketing and direct marketing

which are now widely used in communication with target audiences (Belch G.E. & Belch M.A., 2007). Thus, it can be concluded that social marketing sells behaviour through traditional marketing approaches and communication channels. This often includes products that support behaviour by subsidizing them and making them available to the consumer, but ultimately the goal of product or service availability is to support a change in the behaviour of the target audience (Cheng H., Kotler Ph. & Lee N. R., 2011). In two HIV-related researches where the impact of social marketing on behaviour of people was investigated, it was concluded that social marketing communication can increase use of condoms which in turn reduces the exposure of health risk factors (Noar S. M., Palmgreen P., Chabot M., Dobransky N., & Zimmerman R. S., 2009; Sweat M. D., Denison J., Kennedy C., Tedrow V., & O'Reilly K., 2012).

The involvement of non-governmental organizations in strengthening the health system can contribute to the development of an effective healthcare system. In order to achieve this, close cooperation between non-governmental organizations and the public sector must be ensured (Ejaz I., Shaikh B. T. & Rizvil N., 2011). Non-governmental organizations have several strengths in HIV / AIDS prevention:

- They are able to implement programs quickly, address controversial issues and develop innovative solutions. As non-governmental organizations are smaller, they have more flexible administrative systems and less burdensome bureaucracy than government organizations, they can develop and implement programs faster. Non-governmental organizations generally do not face political constraints that hamper HIV / AIDS prevention efforts. Hence, it is easier for non-governmental organizations to be more open to sensitive topics such as sexuality and condom use.
- Non-governmental organizations often form and serve target audience members what helps to reach target audiences more quickly and efficiently and give greater confidence and understanding of the target audience they serve.
- To reach the poorest and most marginalized groups, based on their firm commitment to serve those most in need. Non-governmental organizations therefore often can reach such groups as prostitutes or intravenous drugs users, who are often outside the society and who may be cautious about cooperation with government authorities.
- Mobilizing local resources and talents, thus providing services at lower cost. Volunteers provide energy and resources to many employees of non-governmental organizations, and even paid employees often work for lower wages because they are personally committed in achieving organizational goals (Mercer M. A., Liskin L. A., 1991).

Non-governmental organizations play an irreplaceable role in HIV / AIDS prevention and control in many countries around the world (Wang, D., Mei, G., Xu, X., Zhao, R., Ma, Y., Chen, R., Qin, X. & Hu, Z., 2016). There are also a number of non-governmental organizations in Latvia that actively engage in state policy-making in the field of HIV / AIDS. They cooperate with state and local government institutions, not only for the purpose to improve the quality of life of the people living with HIV / AIDS but also for the purpose to limit the spread of HIV by providing information about HIV to all stakeholders and educating the society in this field (HIV.LV, 2018; DIALOGS, 2018).

In recent years, governmental and non-governmental healthcare organizations in Latvia have implemented dozens of social marketing communication projects aimed to educate and inform the public how to protect themselves from HIV infection. Based on the findings of carried out social marketing communication projects a survey of residents of Latvia was developed in order to find out the actual awareness of residents of Latvia about HIV infection, available education opportunities, as well as to identify possible primary sources of true and false information.

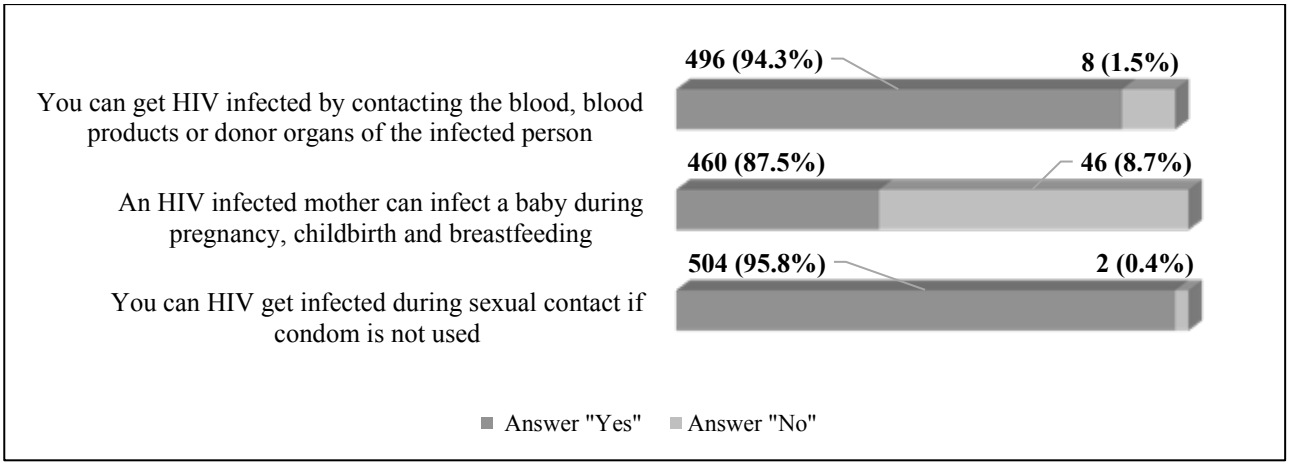
Research results and discussion

An online survey was used as a primary way of obtaining data, which was disseminated through the tested websites. This provided the confidentiality and privacy of the respondents, which was important during this study, as some of the survey questions were ethical and there were concerns that respondents would not want to answer them honestly if they would be interviewed in person. The survey format was tailored for easy access by various electronic devices such as a computer, tablet, and mobile phone. The online survey enabled the possibility to distribute it to a large number of potential respondents at low cost. In addition, respondents were given the opportunity to discontinue the survey at any time and return to the questionnaire some time later, directly to the question to which the respondent had discontinued the survey, which gave the opportunity to increase the number of respondents and the obtained data set. All respondents were asked to answer the same questions and to evaluate the same factors what allowed to compare the data with each other and perform correlation analysis (Neuman, W. L., 2006).

The survey was conducted between 526 Latvian residents in October 2018. According to Central Statistical Bureau of Latvia the population of Latvia in October 2018 was 1934379 people (CSB, 2018). According to this population, the required sample size with confidence level 95% and confidence interval 5 is 384. Considering that 526 respondents participated in the survey, the author may consider that its results are attributable to all residents of Latvia. However, it must be noted that research is limited by online survey and potentially important segments of the population of small towns and rural communities could be excluded from its results.

In total 370 female (70.3%) and 136 male (25.9%) participated in the survey in different age groups from 13 to 64 years and 20 respondents did not indicate their gender. The majority of respondents represent the age group from 18 to 24 years (47.15%), the second largest age group is from 25 to 34 years with 27% share of the total number of respondents. 11.03% of respondents participated in survey represent the age group from 35 to 44 years, 5.32% of respondents participated in the survey represent age group from 45 to 54 years, 2.66% of respondents are in the age group 55 – 64 and 0.76% of respondents are in the age group 13 – 17, but 6.08% of respondents did not mention their age. In addition, taking into account that marketing communications directed to the control of the spread of HIV are often segmented by sexual orientation of the target audience, respondents were asked to indicate their sexual orientation. Respondents' answers were divided as follows: heterosexual - 390 (74.14%), homosexual - 50 (9.51%), bisexual - 48 (9.1%) and 38 (7%) respondents did not indicate their sexual orientation. According to the statistics of the Centre for Disease Prevention and Control of Latvia the highest number of newly diagnosed HIV cases in recent years is among the heterosexual population, but the number of newly diagnosed HIV cases by homosexual transmission decreases (CDPC, 2018), so it was important to clarify existing knowledge about HIV by segmenting the respondents by sexual orientation.

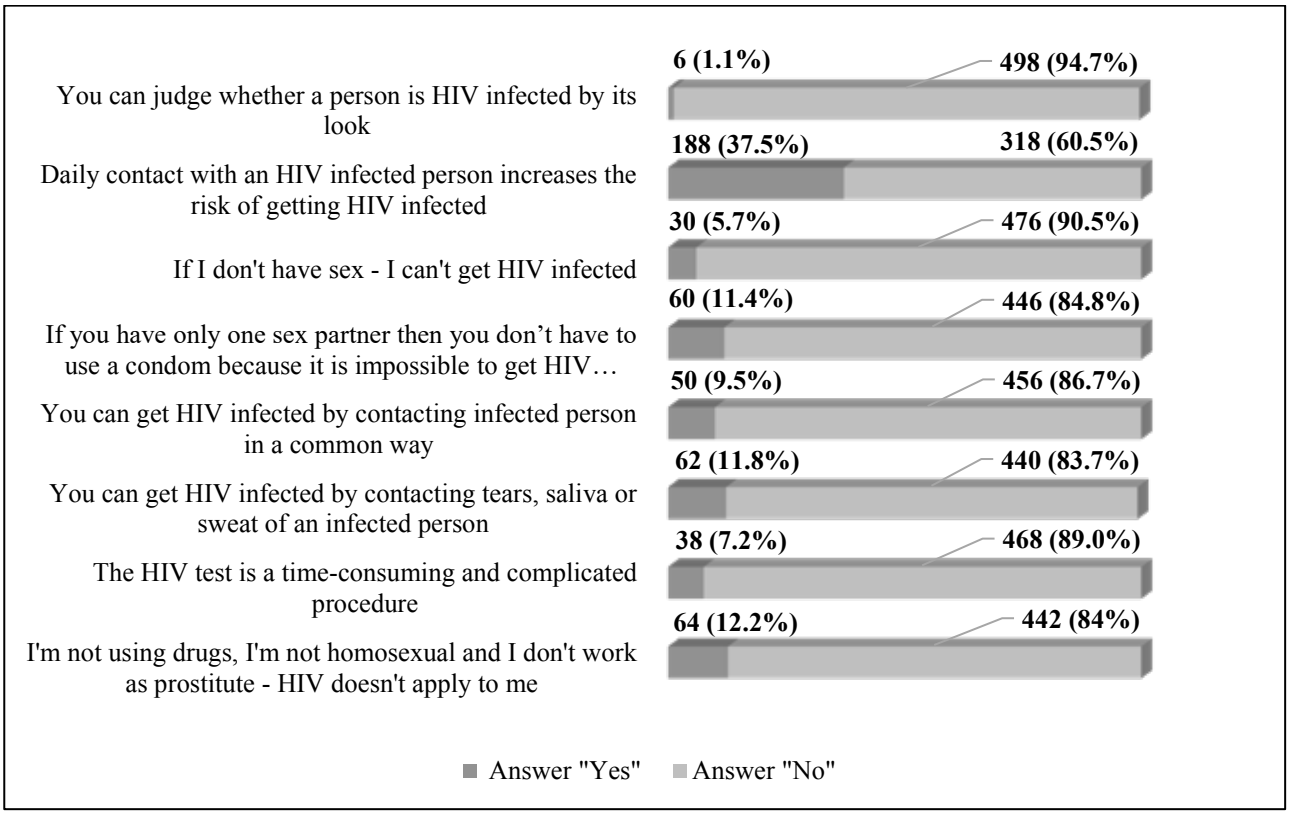
To understand how respondents estimate their existing knowledges about HIV infection they were asked to evaluate it by scale from 1 to 10 (where 1 – very weak, 10 – very good). In total 520 respondents selfassessed their existing knowledges. In general, respondents evaluated their knowledge as good, where mean is 7.14, median – 8, mode – 8. Based on the results of previous studies of implemented HIV spread control measures and marketing communications addressed to society and to test the research hypothesis *H1*, as well as to find out whether respondents' self-assessment of their existing knowledges about HIV infection is true or false, respondents were advised to evaluate 11 statements about HIV infection by indicating “yes” if respondent agrees to the statement or “no” if respondent disagrees to the statement. The statements were made in such way that 3 of them were true and 8 false; in the survey these statements were ranked alphabetically so that the respondents did not get the impression that their responses were affected. The distribution of answers of evaluation of true statements about HIV among respondents is summarised in figure 1.



Source: author's construction based on the survey data (October, 2018)

Fig. 1. **The distribution of answers of evaluation of true statements about HIV among respondents**

Data in figure 1 shows that the majority of respondents are able to identify almost all possible risks of HIV infection what also corresponds to the respondent's self-assessment of their existing knowledges about HIV infection. However, it should be noted that the majority of respondents are not able to fully identify all possible risks of infection of HIV as 95.8% indicate that it's possible to get HIV during unprotected sex and 94.3% indicate that it is possible to become infected by the contacting blood of the infected person, but the same time only 87.5% say that a HIV positive mother is able to infect her child during pregnancy, childbirth and breastfeeding what is also consistent with CDPC statistics which shows that newly diagnosed HIV cases by vertical transmission in Latvia are recorded every year (CDPC, 2018).



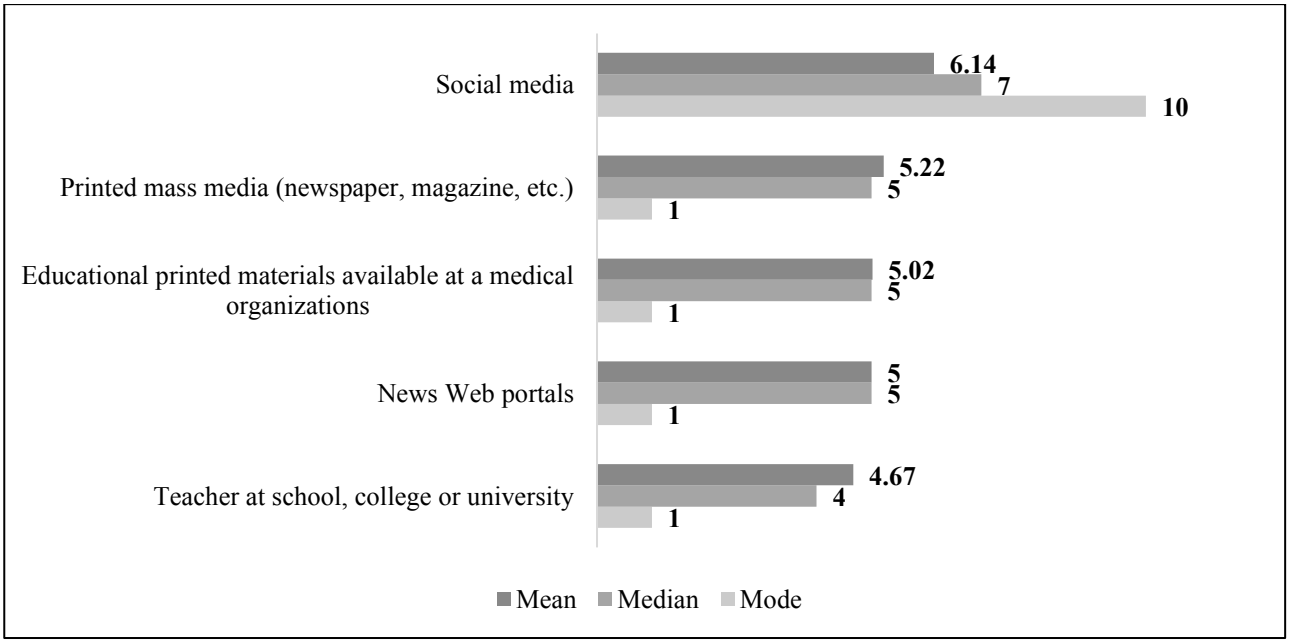
Source: author's construction based on the survey data (October, 2018)

Fig. 2. **The distribution of answers of evaluation of false statements about HIV among respondents**

The same time 11.4% of respondents believe that if a sexual intercourse is only with one partner then condom may not be used during the sex (see figure 2). However, this is completely does not match the truth because also the partner may not be aware of being infected. Also the respondents' evaluation of statement that daily contact with an HIV-infected person increases the risk of infection (35.7% of respondents marked answer "yes") confirms that respondents do not have a complete understanding of possible ways of HIV infection. In fact, if precautionary measures are taken, for example protected sex, avoiding a contact with a blood of an infected person, then getting infected with HIV is not possible by interacting with HIV-positive person daily, even if there was a contact with HIV-positive person other body fluids such as tears, saliva and sweat. Considering the research results it can be concluded that hypothesis *H1* is proved as majority of the respondents can't fully identify almost all possible ways of infection by HIV.

There was a statistically significant correlation observed with a probability higher than 99%, or a significance level below 0.01, between the gender of the respondents and their evaluation that the mother could infect her baby during pregnancy, breastfeeding or during childbirth. This correlation indicates that women more than men are aware of the risk of infecting their children through vertical transmission. Also statistically significant correlation with a probability higher than 99%, or a significance level below 0.01, indicate that the lower is the age of the respondents, the more often respondents believe that a condom may not be used during the sex if a sexual intercourse is only with one partner, what could be explained by the fact that caring for your health and full confidence in your life partner goes hand in hand with life-long experience.

Based on the evaluation of results of previous studies of implemented HIV spread control measures and marketing communications addressed to society 19 different sources of educational information about HIV were derived. In order to understand what are the channels of marketing communications through which respondents most often receive information about HIV they were asked to evaluate these information sources by the scale from 1 to 10 (where 1 – never, 10 – always). Five the most popular information sources about HIV among respondents are shown in figure 3.

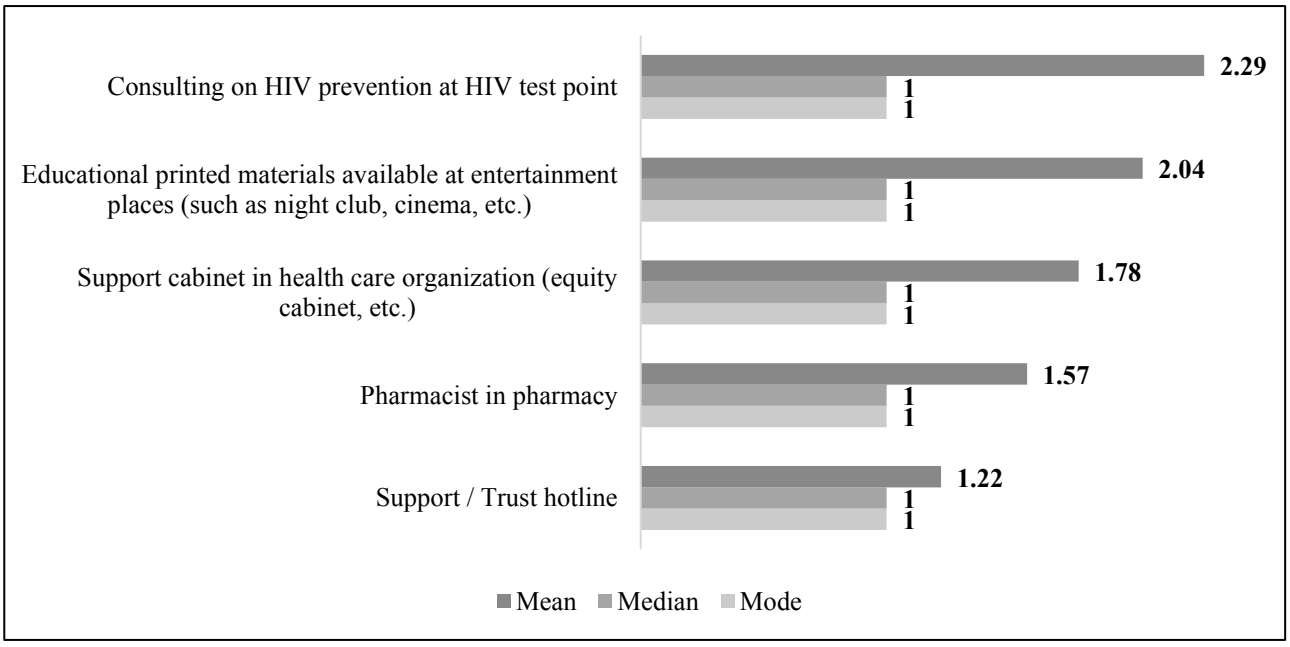


Source: author's construction based on the survey data (October, 2018)

Fig. 3. **The most popular information sources about HIV among respondents**

It can be observed that social media (networks) are the most popular source of information as well as the source of education about HIV among respondents. This could be explained by the fact that in Latvia more than a half of the population aged 15 to 74 use social networks on a daily basis, as well as, for example, for a social network like Facebook, in 2018 the average daily audience share has increased compared to 2017 (TNS Kantar, 2018). The fifth most popular source of educational information is a teacher at school or another educational organization what is also consistent with the Action Plan for Preventing the Prevalence of HIV, Sexually Transmitted Infections, Hepatitis B and C for 2018-2020 which includes the education of 1500 teachers with the aim to develop their skills and knowledges how to communicate with students on health education issues including HIV / AIDS and sexually transmitted infections prevention (MK 630, 2017). A statistically significant correlation with a probability higher than 99%, or a significance level below 0.01, indicates that the teacher is one of the most frequently used sources of information among young respondents – the lower the age the more often an information is obtained from this source of information.

As five the most unpopular information sources about HIV among respondents were indicated support / trust hotline, pharmacists in pharmacies, support cabinet in health care organization and consulting on HIV prevention at HIV test point (see figure 4). Despite the fact that these information and education sources about HIV not only provide the support of people already facing HIV, but also for those who want to get more information on how to protect themselves from infection, such results, perhaps, could be explained by the fact that people are turning to these sources of information in the case when they already faced HIV (got HIV infected themselves or their partner, relatives or friends).



Source: author's construction based on the survey data (October, 2018)

Fig. 4. **The most unpopular information sources about HIV among respondents**

In order to test research hypothesis *H2* and to find out the marketing communication channels through which respondents obtain true or false information about HIV the correlation analysis was performed. No statistically significant correlation was observed between educational information sources about HIV and actual knowledges among respondents about HIV infection. Thus, it can't be concluded that only one or a few of the marketing communication channels provide true information to the respondents about HIV and how to protect themselves from it. Such results also means that hypothesis *H2* was not proved. But it should be noted that a statistically significant correlation with a probability higher

than 99%, or a significance level below 0.01, was observed between information sources such as print media, medical practitioners and the false statement "I do not use drugs, I am not homosexual and do not engage in prostitution - HIV does not apply to me !". This correlation can be explained by the fact that marketing communication messages are often segmented according to the target audience, such as intravenous drug users, prostitutes and homosexuals as these groups traditionally are considered to be high risk groups.

Thus, summarizing existing respondents' knowledges about HIV and the findings of previous studies of implemented HIV spread control measures and marketing communications addressed to society it's impossible to unequivocally claim that a particular source of information serves as a true or false information source about HIV. However, considering the previous segmentation of the marketing communications according to target audience, its creators need to plan the marketing communication channels and its content very carefully, so that the communication message reaches the target audience correctly and encourage its social efficiency. For many years intravenous drug users, prostitutes and homosexuals were considered to be in a high risk group to be get infected by HIV. However, the analysis of newly diagnosed HIV case statistics shows that the number of cases of direct heterosexual transmission has increased in recent years. Hence, it could be suggested that heterosexual people formed a false understanding about HIV if they are faced with a marketing communication message what is targeted to audience which traditionally has been considered as a high risk group, so heterosexuals do not apply this information to themselves and consider that they are not at risk of HIV. Therefore, the creators of the content of marketing communication messages should pay special attention to how to convey the correct message to this group of people to achieve set goals. Because it's impossible to unequivocally claim that a particular source of information serves as a true or false information source about HIV, therefore, despite the fact that in recent years the number of active users of social networks in Latvia has increased, marketing communications should not be communicated only through this channel, but also the use of other communication channels should be adapted to the habits of usage of marketing communication channels of target audience in order to reach the target audience of marketing communications and its efficiency.

Conclusions, proposals, recommendations

Based on the results of the research the author of the paper makes the following conclusions, proposals and recommendations:

1. The majority of respondents are able to identify almost all possible ways of infection of HIV, what corresponds to the high respondents' self-assessment of their knowledges about HIV infection. However, it should be noted that a majority of respondents are not able to fully identify all possible risks of infection of HIV, so it can be concluded that hypothesis *H1: respondents can't fully identify all possible ways of infection by HIV* is proved.
2. There is a lack of full understanding about the potential ways of infection by HIV among respondents what is proved by the fact that 1/3 of respondents indicated that daily contact with an HIV-infected person increases the risk of HIV infection. Such understanding and perception among respondents hinder the integration of HIV-infected people into society and boost their reluctance to disclose their HIV positive status to others.
3. The most popular information source about HIV, as well as the educational source, are social media (networks). This could be explained by the fact that in Latvia more than a half of the population aged 15 to 74 use social networks on a daily basis. Also a statistically significant correlation with a probability higher than 99%, or a significance level below 0.01 indicates that the teacher is one of the most frequently used

information sources about HIV among young respondents – the lower the age, the more often the information is obtained from this source of information, therefore, it's necessary to continue to develop the skills and knowledges of teachers how to communicate with students on health education issues.

4. The most unpopular information sources have been indicated a support / trust hotline, pharmacists in pharmacies, support cabinet in health care organization and consulting on HIV prevention at HIV test point.
5. Summarizing the existing knowledges of respondents about HIV and previously held studies and marketing communications addressed to society, it's impossible to unequivocally claim that a particular source of information serves as a true or false source of information about HIV, what means that research hypothesis *H2: there is statistically significant correlation that indicates the marketing communication channels through which respondents obtain true or false information about HIV* was not proved.
6. Considering the previous segmentation of the marketing communications by target audience, its creators need to plan the marketing communication channels and its content very carefully, so that the communication message reaches the target audience correctly and encourage its social efficiency, because for many years intravenous drug users, prostitutes and homosexuals were considered to be as high risk group to get infected by HIV. However, the analysis of newly diagnosed HIV case statistics shows that the number of cases of direct heterosexual transmission has increased in recent years. Thus, it could be concluded that, perhaps, heterosexual people formed a false understanding about HIV if they are faced with a marketing communication message what is targeted to audience that has traditionally been considered as a high risk group, so heterosexuals do not apply this information to themselves and consider that they are not at risk of HIV.
7. Despite the fact that in recent years the number of active users of social networks in Latvia has increased, marketing communications should not be communicated through this channel only, but the use of other communication channels should be adapted to the habits of usage of marketing communication channels of target audience in order to reach the target audience of marketing communications and its efficiency.
8. The findings of this study will help to improve the content of marketing communications and use of an appropriate communication channel suitable for the certain target audience, in order to achieve its social efficiency.
9. Based on the assumption which follows from this research that heterosexuals do not apply previously held marketing communication messages to themselves and consider that they are not at risk of HIV the research of understanding and perception of marketing communication messages about HIV infection and risks connected to it among heterosexual population must be conducted.

Bibliography

Apvienība HIV.LV, 2018. *Projekti un to dokumentācija.* [Online] Available at: http://www.apvienibahiv.lv/projekti. [Accessed 11 November 2018].

Belch, G. E., Belch, M. A., 2007. *Advertising and promotion: An Integrated Marketing Communications Perspective.* Boston: McGraw-Hill.

CDPC, 2018. *The Centre for Disease Prevention and Control of Latvia. HV/AIDS Statistics*. [Online] Available at: https://www.spkc.gov.lv/lv/statistika-un-petijumi/infekcijas-slimibas/datu-vizualizacija/hivaids. [Accessed 17 August 2018].

Cheng, H., Kotler, Ph. & Lee, N., 2011. *Social Marketing for Public Health: Global Trends and Success Stories.* Sudbury, Mass.: Jones and Bartlett.

CSB, 2018. The population in Latvia. [Online] Available at: https://www.csb.gov.lv/lv/statistika/statistikas-temas/iedzivotaji/iedzivotaju-skaits/galvenie-raditaji/iedzivotaju-skaits-ta-izmainas-un-blivums. [Accessed 11 May 2018].

Dias, M. & Agante, L., 2011. Can advergames boost children's healthier eating habits? A comparison between healthy and non-healthy food in *Journal of Consumer Behaviour,* 10: 152 – 160.

DIALOGS, 2018. *DIA+LOGS projekti* [Online] Available at: http://www.diacentrs.lv/?projekti/dia-logs-projekti.html. [Accessed 11 November 2018].

Donovan, R., Henley, N., 2010. *Principles and Practice of Social Marketing: An International Perspective.* Cambridge: Cambridge University Press.

ECDC/WHO, 2018. *ECDC/WHO HIV/AIDS surveillance in Europe 2018 – 2017 data.* [Online] Available at: http://www.euro.who.int/__data/assets/pdf_file/0004/386959/HIVAIDS-surveillance-in-Europe-2018.pdf. [Accessed 05 December 2018].

Ejaz, I., Shaikh, B. T. & Rizvil, N., 2011. *NGOs and government partnership for health systems strengthening: A qualitative study presenting viewpoints of government, NGOs and donors in Pakistan.* [Online] Available at: https://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-11-122. [Accessed 08 December 2018].

Fortenberry, J. L., 2013. *Nonprofit marketing.* Burlington: Jones and Bartlett.

Kotler, Ph. & Lee, N. R., 2008. *Social Marketing: Influencing Behaviours for Good, 3rd ed.* Los Angeles: SAGE.

Liang, B. & Scammon, D.L., 2011. E-Word-of-Mouth on health social networking sites: An opportunity for tailored health communication in *Journal of Consumer Behaviour,* 10: 322 – 331.

Marshall, D., O'Donohoe, S. & Kline, S., 2007. Families, food, and pester power: Beyond the blame game? in *Journal of Consumer Behaviour,* 6: 164 – 181.

Martin, I. M. & Kamins, M. A., 2010. An application of terror management theory in the design of social and health-related anti-smoking appeals in *Journal of Consumer Behaviour,* 9: 172 – 190.

Mercer, M. A., Liskin, L. A., 1991. The role of non-governmental organizations in the global response to AIDS in *AIDS Care*, 3 (3): 265 – 271.

MK 589, 2014. *Cabinet of Ministers of Latvia. About Public Health Guidelines 2014-2020. Order Nr. 589, 14.10.2014.* [Online] Available at: https://likumi.lv/doc.php?id=269591. [Accessed 12 October 2018].

MK 630, 2017. *Cabinet of Ministers of Latvia. Action plan for limiting the spread of HIV infection, sexual transmission infections, hepatitis B and C, 2018-2020. Order Nr. 630, 31.10.2017.* [Online] Available at: https://likumi.lv/ta/id/294753-par-hiv-infekcijas-seksualas-transmisijas-infekciju-b-un-c-hepatita-izplatibas-ierobezosanas-ricibas-planu-2018-2020-gadam. [Accessed 12 October 2018].

Neuman, W. L., 2006. *Social Research Methods: Qualitative and Quantitative Approaches. 6th edition*. Boston: Pearson.

Noar, S. M., Palmgreen, P., Chabot, M., Dobransky, N., & Zimmerman, R. S., 2009. A 10-year systematic review of HIV/AIDS mass communication campaigns: have we made progress? in *Journal of Health Communication,* 14:15–42.

Sweat, M. D., Denison, J., Kennedy, C., Tedrow, V., & O'Reilly, K., 2012. Effects of condom social marketing on condom use in developing countries: a systematic review and meta-analysis, 1990–2010 in *Bulletin of the World Health Organization*, 90: 613–622A.

Thomas, R. K., 2010. *Marketing Health Services, 2nd ed.* Chicago: AUPHA.

TNS Kantar, 2018. *TNS Kantar. WEB sites TOP 15.* [Online] Available at: http://www.kantartns.lv/11499-2/. [Accessed 17 December 2018].

UN, 2001. *United Nations. Declaration of Commitment on HIV/AIDS.* [Online] Available at: http://www.unaids.org/sites/default/files/sub_landing/files/aidsdeclaration_en_0.pdf. [Accessed 05 December 2018].

UN, 2018. *United Nations. AIDS.* [Online] Available at: http://www.un.org/en/sections/issues-depth/aids/index.html. [Accessed 05 December 2018].

Wang, D., Mei, G., Xu, X., Zhao, R., Ma, Y., Chen, R., Qin, X. & Hu, Z., 2016. Chinese non-governmental organizations involved in HIV/AIDS prevention and control: Intra-organizational social capital as a new analytical perspective in *BioScience Trends*, 10 (5): 418-423.

A FIRM'S ORGANIZATIONAL INNOVATION AND ORGANIZATIONAL LEARNING ABILITIES

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Abstract. Many recent studies are dedicated to the problem of innovation as a mean of improving a firm's overall performance. Various kinds of innovation in a firm usually are closely interrelated with each other. While the majority of studies focus on technological - product and process - innovation, the investigation of non-technological - marketing and organizational - innovation (ORI), has increasingly attracted the interest of researchers during the last decade. Organizational culture and organizational learning are important drivers of such innovation. For instance, a collaborative culture, trust and open-mindedness encourage new initiatives and ideas, while learning helps not just to improve skillsets and abilities of individual employees, but can also greatly contribute to strategic knowledge management and building a resilient, innovative organization.

This study examines the relationship between a firm's organizational learning ability and its organizational innovation performance. The authors consider such factors as Learning Intention – seeing learning as a key investment and organizational commitment to it, and Openness - open-mindedness and organizational culture open to new ideas and worldviews. This study contributes to the theory of ORI by finding the answer to the question what impact these factors could have on ORI development in a firm.

The findings are based on a quantitative analysis of more than 150 small and medium-sized enterprises surveyed in Russia and Latvia. The survey questions measuring ORI performance were developed in line with the widely used definition introduced in the OECD - Eurostat Oslo Manual. The scales for organizational learning were adopted from the previous studies elaborated this area of a firm activity. The survey compared a firm's innovation performance to that of its closest competitors.

This research demonstrates that some of the elements of organizational learning positively influence ORI activity. The results also suggest that Latvian companies differ from Russian ones in terms of their organizational learning intention.

Key words: *innovation, organizational innovation, organizational learning, knowledge management, organizational culture*

JEL code: D83, O31

Introduction

Many recent studies are dedicated to the problem of innovation as a mean of improving a firm's overall performance. Different kind of innovation in a firm usually are closely interrelated with each other. While the majority of studies focus on technological - product and process - innovation, the investigation of non-technological - marketing and organizational - innovation (ORI), has increasingly attracted the interest of researchers during the last decade. Organizational culture

(OC) and organizational learning are important drivers of such innovation.

For instance, a collaborative culture, trust and open-mindedness encourage new initiatives and ideas. OC through collective values, behaviors and practices can significantly impact long-term thinking, risk-taking abilities and understanding of responsibility, thus increasing the innovation activity of a firm (King, 2007; Turró et al., 2014). It can also influence attitudes towards independence, risk and the distribution of power (Shane, 1994; Tan, 2002; Alvarez and Urbano, 2012). Culture can affect productivity through decision-making process, increasing organizational resilience and forming attitudes towards social equality (Throsby, 2001). Finally, culture shapes the form and effectiveness of leadership (Aktas et al., 2015).

And organizational learning helps not just to improve skillsets and abilities of individual employees, but can also greatly contribute to strategic knowledge management and building a resilient, innovative organization. Numerous scholars (e.g., Argyris & Schön, 1978) consider a firm as the entity for collective learning process and argue that the impact of organizational learning on innovation is positively strong (e.g., Nonaka &Takeuchi, 1995). However, the majority of these studies were investigating the phenomenon of the technological innovation. The non-technological innovation, which is a relatively new concept despite of its introduction in the beginning of the last century (Schumpeter, 1934) has not been attracting attention of researchers for a long period probably because of its unclear definition and various concepts that were associated with it.

In a previous study, the authors concluded that organizational learning and knowledge creation are positively related to organizational innovation and that those factors amongst Latvian and Russian companies could be explored further (Apsalone et al., 2017; Dukeov at al., 2018).

Thus, this study examines the relationship between a firm's organizational learning ability and its organizational innovation performance. The authors consider such factors as knowledge generation and learning intention – seeing learning as a key investment and organizational commitment to it, and creativity - openness - open-mindedness and organizational culture open to new ideas and worldviews. This study contributes to the theory of ORI by finding the answer to the question what impact these factors could have on ORI development in a firm.

Conceptual background and framework development

Organizational Innovation. Previous studies have demonstrated that innovation provides companies competitive advantage (Damanpour et al. 1989; Schulz and Jobe 2001). For this study, organizational innovation (ORI) is defined according to the "Oslo Manual" by OECD and EUROSTAT as *"the implementation of a new organizational method in business practices, workplace organization or external relations"* (OECD-EUROSTAT, 2005: 51). Thus, an organizational innovation shall be based on strategic management decisions to implement new organizational methods in business practices, improve workplace organization or external relations.

Organizational innovation has been broadly studied and number of definitions exist (e.g., Mothe and Thi, 2010). ORI can be applied at different levels and departments, ORI can also relate to the overall structure or the functional principles of the firm (Wengel et al., 2002). Some studies suggest ORI as firms' responses to technological innovations. Nevertheless, ORI can play and independent role for firm's development as a distinct form of innovation (Tidd at al., 2005).

Three main types of ORI can be distinguished - business practices, workplace organization (distribution of responsibilities) and external relations.

Firstly, ORI might implement new procedures in processes and operations (Som et. al., 2012). These are innovations in management practices (IMP). IMP innovations include quality management, lean, risk-management systems that

directly impact the organizational performance. (Wheelwright and Clark, 1992; Reed et al., 2000; Ichniowski et al., 1997; OECD-EUROSTAT, 2005). IMP refers also to new organizational structures and administrative procedures enhancing firm's capabilities to take risks, as well as transparency to new internal and external ideas (Han et al., 1998; Lin and Chen, 2007).

Secondly, ORI might implement new methods in workplace organization (IWO) (OECD-EUROSTAT, 2005; Som et al., 2012). IWO aims at improving business performance through know-how and creative working environment (Scott and Bruce, 1994; Mothe and Thi, 2010). IWO is also closely linked to the organizational culture, as certain working practices foster innovation by shaping attitudes towards independence, risk and the distribution of power (Shane, 1994; Tan, 2002; Alvarez and Urbano, 2012).

Thirdly, ORI include innovations in external relations (IER) by decreasing organizational barriers of the external environment and supporting the interaction with external environment (Heidenreich, 2009; Rammer et al., 2009). IER demonstrates, how a firm is making its network activities (Mothe and Thi, 2010). According to the OECD-EUROSTAT (2005: 51), ORI can be *"intended to increase a firm's performance by reducing administrative or transaction costs, enhancing labor productivity by improving workplace satisfaction, gaining access to non-tradable assets (such as non-codified external knowledge), or reducing costs of supplies"*.

Organizational Learning Ability. Several studies stress the crucial role of knowledge generation in innovation activity development of a firm (Lam, 2000; Lam and Lundvall, 2006). Lam (2010) argues that due to the fact that conditions underlying the innovation processes in a firm are social, they considerably depend on the organizational structure and the processes taken place within the firm. Many studies related to innovation consider the very process of innovation as one based on creativity (Glynn, 1996), as well on ability to learn effectively (Argote, 1999; Senge, 1990; Agyris and Schon, 1978) and generate knowledge that is new for the firm (Nonaka, 1994; Nonaka and Takeuchi, 1995; Nonaka and von Krogh, 2009). Lam (2010) states that the efficiency of the innovation process is very much based on the knowledge that a firm can absorb from the external environment. On the other hand, if innovation is a tool of converting knowledge into added value, continuous knowledge acquisition is the essential process for innovation. That also means the firms with high innovation activity should learn on how to learn as they must experience the constant necessity on new knowledge obtaining (Senge et al., 1990).

Knowledge generation, in turn, is closely related to creativity (e.g., Baker and Sinkula, 1999; Calantone et al., 2002). A firm that established its orientation on learning should continuously looking for the new forms of organizing this learning process and knowledge generation (Biemans, 1995; Jaworski and Kohli, 1993; Stathakoloulos, 1998).

Creativity is the process of making new things by using the existing knowledge in a new way Maley (2003). The process of creativity means to create an additional value. Many scholars tried to define creativity by focusing on particular aspects. According to Barron (1955) creativity has to be effective and original. The opposite view was expressed by Corazza (2016), who argued that it is not necessary for the creativity to have as the end product something original or effective and suggested that creativity is something that is perceived not as a routine-like action or matter. Previous studies show that creativity is often a precondition for innovation, as it underlies the process of thinking "outside-the-box" as well as enhances thinking on how to do the things in a new way and create a value at the same time (Zhou & George, 2001; Liu at al., 2017).

Thus, the authors propose two constructs to describe organizational learning processes in a company: knowledge generation and creativity, and propose the following hypotheses:

H1a: Knowledge generation is one of the main factors positively influencing IMP;

H1b: Knowledge generation is one of the main factors positively influencing IWO;

H1c: Creativity is one of the main factors positively influencing IMP;

H1d: Creativity generation is one of the main factors positively influencing IWO.

Organizational Culture. OC can be defined as *"a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems"* (Schein, 1985: 17). Culture explains the way, how a group of people commonly decide and solve problems, culture also includes past learnings that are shared with new members of the group (Louis, 1980). Previous studies have listed OC as a significant factor for knowledge management – it influences generation of knowledge and affects the relations between individual and organizational knowledge (David and Fahey, 2000). Empowering and inclusive culture helps to develop trust between individuals and groups (ibid), thus fosters sharing of ideas and knowledge (Davenport and Prusak, 1998). OC can also provide basis for participation in organizational learning that requires a high degree of commitment (Gupta et al, 2000).

López et al (2004) encouraged enterprises to create favorable working environments with a collaborative culture - long-term vision, communication and dialogue, trust, teamwork, empowerment, ability to tolerate ambiguity, risk assumption as well as respect and diversity – in order to improve organizational learning.

To assess the impact of the OC on organizational learning and ORI, the culture was structured using four dimensions adopted from the competing values framework by Denison and Spreitzer (1991). It demonstrates dilemmas between stability and change on one hand and internal and external environment on another. The framework consists of two axes – centralization vs decentralization and competition vs the maintenance of the sociotechnical system (Denison and Spreitzer, 1991). Thus, four dimensions of the OC can be developed – human relations model (the team), open systems model (the adhocracy), rational goal model (the firm) and internal process model (the hierarchy). This study adopted them as the team, development, result, as well as consistency orientation.

Thus, the authors propose the following hypotheses:

H2a: Team orientation of a firm is one of the main factors positively influencing IWO;

H2b: Team orientation of a firm is one of the main factors positively influencing IER;

H2c: Development orientation of a firm is one of the main factors positively influencing IWO;

H2d: Development orientation of a firm is one of the main factors positively influencing IER;

H2e: Result orientation of a firm is one of the main factors positively influencing IWO;

H2f: Consistency orientation of a firm is one of the main factors positively influencing IMP.

Methodology of the study

A structured, closed-ended questionnaire was developed to test the research questions. Questionnaire items measuring organizational learning were adopted from studies of Griese, Pick and Kleinaltenkamp (2012) and Zortea-Johnston (2012). Creativity was measured using such indicators as the value of open-mindedness, encouraging to think "outside of the box," rewarding people for people for creativity and innovation, building and supporting cross-functional expert teams and initiating creative dialogues. Another learning indicator – knowledge generation – was measured through seeing learning as an investment not as an expense, seeing learning as a key necessity for organizational survival, considering learning as a key value for improvement, systematically identifying the need of knowledge relevant to manage the competitive position, checking, whether the knowledge base is reasonably extended through the new generated knowledge and defining strategic goals for generation of knowledge concerning customers, competitors, and markets.

Questionnaire items measuring organizational culture were mainly self-operationalized. Questionnaire items measuring innovation performance were developed based on the definitions provided in the Oslo Manual (OECD-

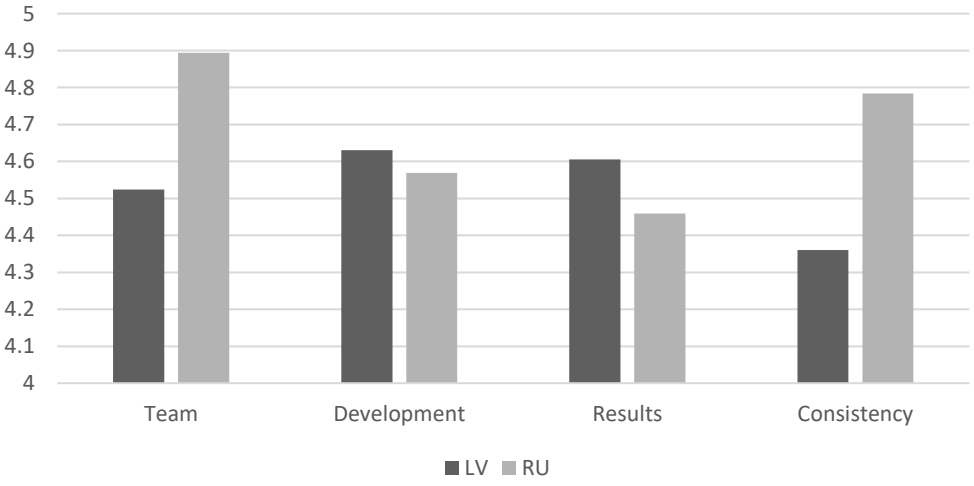
EUROSTAT, 2005), as well as from other studies (Eurostat, 2012; Dadura and Lee 2011). The authors respondents to compare innovation performance in their company to the innovation performance by their competitors using a seven-point Likert scale (where 1 corresponds to ‘‘strongly disagree’’ and 7 corresponds to ‘‘strongly agree’’). Given that only meaning on the end-points was provided, the authors assume that the variables are measured on a continuous scale.

Few background questions were also included to understand the profile of companies, such as the annual turnover and number of employees. Profile variables were measured using a nominal scale. This study included enterprises with no more than 1000 employees. Such an approach allowed to include more businesses in the scope of analysis, at the same time excluding large industry leaders with different factors affecting innovation processes. In total 134 completed questionnaires were collected.

Research results and discussion

Assessing organizational learning indicators in the surveyed companies, this study concludes that both creativity and knowledge generation were rather common, however creativity was more highly rated than knowledge generation – 4.8 vs 4.3 in a scale from 1 to 7. Russian companies were more creative, while Latvian companies had stronger knowledge generation abilities and processes.

When assessing organizational culture, this study concludes that Latvian companies have a stronger tendency towards development and results, while Russian companies – towards team and consistency (Fig. 1). Three dimensions, describing team, development and result organization of an organizational culture, were rather closely related to each other. Thus, companies with stronger orientation towards team, had stronger orientation towards development and achievements. Orientation towards consistency was moderately linked to the other dimensions.



Source: authors' calculations based on survey data

Fig. 1. **Dimensions of organizational culture**

All organizational culture indicators were linked to organizational learning indicators (Table 1). Team and development orientation had the strongest relation to creativity (Pearson Correlation .698 and .871 respectively), while result orientation and consistency – to knowledge generation (Pearson Correlation .684 and .523).

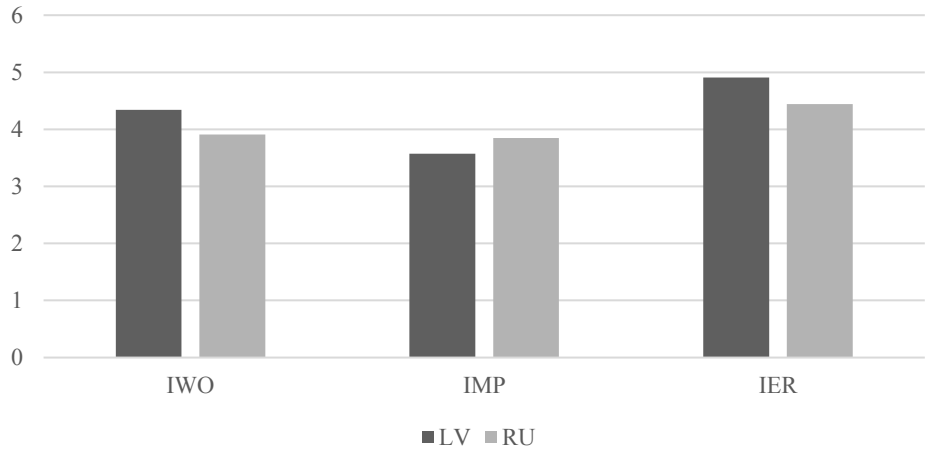
Table 1

Relations between organizational culture and learning indicators

		Team	Development	Results	Consistency
Creativity	Pearson Correlation	.698**	.871**	.632**	.250**
	Sig. (2-tailed)	0.00	0.00	0.00	0.00
	N	131	131	131	131
Knowledge generation	Pearson Correlation	.638**	.761**	.684**	.523**
	Sig. (2-tailed)	0.00	0.00	0.00	0.00
	N	130	130	130	130

Source: author's construction based on survey data

Organizational innovation in workplace organization and external relations was more common in Latvian companies, while innovation in management practices – in Russian companies. From the innovation indicators, IWO and IER were more developed in the surveyed companies, compared to IMP (Fig. 2). All types of organizational innovation were positively related to organizational learning and all dimensions of organizational culture.



Source: authors' calculations based on survey data

Fig. 2. **Organizational innovation performance**

The relationship between organizational culture, organizational learning and organizational innovation performance is further assessed, using multiple linear regression analysis. The assumptions for the analysis are the following: dependent and independent variables are measured on the continuous scale (for this analysis the authors consider the scale as interval, considering that only endpoints were indicated), and the observations are independent (assessed with Durbin-Watson for each of the regression models).

By using a multiple linear regression model with stepwise variable entry method (criteria: Probability-of-F-to-enter <= .050, Probability-of-F-to-remove >= .100), IWO can be seen as a function of knowledge generation and result orientation that explain 34% variation in the IWO performance (Table 2). Durbin-Watson statistic is in a range from 1.5 to 2.5, and the corresponding ANNOVA analysis indicates that the model is good fit for the data ($F(2, 121) = 31.626$, $p < .0005$).

Table 2

IWO Regression Model

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
.586	.343	.332	1.153	.046	8.461	1	121	.004	1.964

Predictors: (Constant), result orientation, knowledge generation, dependent Variable: IWO
Source: author's construction based on survey data

Considering this, the hypotheses H1b and H2e can be accepted as proposed in the paper.

IER can be seen as a function of development orientation, the model explains 17.5% variation in the IER performance (Table 3). Durbin-Watson statistic is in a range from 1.5 to 2.5, and the corresponding ANNOVA analysis indicates that the model is good fit for the data ($F(1, 124) = 26.321$, $p < .0005$).

Table 3

IER Regression Model

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
.418	.175	.168	1.546	0.175	0.175	1	124	.000	1.806

Predictors: (Constant), development orientation, dependent Variable: IER
Source: author's construction based on survey data

Considering this, the hypotheses H1b and H2e can be accepted as proposed in the paper. Considering this, the hypothesis H2d can be accepted as proposed in the paper.

IMP can be described as function of knowledge generation and consistency. The model explains 42.7% of the variation in IMP (Table 4). Durbin-Watson statistic is in a range from 1.5 to 2.5, and the corresponding ANNOVA analysis indicates that the model is good fit for the data ($F(2, 123) = 45.909$, $p < .0005$).

Table 4

IMP Regression Model

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
				R Square Change	F Change	df1	df2	Sig. F Change	
.654	.427	.418	1.017	.046	9.887	1	123	.002	1.902

Predictors: (Constant), knowledge generation, consistency orientation, dependent Variable: IMP
Source: author's construction based on survey data

Considering this, the hypotheses H1b and H2e can be accepted as proposed in the paper. Considering this, the hypotheses H1a and H2f can be accepted as proposed in the paper.

Even though creativity has positively related to all organizational innovation indicators, according to this analysis it was not amongst the main factors influencing any particular sub-type, thus H1c and H1d cannot be supported. Similarly, team organization was positively related to all types of organizational innovation, while this dimension was not one of the main factors influencing any particular sub-type, thus H2a and H2b cannot be supported by this analysis. Finally,

development orientation of a firm was strongly positively related to IWO, however was not amongst the main factors influencing it, thus H2c cannot be supported by this analysis as well.

Conclusions, proposals, recommendations

This study aimed at exploring the relation between organizational culture, organizational learning and organizational innovation based on the sample of small and medium-sized enterprises from Latvia and Russia. There are not much studies focusing on organizational innovation and its connection to organizational culture as well as to organizational learning. At the same time all the aspects related to a firm's knowledge management processes and corporate culture cannot be considered without putting them in context of cultural and institutional specifics of the country where the firm operates (Hutchings & Michailova, 2006). From this perspective our research delivers the results tied to culture of two countries which allowed the authors to come up with some comparative analysis.

The results provided evidence that:

1. Organizational culture has strong, positive influence on both organizational learning and organizational innovation evolvement in a firm.
2. Organizational culture and organizational learning could partly explain all sub-types of organizational innovation. In particular, the knowledge generation ability was one of the key factors influencing IWO and IMP while the development orientation was one of the key factors influencing IER, and the result orientation was one of the main factors influencing IWO and consistency was one of the main factors influencing IWO.
3. The surveyed companies demonstrate the best performance on IWO and IER sub-type of organizational innovations, though performance on IMP sub-type of organizational innovations was relatively lower. Latvian companies demonstrated a better performance in IWO and IER, while Russian companies were stronger in implementing IMP sub-types of organizational innovation.

Based on the research results, the authors consider organizational culture as a cornerstone for developing creative and knowledge generating organizational environment. Such, in turn, positively contributes to organizational innovation performance.

For further research the authors recommend elaborating on differences between Latvian and Russian companies, assessing them in a broader context of main business activities and environment of their work. Base on the findings that a firm reflects to a certain degree the cultural heritage (Balabanova at al., 2018) it would be interesting to compare the state and privately owned companies. It would be valuable also to increase the number of the companies in the study and to consider the organizational innovation performance of companies in other countries of the region.

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Bibliography

Argote, L., 1999. *Organizational Learning: Creating, Retaining and Transferring Knowledge*. Norwell, MA: Kluwer Academic Publishers.

Aktas, M., Gelfand, M., and Hanges, P., 2015. Cultural Tightness–Looseness and Perceptions of Effective Leadership. *Journal of Cross-Cultural Psychology.* 47(2), 294-309.

Alvarez, C., & Urbano, D., 2012. Cultural-cognitive dimension and entrepreneurial activity: A cross-country study. *Revista de estudios sociales*, (44), 146-157.

Apsalone M., Dukeov I., Baumane-Vitolina I., Sumilo E., Berke-Berga A., 2017. *The impact of knowledge management, learning and socio-cultural factors on Innovation*. New Challenges of Economic and Business Development – 2017: Digital Economy. Riga, Latvia. [Online] Available at:

https://www.bvef.lu.lv/fileadmin/user_upload/lu_portal/projekti/bvef/konferences/evf_conf2017/Proceedings.pdf. [Accessed 15 January 2019].

Argyris, C. & Schön, D.A., 1978. *Organizational Learning: A Theory of Action Perspective*, Addison-Wesley, Reading, MA.

Baker, W.E. & Sinkula, J.M., 1999. The synergistic effect of market orientation and learning orientation on organizational performance. *Journal of the Academy of Marketing Science*, Vol. 27 No. 4, 411-27.

Balabanova, E., Rebrov, A., Koveshnikov, A., 2018. Managerial Styles in Privately Owned Domestic Organizations in Russia: Heterogeneity, Antecedents, and Organizational Implications. Management and Organization Review 14:1, 37–72

Barron, F., 1955. The disposition toward originality. *The Journal of Abnormal and Social Psychology*, 51(3), 478.

Biemans, W.G., 1995. The implementation of marketoriented development. *European Journal of Marketing*, Vol. 29 No. 5, 31-2.

Calantone, R.J., Cavusgil, S.T. & Zhao, Y., 2002. Learning orientation, firm innovation capability and firm performance. *Industrial Marketing Management*, Vol. 31 No. 6, 515-24.

Corazza, G. E., 2016. Potential originality and effectiveness: The dynamic definition of creativity. *Creativity Research Journal*, 28(3), 258-267

Damanpour, F., Szabat, K. A., & Evan, W. V., 1989. The relationship between types of innovation and organisational performance. *Journal of Management Studies*, 26, 587–602.

Davenport, T. H., & Prusak, L., 1998. *Working knowledge: How organizations manage what they know.* Harvard Business Press.

David, W., & Fahey, L., 2000. Diagnosing cultural barriers to knowledge management. *The Academy of management executive*, 14(4), 113-127.

Denison, D. R., & Spreitzer, G. M., 1991. Organizational culture and organizational development: A competing values approach. Research in organizational change and development, 5(1), 1-21.

Dukeov, I., Apsalone, M., Baumane-Vitolina, I., Bergman, J-P., Sumilo, E., 2018. A firm's organizational innovation and organizational knowledge management abilities. *New Challenges of Economic and Business Development – 2018: Productivity and Economic Growth*. Riga, Latvia, pp. 177-187.

Glynn, M. A., 1996. Innovative Genius: a Framework for Relating Individual and Organizational Intelligence to Innovation. *Academy of Management Review 21*, 1081-1111.

Griese, I., Pick, D., Kleinaltenkamp, M. 2012. Antecedents of knowledge generation competence and its impact on innovativeness. *Journal of Business & Industrial Marketing*, 27(6), 468 - 485.

Gupta, B., Iyer, L. S., & Aronson, J. E., 2000. Knowledge management: practices and challenges. *Industrial management & data systems*, 100(1), 17-21.

Heidenreich, M., 2009. Innovation patterns and location of European low- and medium-technology industries. *Research Policy*, 38 (3), 483-494.

Hutchings, K., & Michailova, S. 2006. The impact of group membership on knowledge sharing in Russia and China, *International Journal of Emerging Markets*, Vol. 1 Issue: 1, pp.21-34.

Ichniowski, C., Sha, K. & Prennushi, G., 1997. The effects of human resource management practices on productivity: a study of steel finishing lines. *American Economic Review*, 87(3), 291-313.

Jaworski, B. & Kohli, A.K., 1993. Market orientation: antecedents and consequences. *Journal of Marketing*, 57(3), 53-70.

King W. R., 2007. A Research Agenda for the Relationships between Culture and Knowledge Management. *Knowledge & Process Management,* 14 (3), 226–236.

Lam, A., 2000. Tacit knowledge, Organizational Learning, Societal Institutions: an Integrated Framework. *Organization Studies 21*, 487-513.

Lam, A., 2010. Innovative organizations: structure, learning and adaptation. *Innovation Perspectives for the 21st Century*, Madrid: BBVA, Spain, 163-175.

Lam, A. & Lundvall, B-Å., 2006. *The Learning Organization and National Systems of Competence Building and Innovation* in E. Lorenz and B- Å. Lundvall (eds.) How Europe's Economies Learn: Coordinating Competing Models, Oxford: Oxford University Press, 109-139.

Liu D., Gong Y., Zhou J., Huang J.-C., 2017. Human resource systems, employee creativity, and firm innovation: the moderating role of Firm ownership. *Academy of Management Journal*, 60(3), 1164–1188.

Lin, C.Y.Y. & Chen, M.Y.C., 2007. Does innovation lead to performance? An empirical study of SMEs in Taiwan. *Management Research News*, 30(2), 115-132.

Louis, M.R., 1980. Surprise and sense making: What newcomers experience in entering unfamiliar organizational settings, *Administrative science quarterly*, 226 - 251.

Mothe, C. & Thi, T.U.N., 2010. The link between non-technological innovations and technological innovation. *European Journal of Innovation Management*, 13(3), 313-332.

Nonaka, I., 1994. A dynamic theory of organizational knowledge creation, *Organization Science* 5, 14-37.

Nonaka, I. & Takeuchi, H., 1995. *The knowledge-creating company*. New York: Oxford University Press

OECD-EUROSTAT, 2005. *Oslo-Manual: Guidelines for Collecting and Interpreting Innovation Data*. 3rd Edition, Paris, OECD-EUROSTAT Publications.

Nonaka, I., & von Krogh, G., 2009. Perspective—Tacit Knowledge and Knowledge Conversion: Controversy and Advancement in Organizational Knowledge Creation Theory, *Organization Science 20*, 635-652.

Rammer, C., Czarnitzki, D. & Spielkamp, A., 2009. Innovation Success of Non-R&D-Performers: Substituting Technology by Management in SMEs. *Small Business Economics*, 33, 35-58.

Reed, R., Lemak, D. J. & Mero, N. P., 2000. Total quality management and sustainable competitive advantage. *Journal of Quality Management*, 5 (1), 5-26.

Senge, P., 1990. *The Fifth Discipline: the Art and Practice of the Learning Organization,* New York: Doubleday.

Schein, E.H., 1985. *Organizational culture and leadership*. John Wiley & Sons.

Schulz, M., & Jobe, L. A., 2001. Codification and tacitness as knowledge management strategies: an empirical exploration. *The Journal of High Technology Management Research*, 12(1), 139-165.

Senge, P., 1990. *The Fifth Discipline*, Doubleday, New York, NY.

Shane, S., 1994. Cultural values and the championing process. *Entrepreneurship Theory and Practice*, 18(4), 25-41.

Stathakoloulos, V., 1998. Enhancing the performance of marketing managers: aligning strategy, structure and evaluation systems. *European Journal of Marketing*, 32 (5/6), 536-58.

Schumpeter, J. (1934). *The theory of economic development*. Harvard University Press, Cambridge, MA

Tan, J., 2002. Culture, nation, and entrepreneurial strategic orientations: Implications for an emerging economy. *Entrepreneurship Theory and Practice*, 26(4), 95-111.

Tidd, J., Bessant, J., & Pavitt, K., 2005. *Managing innovation: Integrating Technological, Market and Organisational Change*, 3-rd ed., West Sussex: Wiley.

Turró, A., Urbano, D., and Peris-Ortiz, M., 2014. Culture and Innovation: the Moderating Effect of Cultural Values on Corporate Entrepreneurship. *Technological Forecasting and Social Change* 88, 360-369.

Wengel, J., Lay, G., Nylund, A., Bager-Sjögren, L., Stoneman, P., Bellini, N., Bonaccorsi, A., & Shapira, P., 2002. *Analysis of empirical surveys on organizational innovation and lessons for future Community Innovation* Wheelwright, S. C. & Clark, K. B., 1992. *Revolutionizing Product Development: Quantum Leaps in Speed, Efficiency and Quality*. New York, the Free Press.

Zhou, J., & George, J.M., 2010. When job dissatisfaction leads to creativity: Encouraging the expression of voice. *Academy of Management Journal*, 44, 682–696.

Zortea-Johnston, E., Darroch, J. & Matear, S, 2011. Business Orientations and Innovation in Small and Medium Sized Enterprises. *International Entrepreneurship and Management Journal*, 8(2), 145-164.

THE VALUE-ADDED INTERNAL AUDIT IN PUBLIC ADMINISTRATION IN LATVIA

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Abstract. The quality of internal audit and the added value of internal audit are unanswered questions in many public institutions in Latvia and around the world.

This research was aimed at determining the evaluation approach of internal audit in the public sector of Latvia and developing a list of added value or benefits of the internal audit in a local government. The monographic method and the survey method, an expert survey, were used in the paper.

The author has developed a valuation approach of internal audit in local governments. The author offers applying the approach developed when carrying out external evaluations to the commission of the responsible ministry in the sector, the representatives of the audit committee, the management of the local government, and to the auditees by inviting independent experts in the field of internal audit when evaluating the efficiency of the compliance of local internal audit unit with the legal enactments regulating internal audit, standards of professional practice, and best practices in auditing.

Research results showed that the greatest added value of internal audit is the benefits associated with improving management, budget planning and execution control, ensuring the uniform work of the office and circulation of documents, improved coordination of organisational and technical aspects of the council and the local government, as well as improving procurement processes and providing more efficient procurement plans.

Key words: *internal audit, public administration*

JEL code: M42

Introduction

The reform of the public administration – or some of its aspects – has been on the agenda of many EU Member States for several decades (European Commission, 2014). SIGMA experts in 2005 reported that internal audit for Local Government and State-Owned Companies is not a legal requirement – but should be (SIGMA, 2015). In Latvia in the beginning of 2019 we have no internal audit system for local governments, just in 22 municipalities out of 119 internal audit is developed. The establishment of the internal audit unit and the key principles of operation must be included in the laws and the Cabinet regulations, with the structure defined clear – cut, internal audit reporting procedures for the management, and the functions of the audit committee. Similarly, it should be stated that the internal audit annual report of all local governments "On the internal audit results of local governments during the current year" is publicly available. After implementation process it is necessary to evaluate internal audit and measure added value of internal audit in local governments.

This research was aimed at determining the evaluation approach of internal audit in the public sector of Latvia and developing a list of added value or benefits of the internal audit in a local government.

The monographic method and the survey method, an expert survey, were used in the paper.

The author has developed a valuation approach of internal audit in local governments. The author offers applying the approach developed when carrying out external evaluations to the commission of the responsible ministry in the sector, the representatives of the audit committee, the management of the local government, and to the auditees by inviting

independent experts in the field of internal audit when evaluating the efficiency of the compliance of local internal audit unit with the legal enactments regulating internal audit, standards of professional practice, and best practices in auditing.

Author used different scientific reports, European Commission documents, laws of Republic of Latvia and other in this research for theoretical discussion.

Research results and discussion

Internal audit added value as an internal audit process was included in many researches of different authors and wide period. Reserchers Diamond J (2002.), Ray E. (2009.), Soh D.S.B., Martinov-Bennie N. (2011.), Chapn N. (2012), Rouz J. (2013.), Sarens G., Lamboglia R. (2014.), Global Report, The Institute of Internal Auditors (2014.) Piper A (2015.) Abdolmohammadi M. et.al., IAIPF (2016.) and others published the value -added internal audit findings questions: internal audit role in public administration, internal audit role in the structure of the institution, internal audit role, responsibility, effectiveness, evaluation - deviation between role and assessment, maturity model- confidence and advice on how the change of direction of internal audit affects to the institution's added value, analysis of the Common Body of Knowledge (CBOK) global internal auditors surveys in 2015 - risk management, audit procedures and others, internal auditor compliance with Standards.

While there are many small factors that add up to a successful internal audit function there are three major thrusts that are critical (Schulien J., Bates D., 2006) for internal audit function to truly add value. First, the IA function must take a risk-based approach to planning that is done in conjunction with business unit and corporate management. Second, the internal audit function should work closely with management. Third, the IA function should work closely with operations management to identify opportunities for process improvements, cycle time reductions, and cost savings. The value-adding IA function involves subject matter specialists in the conduct of audits that can bring new perspectives and industry better practices to the areas under review.

Almost all European Union Member States have an internal audit function in place, but it does not necessarily cover all areas of the public administration. Formal and informal ways are used to achieve a relevant level of co-ordination and harmonisation. Traditional compliance and financial audits are supplemented increasingly by consultancy services and audits of performance, requiring professional and well-trained internal audit staff. Some of the Member States have established audit boards and/or audit committees (European Commission, 2014).

In Latvia according with Internal audit Law (Saeima, 2012) The Informative Report on the Work of Internal Audit in Ministries and Authorities (Ministry of Finance, 2018) with the opinion on internal control system in Ministries and Authorities is prepared by Internal audit Department of Ministry of Finance each year. Authors suggestion is including opinion on internal control system in local governments of Latvia as a separate report or as a part of this informative report.

Based on the conclusions of the previous researches and the data of the international research of the Institute of Internal Auditors, The Common Body of Knowledge, based on the answers of 14,518 respondents from 166 countries on the global practice of internal audit, and the instructions contained therein to ensure successful internal audit activity, the author of the doctoral thesis has developed an evaluation approach to internal audit in local governments.

The author offers to apply the approach developed when carrying out external evaluations both to the commission of the responsible ministry in the sector, the representatives of the audit committee, to the management of the municipality and to the auditees, by inviting independent experts in the field of internal audit, when evaluating the efficiency of the

local internal audit unit, compliance with internal audit regulating legal enactments, standards of professional practice, and best practice in auditing.

In order to make an assessment, an auditor of the local government's internal audit fills in Table 6, according to the results of document checks, interviews with internal auditors, the management of internal audit unit, and the leadership of local government, evaluating the twelve factors in the column "Rating" and assigning appropriate scores: 2, 1, or 0.

Table 1

Valuation Approach of Internal Audit in Local Governments

Basic element*	**Factor****	**Checked, evaluated document**	**Rating******	**Notes**
1. Organisational independence	1.1. Correct introduction and subordination of internal audit in the organisational structure***	Organisational structural scheme, instructions, bylaws	2- complies with the internal audit standards and best practice requirements; 1- partially complies with the internal audit standards and best practice requirements; 0- does not comply with the internal audit standards and best practice requirements.	
2.Competent management	2.1. Exploring and assessing the needs of local government's management	Minutes of proceedings and audit plans	2- needs were explored; 1- actions carried out partially; 0- needs were not explored.	
	2.2. Advising the local government's management and audit committee	Minutes of proceedings, reports, which: 1) provide information on risks; 2) provide an opinion on the operation of the system as a whole; 3) provides optimization of costs, eliminates controls and activities that do not add value; 4) advise on the issues to be addressed regularly; 5) provide an overview of the control environment, report the necessary improvements.	2-four to five conditions are met; 1-two to three conditions are met; 0-one condition is met.	
	2.3. Management of internal audit unit is proficient	The head of the local government's internal audit unit has an appropriate level of education and a professional certificate in the field of internal audit	2-complies; 1- partially complies; 0- does not comply.	
3. Official mandate	3.1. Internal audit facilitates achievement of corporate targets	Participation of the internal audit in the preparation of the municipal annual report. Consultations, minutes of interviews, IA working papers, internal audit report	2-complies; 1- partially complies; 0- does not comply.	

Table 1 continued

4. Unlimited access to information and resources	4.1. Use of data analytics for internal audit	Internal audit documents, internal audit reports	2-complies; 1- partially complies; 0- does not comply.	
	4.2. Identifying IT risks in internal audit plans	IT systems included in the internal audit plans	2-complies; 1- partially complies; 0- does not comply.	
5. Unbiased employees	5.1. Providing true information in internal audit reports	Internal audit reports, interviews with auditors: (the head of the internal audit unit, the head of the audited structural unit or the senior management has instructed to change the internal audit findings)	2-no detected cases of altered findings; 1-no direct evidence of cases of altered findings; 0- detected cases of altered findings.	
6. Competent staff	6.1. Motivated and professional internal audit team	Employment contracts, CVs, certificates of professional qualification of training of internal auditors	2-works more than 2 years; 1-employees are working more than a year; 0-employees are changing or do not work for more than 1 year.	
	6.2. Professional growth and training of internal auditor	Training plan for the staff of the internal audit unit	2- regular training is planned and implemented (complies); 1- occasional training is implemented (partially complies); 0-no training is planned (does not comply).	
7. Support by stakeholders	7.1. Development of progressive risk management procedure	Internal audit plans, frequency of their update, alignment with the municipal strategic plan	2- risk management improvement measures are implemented; 1- risk management practice is partially used; 0- unused risk management practice	
8. Professional auditing standards	8.1. Respecting basic principles of international professional practice standards of internal audit	Internal audit documents, internal audit report	2- respected in full; 1- partially respected; 0- disrespected.	

Source: Author's created table

** according to survey data 2010 IIARF CBOK survey data; ** adapted after 2015 IAIPF CBOK Global Survey; *** the author has created in accordance with the basic element "organizational independence"*

***** Valuation:*

the assessment of a particular factor is 2, and this means that internal audit activities are in compliance with the requirements of professional practice standards or regulatory enactments, the measures specified in the methodology and plans are implemented, if between four and five conditions are met under 2.2; factor 5.1. has no detected cases of altered findings; factor 6.1 means that an employee is employed for more than 2 years, and other factors are fulfilled;

the assessment of a particular factor is 1, which means that in this factor internal audit activities are partially compliant with the requirements of professional practice standards or regulatory enactments; the measures specified in the methodology and plans are implemented in part, under factor 2.2 between two and three conditions are met; under factor 5.1 no direct evidence of the cases of altered findings; factor 6.1 includes the employees working for more than a year, and other factors are partially fulfilled;

the assessment of a particular factor is 0, which means that the internal audit activities identified in this factor do not meet the requirements of professional practice standards or regulatory enactments; the measures specified in the methodology and plans have not been implemented, if one condition is fulfilled under factor 2.2; under factor 5.1 the cases of internal audit findings are detected; during assessment of factor 6.1, it has been established that the staff of the internal audit unit are changing and do not work for more than a year, and other factors fail.

When the assessment is done, the inspector counts the points obtained and identifies the corresponding group of the assessment of the internal audit performance if the total score is:

Between 12 points and 24 points: the internal audit activity is successfully performed. The internal audit function is an example for other internal audit units. Internal audit's applied methods and best practices can be exemplified for other internal audit units (no rating factor is 0 and all twelve factors were rated 1 or 2).

Between 7 points and 11 points: the performance of the internal audit activity is assessed as partly successful. Internal audit is functional, but deficiencies identified affect the achievement of the objective of the internal audit function (at least seven analysed factors were rated 1);

Between 0 point and 6 points: Internal audit activity does not add value. The internal audit function is necessary to improve the shortcomings identified detrimental to the internal audit functions of target (only one to six factors been assessed average or the highest rating 1 or 2).

To approve the developed approach, an expert method was used. In May 2018, the author received the views and comments from 9 experts. Six of the nine experts believe that in general, the local government internal audit assessment approach developed by the author is usable, while three of the nine experts gave opinions that: 1) the approach is usable but is insufficient; 2) this approach is partially usable; 3) the approach is able of providing a partial assessment of the internal audit.

One expert considers that the local governments could use the self-assessment approach drafted by some state administration body, to which the author agrees, because the author offers the local governments to take over the direct state administration IA methodology, adapting it to local needs as one of the IA function solutions.

Three of the experts recommend using other factors that the author agrees with. Two experts recommend that the basic element "official mandate" be assessed as the mandate set out in law/ regulation, as well as the proportion of audits carried out (compliance audits, performance audits). When describing the basic element of "unbiased employees", the experts recommend evaluating the ethical behaviour of employees, the skill to apply it in practice. In their turn, the experts advise that the basic element of "competent staff" be evaluated by the introduction of recommendations, including a proportion of cancelled recommendations.

Two of the experts think that the assessment should include all IA standards, although the author agrees with this statement only in part, because at the initial stage of internal audit implementation it is not possible to implement all the standards, but the major stages should be evaluated, eight of which the author used as the basis for her developed approach following the opinions o state administration professionals summarised in an international research. Inclusion of all the standards in evaluation of local government's internal audit, to the opinion of the author, will be possible after the first 5 years of existence of the internal audit function, when all the systems will be audited, and internal auditors will have obtained professional certificates and appropriate qualifications to fulfil their obligations under international professional practice standards.

One of the experts believe that the approach is missing some elements relating to the annual planning, which cannot be seen clearly, because the internal audit plans are included in the evaluation of basic elements like "competent management", "unlimited access to information and resources", "support by stakeholders", and "professional audit

standards". The expert also has pointed out that the developed approach does not include implementation follow-up, which, in the author's opinion, is included in the factor "Respecting basic principles of international professional practice standards of internal audit". The author believes that, according to the nature of international professional practice standards of internal audit", this element exactly includes all IA processes that include job scheduling, task completion, reporting findings, and monitoring of the audit.

The author agrees with the recommendations of experts and considers that assessment of basic elements can be supplemented, and an inspector can include additional documents for evaluation in each individual case depending on the municipality-specific factors (implemented international project, significant territorial changes are made, reconstruction, etc.).

In accordance with international standards of professional practice, the IAS provides added value to the organisation and its stakeholders given that it provides unbiased and sufficient assurance and contributes to the efficiency and usefulness of governance, risk management and control processes. In interviews with the municipality's management and heads of local government units it is possible to inquire whether the internal auditor is competent enough, which is one of the essential elements of the internal audit's added value. In order to determine the added value of the local government's internal audit, the author has developed a list of internal audits added value or benefit for local governments based on the theoretical analysis. The author proposes to supplement this list as necessary with other specific and significant benefits for each municipality.

In assessing internal audit added value or benefit of each local government, the inspector (municipal management or an external inspector of internal audit unit) shall issue rating of 0, 1, or 2 as follows: 0, where the benefit does not improve the functioning of the local government; 1, where the benefit slightly improves the municipal operations; and 2, where the benefit significantly improves the work of the local government.

The author also submitted the list of the added value or benefit of the local government internal audit to the experts for evaluation, which was developed while drafting the doctoral thesis, and received the assessment from the aforesaid 9 experts in May 2018. Two experts did not express the quantitative assessment of the added value or benefit of the local government internal audit in improving municipal processes. One of the experts did not evaluate 4 processes, while 6 of the nine experts rated the added value or benefit of the local government internal audit offered by the author in all those mentioned processes (See Table 1).

Table 2

List of value added (benefits) of the local government internal audit according to the experts' evaluation

No.	Value added, or benefit created by the internal audit for local government	Average evaluation of benefit by experts
1	Improvement of management processes in local government	2
2	Improvement of the budget planning and implementation control process in local government	2
3	Improvement of uniform processes of record keeping and document circulation in the local government	2
4	Improvement of work and coordination processes in the organizational and technical councils of the city and municipalities	2
5	Improvement of personnel records management	2
6	Ensuring more efficient purchasing plans	2
7	Improvement of procurement procedures	2
8	Improvement of the registry department processes	2
9	Improvement of accounting process	1,86
10	Improving the financial reporting process	1,86
11	Improvement of the process of preparing the annual report	1,86
12	Improvement of the function of storing and storing documents of the Council and the local government administration, archiving work provision.	1,86
13	More economical implementation of projects	1,86
14	Improvement of the planning and implementation processes of municipal capital companies	1,86
15	Improving the quality of financial statements of municipality corporations	1,86
16	Improvement of construction management work processes	1,83
17	Improvement of the processes of the Orphan's court	1,83
18	Promotion of cooperation with external audits	1,71
19	Improvement of personnel selection processes	1,71
20	Improvement of the evaluation process of municipal employees	1,71
21	Improvement of the support and advisory functions of institutions / institutions established by the City Council in the field of procurement	1,71
22	Improvement of the accounting processes of municipal corporations	1,71
23	Promotion of cooperation with the State Treasury	1,67
24	Improvement of legal support processes	1,57
25	Promoting employee awareness of improving the process of local government	1,43

Source: Author's created table

It follows from Table 2 that, according to the experts, the greatest added value of internal audit gives or significantly improves the benefits associated with improving the management, budget planning and execution control, ensuring the uniform work of the office and the circulation of documents, the improved coordination of organisational and technical aspects of the council and the local government, as well as improving procurement processes, and providing more efficient procurement plans. In their turn, the experts have given the least valuation to raising awareness among employees about the improvement of the municipal work and facilitating the process of legal support and cooperation with the State Treasury.

Consequently, the author's developed approach is approbated by means of expert evaluation and is usable to evaluate the benefits of local government's internal audit.

Conclusions, proposals, recommendations

1. The author offers to apply the internal audit evaluation approach developed when carrying out external evaluations both to the commission of the responsible ministry in the sector, the representatives of the audit committee, to the management of the municipality and to the auditees, by inviting independent experts in the field of internal audit, when evaluating the efficiency of the local internal audit unit, compliance with internal audit regulating legal enactments, standards of professional practice, and best practice in auditing.
2. The author agrees with the recommendations of experts and considers that assessment of basic elements can be supplemented, and an inspector can include additional documents for evaluation in each individual case depending on the municipality-specific factors.
3. Author's developed "List of value added (benefits) of the local government internal audit" is approbated by means of expert evaluation and is usable to evaluate the benefits of local government's internal audit.

Bibliography

Abdolmohammadi, M., D'onza G., Sarens G., 2016. Bechmarking Internal Audit Maturity. CBOK IIARF, pp.43, [Online] Available at: www.theiia.org/gotoCBOK. [Accessed 6 November 2018]

Chapon N., 2012, Questioning the Impact of IA in the Public Sector. Conference on "Public Internal Control systems in the EU Member states", Brussels, 27/28 February,Discussion paper on Internal Audit, 8p.

Diamond, J., 2002. *The Role of Internal Audit in Government Financial Management*: An International Perspective. International Monetary Fund, Working Paper/02/94, p.35.

European Union, 2012. *Compendium of the Public Internal Control Systems in the EU Member States 2012*. Available at:] Luxembourg: Publications Office of the European Union. [Online] Available at: <http://ec.europa.eu/budget/library/biblio/publications/2011/compendium_27_countries_en.pdf> [Accessed 13 March 2014].

European Union, 2014. Compendium of the Public Internal Control Systems in the EU Member States Second edition 2014. [Online] Available at: http://ec.europa.eu/budget/pic/lib/book/compendium/HTML/files/assets/downloads/publication.pdf [Accessed 15 January 2019].

Guidance on the 8th EU Company Law Directive 2006/43/EC article 41-26. ECIIA FERMA. Guidance for Boards and Audit Committees. 21 September 2010.

Ministry of Finance Republic of Latvia, 2018. Internal Audit Policy. [Online] Available at: http://www.fm.gov.lv/en/s/internal_audit/ [Accessed 15 January 2019].

Piper, A. 2015. Auditing the Public Sector. Managing Expectations, Delivering Results. IIARF, Altamonte Springs, Florida 32701-4201, USA, 23.p. IIARF.

Ray E. (2009.), *Adding Value: How Modern Internal Auditing Assists Organizations in Achieving Strategic Objective*s, IIARF, p. 4.-5.

Rouz, J.,2013. *Brieduma modeļu izvēle, izmantošana un izveide*: Rīks izmantošanai pārliecības gūšanas, konsultāciju pakalpojumos, IAI tulkojums.

Saeima, 2012. Internal Audit Law. [Online] Available at: https://likumi.lv/ta/en/en/id/253680-internal-audit-law [Accessed 15 January 2019].

Sarens, G., Lamboglia, R. 2014. *The (mis) fit between the profile of internal auditors and internal audit activities*. Accounting and business Research, Vol.44. No.1, .pp.41-62.

SIGMA, 2005. Sigma Peer Assistance for the State Internal Audit System in Latvia. Detailed Report of the Peers. [Online] Available at: http://www.fm.gov.lv/files/ieksejaauditapolitika/Final_Detailed_Report_English.pdf [Accessed 15 January 2019].

Schulien J., and Bates D., 2006. *The Value-Adding Internal Audit Function* [Online] Available at: https://home.kpmg/content/dam/kpmg/mu/pdf/Value_Adding_IA_Electronic_Sept.pdf [Accessed 14 January 2019].

Soh, D.S.B., Martinov-Bennie, N. 2011.The internal audit function. Perceptions of internal audit roles, effectiveness and evaluation. Managerial Auditing Journal. Vol.27 No7, pp.605-622.

Standards & Guidance. [Online]. Available at: https://global.theiia.org/standards-guidance/Pages/Standards-and-Guidance-IPPF.aspx [Accessed 9 January 2019]

The International Professional Practices Framework (IPPF). [Online]. Available at: https://na.theiia.org/standards-guidance/Pages/Standards-and-Guidance-IPPF.aspx [Accessed:9 June 2018]

The Institute of Internal Auditors (2014) Vērtības radīšana sadarbojoties: Aicinājums Rīkoties. Global Report, The Institute of Internal Auditors. p.15

The Institute of Internal Auditors. Model Internal Audit Activity Charter. Revised 05/2013. [Online] Available at: https://global.theiia.org/standards-guidance/topics/Pages/The-Internal-Audit-Function.aspx [Accessed 08 March 2014].

DYNAMICS OF REAL LABOUR PRODUCTIVITY AND REAL COMPENSATION IN LATVIA

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Abstract. Relationship between labour productivity and wages is an important issue not only for economists, but also for policy makers. In the last decades, we have witnessed that in the EU15 wage growth has been lagging productivity growth. At the same time in Latvia, also in some other central and eastern European member states, wages increased more than productivity, rising concerns about disbalance in the economy. However, comparison of wage level and productivity level in Latvia and respective levels in the EU15 shows that wage level in Latvia is much below the EU15 average value in absolute terms, but also in relation to productivity level. To understand whether dissimilarities in wage and productivity development are dangerous for Latvia's economy, it is worth looking at the situation in different economic sectors, as well as make comparisons with other EU countries.

The aim of the paper is to investigate the dynamics of real labour productivity and real compensation in Latvia in different economic sectors and compare with the other EU member states. The empirical analysis was conducted with comparative analysis and panel data regressions for the period from 2000 until 2017. For robustness checks, different alternative specifications compared.

Our results confirm significant linkage between real labour productivity and real compensation, but not one-to-one, and the gap persists. The gap between these two variables depends on cyclical conditions, the different economic sector with their specifics, the Russian sanctions and labour market structure. The finding of the study is a necessary input for the further microanalysis of the industry which would lead to better policy-making regarding productivity improvements in Latvia.

Key words: *Labour productivity, Wages, Panel data models, Employee Compensation*

JEL code: J24, J30, C23

Introduction

Distribution of income between production factors is one of the classical problems in the economic policy. Assumption that dynamics in labour compensation should be closely correlated to productivity developments is tested in many research papers, and conclusions are different. Employee's compensation includes wages, salaries in cash and in kind, and employers' social security contributions and changes in compensation should reflect changes in productivity. Are these two indicators related or decoupled? – Answer is not clear. Compagnucci et.al. (2018) analysed advanced countries and they found that decoupling between productivity from one hand and labour compensation and utilisation from the other is evident, and reasons are technological progress and knowledge intensity differences in different sectors. Feldstein (2008) has an opposite view –he calculated average growth in both variables and argued that the gap in US is not significant and all is about calculation process (choice of deflators for instance).

Standard economic theory suggests that compensation's dynamics should reflect productivity's developments; the two should therefore grow together. Arguing that growth in real compensation should mirror growth in real productivity means that nominal unit labour costs should be driven just by the inflation rate, and therefore real unit labour costs should remain constant. However, given that real unit labour costs are another way to express the overall share of income accruing to labour, this condition implies that the labour income share in the economy should remain constant. This was in fact one of the so-called "Kaldor's fact", the idea that the shares of national income received by labour and capital were constant over the long run. The observation of the trends in the labour income share over the past half century suggests that this assumption was wrong: in nearly all advanced economies the functional distribution of income, in fact, has substantially changed, leading to a declining labour share since the 1970's and in particular since the beginning of this millennium. This stylised fact is corroborated by the observation of the long-term trends in real compensation and real productivity: although they have both grown over time, productivity has done it faster, leading in some cases to a considerable divergence. The discussion on whether increases in productivity translate into increases in compensations or are instead decoupled has become prominent for economic policy making today. A first key question is to understand to what extent the dynamics of compensations and productivity are linked, if there is a relation between the two and how strong this relation is. If there is any divergence, we should also try to understand how significant it is. (Meager & Speckesser, 2011; Pasimeni, 2018)

Prenner (2018) analysed EU countries starting from 1960-2018, concluded that the linkage between real net productivity and real average compensation has weakened, and rises concerns about sustainable development in future. Pasimeni (2018) used a set of 34 advanced economies and conclusion was the same – there are important factors (labour market structure, cyclic conditions) that weaken the link between productivity and compensation; and that is crucial for the conduction of macroeconomic policies. Last two paper conclusions are based on panel-data analysis, what allows us to compare our estimates theirs.

The aim of the paper is to investigate the dynamics of real labour productivity and real compensation in Latvia in different economic sectors and compare with the other EU member states. The empirical analysis was conducted with comparative analysis and panel data regressions for all 28 (current composition) European Union member states during the period from 2000 until 2017.

Estimation of balanced panel regressions is made by exploiting OLS method, so time series are measured in logs and differentiate. For correct estimation procedure, time series are tested for unit roots. The Im-Pesarin-Shin unit root test reveals that logs of both real productivity and real compensation are non-stationary, but the first order difference is stationary. Cointegration was not found, so it is not possible to take error correction form. For robustness checks, different alternative specifications were compared.

The rest of the paper is organized as follows. First section describes situation in Latvia in comparison with EU28 average. Second section is short description of productivity – compensation relationship in the sectors of Latvian economy. In the third section, we summarize results from econometric analysis, and the last section concludes.

1. Productivity and compensation in Latvia and the EU

In general, productivity is measured as output per input. There are different measurements of productivity in empirical literature. Measuring labour productivity, we prefer GVA (gross value added) per worked hour in constant prices. Real compensation is calculated from nominal compensation per hour worked, which was deflated by consumer price index. Fig.1 shows different pattern of relationship. In Latvia (and some other Central and eastern European countries) growth in compensation exceeds growth in productivity, reflecting slow convergence towards EU average income level. In EU28 average, we can see that increasing productivity is not evident in increase of compensation.

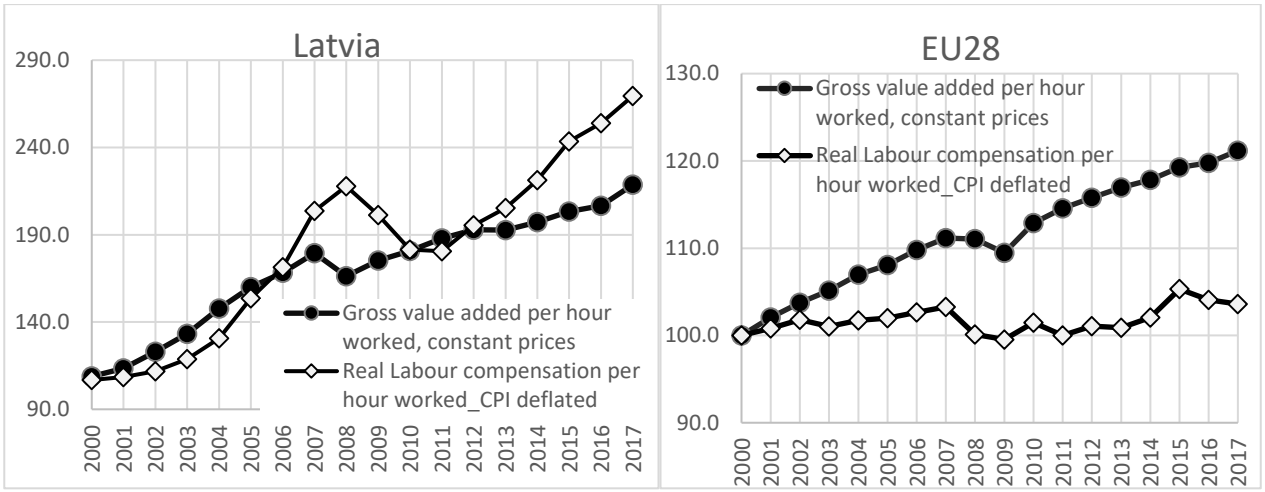


Fig. 1 **Growth in real labour compensation and productivity in Latvia and in the EU average, 2000=100.**

(Source: authors' calculation, based on AMECO and Eurostat data)

As Latvia's productivity growth is below compensation growth, it is interesting to compare results with other EU member states. Figures 2 and 3 show that both nominal labour productivity per hour worked and Compensation of employees per hour worked per hour worked are at very low levels in comparison with EU28=100.

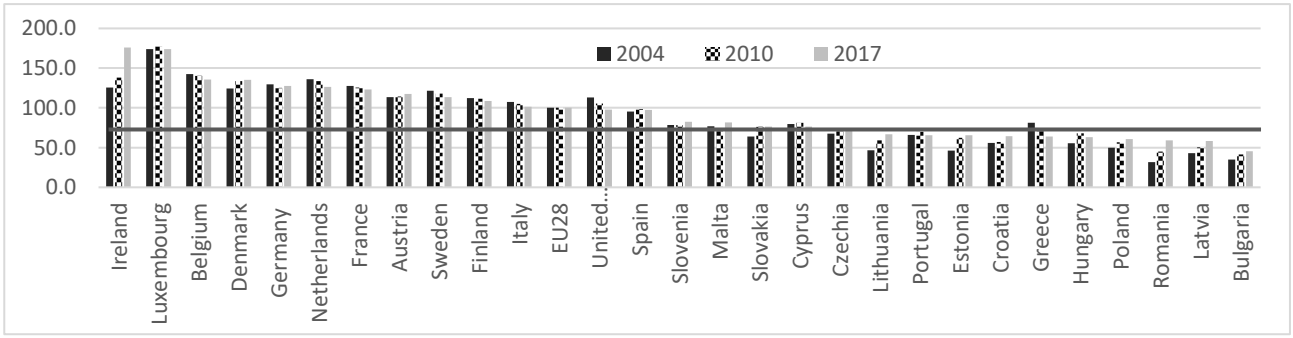


Fig. 2. **EU countries in descending order by Nominal labour productivity per hour worked as percentage of EU28 total in 2017 (based on million purchasing power standards), current prices**

(Data source: Eurostat)

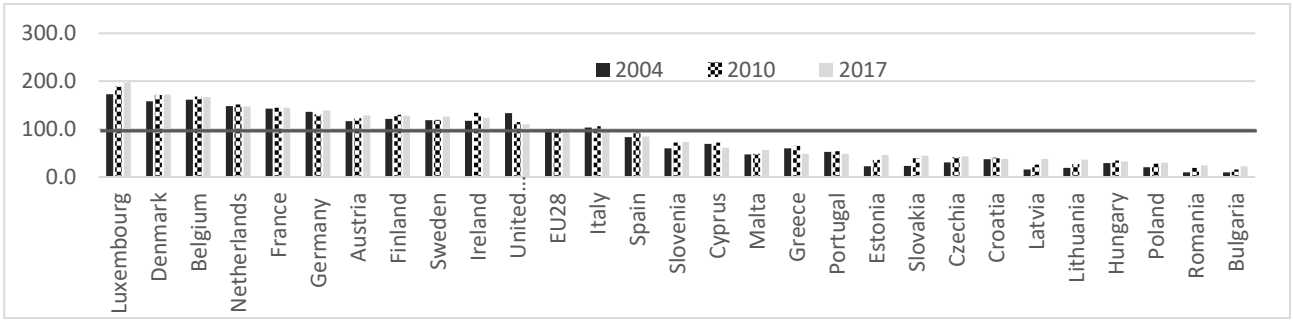


Fig.**3 EU countries in descending order by Compensation of employees per hour worked as percentage of EU28 total in 2017 (based on million purchasing power standards), current prices**

(Data source: Eurostat)

Deeper analysis of historical data allowed us to reveal that after the global financial crisis, the model of economic growth in Latvia changed, the economy has become more stable and balanced because of macroeconomic adjustments and decreasing internal and external proportions. Nevertheless, in the rankings of competitiveness which are regularly published by the World Economic Forum (WEF), Latvia significantly lags behind other EU countries (the Czech

Republic, Poland, Slovenia, Slovakia and the other Baltic States), and particularly in indicators related to the development of innovation systems (Jekabsone S., Skribāne I., 2016). This is mostly because manufacturing is a small proportion of Latvian GDP and because of the industrial sub-sector's technological structure, where low technology industries are dominating (they amount to 60% of total manufacturing added value), altogether this is why there is such low level of productivity in manufacturing and in whole national economy (see Fig. 4).

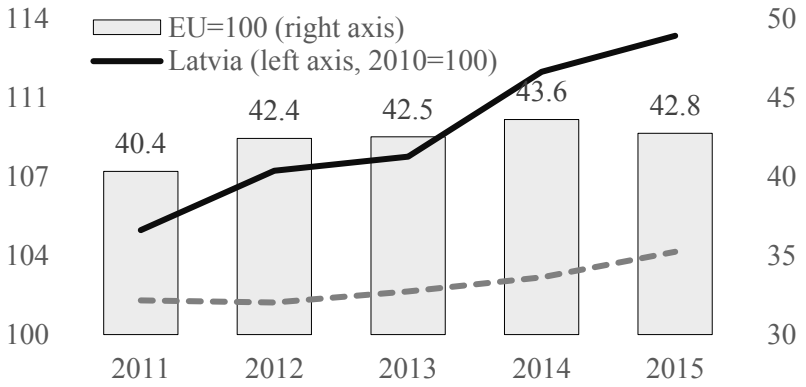


Fig 4. **Productivity (GDP per person employed) in Latvia and EU**

Source: author's construction based on. Eurostat databases.

From 2010 to 2015, Latvia is lagging behind in terms of productivity index in the national economy fell by 6 percentage points in total, but in the industry – by 1.5 percentage points. At the same time, we can observe rapid growth of labour cost (see Fig.5). It is mainly related to low cost level (in 2015, labour costs per employed in the economy of Latvia were 39% of the EU average in total, whereas in the manufacturing industry – 29.8%). From 2010 until 2015, average growth of wages in Latvia reached 6.4% that is three times larger than in EU average (Eurostat Database, 2017).

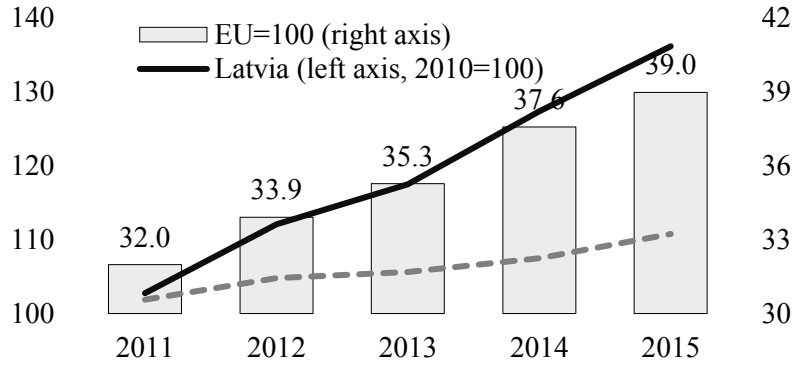


Fig.5. **Labour cost in Latvia and EU**

Source: author's construction based on. Eurostat databases.

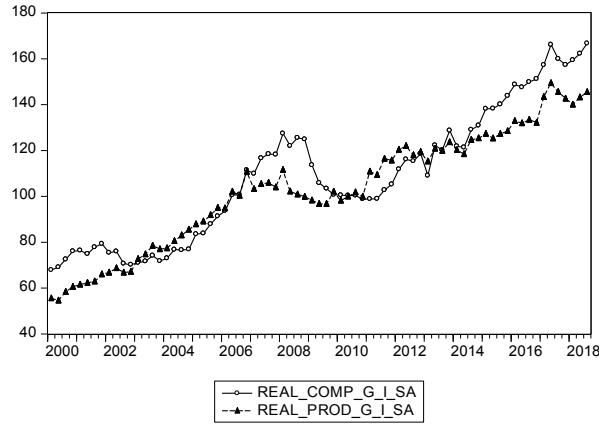
In recent years, the dynamics of labour costs and productivity were largely determined by factors of structural nature. With the economic growth resuming, wage growth is becoming more rapid, substantially due to the growing competition in the EU labour market and the low competitiveness of Latvia in the said market. By contrast, growth of productivity has been more moderate. It means that the advantages of cheap labour cost competitiveness are being gradually lost.

2. Productivity and compensation in Latvia's sectors

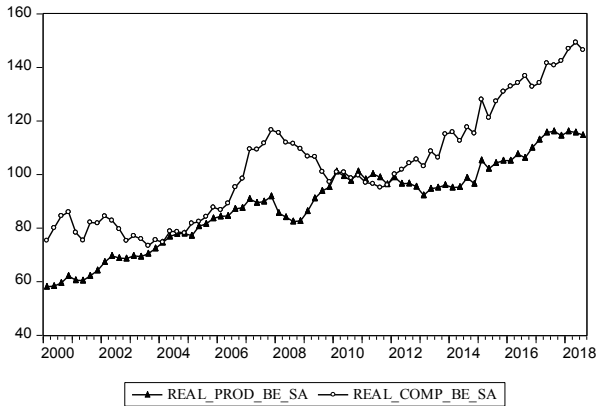
As it was indicated in the previous section, in overall increase of labour compensations in Latvia's economy is faster than respective increase in labour productivity, and that could be like signal of unbalanced development. To understand

if these concerns are well founded, it is worth looking at the relationship between compensation and productivity in individual industries. The productivity of manufacturing and agriculture has been rising over the last two years along with wage developments; moreover, their productivity growth is much stronger than that of other industries. Thus, at this stage, the development of exporting sectors is relatively balanced, and the gap between wages and productivity mostly persists in the non-tradable segment. (Rutkovska, 2018).

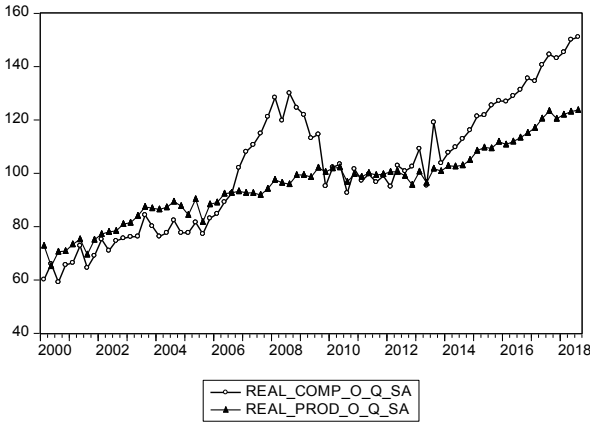
As Fig.5 shows, the dynamics and factors affecting labour productivity vary across industries. Influence of the recent crises can be seen in almost all sectors. Rapid decrease in domestic and foreign demand and respective consequences changed trend in both productivity and compensation. However, after the crisis the industries exhibit very different development trends. Last years, sectors with high share in the economy - trade and industry, and public administration – have stable productivity growth, along with increase in compensations.



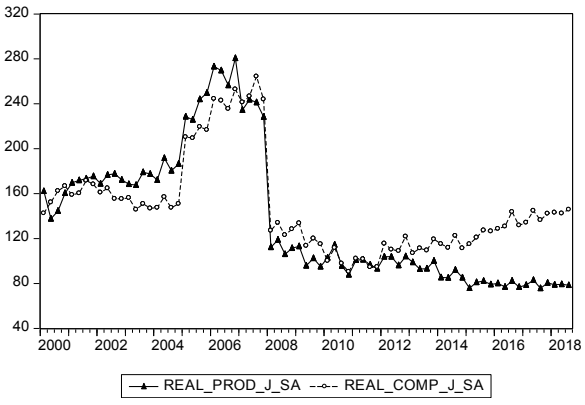
(a) Wholesale and retail trade, transport, accommodation and food service activities



(b) Industry (except construction)



(c) Public administration, defence, education, human health and social work activities



(d) Information and communication

Fig.5. **Labour productivity and compensation of employees per hour worked in selected sectors (real prices, 2010=100)**

Source: Authors' calculation, data from Eurostat and csb.gov.lv

ICT sector (Fig.5, (d)) and also financial and insurance activities, real estate activities and arts, entertainment and other services are sectors with decline in productivity, but still increase in compensations.

3. Empirical estimates: Panel data regression

The aim of this section is to estimate to what extent increases in productivity translate in increases in labour compensations. For meaningful comparisons in the model, we must use data for real labour compensation and real labour

productivity. Real labour productivity is measured as gross value added per hour worked in constant prices, and this variable is available in Eurostat. We adjusted base year to make it possible compare both indicators of interest.

Panel data regressions for EU28

Compensations are available as nominal labour compensation per hour worked, and we have to choose appropriate deflator to convert it in real terms. We deflated compensation with a consumer price index as ours aim is to study the actual purchasing power and welfare of workers. (Pasimeni, 2018). So, the second variable is real labour compensation per hour worked, deflated by harmonized consumer price index. Both series are taken from Eurostat. To avoid some possible miscalculations additionally we took from AMECO database real labour compensation per employee and recalculated it to worked hour. Results appeared to be similar, so we presented just first variant.

Obtained series were tested for unit roots and cointegration. As we expected these series had changing gap between, so cointegration was not found for all different specifications. As series are non-stationary and no cointegrations, we use first order differences in the regression. So, the aim of the model is to test link between growth in labour productivity (and growth in labour compensations. Model is specified as:

$$\Delta\, ln(real\ compensation) = \beta_{0,it} + \beta_{1,it}\, \Delta ln(real\ productivity) + \beta_{it}\, Control\ variables + \varepsilon_{it} \qquad (1)$$

There are discussions in empirical literature about most appropriate control variable in compensation-productivity link (see for instance (Prenner ,2018) and (Schwellnus et.al., 2017). For the standard Philips wage curve the unemployment rate and/or growth in unemployment rate is added in the regression. Table 1 summarizes estimated regressions. Because of heterogeneity in the sample, all models are estimated using White's heteroskedasticity robust standard errors.

Table 1

Regression results: panel data EU28, period 2000-2017

Dependent variable: d(ln(real compensation)	**Model**		
Factors	**(1)**	**(2)**	**(3)**
d(log(real productivity per hour)	0.342*** (0.105)	0.370*** (0.003)	0.393*** (0.104)
d(Unemployment rate)		–0.006*** (0.0018)	–0.0038 (0.0018)
Unemployment rate			–0.0030 (0.0004)
Crisis		0.018** (0.009)	
Constant	0.010*** (0.0022)	0.008** (0.004)	0.035*** (0.004)
Country fixed effects Time fixed effects Adjusted R square	Yes Yes 0.326	Yes No 0.304	Yes Yes 0.416
Notes: 1) *** ⇔ p-value < 0.01; ** ⇔0.01< p-value < 0.05; * ⇔0.05< p-value <0.10 2) values in the brackets are respective standard errors			

Source: author's calculations

Regression results in Table 1 shows that there is significant, positive relationship between productivity growth and compensation growth, but as partial regression coefficient is just about 0.35-0.4, significantly different of 1, there is no one-to-one linkage. Control variables – unemployment and growth in unemployment – both are statistically significant. As we expected the sign is negative, which means for all other factors unchanged, increase in unemployment rate will

decrease compensation. Positive coefficient next to the dummy variable indicating recent crisis shows that the gap between compensation and productivity even widened during crisis.

Panel data regressions for Latvia

Analysis for industries in Latvia was performed exploiting quarterly data since 2000Q1. For real productivity variable, we took nominal gross value added, divided by number of worked hours, and deflated by respective industries output price index. Labour compensation also we calculated from nominal values per hour worked, but for price index we used CPI. Unit root and cointegration tests allow us to estimate long run model and respective error correction form.

Table 2

Regression results: panel Latvia's industries, max period 2000Q1-2018Q3

Long term models				Error correction models			
Dependent variable: **log(real_comp)**	2000Q1-2018Q3	2004Q1-2018Q3	2010Q1-2018Q3	Dependent variable: **d(log(real_comp))**	2000Q1-2018Q3	2004Q1-2018Q3	2010Q1-2018Q3
log(real_prod)	0.636*** (0.010)	0.599*** (0.015)	0.278*** (0.020)	d(log(real_prod))	0.302*** (0.020)	0.335*** (0.020)	0.269*** (0.013)
unempl	–0.025*** (0.002)	–0.024*** (0.002)	–0.030*** (0.003)	unempl			
crisis	0.094** (0.019)	0.087** (0.022)		d(unempl)	–0.009** (0.003)	–0.01*** (0.004)	–0.001 (0.008)
				u(-1)	–0.20*** (0.024)	–0.27*** (0.029)	–0.53*** (0.029)
Constant	2.047*** (0.093)	2.231*** (0.072)	3.837*** (0.106)	Constant	0.005 (0.003)	0.005 (0.003)	0.009 (0.007)
Adjusted R^2	0.90	0.85		Adjusted R^2	0.36	0.44	0.53

Notes: 1) *** ⇔ p-value < 0.01; ** ⇔0.01< p-value < 0.05; * ⇔0.05< p-value <0.10
2) values in the brackets are respective standard errors
3) In all models GLS weights: Cross-section SUR and coef. covariance method: White cross-section
4) In all models Fixed industry effects and none period effects are used

Source: author's calculations

From estimation results (Table 2) we concluded that proportion of productivity growth what turns to compensation growth is decreasing over the time in Latvia's industries. However, speed of adjustment in error correction model is increasing from about 20% for all period till about 50% for after crises period.

Conclusions, proposals, recommendations

1. Since 2010, the productivity of Latvia's economy has been at the level of 40-45% of the EU average (Eurostat Database, 2017). Although in recent years productivity growth rate was faster than the EU average, but labour costs grew almost twice the rate and this can adversely affect competitiveness of Latvia. A further increase in labour costs is inevitable in the open labour market conditions; therefore, strengthening the competitiveness of Latvian is largely determined by the ability to reduce the productivity gap with the advanced economies.
2. Descriptive analysis shows that there is no one-to-one relationship between labour productivity and compensation. Last years "Old" EU countries experienced slowdown in labour compensation in line with quite stable productivity growth, rising discussions about fair income distribution. Situation in the Baltics is different: growth in labour compensations exceeds growth in productivity, possibly indicating disbalance in economy, but it is important to emphasize that in caparisons with EU28 average both productivity and compensations are far behind mean level.
3. Latvian data shows that compensation-productivity gap became apparent in 2006 and was at maximum during recent crisis (in 2008). After that gap is still evident.

4. Deeper analysis of Latvia's data indicated that the dynamics of real compensation and labour productivity depends on the economic sector. Since 2012Q2 labour productivity, growth slowed down in ICT sector, financial and insurance activities, and in real estate activities. One of possible reasons could be change in external demand because of the crisis, difficulties in recovery period, Russian sanctions. Sectors with stronger growth in productivity are manufacturing (at least for last two years) and agriculture.
5. The results from econometric models presented in the section 3 show that in the EU countries on average there is a significant link between growth in labour productivity (measured as gross value added per hour worked, in constant prices) and growth in labour compensations (measured as Labour compensation per hour worked deflated by CPI). However, this linkage is not one-to-one relationship, and a significant gap is observable.
6. As Partial regression coefficients are significant and significantly less than 1 in all model specifications, one can conclude that productivity growth is necessary but not sufficient condition for rising labour compensations and further living standards.
7. Estimates for Latvia's industries show that short-term deviations of long run relationship between labour productivity and compensations adjusted with average speed of roughly 22% in next quarter.
8. One of the main challenges for Latvia is the creation of new competitive advantages that are associated with investments in the latest technologies, innovation, research, human capital, efficient allocation of resources and redistribution that comes with the behavioural changes of economic subjects. Increasing entrepreneurs' motivation is a major structural change in policy making. Economic structural transformation process is largely dependent on the quality of the institutional framework (legislation, state aid and economic and political institutions), which provides goods and resources market efficiency, minimizing the redistribution process costs and risks, thereby strengthening the country's competitive benefits.
9. Proposals for further research:
    a. Some of our findings about Latvia indicate possibility of a productivity trap. Analysis with firm level data in different sectors could help us to reveal this.
    b. Disaggregate analysis could help us not only find that there is a gap, but also find out factors causing that. It needs to go deeper and analyse structural conditions in the labour market. Regarding competitiveness issues it would be interesting compare wage gap difference in tradable and non-tradable sectors.
    c. We also performed Granger causality test between productivity and compensations, and we concluded that there is one-directional causality from productivity to compensation even with several lags. To investigate dynamic structure of this linkage it is necessary to use quarterly data.

Bibliography

Compagnucci, F., Gentili, A., Valentini, E., Gallegati, M., 2018. Have jobs and wages stopped rising? Productivity and structural change in advanced countries. Structural Change ad Economic Dynamics. Available at: https://doi.org/10.1016/j.strueco.2018.07.003. [Accessed February 10, 2019]

Drahokoupil, J., Piasna, A. 2018. What is Behind Low Wages in Central and Eastern Europe? Post-Communist Economies, 30(4), pp. 421-439.

European Commission, 2018. Labour market and wage developments in Europe - Annual review 2018. [Online] Available at: https://ec.europa.eu/social/main.jsp?catId=738&langId=en&pubId=8139&furtherPubs=yes [Accessed January 6, 2019]

Feldstein, M. 2008. Does Wages reflect Growth in Productivity? Journal of Policy Modelling. Vol.30 (4), pp. 591-594

Fleck, S., Glaser, J., Sprague, S., 2011. The Compensation – Productivity Gap: a Visual Essay. Monthly Labour Review, 134(1), pp. 57-69

Fuentes-Castro, D., 2012. Labour Productivity and Compensation of Employees in Europe. Applied Economics Letters, vol. 19, pp. 689-693

Galgoczi, B., 2017. Why Central and Eastern Europe Needs a Pay Rise. European Trade Union institute (etui) Working paper 2017.01. [Online] Available at: https://www.etui.org/Publications2/Working-Papers/Why-central-and-eastern-Europe-needs-a-pay-rise. [Accessed January 18, 2019]

Naz, A., Ahmad, N., and Naveed, A., 2017.Wage Convergence across European Regions: Do International Borders Matter? Journal of Economic Integration, pp.35-64.

Nikulin, D., 2015. Relationship between wages, labour productivity and unemployment rate in the new EU member countries. Journal of International Studies,2015(1), pp. 31-40

Pasimeni, P., 2018. The Relation between Productivity and Compensation in Europe. European Commission Discussion paper 079, doi: 10.2765/749614 [Online] Available at: https://ec.europa.eu/info/publications/economy-finance/relation-between-productivity-and-compensation-europe_en. [Accessed January 5, 2019]

Pessoa, J.P., Reenen, J. 2013. Wage growth and productivity growth: the myth and reality of decoupling. CEP Discussion Paper No 1246. [Online] Available at: http://cep.lse.ac.uk/pubs/download/dp1246.pdf. [Accessed January 28, 2019]

Posta, V., 2018. A Statistical Analysis of Productivity and Compensation of Labour in the EU. Statistika – Statistics and Economy Journal, vol. 98 (4), pp. 338-351

Prenner, Ch., 2018. Does productivity pay off? The link between productivity and pay in the EU. [Online] Available at: https://www.boeckler.de/pdf/v_2018_10_26_prenner.pdf. [Accessed January 28, 2019]

Priede, J., 2013. Quality Competitiveness of Latvia's Food Industry in the Fish Products Group. *Journal of Economics, Business and Management*, *1*(2). https://doi.org/10.7763/JOEBM.2013.V1.41

Priede, J., & Pereira, E. T.,2015. European Union's Competitiveness and Export Performance in Context of EU – Russia Political and Economic Sanctions. *Procedia - Social and Behavioral Sciences*, *207*, 680–689. https://doi.org/10.1016/j.sbspro.2015.10.138

Priede, J., & Skapars, R. ,2012. Quality Competitiveness of Latvia's Metal Industry in the Iron and Steel Product Groups. *Economics and Management*, *17*(1), 202–208. https://doi.org/10.5755/j01.em.17.1.2268

Rusinova, D., Lipatov, V., Heinz, F.F., 2015. How Flexible are real Wages in EU Countries? A Panel Investigation. Journal of Macroeconomics, vol. 43, pp. 140-154

Schwellnus, C., A. Kappeler and P. Pionnier, 2017. Decoupling of Wages from Productivity: Macro-level Facts", OECD Economics Department Working Papers, No. 1373, OECD Publishing, Paris. [Online] Available at: https://www.oecd.org/eco/Decoupling-of-wages-from-productivity-Macro-level-facts.pdf. [Accessed November 12, 2018]

Schwellnus, C., Kappler, A., Pionnier, P.A., 2017. The Decoupling of Median Wages from Productivity in OECD Countries. International Productivity Monitor. Vol.32, pp. 44-60

Sharpe, A., Arsenault, J., & Harrison, P.,2008. The Relationship between Labour Productivity and Real Wage Growth in Canada and OECD Countries.

Stansbury, A.M., Summers, L.H., 2017. Productivity and Pay; Is the link Broken? NBER, w24165

TAX INCENTIVES TO PARTICIPATE IN OCCUPATIONAL PENSION SCHEMES: THE PERSPECTIVE OF AN INDIVIDUAL

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Abstract. Tax incentives can be an important tool in encouraging private pension provision. Many possible pension tax regimes can be applied in occupational pension schemes. They differ depending on whether contributions into the scheme, investment returns earned and benefits paid out of the scheme are taxed or exempt from tax. Many OECD countries apply an EET system, where contributions and investment returns are exempt from income tax and benefits are taxed. This can be considered attractive from the member's point of view, as the tax relief is received immediately, whereas the tax is applied to benefits which will be paid in a distant future. However, other tax regimes are also in use. Currently in Poland the system in use is TEE (contributions are taxed whereas investment returns and benefits are exempt), and this is likely to be used in the new occupational schemes which are due to be introduced in Poland in 2019.

Aim of this paper is to compare the different tax regimes which can serve as an incentive to save in the new pension schemes in Poland from the member's point of view. Model of a pension scheme under different tax regimes was constructed. This allows to calculate benefits and replacement rates that could be achieved, as well as post tax income throughout the scheme membership. Different categories of workers based on their salaries were considered. It can be shown that for chosen assumptions TEE and TTE regimes result in higher replacement rates for high earners in comparison to low earners, whereas for EET and ETT the opposite is true. In addition, there is almost no difference in replacement rates under different tax regimes for low earners, as only the taxation of investment returns has impact. In contrary, for the high earners different tax regimes can result in higher or lower replacement rates. The practical implication of the paper is that there is no single tax regime that would provide highest replacement rates for all workers. Different aims can be achieved by using different regimes, depending on particular country's income tax rules.

Key words: *tax incentives, tax systems, occupational pension schemes.*

JEL code: G22, H24, J32.

Introduction

Demographic changes which can be observed in many countries result in serious consequences for systems of social protection, in particular pension systems. Population ageing, an increase in number of post-working age persons in relation to working age persons causes a need for reforms of pension systems [Fenge R., Werding M., 2003, p. 2-3; Palacios R., Pallarès-Miralles M., 2000, p. 8-10]. As a result, level of protection offered by public pension systems often decreases. In the long-term perspective of 20 or 30 years public pension may offer only protection against poverty, but no longer a replacement of pre-retirement income, and may not allow to maintain pre-retirement standard of living. This is a crucial problem for many countries with an ageing population, including Poland. Demographic old-age dependency ratio in Poland (number of individuals aged 65 and over in relation to 100 people of working age between 20-64 years old) was equal to 24.3 in 2015 and was lower than average in 28 countries of European Union (29.9) and OECD (27.9) [OECD, 2017a, p. 123]. This situation is due to change. Estimates show that in ten years' time old-age dependency ratio in Poland

will be 36.4 (in 2025) and in 35-years' time 60.8 (in 2050). As a result it will be higher than average in EU28 (55.9 in 2050) and OECD (53.2 in 2050) [OECD, 2017a, p. 123].

A replacement rate from Polish pension system (both first and second pillars) is estimated to be around 30% of final salary [OECD, 2017b, p. 2]. It can be concluded that additional savings for retirement are extremely important. A solution comes in the form of additional saving systems within third pension pillar, in particular occupational pension schemes. Starting in 2019, a new form of occupational pension schemes will be introduced in Poland. Employee Capital Plans (PPK) are quasi-compulsory, based on principles of automatic enrolment into occupational pension schemes [Instytut Emerytalny, 2017]. Aim of this new project is to encourage Polish workers to save more for retirement, as participation in occupational pension schemes is currently very low (2.41% of working population in 2017 [KNF, 2018, p.4]). Another incentive to save often takes form of tax-based reliefs (for example in Italy [Ferrera M., Jessoula M., 2006, p. 439] or Demark [Green-Pedersen C., 2006, p. 465]). This will be investigated in this paper.

Tax system applied to occupational pension schemes can encourage or discourage workers to participate in such schemes. System defines whether income tax is applied to contributions paid into the scheme, investment returns earned by investing funds accumulated within the scheme or benefits paid out. So far tax system denoted TEE (taxed, exempt, exempt) is utilised in Polish schemes **[**Brzęczek T., Szczepański M., 2016, p. 72). As a result, contributions are taxed but investment returns and benefits are exempt from income tax.

In this paper different tax regimes, which could be applied in PPK, will be compared. World Bank [Whitehouse E., 2005] lists four main types of tax systems, shown in Table 1.

Table 1

Main tax systems applied in occupational pension schemes

Tax system	Contributions	Investment returns	Benefits
EET (*exempt, exempt, taxed*)	exempt	exempt	taxed
TEE (*taxed, exempt, exempt*)	taxed	exempt	exempt
TTE (*taxed, taxed, exempt*)	taxed	taxed	exempt
ETT (*exempt, taxed, taxed*)	exempt	taxed	taxed

Source: authors' construction based on [Whitehouse E., 2005].

Among these systems the one used most widely in developed countries is EET. It is applied by 13 out of 28 European Union countries and 18 out of 35 OECD countries [OECD, 2015], including Canada, Germany, UK and USA. Together with the TEE system these two are referred to as expenditure tax. According to the World Bank these are most appropriate systems to use in relation to pension systems. The other two regimes, TTE and ETT, referred to as comprehensive tax, treat savings in the same way as other goods and services, while savings are not part of consumption but a source of future consumption [Whitehouse E., 2005, p. 2]. In addition, administration of the TEE and EET systems is simpler. On the other hand, the other two regimes generate more tax income for the State.

Among the two expenditure tax systems EET is often considered more attractive from the member's point of view, as the tax relief is applied immediately when paying the contribution [Instytut Emerytalny, 2017, p.18; Bankman J., 1988, p. 793-794]. TEE system offers tax relief to future income (pension), preventing it from decreasing in the period after income from paid work has stopped [Petelczyc J., 2016, p. 63]. There is a risk however of future government not honouring the promises of its predecessors and changing tax rules to apply tax to pension benefits as well [Barr N., Diamond P., 2010, p. 98].

Three more tax regimes are mentioned by OECD (see also [Yoo K.Y., de Serres A., 2004]). These are shown in Table 2.

Table 2

Other tax systems used in occupational pension schemes

Tax system	Contributions	Investment returns	Benefits
ETE (*exempt, taxed, exempt*)	exempt	taxed	exempt
TET (*taxed, exempt, taxed*)	taxed	exempt	taxed
EEE (*exempt, exempt, exempt*)	exempt	exempt	exempt

Source: authors' construction based on [OECD, 2015].

ETE system, in which only investment returns are taxed, is used in Cyprus. TET, taxing both contributions and benefits, is applied for example in France and Belgium. Slovakia introduced an EEE system, offering full tax relief [OECD, 2015, p. 3-4].

Aim of this paper is to compare different tax regimes from the individual's point of view. Additional aim is to investigate relationship between replacement rate and level of earnings and given tax system. Two research hypotheses were set:

H1: It is possible to compare different tax systems using measures of pension scheme member's pre and post retirement income.

H2: Tax regimes which tax contributions result in higher replacement rates for high earners, whereas those that tax benefits result in higher replacement rates for low earners.

In order to verify first hypothesis, models which allow to estimate funds accumulated in pension schemes and benefits paid out have been constructed. These take into account factors such as rate of investment return earned by the scheme, rate of salary increase and expected longevity. Calculations were performed for members with different levels of earnings, using deciles of earning published by Central Statistical Office of Poland (GUS). This allowed to verify the second hypothesis.

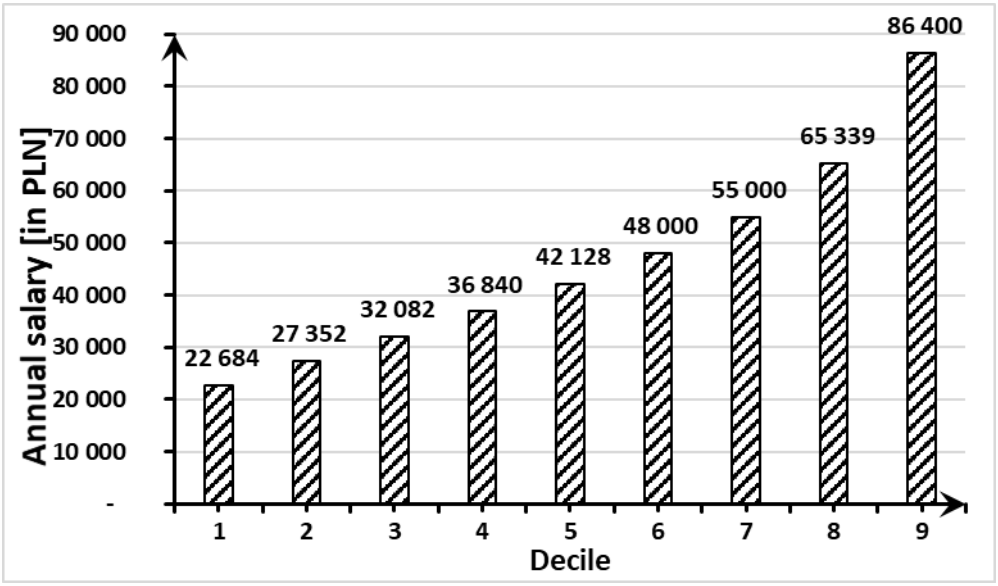
Research results and discussion

1. Assumptions

Calculations were performed for an individual member, who joins the scheme aged 25 and contributes for a period lasting between 30 to 45 years. Considered retirement age (age at which contributions cease and benefits start to be paid) is between 55 and 70 years old. Two forms of benefit payment are considered: a term annuity payable for 10 years (minimal period set in PPK [Ustawa z dnia 4 października 2018… (Act of Polish Parliament…, 2018)]) or an annuity payable for life. Contribution rates are set as 2% of salary paid by the member and 1.5% of salary paid by the employer. These are the minimum contribution rates set in Polish PPK. All payments (contributions and benefits) are paid monthly. Annual real rate of salary increase is assumed to be 1%, annual real rate of investment returns 3% and annual real interest rate (used to calculate annuities) 1%, set based on investigation of financial markets.

Life annuity calculations are performed using unisex life tables for Poland in 2017, as it is not possible to use gender specific life tables in insurance calculations [European Commission Legal Service, 2011; Ustawa z dnia 11 września 2015… (Act of Polish Parliament …, 2015)].

Different levels of earnings were considered, based on data on highest annual gross earnings in decile groups published by GUS, shown in Figure 1.



Source: authors' construction based on data from [GUS, 2018a].

Fig.1. **The highest annual gross earnings in decile groups in Poland in October 2016**

As shown in Figure 1, highest earnings in each decile group increase almost linearly when moving from decile 1 to decile 7, with bigger increases in deciles 8 and 9.

An important assumption in calculations performed in this paper are the tax rates. In 2018 in Poland there were two tax brackets, depending on the level of income: 18% and 32%. Level of income also determines the level of tax deduction granted, shown in Table 3. Tax on investment returns of 19% was also assumed.

Table 3

Tax deduction applicable in Poland in 2018

Income bracket	Tax reduction
0 PLN - 8 000 PLN	1 440 PLN
8 000 PLN - 13 000 PLN	decreases linearly to 556.02 PLN
13 000 PLN - 85 528 PLN	556.02 PLN
85 528 PLN - 127 000 PLN	decreases linearly to 0 PLN
Above 127 000 PLN	0 PLN

Source: authors' construction based on [KPMG, 2018]

2. Research methodology

The following research methods were used:

- Critical review of literature concerning different tax regimes and pension schemes in the world.
- Formulation of models which allow to estimate replacement rate for a member of PPK scheme, based on chosen assumptions (rate of investment returns, interest rate, rate of salary increase)
- Analysis of sensitivity of obtained results to the assumptions chosen in calculations

Data published by GUS were used to formulate financial and demographic assumptions.

In order to model savings accumulated within pension scheme as well as benefits paid out the following formulas were used:

The final salary in the *nth*-year of saving was calculated as:

$$W_n = W_0(1+s)^{n-1} \tag{1}$$

where: W_0 is an initial salary, s is a real annual rate of salary growth, n is a saving period (between 30 to 45 years).

To estimate value saved within pension scheme the accumulated value of annuities payable m times per year where payments of $\frac{1}{m}$ are paid at the end of each period for mn periods was calculated as [Kellison S.G., 1991, p. 103]:

$$\ddot{s}_{\overline{n}|}^{(m)} = \frac{(1+i)^n - 1}{\frac{i^{(m)}}{1+i^{(m)}}} = \frac{\left((1+i)^n - 1\right)\left(1+i^{(m)}\right)}{i^{(m)}} \tag{2}$$

where: m is the number of payment periods in one period of capitalization (m = 12 for monthly payments), i is an interest rate, mn is a number of annuity payments, $\frac{1}{m}$ is an amount of payment (sum of payments in one period of capitalization is 1).

The final value of the accumulated funds during the saving period was calculated as:

$$K_n = \sum_{j=1}^{n} k \cdot W_i \cdot m \cdot \ddot{s}_{\overline{1}|}^{(m)} \left(1+i\right)^{n-j} \tag{3}$$

where: k is the total contribution rate paid by the employee and the employer during the whole period of saving, W_i is the amount of the salary in i-year of saving, $\ddot{s}_{\overline{1}|}^{(m)}$ is the accumulated value of annuity-immediate paid m times in 1 year of amount equal to 1/m, n is the saving period.

Two forms of benefit payment were considered. Firstly, an annuity certain payable for fixed amount of years was used. The amount of pension was then calculated as:

$$R = \frac{K_n}{m \cdot \ddot{a}_{\overline{n \cdot m}|}^{(m)}} \tag{4}$$

where: $\ddot{a}_{\overline{n \cdot m}|}^{(m)}$ is the present value of annuity-due paid m times per year in advance of $\frac{1}{m}$ over n years, K_n is the final value of the accumulated funds during the saving period.

The present value of time annuity-due payable m times per year, where payments of $\frac{1}{m}$ are paid at the beginning of each period for mn periods used in formula (4) is equal to [Kellison S.G., 1991, p. 104]:

$$\ddot{a}_{\overline{n}|}^{(m)} = \frac{1-\nu^n}{d^{(m)}} = \frac{1-\nu^n}{\frac{i^{(m)}}{1+i^{(m)}}} \tag{5}$$

where: m is the number of payment periods in one period of capitalization ($m \in N$), mn is a number of annuity payments, $\frac{1}{m}$ is an amount of payment (sum payment in one period of capitalization is 1), $\nu = \left(1+i\right)^{-1}$ is a discount factor, i is an interest rate.

Secondly, a life annuity was considered. The amount of pension was calculated as:

$$R = \frac{K_n}{m \cdot \ddot{a}_x^{(m)}} \tag{6}$$

where: K_n is the final value of the accumulated funds during the saving, : m is the number of payment periods in one period of capitalization ($m \in N$), $\ddot{a}_x^{(m)}$ is the present value of annuity-due paid m times per year in advance of $\frac{1}{m}$ (at the beginning of each period) for life to a person aged x at the start of payments.

The present value of annuity-due payable for life, where payments of $\frac{1}{m}$ are paid at the beginning of each period used in formula (6) is equal to [Bowers N.L.Jr et al, 1997, p. 144, 150]:

$$\ddot{a}_x^{(m)} = \ddot{a}_x - \frac{m-1}{2m} = \sum_{k=0}^{\infty} v^k \, {}_k p_x - \frac{m-1}{2m} \tag{7}$$

where: m is the number of payment periods in one period of capitalization ($m \in N$), i is an interest rate, $\frac{1}{m}$ is an amount of payment (sum payment in one period of capitalization is 1), $v = (1+i)^{-1}$ is a discount factor, ${}_k p_x$ is the probability of a person aged x surviving to age $x+k$.

In both cases, replacement rate can then be calculated as:

$$r = \frac{R}{W_n} \tag{8}$$

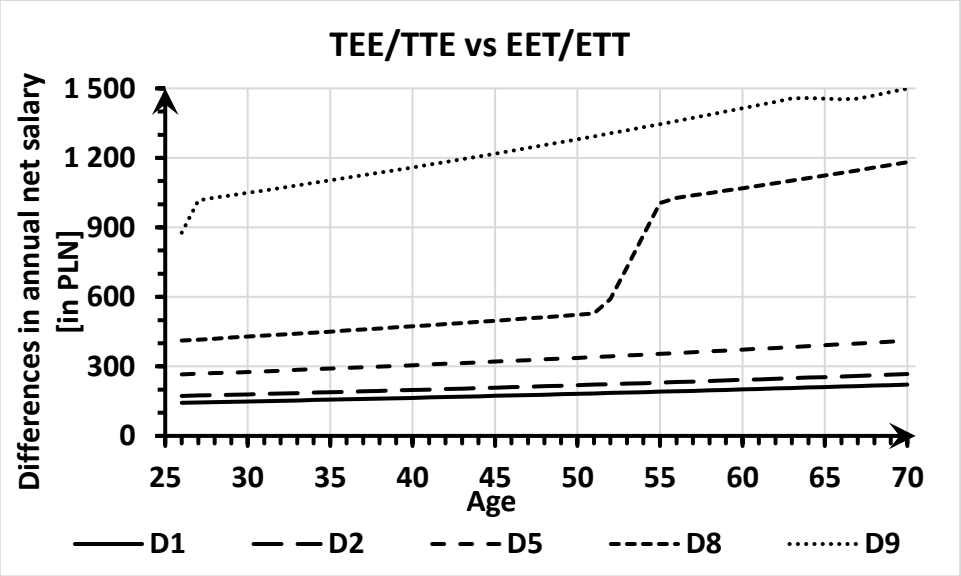
where: R is the pension amount, W_n is the final salary – the level of salaries in the n-year saving.

At the beginning of the modelling formula (1) was used to calculate the amount of the salary at the time of retirement - the value of final salary after 30-45 years of saving, assuming the annual rate of salary increase of 1%. The final value of the accumulated funds in the period of saving was estimated using the formula (2) and (3), assuming real rate of investment returns of 3%. It was assumed that the value of funds accumulated is the present value of pension benefits. Retirement benefits can be paid in full in the form of an annuity payable each month for 10 years or for life. Subsequently, the amount of pension benefits and replacement rates in these two cases were calculated using formulas (4) - (8).

3. Results

In order to compare different tax regimes both pre- and postretirement income of a member of a pension scheme was calculated, considering different levels of earnings. All figures were prepared in Microsoft Excel, and it should be noted that for clarity axes do not necessarily start at 0.

To compare preretirement income, a post-tax (net) salary was calculated for a member with starting salary equal to the highest earnings in each decile group throughout scheme membership. Same results were obtained for the two regimes which exempt pension contribution from income tax (EET and ETT) and the two regimes which tax pension contributions as income (TEE and TTE). Difference in salary between the pairs was then calculated. The result are shown in Figure 2.

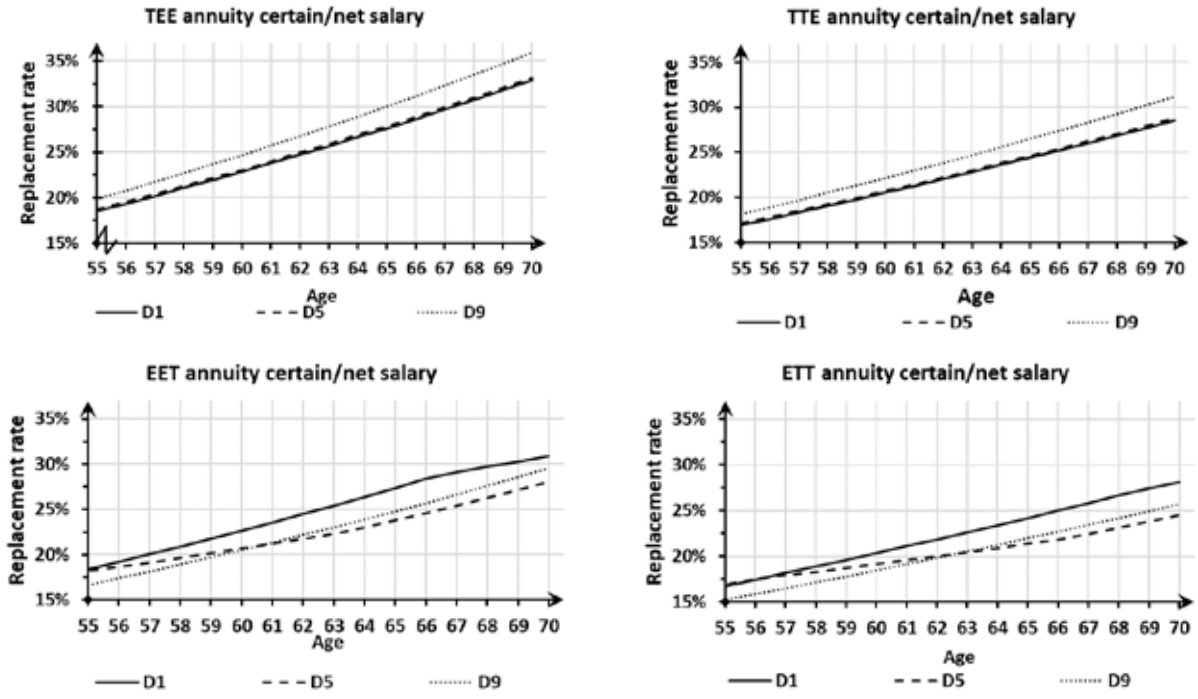


Source: authors' calculations.

Fig. 2. **Difference in net salaries under the two tax regimes which tax pension contributions (TEE and TTE) and the two regimes which do not (EET and ETT)**

For persons earning in deciles 8 and 9 the difference is significant (between 400 and 1500 PLN, which is about 2% of their salaries). This can explain why tax incentives are considered to work best for high earners [see e.g. Immergut E.M., Anderson K.M., 2006, p. 23]. For workers with earnings from deciles 1-7 the difference is not a s big (200-600 PLN, comprising around 1% of their salaries) and may not be a sufficient incentive to save in a pension scheme.

In order to compare post retirement income replacement rates were calculated for members with different earnings, taking into considerations different retirement ages between 55 and 70 years old. Firstly, it was assumed that the benefit takes form of an annuity certain payable for 10 years monthly. Replacement rates are shown in Figure 3.



Source: authors' calculations.

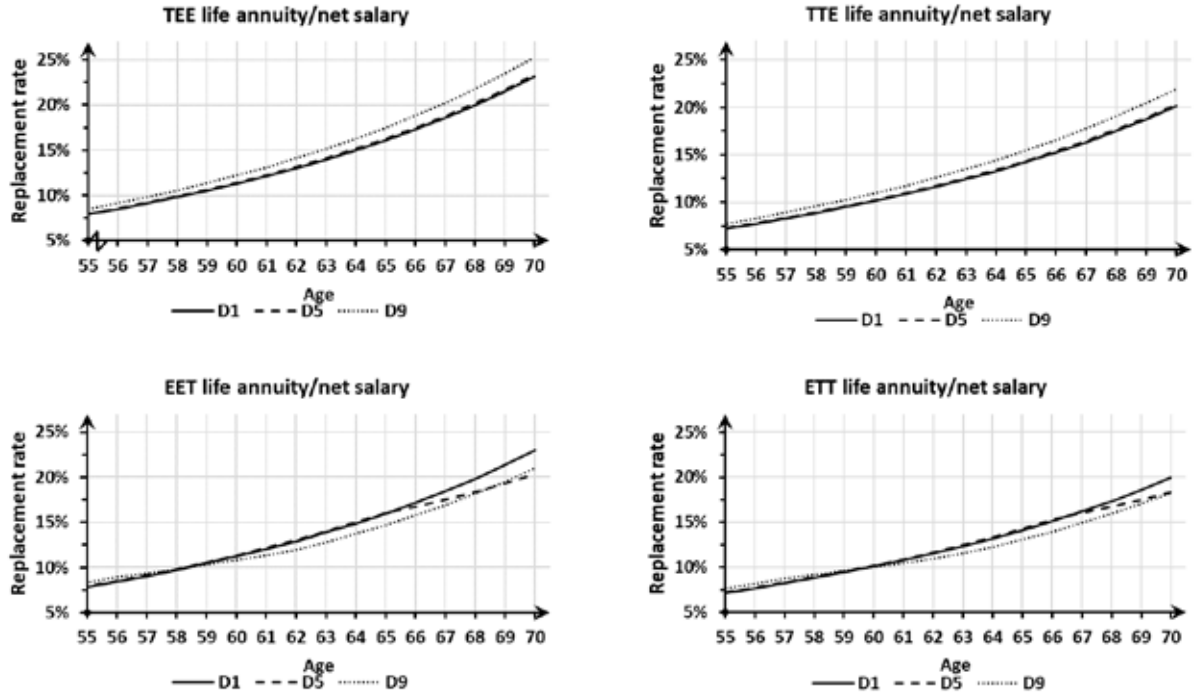
Fig. 3. **Replacement rates achieved in a pension scheme for deciles of earnings and different retirement ages under four tax regimes, assuming benefits are paid as annuity certain for ten years**

As shown in Figure 3, replacement rate increases as the saving period increases. Increasing retirement age from 55 to 70 causes the replacement rate to increase by about 15 percentage points (from 16% to 31 % under EET system, from 15% to 28% in ETT system, from 19% to 36% in TEE system and from 17% to 31% in TTE system).

Replacement rate depends on both the tax regime and the level of earnings. In TEE and TTE systems replacement rates are higher for high earners (in deciles 8 and 9) in relation to low earners. In contrast, in EET and ETT regimes it is the low earners (below decile 5) who obtain higher replacement rates, in relation to high earners.

It can be noted that introducing tax on investment returns reduces the replacement rate. The reduction depends on retirement age, and is equal to around 9% if retiring at age 55 and 15% if retiring at age 70.

Secondly, it was assumed that the benefit is paid in form of life annuity. Calculations were made based on survival probabilities as published by GUS for Poland in 2017 [GUS, 2018b]. The results are shown in Figure 4.



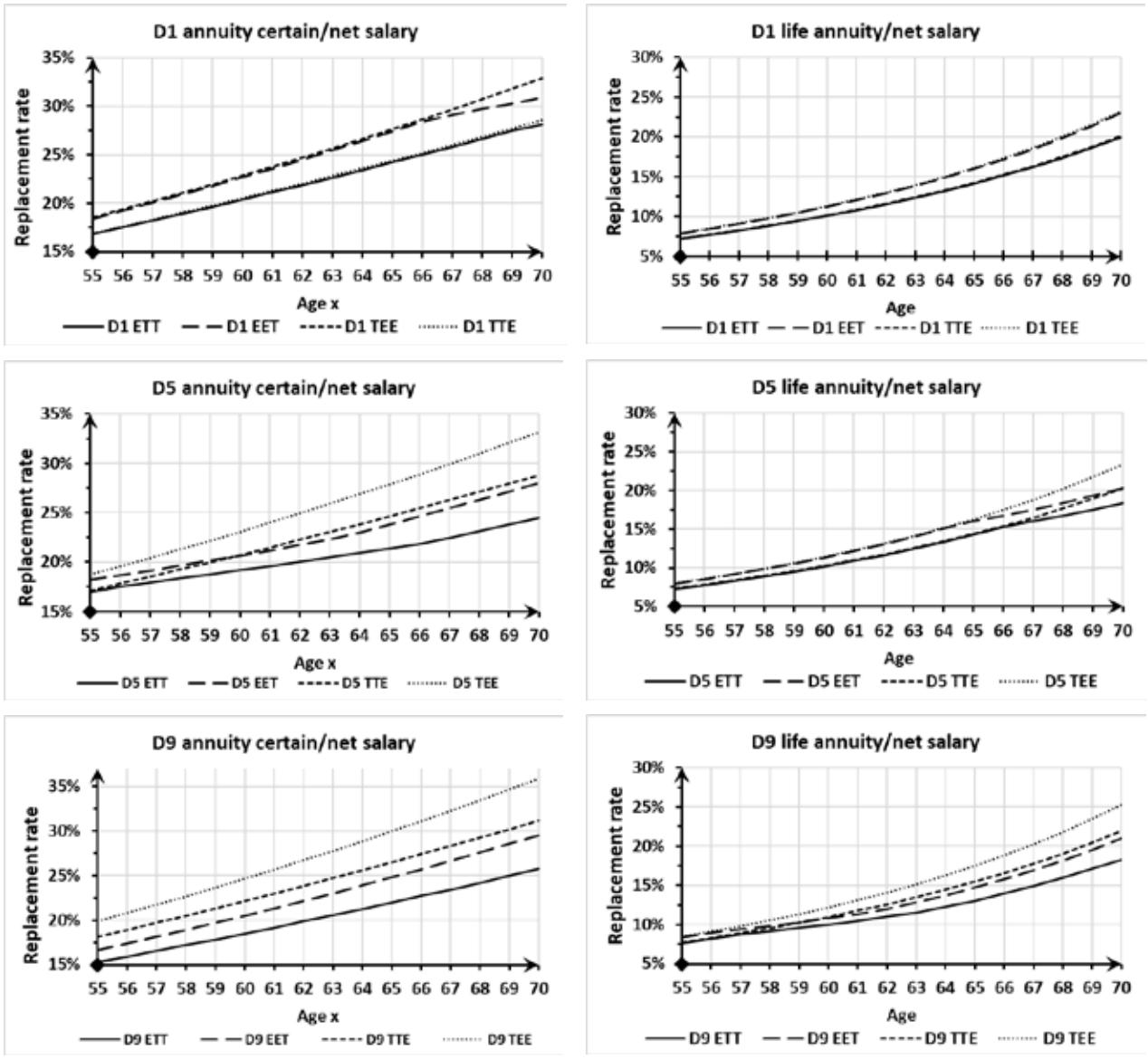
Source: authors' calculations.

Fig. 4. **Replacement rates achieved in a pension scheme for deciles of earnings and different retirement ages under four tax regimes, assuming benefits are paid as annuity for life**

Changing the benefit payment form from annuity certain to life annuity decreases the replacement rate. The effect is more pronounced at lower retirement ages: if retiring at age 55, changing annuity certain to life annuity decreases the replacement rate by more than 50%, if retiring at age 70 the change results in a decrease of about 30%. However, benefit in the form of life annuity offers longevity protection, as it will be paid for as long as the member is alive. This is not the case with annuity certain, where the benefit stops after ten years, allowing possibility that the member will outlive their pension. Other conclusions reached for the case of annuity certain (replacement rate increasing with retirement age, TEE/TTE regimes resulting in higher replacement rates for high earners and EET/ETT for low earners, and impact of introducing tax on investment returns) can be reached in case of life annuities as well.

In order to investigate the four tax regimes further, results of replacement rate calculations where compared in the same graph for all tax regimes. Three levels of earnings, corresponding to deciles 1, 5 and 9, and benefits in the form of life annuity were chosen as basis for comparison. These are shown in Figure 5.

As can be seen in Figure 5, for low earners with (earning from decile 1) there is little difference between taxing contributions or taxing benefits (between EET and TEE or ETT and TTE regimes). Only tax on investment returns has an impact on replacement rate, decreasing it. For workers with earning in decile 5 (the median) some difference between all four regimes can be observed, in particular at higher retirement ages. This difference becomes even more pronounced when looking at worker with earnings in decile 9. Here, TEE regime results in highest replacement rate (this is however at the cost of lower net salary during working life, as pension contributions are not exempt from tax). ETT results in lowest replacement rate, with little difference between the remaining two regimes.



Source: authors' calculations.

Fig. 5. **Replacement rates achieved in a pension scheme by member with earnings equal to deciles 1, 5 and 9 for different retirement ages under four tax regimes, assuming benefits are paid as annuity for life**

4. Analysis of sensitivity

As a final step, an analysis of sensitivity of results to the assumptions was performed. Decreasing the assumption for rate of investment returns by one percentage point (from 3% to 2%) decreases the replacement rate, as lower investment

returns result in lower pension amount. Exact scale of impact depends on the retirement age as well as tax regime, and to a lesser extent on the decile of earnings. The decrease in replacement rate is equal to about 15% - 22% for TEE, 10% - 21% for EET, 12% - 18% for TTE and 8% - 17% for ETT. Increasing the assumption for rate of salary increase by one percentage point (from 1% to 2%) also decreases the replacement rate. This is due to the fact that while both pension amount and net salary amount increase, the salary increases by greater percentage, thus decreasing the replacement rate. As before, exact scale of impact depends on the retirement age as well as tax regime, and to a lesser extent on the decile of earnings. The decrease in replacement rate is equal to about 10% - 21% for TEE, 10% - 25% for EET, 10% - 20% for TTE and 10% - 25% for ETT.

Conclusions, proposals, recommendations

1. Two tax regimes which tax pension contributions (TEE and TTE) result in lower net salary throughout working lifetime than the two regimes under which contributions are exempt from income tax (EET and ETT). The effect is larger for high earners (taxing contributions lowers the net salary by about 2%) in comparison to low earners (taxing contributions lowers the net salary by about 1%). This causes the tax incentives (i.e. offering tax exemptions on pension contributions) to be more attractive for high earners and not necessarily for low earners.
2. Different tax regimes work better for different earners. TEE and TTE result in higher replacement rates for high earners compared to low earners, whereas EET and ETT for low earners compared to high earners. In addition, for low earners there is little difference between EET and TEE or ETT and TTE regimes. Only tax on investment returns has an impact on replacement rates. In contrast, for high earners TEE results in highest replacement rates (at the cost of lower net salary) and ETT in lowest. This analysis confirms Hypothesis 2.
3. Introducing tax on investment returns reduces replacement rates by about 9% (if retiring at age 55) to 15% (retiring at age 70).
4. Changing benefit payment form from annuities certain payable for ten years to life annuities decreases replacement rates, but offers longevity protection.
5. The above comparison of different tax systems using measures of member's pre and post retirement income confirms Hypothesis 1.
6. The practical implication of the paper is that there is no single tax regime that would provide highest replacement rates for all workers. Different aims can be achieved by using different regimes, depending on particular country's income tax rules.

Bibliography

Bankman J., 1988. *Tax policy and retirement income: are pension plan anti-discrimination provisions desirable?* The University of Chicago Law Review, 55:790, p 790 - 835

Barr N., Diamond P., 2010. *Pension reform: a short guide*, Oxford University Press

Bowers N.L.Jr, Gerber H.U., Hickman J.C., Jones D.A., Nesbitt C.J., 1997. *Actuarial mathematics*, The Society of Actuaries.

Brzęczek T., Szczepański M., 2016. *Zarządzanie ryzykiem w pracowniczych programach emerytalnych. Uwarunkowania instytucjonalne, ekonomiczno-fiskalne i demograficzne [Risk management in occupational pension schemes. Institutional, fiscal-economic and demographic determinants]*, Polskie Towarzystwo Ekonomiczne, Poznań

European Commission Legal Service, 2011. *Summaries of important judgements. C-236/09 Test-Achats, judgment of 1 March 2011*. [Online] Available at: http://ec.europa.eu/dgs/legal_service/arrets/09c236_en.pdf [Accessed 20.12.2018].

Fenge R., Werding M., 2003. *Ageing and the tax implied in public pension schemes: simulations for selected OECD countries*, CESifo Working Paper, No. 841, Center for Economic Studies and Ifo Institute (CESifo), Munich

Ferrera M., Jessuola M., 2006. *Italy: a narrow gate for path-shift*, in: The handbook of West European pension politics, edited by Immergut E.M, Anderson K.M. and Schulze I., Oxford University Press, p. 396-453

Green-Pedersen C., 2006. *Denmark: a „World Bank" pension system*, in: The handbook of West European pension politics, edited by Immergut E.M, Anderson K.M. and Schulze I., Oxford University Press, p. 454-495

GUS, 2018a. *Rocznik statystyczny pracy 2017 [Yearbook of labour statistics 2017]*, Warszawa.

GUS, 2018b. *Trwanie życia w 2017 r. [Life expectancy tables of Poland 2017]*, Warszawa.

Immergut E.M., Anderson K.M., 2006. *Editors'introduction: the dynamics of pension politics*, in: The handbook of West European pension politics, edited by Immergut E.M, Anderson K.M. and Schulze I., Oxford University Press, p. 1-45

Instytut Emerytalny, 2017. *Pracownicze Plany Kapitałowe – szansa czy miraż? Postulaty de lega ferenda z różnych perspektyw nad projektowaną formą dodatkowego oszczędzania na emeryturę [Employee Capital Plans – opportunity or mirage? De lega ferenda postulates from different perspectives on the proposed form of additional retirement saving]*, Warszawa. [Online] Available at: http://www.instytutemerytalny.pl/[Accessed 15.12.2018].

Kellison S. G., 1991. *The theory of interest*. Second Edition, RICHARD D. IRWIN, INC.

KNF, 2018. *Pracownicze Programy Emerytalne w 2017 roku [Occupational pension schemes in 2017]*, Urząd Komisji Nadzoru Finasowego, Warszawa.

KPMG, 2018. *Poland – Income tax*. [Online] Available at: https://home.kpmg/xx/en/home/insights/2011/12/poland-income-tax.html [Accessed 15.09.2017].

OECD, 2015. *Stocktaking of the tax treatment of funded private pension plans in OECD and EU countries*. [Online] Available at: www.oecd.org/pensions [Accessed 15.12.2018].

OECD, 2017a. *OECD Pensions at a Glance 2017: OECD and G20 indicators,* OECD Publishing, Paris

OECD, 2017b. *OECD Pensions at a Glance 2017: How does Poland compare*?, OECD Publishing, Paris

Palacios R., Pallarès-Miralles M., 2000. *International patterns of pension provision*, Social Protection Discussion Paper Series, No 0009, World Bank.

Petelczyc, J., 2016. *Pracownicze programy emerytalne w krajach Unii Europejskiej [Occupational pension schemes in European Union countries]*, Dom Wydawniczy ELIPSA, Warszawa.

Ustawa z dnia 11 września 2015 r. o działalności ubezpieczeniowej i reasekuracyjnej, Dz.U. 2015 poz. 1844, art. 34 [Act of Polish Parliament of 11 September 2015 on insurance and reassurance activity].

Ustawa z dnia 4 października 2018 r. o pracowniczych planach kapitałowych, Dz.U. 2018 poz. 2215 [Act of Polish Parliament of 4 October 2018 on employee capital plans].

Whitehouse E., 2005. *Taxation: The tax treatment of funded pensions*, Pension Reform Primer Series, World Bank, Washington, DC. [Online] Available at: https://openknowledge.worldbank.org/handle/10986/11211 [Accessed 15.12.2018].

Yoo K.Y., de Serres A., 2004. *Tax treatment of private pension savings in OECD countries*, OECD Economic Studies, No 39

THE MODERATING ROLE OF SENSE OF COHERENCE BETWEEN PERCEIVED SUPERVISOR SUPPORT AND JOB BURNOUT

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Abstract. Supervisors have a significant influence on job satisfaction and well-being of employees. Vice versa, consequences of poor supervisory support range from heightened perception of stress[1], an intention to leave, absenteeism to serious psychological consequences or Burnout. However, the risk of developing a Burnout is not given for every employee. This work understands, that the personal assessment of, and the response to leadership behaviour or supervisor support, is a function of employees' personality traits. Sense of Coherence (SoC) can be seen as one of these personal characteristics. SoC describes the extent, "to which one has a pervasive, enduring though dynamic feeling of confidence that one's environment is predictable and that things will work out as well as can reasonably be expected." (Antonovsky, 1979:123). The sample comprises of managers in middle management (N=82) from different German industries. In the examination, the Survey of Perceived Supervisor Support (SPSS), the Maslach Burnout Inventory (MBI-D) and the Sense of Coherence Scale (SoC-29) has been used. It was postulated that SoC moderates the relationship between perceived supervisor support and job Burnout among employees. Partly, in the line with the predictions, a significant correlation between perceived Supervisory Support and the Burnout Dimensions "emotional exhaustion", "professional fulfilment" and "depersonalization" and a significant moderating effect of SoC on the relationship between perceived Supervisory Support and the Burnout dimension "emotional exhaustion" could be determined.

Key words: *perceived supervisory support, burnout, mental exhaustion, sense of coherence*

JEL code: M12, J24, J28

Introduction

Burnout is a disease composed of the dimensions "emotional exhaustion", "depersonalization," and "reduced personal accomplishment", occurring particularly among employees who work with people (Maslach & Jackson, 1984, 1986). In his original 1974 article, Freudenberger describes the state of "being burned out" as "becoming exhausted by making excessive demands on energy, strength, or resources" in the workplace (Freudenberger, 1974:159). It is the result of "[…] a (transactional) process in which a previously committed professional disengages from his or her work in response to stress and strain experienced in the job" (Cherniss,1980:18). Hence, Burnout reduces the ability to work, solving job-related problems and developing professional efficacy (Maslach & Goldberg, 1998).

Whether and when workload and -situations lead to a health-endangering strain or, in the worst case, to chronic stress and ultimately Burnout symptoms, depends, among other things, on the Social Support provided by supervisors (Tintor, 2015; Stock et al. 2014; Mohr & Udris, 1997; Ducki, 2000). In general, mental well-being is the consequence of balance between workload (extent and complexity) as well as available structural, social and personal resources (Sprenger, 2011). In the context of a health-promoting leadership approach, resources are of central importance, since supervisors' leadership behaviour has an influence on employee's well-being. Supervisory support is recognized as a social resource (Becker, 2015). Why only certain employees, in a similar position or similar work setting, are prone to burnout and others stay

[1] In the course of this work the general term "stress" refers to the harmful distress.

healthy, cannot be explained based on organizational factors solely. This phenomenon is not illuminated in Burnout research sufficiently. As a result, it is assumed, that individuals have (more or less) generalized[2] resistance resources. These resources are responsible for promoting the process of recovery, but also for keeping a good heath condition. A method to measure this competence is concept of Sense Of Coherence (SoC), central part of the Salutogenesis. Antonovsky describes SoC as a particular "emotional quality" (Ducki, 2000) which can be considered as an indicator for mental health. Antonovsky (1979:8) is speaking of the "way of looking at the world," individuals' general attitude towards their life, which is characterized by a high degree of reflexivity regarding to own feelings and needs.

Whether stressors can be successfully mastered depends on evaluation processes, activation of resource and coping. SoC has a positive influence on all phases of the coping process (Antonovsky, 1997): In the primary evaluation of potential stressors already, individuals with a strong SoC behave different than those with a weak SoC. Hence, individuals having a strong SOC are more inclined to classify a stimulus as a non-stressor. However, if a stimulus is assessed as a stressor, a person with a strong SoC may interpret it as a positive challenge rather than a threat. In this primary evaluation processes tension is already reduced. For that reason it can be summarized: The stronger the feeling of SoC, the better the healthier of an individual - or the better the ability to recover from disease (Antonovsky,1979; Antonovsky, 1987; Meckel-Haupt, 2001; Rottmann, 2012). SoC is based on three components: The feeling of perceiving the world as organized (Sense Of Comprehensibility), the conviction to find a solution in burdensome situations (Sense Of Manageability) or considering it as meaningful to invest energy for challenging tasks (Sense Of Meaningfulness) (Antonovsky,1979; Bengel et al., 2001; Lindström & Eriksson, 2006; Eriksson & Lindström, 2006; Hager, 2018).

The previous explanations give rise to the question, to what extend SoC (as an intervening variable), moderates the effect of perceived supervisory support on Burnout. To test the hypothesis, a correlation analysis, a linear regression and a moderator analysis were performed.

1. Methodology

A cross-sectional survey design has been used to determine the desired research results. The data has been collected by the recruitment of employees in different German industries and branches, online on XING-Network[3]. The online survey has been conducted via the platform "SoScisurvey"[4]. The participants received no incentives.

To measure *Perceived Supervisory Support*, the SPSS scale (Kottke & Sharafinski, 1988) has been used. The SPSS scale is based on the Perceived Organizational Support Survey by Eisenberger et al. (1986) - with one difference - all items refer to the supervisor, not to the organization as a global entity. Given that the definitions of Perceived Organizational Support and Perceived Supervisory Support are practically identical in nature, their measurements have been adapted to accommodate these similarities. The SPSS consists of 16 items with a 7-point Likert scale anchored from "strongly disagree (1) to "strongly agree" (7). Example items include: "My supervisor really cares about my well-being." "My supervisor is willing to help me, when I need a special favour." "My supervisor tries to make my job as interesting as possible." The items "If my supervisor could hire someone to replace me at a lower salary, he/she would do so." and "If given the opportunity, my supervisor would take advantage of me." must be reversed during summation of the total

[2] Antonovsky (1979) uses the term generalized resistance resources (GRR) to refer to the overall physical constitution and the body's defenses, intelligence and education, coping strategies and ego-strength (self-confidence and positive self-esteem) on an individual level. The GRRs are determined by the quality of social relationships, the desire for belonging, social support, trust and recognition, and social participation. GRR at a social level are: Meaningful participation in activities, disposition over material security for livelihood, or, in a cultural context, the viable aesthetic, political and religious value orientations.
[3] https://www.xing.com/
[4] https://www.soscisurvey.de/

values. Higher scores indicate that participants perceived their supervisors to be more supportive. Cronbach's alpha in the present study was measured at .944.

Sense of Coherence was investigated with the validated questionnaire by Antonovsky (Antonovsky 1993). The questionnaire comprises a total of 29 seven-level scaled questions on the 3 basic components (comprehensibility, meaningfulness and manageability) of the SoC (original published in Hebrew and English). There are two different types of items in this questionnaire, both, negative and positive polarized. For positively polarized items, the respective scale value (1 to 7) is included in the overall score, for negatively polarized questions, the lowest scale value (1) receives the highest value to be added and the highest scale value (7) the value 1. The 13 items 1, 4-7, 11, 13, 14, 16, 20, 23, 25, 27 have negative polarity. Accordingly, the value of the item is evaluated negatively and a total of 104 (13*8) is added to the total value. Examples of items measuring the comprehensibility dimension are as follows (Antonovsky, 1987, p. 190ff.): “When you talk to people, do you have a feeling that they don’t understand you?” (from ‘never have this feeling’ to ‘always have this feeling’), “Do you have a feeling that you are in an unfamiliar situation and don’t know what to do?” (from ‘very often’ to ‘very seldom or never’). The following items are examples that measure manageability: “When something unpleasant happened in the past your tendency was:” (from ‘to eat yourself up about it’ to ‘to say “ok that’s that, I have to live with it” and go on’), “When you do something that gives you a good feeling:” (from ‘it’s certain that you’ll go on feeling good’ to ‘it’s certain that something will happen to spoil the feeling’). Meaningfulness is measured with items like these: “Doing the things you do every day is:” (from ‘a source of deep pleasure and satisfaction’ to ‘a source of pain and boredom’), “When you think about your life, you very often:” (from ‘feel how good it is to be alive’ to ‘ask yourself why you exist at all’). A principal component factor analysis, performed by Schumacher et al. (2000), did not identify the 3-factor structure of the SoC-Scale. They recommend to use the SoC-29 as a global factor. In this investigation a Cronbach's alpha of 0.82 for the global (full) scale was determined. A recommended, the sub-factors are not considered separately.

The *Maslach Burnout Inventory* by Maslach & Jackson (1981) has been used as a diagnostic tool for the detection of burnout. The questionnaire is regarded as the most widely used survey instrument in empirical studies of the burnout phenomenon (Rudow, 1994). For this research, the german revised version of the Maslach Burnout Inventory (MBI-D) according to Büssing & Perrar (1992) has been chosen. The MBI-D closely follows Maslach & Jackson's item content and scaling and captures the components (according to the original MBI construct) “emotional exhaustion”, “depersonalization” and “professional fulfilment”. The MBI-D consists of 21 items on a six-step Likert scale with possible answers: 1="nie" (never), "(sehr selten " (very rare), " eher selten" (rather rare), " manchmal" (sometimes), "eher oft (rather often)" and 6=" sehr oft" (very often). Maslach & Jackson (1986) recommend the separate consideration of the three subscales. The values are calculated for each of the three scales by summation. The scale of personal fulfilment has to be calculated vice versa. Scoring higher on the subscale emotional exhaustion indicates greater feelings of fatigue and being drained; a higher score on the subscale depersonalisation denotes a greater tendency toward cynical, callous and uncaring attitudes against e. g. colleagues; higher professional fulfilment scores refer to higher feelings of competence and successful achievement, whereas scoring low on this subscale indicates a higher attitude of inefficacy and reduced motivation (Salanova et al., 2005). The reliability was estimated for the subscale emotional exhaustion at .823, for the subscale depersonalization .811 and for the subscale professional fulfilment .902.

In addition to the main independent variables, a set of control variables that can affect job burnout were included into the model. These variables include [a] age, [b] gender, [c] company affiliation. Gender was measured as a dummy variable - females were coded 0 and males 1. Company affiliation was measured in the number of years that respondents had worked for their organizations. A correlation-, regression- and mediator analysis were performed. The moderator analysis was done using the sobel test based on the PROCESS macro developed by Hayes (2018). All analyses were carried out using the Statistical Package for Social Sciences (SPSS), version 25.0. The statistical significance level was set at $p<0.05$.

Perceived supervisory support was set as an independent variable; burnout was defined as a dependent variable. SoC was set as a moderator variable.

2. Results

The sample represents a subset of the population of all employees in middle management in Germany. The age of the participants (N=82) ranges from 21 to 56 years (M = 40.34, SD = 10.46). According to Kolmogorov-Smirnov .000 and Shapiro-Wilk .000, there is clearly no normal distribution for the age of the interviewees, as the specified significance limit for this study falls far short of p<.050. 59 participants (71.95%) are male and 23 female (28.05%).

The Burnout scores on the three dimensions of the surveyed employees show a mean of 2.60 (SD=1.17, Var.=1.36, Range=4,9) for emotional exhaustion, 2.88 (SD=0.1, Var.=0.86, Range=4.4) for depersonalization and 4.18 (SD=0.11, Var.=1, Range=4) for professional fulfilment. The Kolmogorov-Smirnov test shows a significance of .095 (emotional exhaustion) and .558 (professional fulfilment), the Shapiro Wilk test a significance of .162 (depersonalization). The significance limit of p<.050 is exceeded by all three burnout dimensions, thus a normal distribution of the values is given. The average scores for women are 2.60 (SD=1.26, Var.=1.58, min.=0.40, max.=5.10, Range=4.7) for emotional exhaustion and 2.84 for depersonalization (SD=1.03, Var.=1.05, min.=0.60, max.=4.60, Range=4.00). The average scores for men are 2.61 (SD=1.14, Var.=1.29, min.=0.20, max.=4.90, Range=4,7) for emotional exhaustion and 2.73 for depersonalization (SD=1.00, Var.=1.00, min.=0.60, max.=5.20, Range=4.60). There are gender differences in pro-fessional fulfilment men scoring at 4.29 (SD=0.98, Var.=0.96, min.=1.90, max.=5.90, Range=4.00) higher on that burnout dimension than women: 3.91 (SD=1.04, Var.=1.09, min.=2.00, max.=5.70, Range=3.70).

The perceived Supervisory Support of the interviewed employees has a mean of 46.79 with a standard deviation of 13.39 and a variance of 179.35. The extreme values are at min. 19 and max. 79 with a range of 60. For the perceived supervisory support, the calculation of the Kolmogorov-Smirnov test gives a value of .012 and that of the Shapiro-Wilk test a value of .169. Thus, according to Shapiro-Wilk (p<.050), there is a normal distribution of the perceived supervisory support values given. The mean perceived supervisory support of male employees in the sample is 45.92 and lower than for female workers. The variance is 208.56, the standard deviation 14.44. In female male students, the mean is 49.04, with a variance of 103.13 and a standard deviation of 10,16. The range of 35 (min. 35, max. 70) of the female students is lower than for the male students (60, min. 19, max. 79).

For the SoC of the interviewees, a mean of 152.24 with a standard deviation of 19.67 and a variance of 134.21 has been calculated. The extreme values are at min. 87 and max. 186 with a range of 99. For the perceived supervisory support, the calculation of the Kolmogorov-Smirnov test calculated a value of .006 and that of the Shapiro-Wilk test a value of .067. Thus, according to Shapiro-Wilk (p<.050), there is a normal distribution of the SoC values given. The mean of perceived supervisory support of male employees in the sample is 147.88 and lower than for female workers. The variance is 132,77, the standard deviation 21,07. In female male students, the mean is 153,34, with a variance of 135,12 and a standard deviation of 10,16. The range of 92 (min. 94, max. 186) of the female students is higher than for the male students (87, min. 87, max. 174).

As part of a bivariate correlation analysis, possible relationships between the individual variables were tested. For correlation coefficients between perceived supervisory support and the three Burnout Dimensions (emotional exhaustion, depersonalization and professional fulfilment), see Table 1. The factor emotional exhaustion (r=-.224) correlates significant negative, depersonalization (r=-.183) correlates significant negative and professional fulfilment (r=.302) correlates significant positive with perceived supervisory support. For these investigations the Pearson coefficient was used (p<0.05).

Table 1

Pearson Correlation

	Perceived Supervisory Support	Emotional Exhaustion	Depersonalization	Professional Fulfillment
Perc. Supervisory Support	1,000	-.224*	-.183*	.302**
Sig. (2-tailed)	.	.043	.000	.006

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

Separate linear regression analyses (Parts A, B, C) were calculated for the three dimensions of the burnout construct. In a first step, the burnout dimension emotional exhaustion was tested. 5,0% of the variance of the emotional exhaustion can be predicted from perceived supervisory support. The standard error of the estimate is 1.154.

Table 2

Regression Analysis (Part A) - Model Summary (Variable: Emotional Exhaustion)

	R	R^2	Adj. R	Std. Error of the Estimate
Emotional Exhaustion	.224[a]	.050	.046	1.154

a. Predictors: (Constant) Perceived Supervisory Support

The ANOVA shows that the regression model makes a statistically significant prediction (Sig. .000⩽.050). Finally, a regression coefficient of B=3,355 with a standard error of .466 for emotional exhaustion could be determined. The upper and lower limits of the confidence interval are 2.428 and 4.282.

Table 3

Regression Analysis (Part A) - Coefficients

	B	Std. Error	β	T	Sig.	Lower Bound	Upper Bound
(Constant)	3,355	.466		7.201	.000	2,428	4,282
Perceived Supervisory Support	-.016	.010	-.224	-1,674	.042	-.035	.003

a. Predictors: (Constant) Emotional Exhaustion

Secondly, the burnout dimension depersonalization has been tested. 3,6% of the variance of the emotional exhaustion can be predicted from perceived supervisory support. The standard error of the estimate is 0.879.

Table 4

Regression Analysis (Part B) - Model Summary (Variable: Depersonalization)

	R	R^2	Adj. R	Std. Error of the Estimate
Depersonalization	.189[a]	0.036	.032	.879

a. Predictors: (Constant) Perceived Supervisory Support

The ANOVA shows that the regression model makes a statistically significant prediction (Sig. .000⩽.050). A regression coefficient of B=3,178 with a standard error of .355 for depersonalization could be determined. The upper and lower limits of the confidence interval are 2.550 and 4.125.

Table 5

Regression Analysis (Part B) - Coefficients

	B	Std. Error	β	T	Sig.	Lower Bound	Upper Bound
(Constant)	3,178	.355		8.112	.000	2,345	4,112
Perceived Supervisory Support	.020	.008	-.213	2.101	.022	.003	.031

a. Predictors: (Constant) Depersonalization

Thirdly, the burnout dimension professional fulfilment has been tested. 9,1% of the variance of the emotional exhaustion can be predicted from perceived supervisory support. The standard error of the estimate is 0.980.

Table 6

Regression Analysis (Part C) - Model Summary (Variable: Professional Fulfilment)

	R	**R^2**	**Adj. R**	**Std. Error of the Estimate**
Prof. Fulfilment	.302[a]	0.091	.086	.980

a. Predictors: (Constant) Perceived Supervisory Support

According to ANOVA, the regression model makes a statistically significant prediction (Sig. .000⩽.050). The regression coefficient of B=3,355 with a standard error of .466 for professional fulfilment could be determined. The upper and lower limits of the confidence interval are 2.550 and 4.125 (Table 5).

Table 7

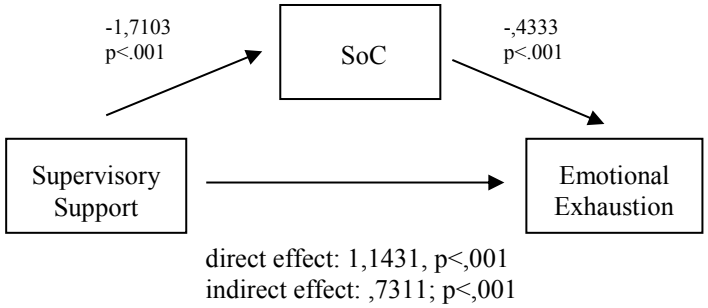
Regression Analysis (Part C) - Coefficients

	B	Std. Error	β	T	Sig.	Lower Bound	Upper Bound
(Constant)	3,178	.355		8.112	.000	2,345	4,112
Perceived Supervisory Support	.020	.008	-.213	2.101	.022	.003	.031

a. Predictors: (Constant) Depersonalization

Finally, surprisingly few (significant) effects of control variables on three aspect of burnout were found: depersonalization was positively associated with gender (male) (β=.124; p<.1) & professional fulfilment was positively associated with job tenure (β=.137; p<.05).

The prerequisite for the moderator analysis, the normal distribution of the dependent variable and the moderator variable, is given (see paragraph 5b, 5c). The previous studies show, that perceived supervisory support has a significant effect on all three burnout dimensions. A moderator analysis should check the role of the SoC as a possible moderator between perceived supervisory support and the dependent variable burnout in its three dimensions. This indirect effect was tested for significance using the bootstrapping procedures outlined by Hayes (2018). Bootstrapping uses random sampling with replacement to increase accuracy in sampling estimates. The PROCESS macro, model 4, was used to test the model. This analysis used 5,000 bootstrap samples created from the original sample to estimate bias-corrected standard errors and 95% confidence intervals for the indirect effect of perceived supervisory support on burnout measures via SoC. As described by Hayes (2018) indirect effects are considered significant at p<,050 if zero is not included in the 95% confidence interval.



Source: author's construction based on the moderator analysis.

Fig. 1. **Model and Results of the Moderator Analysis**

3. Discussion

The aim of the study was to capture the supervisory support that employees experience from their immediate supervisors and to investigate the extent to which this support predicts the development of burnout. Furthermore, it should be determined, whether SoC proves to be a buffer between supervisor support and burnout. A distinction of the three burnout dimensions according to Maslach et al. (1986) made it possible to obtain a more precise description of the effect of supervisory support and to explain their specific connections. The analyses on the prediction of burnout point to the special importance of the superior, since high levels of support are accompanied by lower levels of exhaustion. Social supervisory support can act as a psychosocial immune system. Granted or denied, social support can directly affect the mental state of individuals – both in a positive or negative sense. In a positive way, it promotes health and helps to overcome disease.

The results are consistent with relevant literature on the topic of social support as a key to effective stress-management at work. Less hierarchical leadership through emotional competence counteracts burnout among employees (Vincent, 2012). Hence, the more dissonant and dictatorial the leadership is, the more likely burnout will become noticeable among employees. Supervisory support is therefore strongly related to the emotional competence of the executive (Bergner, 2016).

The positive moderator analysis regarding the SoC and its buffer function between perceived supervisory support and the burnout dimension emotional exhaustion suggests that one's own spiritual view is (partly) responsible for interpreting potential stress situations either as problems and intimidations or as challenges and growth opportunities. This underlines the findings of Rimann & Udris (1998).

Not only organizational factors, such as supervisory support, are responsible for developing a burnout. In order to counter these limitations of personal and organisational factors, sustainable models are needed, which can explain the connections between employee and organisation in a comprehensible manner. The Sense of Coherence is one of these models that can reveal an imbalance between personal resources and working conditions.

Conclusion

Clinical research is pathogenic. A salutogenic approach does not evaluate stressors negatively - under certain conditions they can even strengthen the organism. Hence, some people maintain or improve their health status despite high stress levels (Antonovsky, 1997; Bengel & Strittmatter, 2001). Research into the concept of Salutogenesis - in particular the health-promoting effect of the Sense of Coherence - is empirically well documented. However, the role of the SoC in

the world of labour has been insufficiently researched (Mette & Harth, 2017) and should be further explored in future steps.

In times of high stress rates in the profession, it is important for all employees in middle management to become aware of the problems that can arise from stress and burnout. Personal and occupational strategies for coping with stress are associated with a reduction in burnout and are, therefore, highly recommended. An occupational strategy would be a targeted burnout prophylaxis, starting shortly after hiring employees - because coping with stressful working conditions at the start of a career or a new job, places high demands new staff members. Supervisors therefore have a key role to play. Prior to an absence, the supervisor can become actively involved with the employee, since it is possible to detect the warning signs of burnout or of an absence. The manager can then meet with the employee to advise him properly and refer him to an aid program or training. This type of proactive approach will often make it possible to prevent or shorten a work stoppage due to burnout.

The taboos of excessive professional values, which society but also employees set for themselves, must be broken. It remains to be hoped that health-promoting measures can optimize the work situations in the long term. Only in this way employees can work motivated and remain healthy in their jobs.

References

Antonovsky, A. (1979): Health, Stress, and Coping. San Francisco: Jossey-Bass Publishing.

Antonovsky, A. (1993): The Structure and Properties of the Sense of Coherence Scale. *Social Science & Medicine*, 36(6), pp. 725-733.

Antonovsky, A. (1997): Salutogenese. Zur Entmystifizierung der Gesundheit. In: Franke, A. (Ed.): *Forum für Verhaltenstherapie und psychosoziale Praxis*, 36, Tübingen: dgvt.

Antonovsky, A. (1987): Unraveling the Mystery of Health. How People manage Stress and stay well. Jossey Bass, San Francisco.

Becker, P. (2015): Executive Health - Gesundheit als Führungsaufgabe. Arbeitsfreude und Unternehmenserfolg fördern. Heidelberg: Springer.

Bengel, J.; Strittmatter, R. & Willmann, H. (2001): Was erhält Menschen gesund? Antonovskys Modell der Salutogenese - Diskussionsstand und Stellenwert. *Forschung und Praxis der Gesundheitsförderung*, Köln.

Bergner, Thomas (2016): Burnout-Prävention. Erschöpfung verhindern - Energie aufbauen. Stuttgart: Schattauer.

Büssing, A., & Perrar, K.-M. (1992): Die Messung von Burnout. Untersuchung einer deutschen Fassung des MaslachBurnout Inventory (MBI-D) [Measuring burnout: A study of a German version of the Maslach Burnout Inventory (MBI-D)]. *Diagnostica*, 38(4), pp. 328-353.

Cherniss, C. (1980): Staff Burnout. Job Stress in the Human Services. London: Sage Publications.

Ducki, A. (2000): Diagnose gesundheitsförderlicher Arbeit. Eine Gesamtstrategie zur betrieblichen Gesundheitsanalyse. Zürich: vfd..

Eisenberger, R., Huntington, R., Hutchinson, S., & Sowa, D. (1986): Perceived organizational Support. *Journal of Applied Psychology*, 71, pp. 500-507.

Erickson, M. &. Lindström, B. (2006): Antonovsky's Sense of Coherence Scale and the Relation with Health: A systematic Review. Journal of Epidemiology and Community Health, BMJ, London, 60(5), pp. 376–381.

Freudenberger, H. J. (1974): Staff Burn-Out. *Journal of Social Issues*, 30: 159-165.

Hager, F. W. (2018). The Links between Meaningfulness of Work, Work-Engagement and mental Well-Being. In: DOKBAT 2018 - 14th Annual International Bata Conference for Ph.D. Students and Young Researchers (Vol. 14), pp. 76-94. Zlín: Tomas Bata University in Zlín, Faculty of Management and Economics, Czech Republic.

Hayes, A.F. (2018): Mediation, Moderation, and Conditional Process Analysis. New York: Guilford Press.

Kottke, J. L. & Sharafinski, C. (1988): Measuring perceived supervisory and Organizational Support. *Educational and Psychological Measurement*, 48, pp. 1075-1079.

Lindström, B. &. Erickson, M. (2006): Contextualizing Salutogenesis and Antonovsky in Public Health Development. Health Promotion International, Oxford Academic, Oxford, 21(3), pp. 238-244.

Maslach, C., & Jackson, S. E. (1981): The Measurement of experienced Burnout. *Journal of Occupational Behavior*, 2, pp. 99-113.

Maslach, C., & Jackson, S. E. (1984): Burnout in Organizational Settings. In S. Oskamp (Ed.), *Applied Social Psychology Annual: Applications in Organizational Settings* 5, pp. 133-153. Beverly Hills, CA: Sage.

Maslach, C. & Goldberg, J. (1998): Prevention of Burnout: New Perspectives. *Applied & Preventive Psychology*, 7, pp. 63-74.

Maslach, C.; Jackson, S. E.; Schwab, R. L. (1986): Maslach Burnout Inventory. Manual with a special Supplement "Burn-out in Education"; MBI. 2. ed. Palo Alto, Calif.: Consulting Psychologists Press.

Meckel-Haupt, A. (2001): Ein Beitrag zur Validierung des deutschsprachigen SOC-Fragebogens von Aaron Antonovsky. Medizinische Fakultät der Heinrich-Heine-Universität Düsseldorf.

Mette, J. & Harth, V. (2017): Das Kohärenzgefühl im Arbeitskontext - Bedeutung des Konstrukts für die Gesundheit von Beschäftigten und die betriebliche Gesundheitsförderung. *Zentralblatt für Arbeitsmedizin, Arbeitsschutz und Ergonomie*,

Heidelberg: Haefner.

Mohr, G. & Udris, I. (1997): Gesundheit und Gesundheitsförderung in der Arbeitswelt. In: Schwarzer, Ralf (Hg.): *Gesundheitspsychologie: Ein Lehrbuch*. Hogrefe: Göttingen.

Rimann & Udris (1998): Kohärenzerleben - Sense of Coherence: Zentraler Bestandteil von Gesundheit oder Gesundheitsressource? In: Schüffel, W. u.a. (Eds..) (1998): pp. 351–364.

Rottmann, J. (2012): Das Kohärenzgefühl in der Ätiologie depressiver Störungen: Ein Schutzfaktor, der im depressiven Zustand nicht verfügbar ist? Dissertation. Technische Universität Dortmund. URL: https://eldorado.tu-dortmund.de/bitstream/2003/30092/1/Dissertation.pdf. Last retrieved: 21.11.2018.

Rudow, B. (1994): Die Arbeit des Lehrers. Zur Psychologie der Lehrertätigkeit, Lehrerbelastung und Lehrergesundheit. Huber, Bern.

Salanova, M., Agut, S. & Peiro, J. M. (2005): Linking Organizational Resources and Work Engagement to Employee Performance and Customer Loyalty: The Mediation of Service Climate. *Journal of Applied Psychology*, 90, pp. 1217-1227.

Sprenger, B. (2012): Die praktische Umsetzung im Unternehmen. In: Lohmer, M.; Sprenger, B. & Wahlert, J. In: *Gesundes Führen - Life-Balance versus Burnout im Unternehmen*. Stuttgart: Schattauer.

Stock, R.; Totzauer, F. & Zacharias, N. (2014): A Closer Look at Crossfunctional R&D Cooperation for Innovativeness: Innovation-oriented Leadership and Human Resource Practices as Driving Forces. In: *Journal of Product Innovation Management*, 31(5) pp. 924-938.

Tintor, M. (2015): Betriebliches Gesundheitsmanagement in Restrukturierungsprozessen. Heidelberg: Springer Gabler. Van Dick, R. (1999): *Stress und Arbeitszufriedenheit im Lehrerberuf*. Marburg: Tectum.

Vincent, S. (2012): Analyseinstrument für gesundheits-und entwicklungsförderliches Führungsverhalten: Eine Validirungsstudie. *Zeitschrift für Arbeitswissenschaft*, 66(1), pp. 38–57.

FINANCIAL INCENTIVES OF ECONOMIC GROWTH IN EMERGING MARKETS: EVIDENCE FROM RUSSIA

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Abstract. The impact of the financial system on economic growth is mixed. As a rule, the financial system is considered to be able to create preconditions for stable economic growth. And, thus, it is advisable to financially stimulate the economy. However, the relationship between financial development and economic growth is non-linear as can be seen in emerging markets. On the one hand, emerging markets have not reached the limit of financial saturation. On the other hand, the imperfect institutions of these countries hinder effective financial stimulation of the economy. In this regard, the aim of the study was to substantiate the instruments of financial stimulation of economic growth in the emerging market (on the example of the Russian Federation). Objectives of the research were revealing the prerequisites of financial stimulation of the economy in the countries with emerging financial markets and formulation recommendations in the field of financial and monetary policy of Russia.

When justifying financial incentive instruments, general scientific methods are used, as well as methods of statistical analysis of aggregated data on the functioning of the financial sector of the Russian Federation. The main results and conclusions of the study include the following.

Emerging markets are characterized by significant institutional weaknesses, including weak protection of property rights, which limits the use of financial instruments in developed markets. In these conditions, the fiscal and monetary mechanisms of financial stimulation of economic growth have the highest potential, which is clearly seen in the example of neocontinental financial systems.

According to the authors, the instruments of financial stimulation of economic growth in the emerging market should be based on the principles of transparency and efficiency. For Russia, this means, first of all, the use of such financial incentive instruments that would contribute to the growth of the efficiency of public institutions ' expenditures, the reduction of the share of shadow business; the use of monetary policy instruments that stimulate, first of all, economic growth; creation of new institutions of economic development.

The study makes a certain contribution to the system of scientific ideas about the applicability of certain instruments of financial stimulation of economic growth in emerging markets. The applied value of the research results is that they can be used in the practice of management and regulatory decisions made in emerging markets.

Key words: *emerging markets, financial system, economic growth, financial incentives, Russia*

JEL code: E63

Introduction

The nature of financial system's influence on economic growth is ambiguous. As a rule, it is believed that a financial system is capable of creating prerequisites for stable economic growth. And, thus, financial stimulation of an economy is

advisable. However, the link between financial development and economic growth is not linear, as can be seen from the example of the emerging markets. On the one hand, the emerging market countries have not reached the limit of financial glut. On the other hand, the imperfect institutions of these countries impede effective financial stimulation of the economy.

The development of the Russian economy in recent years has been largely associated with the formation of a modern model of economic growth, suggesting the emergence of a new technological base that significantly increases the labor productivity and cheapens the production. Power structures are trying to develop innovative activity in the economy through the state corporations and other state organizations (institutions), using the budgetary resources for capital investments (Zubov V. & Inozemtsev V., 2015). The rest of the economic agents are experiencing restrictions in attracting investments. From 2013 to 2016, the average annual growth of the nominal volume of investment in fixed assets per capita was about 3%, demonstrating a negative value in 2015 (Federal State Statistics …, 2017). At the same time, only slightly more than 40% of the large and medium-sized enterprises attracted loans and borrowings for these purposes (HSE, 2016).

The inertness of the economic agents has objective reasons. They are widely covered in literature and are largely related to the monetary policy pursued by the Central Bank of the Russian Federation and the budget policy of the Ministry of Finance of the Russian Federation, which, in particular, are reflected in the works of Glazyev S. (2016), Andryushin S. (2014) and Belousov A. (2006). In the Russian economy, the largest amounts of financial resources are accumulated by the credit institutions, which account for up to 90% of the assets of national financial institutions (including pension funds, insurance organizations, investment funds and other financial institutions) (Rubtsov B. & Annenskaya N., 2018).

The ineffective model of financial stimulation of the economy leads to stagnation of investment process, which is intensified under the influence of international sanctions (Balatsky E., 2018). Financial instability has become an interconnected critical factor, impeding not only strategic, but also tactical investment planning (Maslennikov M., 2018).

The actual challenges determined the goal and key questions of the research, which was aimed at justifying the tools of financial incentives for economic growth in the emerging market on the example of Russia. The paper reveals prerequisites of financial stimulation of the economy in the countries with emerging financial markets, formulates recommendations in the field of financial and monetary policy.

Research results and discussion

1 The problem of financial stimulation of economy in the context of emerging market ideas

The issue of financial priming of an economy has a fairly long history of research, including in the framework of the neoclassical model of economic growth (see Smith W., 1957; Foley et al., 1969, Drabicki J. & Takayama A., 1983). Theoretical models have often been tested on national economies (Garcia C. & Malet N., 2007; Patrick H., 1959; Hossain A., 2015; Wallich H., 1985). The main attention in the framework of this problematic is usually paid to a monetary policy (Fortin P., 2003; Galindo M., 2009; Bhattacharya et al., 2009). Among the budgetary mechanisms (Van der Ploeg F., 1996; DSouza E., 1996) taxation is emphasized more often (Pokrovskaia et al., 2016), that is, income generation, rather than the ways of its spending. Note, however, that it is often the tax mechanisms that have the least ability to be imported (L'vova et al., 2017; Lvova et al., 2016).

In general, the problem of financial stimulation of the economy is one of the main directions of the theory of financial systems (Popov A., 2017). The main questions in this area can be formulated as follows: does the financial system affect economic growth, what are the significance, scale and channels of this influence? In the researches of R. Levine, A. Demirgüç-Kunt, T. Beck, M. Čihák, E. Feyen, V. Maksimovic, D. Acemoglu, N. Loayza, R. McKinnon and others it is proved that an efficiently functioning financial system can have a significant positive effect on economic growth, which

actualizes the search for financial incentives for the economy. However, in recent years, an optimistic view on the role of the financial system in the economy has been replaced by fears about financial glut, after which further financialization ceases to be a factor of stable economic growth (Popov A., 2017; Danilov Yu. & Pivovarov D., 2018).

At the same time, a number of studies confirm that the window of opportunities for effective financial stimulation of economic growth is open to the countries with fairly high, but not excessive, financial development (Sahay et al., 2015). In this group of countries are the countries with the so-called "emerging market".

The term "emerging market" is understood very ambiguously. Thus, the category of emerging markets, which are understood in a broad sense, taking into account the economic, social and technological factors of national competitiveness, usually includes about 80 countries, whereas, according to the investment community (MSCI, S&P Dow Jones, FTSE Russel, Bloomberg), a group of countries with emerging financial markets usually includes a little over 20 (Lvova N., 2018). For the purpose of research, we will consider the emerging market in a narrow sense, primarily as a phenomenon of financial economics, which allowed us to formulate its main institutional, instrumental and functional features.

From an institutional point of view, attention should be paid to such signs of emerging market as the relatively high role of deposit institutions in the financial development and at the same time the limited amount of financial services provided by other financial intermediaries, which is fully true for the Russian Federation. The model of financial development in these countries is more close to the continental type, in which financial markets are significantly inferior in importance to financial institutions (Zhukova T., 2015; Rubtsov B. & Annenskaya N., 2018; Voronova et al., 2018).

As for the instrumental signs of an emerging market, it is worth noting a limited selection of corporate finance instruments. This circumstance is reflected in the financial structure of companies in the real sector. The access of these companies to capital market instruments is generally limited, and the financial structure is mostly weakly diversified with a relatively low share of borrowed funds. In addition to this, Russia is characterized by the escape of the companies into short-term sources of financing, including commercial loans, which, stably remaining on the balance sheet, become quasi-long-term sources (Ivanov V. & Bushueva N., 2007). Let us also note the ultra-high concentration of the Russian capital market, reflecting the limited availability of direct financing mechanisms for small and medium-sized companies. Obviously, the above signs should be taken into account in the study of channels of financial stimulation of the economy.

From a functional point of view, the financial specifics of the emerging market is manifested in the fact that the quality of financial functions in the economy is insufficient compared with developed financial markets. This feature is manifested in the quantitative parameters of the financial systems functioning, which are characterized by relatively low financial depth and efficiency. Capital markets in these countries are less voluminous and liquid than in the countries with developed financial markets, and at the same time, they are marked by increased volatility, which correlates with high potential, but at the same time increased country risks.

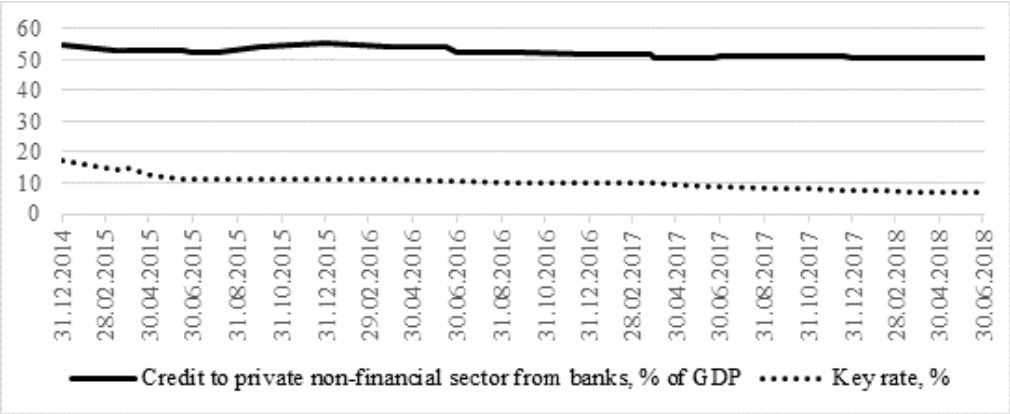
Taking into account the identified financial signs of the emerging market, we will further reveal the problem of choosing mechanisms for financial stimulation of the economy by the example of the Russian Federation, including monetary and budgetary ones.

2 Monetary mechanisms of economy stimulation

The availability of loans depends primarily on the level of interest rates and, in general, on the mechanism of the refinancing scheme. For the credit institutions in the Russian Federation, the size of the key rate (from January 01, 2016, it is equated to the value of the refinancing rate, which is no longer set by itself) predetermines the costs of raising additional funds.

The maximum size of the key rate in the Russian Federation was set by the Bank of Russia on December 16, 2014 at 17%; in the future, the size of the key rate systematically decreased until March 26, 2018, amounting to 7.25%; at the end of 2018, the key rate was increased twice: up to 7.5% on September 17 and up to 7.75% on December 17 (CBRF, 2018 (a)).

In theory, a reduction in the key rate should lead to an increase in the non-financial sector crediting, which makes it possible to consider its reduction as a tool for financial stimulation of the economy. However, in Russia, a reduction in the key rate did not lead to an increase in financial access (Fig. 1).



Source: authors' construction based on (BIS, 2018; CBRF, 2018 (b)).

Fig. 1 **Response of non-financial sector crediting in Russia to the key rate of CBRF**

Lending volumes grew in those segments that enjoyed the state support (agriculture, mining, mortgage lending). Under the conditions of stagnation, the credit activity of most other sectors reacted poorly to a reduction in the key rate.

The malfunctioning of the transmission mechanism occurred mainly at the stage of impulse transfer from a key rate to the bank lending rates, which, according to the authors, is due to the low level of competition in the banking sector. Market failures lead to the effect of sustainably high interest rates on the loans to the non-financial sector, which is not sensitive enough to monetary policy instruments.

The official position of the Bank of Russia on liquidity management is still to create "conditions for the formation of money market rates near the Bank of Russia key rate" (see CBRF, 2015). The sizes of the key rate are linked by the Bank of Russia, first of all, with the stability of the ruble, its strengthening or weakening, that is, mainly with external factors affecting the functioning of the Russian financial market.

Of course, the reduction of inflation and the stability of the national currency are the initial conditions for ensuring the sustainable development of the national economy, for the implementation of the accumulation processes and subsequent investments. To solve this problem solely by the methods of monetary policy that the CBR is trying to do, as world practice shows, is unrealistic. Moreover, it cannot be solved by reducing the money supply, reducing consumer demand, which is simultaneously accompanied by a drop in investment volumes, even with the growth of profits of enterprises in the real sector of the economy.

An analysis of the growth rate of the money supply and the rate of investment in the Russian Federation over the past 15 years indicates that there is a direct relationship between these indicators. Thus, for investment growth of 5%, the growth rate of the money supply must be at least 20% in real terms (Blinov S., 2015).

In increasing the resource base of commercial banks, an important role belongs to central banks. The Bank of Russia also revitalizes its activities in this direction, increasing the time and volume of refinancing of credit institutions in order to form long-term sources of liquidity. At the same time, the volume of preferential financing included in the Investment projects support program is not sufficient for a transition to the intensive development of the national economy.

3 Fiscal mechanisms to stimulate the economy

The specific of the emerging market predetermines the high importance of the budget mechanisms for the financial stimulation of the economy. In particular, in the Russian Federation the budget funds are the most important source of investment resources. In recent years, a significant part of them has been directed to the technical re-equipment of the military-industrial complex, to the development of infrastructure and, above all, of the transportation infrastructure.

According to the Federal Law "On the federal budget for 2018 and the planned period of 2019-2020," the federal budget revenues during this period in relation to the country's GDP will decline from 15.7% in 2018 to 14.8% in 2020. This dynamic is mainly connected to the reduction in the share of oil and gas revenues from 5.6% of GDP to 4.9% of GDP while maintaining the share of non-oil and gas revenues at the level of 10% of GDP, which once again shows a significant dependence of the budget system of the Russian Federation on foreign economic conditions for energy (Ministry of Finance of Russia, 2017).

In the conditions of the deficit of the overwhelming majority of the budgets of the subjects of the Russian Federation, the possibilities for financial support of the regional economy are extremely insignificant. The current system of intergovernmental relations is characterized by the dependence of the regions on the federal budget in the absence of due incentives for economic growth. In our opinion, substantial institutional transformations of the entire budget system are needed, expressed in the new distribution of taxes between the levels of the budget system, which would allow the regions to make the majority of expenses from their own sources codified by the law. Thereby, interbudgetary transfers and expenses related to their servicing would be reduced.

Tax policy as a whole is capable of providing efficient mechanisms for financial stimulation of an economy, which, first of all, turns us to the problem of creating tax conditions for the development of the non-financial companies sector. The studies examining tax policies in the emerging and underdeveloped countries allow us to make the following generalizations in terms of the specifics of tax conditions for business:

- the need to receive sufficient revenues to finance basic public expenses without using excessive borrowing causes a relatively high need of the state for tax revenues; at the same time, an important task is to form tax revenues in such a way that the principle of equity is maximally observed, the negative impact on economic activity is minimal, and the tax system remains competitive (Tanzi V. & Zee H., 2000);

- low incomes of the population and the underground economy do not allow income taxation of citizens to play the same role as in the developed countries, which predetermines the high importance of indirect taxes and taxes on businesses (Amaglobeli et al., 2018);

- the cost of collecting and administering taxes in developed countries is significantly lower than the costs in other countries. In emerging and underdeveloped financial systems, business expenses on meeting tax obligations are also significant (BirD R. & Zolt E., 2008). At the same time, the first costs can be reduced, but at the expense of the growth of business expenses, which maintains high administrative pressure on business in the emerging market countries.

Two assumptions can be made: first, about the lower tax burden on business in the emerging markets compared to developed markets; secondly, about significantly more burdensome business procedures for calculating and paying taxes in the emerging market countries. To test these assumptions, as well as to correlate tax conditions in emerging market countries and in Russia, the main components of the “ease of paying taxes” indicator of the “Doing Business” rating prepared by the World Bank jointly with PriceWaterhausCoopers, published in 2018 (based on the data for 2016) by groups of countries. The considered groups included countries for which there were no contradictions in the assessment of financial development (according to (FTSE country classification …, 2018) and (S&P Dow Jones …, 2018).

For the clarity of the express comparison an average value for the countries of the group and a variance to characterize the range of variation of values within the group for each of the indicators were calculated. The results are presented in table 1.

Table 1.

Paying taxes in countries with developed and emerging financial markets in 2018

	Countries with developed markets		Countries with emerging markets		Russia
	average	variance	average	variance	
1. Total tax and contribution rates, %, including	37.9	148	42.5	234	47.5
Profit taxes rate	15.4	58	16.7	59	8.8
Labor taxes rate	20.1	158	21.3	154	36.3
Other taxes rate	2.0	5	4.6	42	2.4
2. Time to comply, hours, including	135.0	3089	294.9	143966	168
Corporate income taxes	40.0	568	79.8	8952	53
Labor taxes	58.0	1381	86.0	4619	76
Consumption taxes	36.9	372	129.1	54612	39
3. Number of payments, including	10.9	40	12.0	82	7
Profit taxes	1.6	1	1.9	7	1
Labor taxes	2.8	10	3.6	17	2
Other taxes	6.5	12	6.5	14	4

Note: the analysis included the data for 25 countries with developed financial markets: Australia, Austria, Belgium, Great Britain, Germany, the Special Administrative Region of the People's Republic of China Hong Kong, Denmark, Israel, Ireland, Spain, Italy, Canada, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, the Republic of Korea, Singapore, USA, Finland, France, Switzerland, Sweden, Japan; as well as in 22 emerging financial markets – Brazil, Hungary, Greece, Egypt, India, Indonesia, Qatar, Mainland China, Colombia, Malaysia, Mexico, United Arab Emirates, Peru, Poland, Russia, PRC Taiwan, Thailand, Turkey , The Philippines, the Czech Republic, Chile, South Africa.

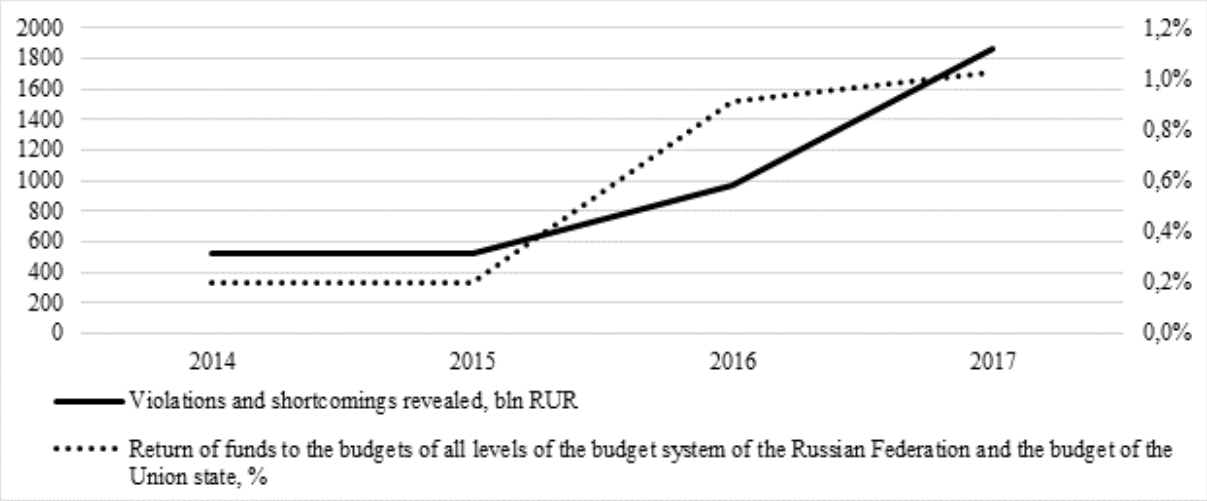
Source: authors' calculation based on (PWC & World Bank Group, 2018).

The first assumption has not been confirmed: the firm conclusion about the lower tax burden on enterprises in the emerging market countries cannot be made from the data presented. At the same time, attention is drawn to the fact that in the countries with developed financial markets, the tax rate on corporate profits is on average a bit lower than in emerging market countries, however, there are also fewer differences between the countries in this group. At the same time, in the countries with emerging markets, taxes that are paid by organizations and are not taxes on profits and labor form a higher and more differing load by country. The second assumption of administrative costs found full confirmation for each of the indicators. But it is especially pronounced when analyzing the indicator of time needed for the fulfillment of tax obligations: the average value for a group of countries with emerging markets is more than twice the value for a group of countries with developed markets. At the same time, such values are not least related to the "surge" of values for Brazil — in 2016, companies spent 1958 hours on meeting all tax obligations in this country, which corresponds to half of the total time for calculating and paying taxes from the rest of the group. But even if Brazil is excluded from the

statistical calculations for the group, the total time to fulfill tax obligations in the emerging market countries is one and a half times higher than the corresponding figure for the countries with developed markets.

The noted features of the countries with emerging financial markets are clearly manifested in the analysis of the data for Russia. The total tax rate on the Russian business is higher than the average for the emerging market countries, and the income tax rate is lower. The administrative costs of paying taxes in Russia are now closer to those in the developed market countries than in the emerging market countries. This was the result of a systematic state policy to improve the conditions for the fulfillment of tax obligations, while the target indicators were precisely the improvement of the country's position in the analyzed market, which was successfully achieved. The number of business tax payments in Russia is below the average for emerging market countries. Thus, we can note the lower administrative costs and, nevertheless, the higher burden of taxes paid by the business in Russia.

In the context of budget spending cuts and the identified limitations in raising budget revenues, the issues of effective financial control are being actualized. Violations of the principle of targeted and effective use of budgetary funds are observed to a greater or lesser extent in almost all regions of the Russian Federation. The volumes of revealed violations and shortcomings in the receipt and use of funds of the budget system only increase. Only a small part of these funds can be returned to the budgets (Fig. 2).



Sources: authors' construction based on (Accounts Chamber of Russia, 2014; Accounts Chamber of Russia, 2015; Accounts Chamber of Russia, 2016; Accounts Chamber of Russia, 2017).

Fig. 2 **Key results of fiscal control activities in the Russian Federation**

A significant challenge for effective fiscal stimulation of the economy in the emerging financial market is corruption, the extent of which can be measured only approximately. For Russia, the problem of corruption has not loosened its relevance for many years. Thus, according to the corruption perception index (Transparency International, 2017), Russia regularly occupies the last places in the international ranking, being inferior not only to developed countries, but also to all other countries with the emerging financial market (Transparency International, 2017).

Another interconnected problem in this area is the shadow economic activity, the development of which substantially distorts the effect of financial incentives. The share of the shadow economy to GDP, according to Rosstat, is 20-25%, according to the International Monetary Fund estimates – 33% (Self-employed citizens…, 2018)[1].

[1] Special attention in this context requires the phenomenon of the informal economy. The informal economy is a factor in the destabilization of the financial system, as it leads to a decrease in budget revenues in terms of unpaid taxes, insurance contributions to extrabudgetary funds, and a reduction in the social protection of citizens employed in the informal economy (low wages, lack of social benefits). In Russia, the problem of the informal economy is significant in regions with a low level of industrial development, high unemployment, and, conversely, in terms of development, the leading regions are less susceptible to making the economy "underground" (Korchagin Y., 2017).

The resources of the shadow economy are a potential source not only for stabilizing the budgetary system, but also represent significant reserves for increasing the revenue side of budgets of different levels. Along with the shadow business, which does not generate revenues for the consolidated budget of the Russian Federation, significant volumes are made by the offshore business, which legally allows for the fiscal charges and, above all, the corporate income tax to be withdrawn from the payment to the budget. Of course, in this area it is necessary to use the experience of developed countries, eliminating the possibility of tax evasion. The Government of Russia faces the difficult task of minimizing the informal sector to at least the average European level.

Conclusions, proposals, recommendations

The emerging markets are characterized by the significant institutional imperfections, including weak protection of property rights, which limits the use of financial instruments that are implemented in the developed markets. Under these conditions, the monetary and budgetary mechanisms for financial stimulation of the economy have the highest potential.

The modern financial policy in Russia is basically focused on stabilizing the financial sector and adjusting the real economy to unfavorable external and internal conditions for conducting the business. It is unlikely that such a policy will contribute to ensuring a high rate of the national economy development. It is necessary to develop monetary and budgetary mechanisms that would allow to increase the monetary supply, increase the budget revenues at all levels, enhance the efficiency of using the budget funds, including by drastically reducing the level of corruption and reducing the share of the shadow economy.

It should be noted that an important role in financial stimulation of the economy in the emerging market countries belongs to development institutions, which potentially have significant growth reserves and are pivotal for the economy development (engineering, construction, etc.). Specialized development institutions[2] are not able to replace the banking sector in terms of investment lending. However, they should play the important role of "regulators" who orient the banking sector toward investing the industries and enterprises that are badly in need. In Russia, many of them cannot cope with this function. The activities of the development institutions should be transparent and controlled by non-departmental audit institutions.

In general, according to the authors, the instruments of financial stimulation of economic growth in the emerging market should be built on the principles of transparency and efficiency. For Russia, this means, first of all, the use of such instruments of financial incentives that would contribute to increasing the efficiency of public institutions expenses, reducing the share of the shadow businesses; the use of monetary policy instruments stimulating, above all, the economic growth; the creation of new institutions of economic development.

The research makes a certain contribution to the system of scientific ideas about the applicability of individual instruments of financial stimulation of economic growth for the countries with emerging markets. The practical significance of the research results is that they can be used in the practice of managerial and regulatory decisions taken in emerging markets.

[2] Currently there are a number of such institutions in Russia : The Foundation for Assistance to the Development of Small Forms of Enterprises in the Scientific and Technical Sphere, Foundation for Development of the Center for Elaboration and Commercialization of New Technologies (SKOLKOVO), the Monotowns Development Fund, the Industrial Development Fund, the VEB Innovations Fund, the Vnesheconombank Group of Companies – Bank for Development, OJSC MSP Bank – Bank for Small and Medium Enterprises support, the Innovation Support Fund, the RUSNANO Group, etc. The main source of funding for these institutions is the federal budget.

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Bibliography

Accounts Chamber of Russia, 2014. *Annual Report.* [Online] Available at: http://www.ach.gov.ru/upload/uf/42b/42bbd3028f55dd9fa2965d2f8eb9e8de.pdf [Accessed 14 January 2019]

Accounts Chamber of Russia, 2015. *Annual Report*. [Online] Available at: http://www.ach.gov.ru/upload/uf/483/4830aed0a9653b4c89e0ed73badbe861.pdf [Accessed 14 January 2019]

Accounts Chamber of Russia, 2016. *Annual Report*. [Online] Available at: http://www.ach.gov.ru/upload/uf/6cb/6cb43bbf3b9691809ef63be692eaa579.pdf [Accessed 14 January 2019]

Accounts Chamber of Russia, 2017. *Annual Report*. [Online] Available at: http://www.ach.gov.ru/upload/uf/67c/67cbebeb812ab80d1e97cd8fcaf1fd43.pdf [Accessed 14 January 2019]

Amaglobeli, D., Crispolti, V., Dabla-Norris, E., Karnane P. & Misch F., 2018. *Tax Policy Measures in Advanced and Emerging Economies: A Novel Database*. IMF Working Paper.

Andryushin, S., 2014. Perspectives of the Inflation Targeting Regime in Russia. *Voprosy Ekonomiki = Economic Issues*, no. 11, 07-121 [in Russian]

Balatsky, E., 2018. Damage to Russia from International Sanctions: Rethinking the Facts. *Mir novoj jekonomiki = World of New Economy*, vol. 12, no. 3, 36-45 [in Russian]

Belousov, A., 2006. Scenarios of Russia's Economic Development for a Fifteen-year Perspective. *Problems of Forecasting*, no. 1, 3-53 [in Russian]

Bhattacharya, J., Haslag, J. & Martin, A., 2009. Optimal Monetary Policy and Economic Growth. *European Economic Review*, vol. 52, no.2, 210-221.

Bird, R. & Zolt, E., 2008. Tax Policy in Emerging Countries. *Environment and Planning C: Government and Policy*, vol. 26. 73-86.

BIS, 2018. *Credit to Non-Financial Sector* [Online] Available at: URL: https://www.bis.org/statistics/totcredit.htm [Accessed 14 January 2019]

Blinov, S., 2015. Current Crisis, its Causes and Necessary Measures. *Expert Online*, available on-line at http://expert.ru/2015/02/06/ [Accessed 14 January 2019]

CBRF, 2015. *Report on Monetary Policy*. [Online] Available at: http://www.cbr.ru/publ/ [Accessed 14 January 2019]

CBRF, 2018 (a). *Interest Rates on the Bank of Russia Pperations*. [Online] Available at: http://www.cbr.ru/Content/Document/File/35859/rates_table_e.xlsx[Accessed 14 January 2019]

CBRF, 2018 (b). *Key Rate* [Online] Available at: http://www.cbr.ru/Content/Document/File/35859/rates_table_e.xlsx [Accessed 14 January 2019]

Danilov, Yu. & Pivovarov, D., 2018. Financial Structure in Russia: Conclusions for State Policy. *Voprosy Ekonomiki=Economic Issues,* vol. 3, 30-47 [in Russian]

Drabicki, J. & Takayama, A., 1983. An Optimal Monetary-fiscal Policy in an Aggregate Neoclassical Model of Economic Growth. *Journal of Macroeconomics*, vol. 5, no 1, 53-74.

DSouza, E., 1996. Budgetary Policy and Economic Growth. *Economic and Political Weekly*, vol. 31, no. 38, 2601-2607.

Federal State Statistics Service of Russia, 2017. *Investments in Fixed Capital per Capita in the Russian Federation on 21.01.2017*. [Online] Available at: http://www.gks.ru/free_doc/new_site/business/invest/invest_dusha.xlsx [Accessed 14 January 2019]

Foley, D., Shell, K & Sidrauski, M., 1969. Optimal Fiscal and Monetary Policy and Economic Growth. *Journal of Political Economy*, vol. 77, no4, 698-719.

Fortin, P., 2003. Can Monetary Policy make a Difference for Economic Growth and Inequality? *Canadian Public Police – Analyse De Politiques.* Conference on Linkages between Economic Growth and Inequality, Ottawa, vol. 29. S223-S232.

FTSE Country Classification Process, 2018. Interim Update. [Online] Available at: https://www.ftse.com/products/downloads/FTSE-Country-Classification-Update_latest.pdf [Accessed 14 January 2019]

Galindo, M., 2009. Monetary Policy and Economic Growth. *Monetary Growth: Trends, Impacts and Policies,* 67-76.

Garcia, C. & Malet, N., 2007. Exchange Market Pressure, Monetary Policy, and Economic Growth: Argentina, 1993-2004. *Developing Economies*, vol. 45, no 3, 253-282.

Glazyev, S., 2016. Stabilization of the Currency and Financial Market as a Necessary Condition for the Transition to Sustainable Development. *Economy of Regions*, no. 1 (12). 28-36 [in Russian]

Hossain, A., 2015. Inflation Volatility, Economic Growth and Monetary Policy in Bangladesh. *Applied Economics*, vol. 47, no. 52, 5667-5688.

HSE, 2016. *Investment Activity of Russian Industrial Enterprises in 2015*. Moscow. [in Russian]

Ivanov, V. & Bushueva, N., 2007. External Sources of Financing Russian Enterprises: Realities and Prospects. *Vestnik Sankt-Peterburgskogo universiteta. Jekonomika = Bulletin of St. Petersburg University. Economy*, iss. 1, 96-107. [in Russian]

Korchagin, Y., 2017. *Rating of Regions for the Informal Economy for 2016*. [Online] Available at: http://www.lerc.ru/?part=articles&art=2&page=130 [Accessed 14 January 2019]

L'vova, N.A., Pokrovskaya, N.V. & Ivanov, V.V., 2017. Socially Oriented Taxation and How It Is Perceived (Case Study of a Survey of Economists-To-Be). *Economic and Social Changes: Facts, Trends, Forecast*, no. 4, 196-211.

Lvova, N. A., 2018. The Concept of Financial Diagnostics of Public Companies for the Emerging Financial Market. *Jekonomika i predprinimatel'stvo = Economy and Entrepreneurship*, no. 9, 940-948 [in Russian]

Lvova, N., Pokrovskaia, N., Voronova, N. & Ivanov, V.V., 2016. The Concept of Financial Paradoxes: Origins, Essence, Potential for Development. *Proceedings of the 28th International Business Information Management Association Conference – Vision 2020: Innovation Management, Development Sustainability, and Competitive Economic Growth*, 671-680.

Maslennikov, M., 2018. Adaptation of Large-scale Business in the Face of Increasing Volatility of Global Financial Markets. *Zhurnal jekonomicheskoj teorii = Journal of Economic Theory*, vol. 15, no. 2, 189–203 [in Russian]

Ministry of Finance of Russia, 2017. The Main Directions of the Budget, Tax and Customs Tariff Policy for 2018 and the Planning Period of 2019 and 2020 [Online] Available at: https://m.minfin.ru/common/upload/library/2017/10/main/ONBNTTP_2018-2020.docx [Accessed 14 January 2019]

Patrick, H., 1959. Monetary Policy in Japans Economic Growth 1945-1959. *Far Eastern Survey*, vol. 28, no. 5, 65-71.

Pokrovskaia, N.V., Sokolov, B.I. & Ivanov, V.V., 2016. Tax Reforms for Sustainable Economic Growth of the National Economy: Case of China. *Proceedings of the 27th International Business Information Management Association Conference – Innovation Management and Education Excellence Vision 2020: From Regional Development Sustainability to Global Economic Growth*, 429 – 439.

Popov, A., 2017. Evidence on Finance and Economic Growth. *Working Paper Series of European Central Bank*, no. 2115.

PWC, World Bank Group, 2018. *Paying Taxes 2018*. [Online] Available at: https://www.pwc.com/gx/en/paying-taxes/pdf/pwc_paying_taxes_2018_full_report.pdf [Accessed 14 January 2019]

Rubtsov, B. & Annenskaya, N., 2018. Factor Analysis of the Russian Stock Market. *Journal of Reviews on Global Ecnomics*, iss. 7, 417-425.

S&P Dow Jones Indices' Annual Country Classification Consultation, 2017. [Online] Available at: https://us.spindices.com/documents/index-news-and-announcements/20170615-spdji-annual-country-classification-consultation.pdf [Accessed 14 January 2019]

Sahay, R., Cihák, M., N'Diaye, P., Barajas, A., Bi, R., Ayala, D., Gao, Y., Kyobe, A., Nguyen, L., Saborowski, C., Svirydzenka, K. & Yousefi, S.R., 2015. Rethinking Financial Deepening: Stability and Growth in Emerging Markets. *IMF Staff Discussion Note*, no. 15/08.

Self-employed Citizens Will Pay Taxes from 2019 [Online] Available at: https://www.snta.ru/press-center/samozanyatye-grazhdane-budut-platit-nalogi-s-2019-goda [Accessed 14 January 2019]

Smith, W.L., 1957. Monetary-fiscal Policy and Economic Growth. *Quarterly Journal of Economics*, vol. 1, no 1. 36-55.

Tanzi, V. & Zee, H., 2000. Tax Policy for Emerging Markets: Developing Countries. *National Tax Journal*, vol. 53, no. 2. 299-322.

Transparency International, 2017. [Online] Available at: https://transparency.org.ru/research/indeks-vospriyatiya-korruptsii/rossiya-v-indekse-vospriyatiya-korruptsii-2017-posadki-ne-pomogli.html?sphrase_id=10468 [Accessed 14 January 2019]

Van der Ploeg, F., 1996. Budgetary Policies, Foreign indebtedness, the Stock Market and Economic Growth. *Oxford Economic Papers – New Series*, vol. 48, No. 3, 382-396.

Voronova, N.S., Lvova, N.A. & Pokrovskaia, N.V., 2018. Determinants of Financial Development in the Context of Eurasian Integration. *Problemy sovremennoj jekonomiki = Problems of the modern economy*, iss. 1, 6-11 [in Russian]

Wallich, H., 1985. Central America Monetary Policy and Economic Growth. *Journal of Interamerican Studies and World Affairs*, vol. 27, no. 4, 111-115.

Zhukova, T.V., 2015. The Ownership Structure in the Financial Market in Countries with a Non-continental Model. *Finansy i kredit = Finance and Credit*, no. 35, 2-11 [in Russian]

Zubov, V. & Inozemtsev, V., 2015. Surrogate Investment System. *Voprosy Ekonomiki=Economic Issues,* no. 3, 76-86 [in Russian]

SYSTEMATIC LITERATURE MAPPING ON BLOCKCHAIN APPLICATION IN THE CONTEXT OF ECONOMICS, FINANCE AND MANAGEMENT

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Abstract. The relationship between knowledge management and innovation has been one of the most explored topics in management studies for many years. In contemporary organizations these two topics became associated with digital technologies. The introduction of computers and related digital technologies has been changing the way knowledge is managed in organizations, but digital innovation itself was imposing new requirements on what knowledge organization must possess to innovate and stay modern. Blockchain have recently emerged as paradigm-breaking technology, thus potentially requiring novel skills and knowledge from the adopting or innovating company.

The main purpose of this research is to conduct exploratory literature review in the field of economics, finance and management to in order to map the frequencies of topics related to blockchain application in organizations. Obtained findings provide an overview of what aspects and kinds of the nascent technology is being researched. The findings can help an innovating company better understand the current trends with respect to the development and adoption of the novel technology. This research also establishes a foundation for further analysis of skillsets and organizational knowledge required for blockchain-related innovations in organizations.

Key words: *literature mapping, blockchain application, economics and management studies*

JEL codes: D83, M12, M15, M51, O32

Introduction

Digital technologies play a big role in organizational development processes and in many cases, it becomes a critical factor for remaining competitive (Urbinati et al., 2017), moreover organizations are under increasing pressure to apply digital technologies to renew and transform their business models (Kohli, Melville, 2017). During the last decade, a number of authors (I. Nonaka, R. Toyama 2015, A. Halldorsson, J. Hsuan, H. Kotzab 2015, R. Maier, A. Schmidt 2015, M. J. Benner, M. L. Tushman 2015, J. Cha, M. Newman, G. Winch 2018) were calling for re-visiting knowledge management theories in the light of the paradigmatic changes in processes leading to the creation and adoption of new digital technologies in organizations. The introduction of computers and related digital technologies has been changing the way knowledge is managed in organizations, but digital innovation itself was imposing new requirements on what knowledge organization must possess to innovate and stay modern. The evolution of knowledge management in organizations (Vo, Mounoud, 2014), raises a need to analyze novel knowledge management methods and skills, because traditional one-fit-all models may not be valid in contemporary organizational landscape where digital technologies emerge.

One of the most popular topics in business management and innovation studies is blockchain technology, which is poised to become the most exciting invention after the Internet, for its decentralized trusted transactions (Zhao et al., 2016) and its perceived capacity to transform the ways in which people and businesses cooperate. Shortly after the term

blockchain was introduced by Satoshi Nakamoto in 2008, public ledger-based peer-to-peer decentralized digital currency 'Bitcoin' was created as a first blockchain technology implementation and is defined as a shared and immutable ledger (Gupta, 2017). Blockchain architecture gives participants an ability to share a ledger that updates every time when a transaction occurs by peer-to-peer replication and every block contains a certain and verifiable and immutable record of every single transaction ever made (Lewis, 2015). While originally blockchain had emerged as the basis for financial Bitcoin transactions, the underlying technology provides a practical solution to the problem of lack of trust in business world and human society, although real-world business use cases based on blockchain are still rare (Chen et al., 2018), which potentially shows that organizations still have little practical understanding how and what for the new technology can be used to improve or create new processes and products.

Even though few studies already exist on the blockchain technology application, organizations still have little practical knowledge (J. Flood, L. Robb, 2018, G. Fridgen, J. Lockl et al., 2018, Z. Zheng, S. Xie, et al., 2018), so to close this gap and to have wider perspective of blockchain technology we begin our research by rising a research question [RQ]: "What are the most important research areas reported in the scientific articles and papers on blockchain technology application in economics, finance and management? Research aims at discovering in the literature applications of blockchain technology that are currently used, as well as research results for other potential uses in economics, finance and management sectors and mapping the frequencies of topics related to blockchain application in organizations.

This research provides an overview of what aspects and kinds of the nascent technology is being researched, thus helping better understand the current trends with respect to the development and adoption of the novel technology. This research will also establish a foundation for knowledge mapping on skillset and organizational knowledge in the context of blockchain innovations, which, in turn, can help companies close the knowledge gap and better orient their knowledge and innovation management efforts.

2. Research design

To answer RQ and fulfil the aim of the research an interpretive research perspective was adopted. Interpretive studies generally attempt to understand phenomena through the meanings that people assign to them and interpretive methods are aimed at producing an understanding of the context and the process (Walsham, 1995).

To perceive wider insights about the blockchain technology as phenomena a systematic literature review was adapted in the context of economics, finance and management. Triangulation is used to capture different dimensions of the blockchain technology application. The systematic literature review is one secondary study method that goes through existing primary reports, reviews them in-depth and describes their methodology and results (Kitchenham, Charters, 2007). Along with systematic literature review, frequently a systematic mapping is used as a method. Systematic mapping is appropriate for this research, because it can help provide an overview of a research area, identify the quantity and type of research and results available within it, map the frequencies of publication over time to see trends and what is more, it is frequently used for research areas where relevant, high-quality primary studies is lack (Petersen et al., 2008).

As the blockchain field is relatively new and blockchain-based applications field started emerging in 2015 after the appearance of smart contract in the blockchain technology, so the study articles would be searched manually from determined sources from 2015 to 2018. It was decided to search the electronic libraries relevant for both management and technology domains: Scopus, Springer Link, Science Direct, IEEE, and ACM digital library.

Research begun with a systematic literature review, which was done by searching five databases and screening papers. After adding inclusion and exclusion criteria in the search and screen process, relevant articles were selected, blockchain application domains identified and systematic mapping was done to reveal frequencies of topics related to blockchain application in economics, finance and management sectors.

3. Systematic literature mapping on blockchain application

3.1.The literature search and screening process

In this research, a systematic literature review approach was followed according to the guidelines proposed by B. Kitchenham (2007). First, relevant keywords were set, secondly criteria for the searches were determined. The keywords that were used are: blockchain applications for finance, blockchain applications for management, blockchain applications for economics, blockchain applications for FinTech. The queries were also executed with alternative words like decentralized and distributed ledger by replacing the word blockchain. The search was confined to publications written in the English language and selected as a content type only journals and conference papers, rejecting book chapters or webpages (Konstantinidis et.al., 2018). As the blockchain field relatively new and blockchain-based application field started emerging in 2015 after the appearance of smart contract in the blockchain technology, so the study articles were searched manually from below defined sources from 2015 to 2018. Research begun with 337 selected articles. That number was reduced by 220 after excluding papers with irrelevant title to this research. The above procedure was repeated by scanning the papers abstracts and by applying inclusion/exclusion criteria, which further excluded 27 irrelevant papers. After reading the remaining papers in entirety and having applied quality assessment process, 32 irrelevant papers were excluded, giving the final number of remaining papers - 58 (See Figure 1, Appendix 1).

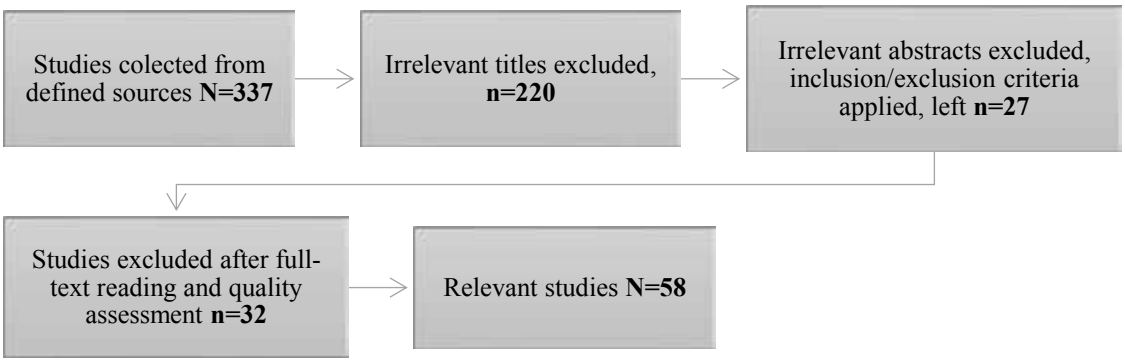

Fig. 1. **Search and screening process**

As illustrated in Figure 1, the prompt progression of the screening process begun after applying inclusion and exclusion criteria (Table 1) and the number of articles that were selected, decreased after full reading by applying quality assessment process.

Table 1

Inclusion/exclusion criteria

Inclusion criteria	Exclusion criteria
Only the peer-reviewed literature	Literature that does not subject to peer review
Literature that defines current	Grey literature or informal studies with no concrete evidence
Studies published from 2015-2018 which describe finance, business, economics and FinTech in the blockchain-based applications	Work in progress, proposals or draft versions

The quality assessment criteria process was defined to select relevant papers as precisely as possible. Table 2 lists the quality assessment criteria questions, which were formulated according to B. Kitchenham's (2007) quality criteria guidelines.

Table 2

The quality assessment questions

1. Are the goals and purpose of a study clearly stated?
2. Does the study describe Blockchain application in Finance, Business or Economics?
3. Does the study discuss real or hypothetical/theoretical Blockchain-based product/service or specific Blockchain platform, or specific Blockchain implementation?
4. Is the study answering all the defined questions or problems?
5. How well the research results are presented?
6. How clear are the links between data, interpretation and conclusions?

The quality assessment questions were scored as follows: 1 = fully satisfy the question, 0.5 = partially satisfy the question, 0 = does not satisfy the question. The studies which scored 50% (three out of maximum 6) or higher were included in the literature review, whereas the papers which did not pass the 50% threshold were excluded from the list.

3.2. Systematic literature mapping results

Second step of this research was to extract data from 58 relevant articles. To answer the RQ it was essential to extract the concepts at the heart of each paper, by developing a conceptual map of the blockchain application in the context of economics, management and finance. A systematic mapping enables to provide an overview of a research area, identify the quantity and the type of research and results available within it.

Going deeper into research, more accurate analysis of each sector was done. The intension of this step was to classify application domains of blockchain technologies (Table 4).

Table 4

Application domain classification

Application domain	Application examples and keywords
Business	Business service providers (app developers), Business service consumers (app users), Entrepreneurship, Enterprise, Business process, Business models, Online business.
Management	Management systems, Business Process Management, Business to consumers (B2C), Business to business (B2B), Business to Government (B2G), Life cycle management, E-governance, Intelligent Resource Management, Strategic management, Management and Knowledge.
Finance	FinTech sector, Fin market, Fin services, Fin industry, FinTech innovations, Banking, Insurance, Crowd funding, Payments, Taxation, Accounting, Auditing, Monitoring, Initial coin offerings, Fund raising, Equity crowdfunding.
Information technology systems	Internet of Things (IoT), Computer science, IT sector, Computing, Cloud computing, Network operators, Computer Architecture, Software architecture, Agile software processes, Software development companies, Log-in platforms, Database systems, Application development, Metadata repositories and services, Technology-based start-ups, Distributed databases, Human Computer Interaction (HCI), Smart Devices, Sensor nodes, Behavior pattern, Communication, Peer-to-peer computing.
Economics	Sharing economy, e-Government, Bureaucracy public services (e-ID, e-voting system, land registers, medical sector), Innovation, Open innovation Healthcare, Education, Supply chain energy, Freight Transportation, Crowd-based economy, Machine learning, Copyright, Smart city.

This classification leads to further analysis, which focuses on presenting what exact blockchain type were mentioned of each category – business, management, finance, information technology systems, economics (Table 5).

Table 5

Blockchain type in application domain

APP DOMAIN:	Blockchain (technology, app)	Bitcoin	Cryptocurrencies	Distributed ledger	Smart contracts	General
Business	**10**	2	1	1	5	
Management	4				3	
Finance	**11**	3	4	1	3	3
Information technology systems	**16**	1	2	1	**9**	1
Economics	**10**	1	1		5	
General	3				1	

The vast majority of selected relevant papers discussed and compared different blockchain models, presented schemes and solutions in using blockchain technology. Most of the papers included constructed or illustrated applications of how blockchain can be implemented in economics, business and finance sectors.

Looking at the results of literature mapping (see Table 5), perhaps one of the most interesting findings is that despite the hype, bitcoin is one of the least researched blockchain applications in the field of management and economics (including finance and FinTech). Taken together with "cryptocurrencies", however, those two facets of blockchain are second only to "smart contracts".

Conclusions and future research

The results show that research is relatively evenly distributed between business, finance, economics and IT, with the latter taking a bit more of researcher's attention. Not surprisingly, the cryptocurrencies and bitcoin are discussed mostly in the finance domain, while smart contracts – in the IT. This latter finding suggests that IT solutions are being sought and proposed for the use of smart contracts, which are at the heart of the discussion on usability and utility of blockchain application.

This research creates a foundation and clearly demonstrates the need for further and deeper analysis of literature. Specifically, the mapping results can be used as a stepping stone for the development of knowledge-oriented mapping of the blockchain research. Further research can be applying Bloom's Taxonomy of Measurable Verbs (Stanny, 2016) to classify the obtained results according to the knowledge-related "measurable verbs". Such exercise will help describe and classify how current research on blockchain and its application is correlated with different types (degrees) of knowledge and skills. The results of this further step will help companies understand what organizational competences are required for company to manage blockchain-related innovation.

Bibliography

Benner, M., J., M., Tushman, L. (2015). Reflections on the 2013 Decade Award—"Exploitation, Exploration, and Process Management: The Productivity Dilemma Revisited" Ten Years Later. Academy of Management Review, Vol. 40, No. 4. https://journals.aom.org/doi/abs/10.5465/amr.2015.0042

Cha, J., Newman, M., Winch, G. (2018). Revisiting the project management knowledge framework: Rebalancing the framework to include transformation projects. International Journal of Managing Projects in Business, Vol. 11 Issue: 4, pp.1026-1043. https://www.emeraldinsight.com/doi/pdfplus/10.1108/IJMPB-11-2017-0147

Chen, S., Zhang, J., Shi, R., Yan, J., Ke, Q. (2018). A Comparative Testing on Performance of Blockchain and Relational Database: Foundation for Applying Smart Technology into Current Business Systems. International Conference on Distributed, Ambient, and Pervasive Interactions DAPI 2018: Distributed, Ambient and Pervasive Interactions: Understanding Humans pp 21-34. https://link.springer.com/chapter/10.1007/978-3-319-91125-0_2

Flood, J., Robb, L. (2018). Professions and Expertise: How Machine Learning and Blockchain are Redesigning the Landscape of Professional Knowledge and Organization. Griffith University Law School Research Paper No. 18-20. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3228950

Fridgen, G., Lockl, J., Radszuwill, S., Rieger, A., Schweizer, A., Urbach, N. (2018). A Solution in Search of a Problem: A Method for the Development of Blockchain Use Cases. Strategic and Competitive use of Information Technology. AIS Conference.https://aisel.aisnet.org/amcis2018/StrategicIT/Presentations/14/

Gupta, M. (2017). Blockchain for Dummies, IBM Limited Edition. For Dummies. https://www.ibm.com/downloads/cas/36KBMBOG

Halldorsson, A., Hsuan, J., Kotzab, H. (2015). Complementary theories to supply chain management revisited – from borrowing theories to theorizing. Supply Chain Management: An International Journal, Vol. 20 Issue: 6, pp.574-586. https://www.emeraldinsight.com/doi/pdfplus/10.1108/SCM-06-2015-0228

Kitchenham, B., Charters, S. (2007). Guidelines for performing Systematic Literature reviews in Software Engineering Version 2.3. https://www.elsevier.com/__data/promis_misc/525444systematicreviewsguide.pdf

Kohli, R., Melville, N., P. (2017). Digital innovation: A review and synthesis. https://onlinelibrary.wiley.com/doi/epdf/10.1111/isj.12193

Lewis, A. (2015). Blockchain Technology Explained. Blockchain Technologies, 1–27. https://doi.org/10.15358/0935-0381-2015-4-5-222

Maier, R., Schmidt, A. (2015). Explaining organizational knowledge creation with a knowledge maturing model. Knowledge Management Research & Practice , Volume 13, Issue 4. https://orsociety.tandfonline.com/doi/abs/10.1057/kmrp.2013.56#.XIeMICIzbIU

Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System. Www.Bitcoin.Org, 9. https://doi.org/10.1007/s10838-008-9062-0

Nonaka, I., Toyama, R., (2015). The Knowledge-creating Theory Revisited: Knowledge Creation as a Synthesizing Process. The Essentials of Knowledge Management pp 95-110. https://link.springer.com/chapter/10.1057/9781137552105_4

Petersen, K., Feldt, R., Mujtaba, S., Mattsson - Ease, M. (2008). Systematic Mapping Studies in Software Engineering. https://www.researchgate.net/publication/228350426

Stanny, C., J. (2016). Reevaluating Bloom's Taxonomy: What Measurable Verbs Can and Cannot Say about Student Learning. Education Science 6, pp 37. https://www.researchgate.net/publication/310181245_Reevaluating_Bloom's_Taxonomy_What_Measurable_Verbs_Can_and_Cannot_Say_about_Student_Learning

Urbinati, A., Chiaroni, D., Chiesa, V., Frattini, F. (2017). The role of digital technologies in the innovation process. Conference: 24th Innovation and Product Development Management Conference, June 11-13, 2017, Reykjavik, Iceland. https://www.researchgate.net/publication/317549262

Vo, L., C., Mounoud, E. (2014). Developing Knowledge Management Implementation Frameworks: Implications From Translation Perspective. https://www.researchgate.net/publication/285061610_Developing_Knowledge_Management_Implementation_Frameworks_Implications_From_Translation_Perspective

Walsham, G. (1995). Interpretive case studies in IS research: nature and method. European Journal of Information Systems. May 1995, Volume 4, Issue 2, pp 74–81. https://link.springer.com/article/10.1057/ejis.1995.9

Webster, J., Wattson, R.,T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. MIS Quarterly, 26(2), xiii–xxiii. https://web.njit.edu/~egan/Writing_A_Literature_Review.pdf

Zhao, J., L., Fan, S., Yan, J. (2016). Overview of business innovations and research opportunities in blockchain and introduction to the special issue. Financial Innovation December 2016. https://link.springer.com/article/10.1186/s40854-016-0049-2

Zheng, Z., Xie, S., Dai, H., N., Chen, X., Wang, H. (2018). Blockchain challenges and opportunities: a survey. Journal of Web and Grid Services, Vol. 14, No. 4, 2018. https://www.researchgate.net/profile/Hong-Ning_Dai/publication/328271018_Blockchain_challenges_and_opportunities_a_survey/links/5bd2706f92851c6b278f31eb/Blockchain-challenges-and-opportunities-a-survey.pdf

Appendix 1. The final sample of relevant papers

1. Zhao, J. L., Fan, S., Yan, J. (2016). Overview of business innovations and research opportunities in blockchain and introduction to the special issue. Financial Innovation December 2016. https://link.springer.com/article/10.1186/s40854-016-0049-2
2. Risius, M., Spohrer, K. (2017). A Blockchain Research Framework. Business & Information Systems Engineering, December 2017, Volume 59, Issue 6, pp 385–409. https://link.springer.com/article/10.1007/s12599-017-0506-0
3. Wang, H., Chen, K., Xu, D. (2016). A maturity model for blockchain adoption Financial Innovation, December 2016. https://link.springer.com/article/10.1186/s40854-016-0031-z
4. Brühl, V. (2017). Virtual Currencies, Distributed Ledgers and the Future of Financial Services. Intereconomics November 2017, Volume 52, Issue 6, pp 370–378. https://link.springer.com/article/10.1007/s10272-017-0706-3
5. Konstantinidis, I., Siaminos, G., Timplalexis, C., Zervas, P., Peristeras, V., Decker, S. (2018). Blockchain for Business Applications: A Systematic Literature Review. International Conference on Business Information Systems BIS 2018: Business Information Systems pp 384-399. https://link.springer.com/chapter/10.1007/978-3-319-93931-5_28
6. He, S., Xing, C., Zhang, L., J. (2018). A Business-Oriented Schema for Blockchain Network Operation International Conference on Blockchain ICBC 2018: Blockchain – ICBC 2018 pp 277-284. https://link.springer.com/chapter/10.1007/978-3-319-94478-4_21
7. Chen, G., Xu, B., Lu, M., Chen, N., S. (2018). Exploring blockchain technology and its potential applications for education Smart Learning Environments, December 2018. https://link.springer.com/article/10.1186/s40561-017-0050-x
8. Chen, S., Zhang, J., Shi, R., Yan, J., Ke, Q. (2018). A Comparative Testing on Performance of Blockchain and Relational Database: Foundation for Applying Smart Technology into Current Business Systems. International Conference on Distributed, Ambient, and Pervasive Interactions DAPI 2018: Distributed, Ambient and Pervasive Interactions: Understanding Humans pp 21-34. https://link.springer.com/chapter/10.1007/978-3-319-91125-0_2
9. Wan, Z., Cai, M., Yang, J., Lin, X. (2018). A Novel Blockchain as a Service Paradigm International Conference on Blockchain ICBC 2018: Blockchain – ICBC 2018 pp 267-273. https://link.springer.com/chapter/10.1007/978-3-319-94478-4_20
10. Slominski, A., Muthusamy, V. (2017). BPM for the Masses: Empowering Participants of Cognitive Business Processes. International Conference on Business Process Management BPM 2017: Business Process Management Workshops pp 440-445. https://link.springer.com/chapter/10.1007/978-3-319-74030-0_34

11. Viriyasitavat, W., Xu, L., D., Bi, Z., Sapsomboon, A. (2018). Blockchain-based business process management (BPM) framework for service composition in industry 4.0 Journal of Intelligent Manufacturing pp 1–12. https://link.springer.com/article/10.1007/s10845-018-1422-y

12. Grover, P., Kar, A., K., Ilavarasan, P., V. (2018). Blockchain for Businesses: A Systematic Literature Review. Conference on e-Business, e-Services and e-Society I3E 2018: Challenges and Opportunities in the Digital Era pp 325-336. https://link.springer.com/chapter/10.1007/978-3-030-02131-3_29

13. Swan, M. (2016). Blockchain Temporality: Smart Contract Time Specifiability with Blocktime. International Symposium on Rules and Rule Markup Languages for the Semantic Web RuleML 2016: Rule Technologies. Research, Tools, and Applications pp 184-196. https://link.springer.com/chapter/10.1007/978-3-319-42019-6_12

14. Hyvärinen, H., Risius, M., Friis, G. (2017). A Blockchain-Based Approach Towards Overcoming Financial Fraud in Public Sector. Services Business & Information Systems Engineering December 2017, Volume 59, Issue 6, pp 441–456. https://link.springer.com/article/10.1007/s12599-017-0502-4

15. Liu, Y., Lu, Q., Xu, X., Zhu, L., Yao, H. (2018). Applying Design Patterns in Smart Contracts A Case Study on a Blockchain-Based Traceability Application. International Conference on Blockchain ICBC 2018: Blockchain – ICBC 2018 pp 92-106. https://link.springer.com/chapter/10.1007/978-3-319-94478-4_7

16. Norta, A. (2016). Designing a Smart-Contract Application Layer for Transacting Decentralized Autonomous Organizations International Conference on Advances in Computing and Data Sciences ICACDS 2016: Advances in Computing and Data Sciences pp 595-604. https://link.springer.com/chapter/10.1007/978-981-10-5427-3_61

17. Huang, B., Liu, Z., Chen, J., Liu, A., Liu, Q., He, Q. (2017). Behavior pattern clustering in blockchain networks Multimedia Tools and Applications October 2017, Volume 76, Issue 19, pp 20099–20110. https://link.springer.com/article/10.1007/s11042-017-4396-4

18. Chen, C., Qi, Z., Liu, Y., Lei, K. (2017). Using Virtualization for Blockchain Testing. International Conference on Smart Computing and Communication SmartCom 2017: Smart Computing and Communication pp 289-299. https://link.springer.com/chapter/10.1007/978-3-319-73830-7_29

19. Terzi, S., Stamelos, I. (2018). Permissioned Blockchains and Smart Contracts into Agile Software Processes. International Conference on Software Process Improvement and Capability Determination SPICE 2018: Software Process Improvement and Capability Determination pp 355-362. https://link.springer.com/chapter/10.1007/978-3-030-00623-5_26

20. Huh, J., H., Seo, K. (2018). Blockchain-based mobile fingerprint verification and automatic log-in platform for future computing. The Journal of Supercomputing pp 1–17. https://link.springer.com/article/10.1007/s11227-018-2496-1

21. Rimba, P., Tran, A., B., Weber, I., Staples, M., Ponomarev, A., Xu, X. (2018). Quantifying the Cost of Distrust: Comparing Blockchain and Cloud Services for Business Process Execution. Information Systems Frontiers pp 1–19. https://link.springer.com/article/10.1007/s10796-018-9876-1

22. Li, J. (2018). Data Transmission Scheme Considering Node Failure for Blockchain. Wireless Personal Communications, November 2018, Volume 103, Issue 1, pp 179–194. https://link.springer.com/article/10.1007/s11277-018-5434-x

23. Kruijff, J., Weigand, H. (2017). Ontologies for Commitment-Based Smart Contracts. OTM Confederated International Conferences "On the Move to Meaningful Internet Systems" OTM 2017: On the Move to Meaningful Internet Systems. OTM 2017 Conferences pp 383-398. https://link.springer.com/chapter/10.1007/978-3-319-69459-7_26

24. Barriocanal, E., G., Alonso, S., S., Sicilia, M., A. (2017). Deploying Metadata on Blockchain Technologies. Research Conference on Metadata and Semantics Research MTSR 2017: Metadata and Semantic Research pp 38-49. https://link.springer.com/chapter/10.1007/978-3-319-70863-8_4

25. Jun, M., S. (2018). Blockchain government - a next form of infrastructure for the twenty-first century. Journal of Open Innovation: Technology, Market, and Complexity, December 2018. https://link.springer.com/article/10.1186/s40852-018-0086-3

26. Du, W., Pan, S., L., Leidner, D., E., Ying, W. (2018). Affordances, experimentation and actualization of FinTech: A blockchain implementation study. The Journal of Strategic Information Systems Available online 6 November 2018 In Press, Corrected Proof. https://www.sciencedirect.com/science/article/pii/S0963868717302664

27. Savelyev, A. (2018). Copyright in the blockchain era: Promises and challenges Computer Law & Security Review, Volume 34, Issue 3, June 2018, Pages 550-561 https://www.sciencedirect.com/science/article/pii/S0267364917303783

28. Wang, Y., Kogan, A. (2018). Designing confidentiality-preserving Blockchain-based transaction processing systems. International Journal of Accounting Information Systems, Volume 30, September 2018, Pages 1-18. https://www.sciencedirect.com/science/article/pii/S1467089518300794

29. Pazaitis, A., Filippi, P., Kostakis, V. (2107). Blockchain and value systems in the sharing economy: The illustrative case of Backfeed. Technological Forecasting and Social Change, Volume 125, December 2017, Pages 105-115 https://www.sciencedirect.com/science/article/pii/S0040162517307084

30. Adhami, S., Giudici, G., Martinazzi, S. (2018). Why do businesses go crypto? An empirical analysis of initial coin offerings. Journal of Economics and Business, In press, corrected proof, Available online 9 May 2018. https://www.sciencedirect.com/science/article/pii/S0148619517302308

31. Lee, I., Shin, Y., J. (2018). Fintech: Ecosystem, business models, investment decisions, and challenges. Business Horizons, Volume 61, Issue 1, January–February 2018, Pages 35-46. https://www.sciencedirect.com/science/article/pii/S0007681317301246

32. Wonglimpiyarat, J. (2018). Challenges and dynamics of FinTech crowd funding: An innovation system approach. The Journal of High Technology Management Research, Volume 29, Issue 1, 2018, Pages 98-108 https://www.sciencedirect.com/science/article/pii/S1047831018300099

33. Zook, M., A., Blankenship, J. (2018). New spaces of disruption? The failures of Bitcoin and the rhetorical power of algorithmic governance. Geoforum, Volume 96, November 2018, Pages 248-255. https://www.sciencedirect.com/science/article/pii/S0016718518302574

34. Gatteschi, V., Lamberti, F., Demartini, C., Pranteda, C., Santamaría, V. (2018). To Blockchain or Not to Blockchain: That Is the Question. IT Professional Year: 2018, Volume: 20, Issue: 2 Page s: 62 - 74. https://ieeexplore.ieee.org/document/8338007

35. Dinh, T., T., A., Liu, R., Zhang, M., Chen, G., Ooi, b., C., Wang, J. (2018). Untangling Blockchain: A Data Processing View of Blockchain Systems. IEEE Transactions on Knowledge and Data Engineering Year: 2018 , Volume: 30 , Issue: 7 Page s: 1366 - 1385. https://ieeexplore.ieee.org/document/8246573

36. Cai, W., Wang, Z., Ernst, J., B., Hong, Z., Feng, C., Leung, V., C., M. (2018). Decentralized Applications: The Blockchain-Empowered Software System. IEEE Access, 2018, Volume: 6, pp 53019 - 53033 IEEE Journals & Magazines. https://ieeexplore.ieee.org/document/8466786

37. Yuan, Y., Wang, F., Y. (2018). Blockchain and Cryptocurrencies: Model, Techniques, and Applications. IEEE Transactions on Systems, Man, and Cybernetics: Systems, 2018, Volume: 48, Issue: 9, pp 1421 - 1428. https://ieeexplore.ieee.org/document/8419306

38. Christidis, K., Devetsikiotis, M. (2016). Blockchains and Smart Contracts for the Internet of Things IEEE Access, 2016, Volume: 4, pp 2292 - 2303. https://ieeexplore.ieee.org/document/7467408

39. Xu, C., Wang, K., Guo, M. (2017). Intelligent Resource Management in Blockchain-Based Cloud Datacenters IEEE Cloud Computing, 2017, Volume: 4, Issue: 6, pp 50 - 59. https://ieeexplore.ieee.org/document/8260822

40. Magazzeni, D., McBurney, P., Nash, W. (2017). Validation and Verification of Smart Contracts: A Research Agenda. Computer Year: 2017, Volume: 50, Issue: 9 pp 50 - 57. https://ieeexplore.ieee.org/document/8048663

41. Zhao, H., Bai, P., Peng, Y., Xu, R. (2018). Efficient key management scheme for health blockchain. CAAI Transactions on Intelligence Technology Year: 2018, Volume: 3, Issue: 2 Pages: 114 - 118. https://ieeexplore.ieee.org/document/8396896

42. Raikwar, M., Mazumdar, S., Ruj, S., Gupta, S., S., Chattopadhyay, A., Lam, K., Y. (2018). A Blockchain Framework for Insurance Processes. 2018 9th IFIP International Conference on New Technologies, Mobility and Security (NTMS), 2018. https://ieeexplore.ieee.org/document/8328731

43. Olnes, S., Jansen, A. (2018). Blockchain technology as infrastructure in public sector: an analytical framework. Proceedings of the 19th Annual International Conference on Digital Government Research: Governance in the Data Age. https://dl.acm.org/citation.cfm?id=3209293

44. Elsden, C., Manohar, A., Briggs, J., Harding, M., Speed, C., Vines, J. (2018). Making Sense of Blockchain Applications: A Typology for HCI. April 2018 CHI '18: Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems. https://dl.acm.org/citation.cfm?id=3174032

45. Sun, H., Huang, Y. (2018). Distributed ledger technology and economic contract innovation July 2018 ICCSE'18: Proceedings of the 3rd International Conference on Crowd Science and Engineering. https://dl.acm.org/citation.cfm?id=3267929

46. Shrestha, A., K., Vassileva, J. (2016). Towards decentralized data storage in general cloud platform for meta-products. November 2016 BDAW '16: Proceedings of the International Conference on Big Data and Advanced Wireless Technologies. https://dl.acm.org/citation.cfm?id=3016029

47. Constantinides, P., Henfridsson, O., Parker, G., G. (2018). Introduction-Platforms and Infrastructures in the Digital Age June 2018 Information Systems Research: Volume 29 Issue 2, June 2018 https://dl.acm.org/citation.cfm?id=3272420

48. Clohessy, T., Acton, T., Morgan, L. (2018). Contemporary digital business model decision making: a cloud computing supply-side perspective January 2018 International Journal of Networking and Virtual Organisations: Volume 19 Issue 1, January 2018 Publisher: Inderscience Publishers. https://dl.acm.org/citation.cfm?id=3272252

49. Ali, A., A., El-Dessouky, I., A., Abdallah, M., M., Nabih, A., K. (2017). The Quest for Fully Smart Autonomous Business Networks in IoT Platforms. December 2017 AMECSE '17: Proceedings of the 3rd Africa and Middle East Conference on Software Engineering. Publisher: ACM https://dl.acm.org/citation.cfm?id=3178301

50. Cai, C., W. (2018). Disruption of financial intermediation by FinTech: a review on crowdfunding and blockchain. Accounting and Finance: Volume 58, Issue 4, December 2018, Pages 965-992. https://researchoutput.csu.edu.au/en/publications/disruption-of-financial-intermediation-by-fintech-a-review-on-cro

51. Rahmadika, S., Rhee, K., H. (2018). Blockchain technology for providing an architecture model of decentralized personal health information. International Journal of Engineering Business Management 10. https://journals.sagepub.com/doi/full/10.1177/1847979018790589

52. Kamel Boulos, M., N., Wilson, J.,T., Clauson, K., A. (2018). Geospatial blockchain: Promises, challenges, and scenarios in health and healthcare International Journal of Health Geographics 17 (1), 25. https://ij-healthgeographics.biomedcentral.com/articles/10.1186/s12942-018-0144-x

53. Rozario, A., M., Vasarhelyi, M., A. (2018). Auditing with smart contracts International Journal of Digital Accounting Research 18, pp. 1-27. http://rabida.uhu.es/dspace/bitstream/handle/10272/14419/Auditing_with_Smart.pdf?sequence=2

54. Ibba, S., Pinna, A., Baralla, G., Marchesi, M. (2018). ICOs overview: Should investors choose an ICO developed with the lean startup methodology? Lecture Notes in Business Information Processing 314, pp. 293-308. https://link.springer.com/chapter/10.1007/978-3-319-91602-6_21

55. Nowiński, W., Kozma, M. (2017). How can blockchain technology disrupt the existing business models? Entrepreneurial Business and Economics Review 5 (3), pp. 173-188. https://www.researchgate.net/publication/319911238_How_Can_Blockchain_Technology_Disrupt_the_Existing_Business_Models

56. Zhu, H., Zhou, Z., Z. (2016). Analysis and outlook of applications of blockchain technology to equity crowdfunding in China Financial Innovation 2(1), 29. https://link.springer.com/article/10.1186/s40854-016-0044-7

57. Cai, Y., Zhu, D. (2016). Fraud detections for online businesses: a perspective from blockchain technology Financial Innovation 2(1), 20. https://link.springer.com/article/10.1186/s40854-016-0039-4

58. Sun, J., Yan, J., Zhang, K., Z., K. (2016). Blockchain-based sharing services: What blockchain technology can contribute to smart cities. Financial Innovation 2(1), 26. https://link.springer.com/article/10.1186/s40854-016-0040-y

APPLICATION OF THE LOGIC MODEL IN MEASURING THE EFFECTIVENESS OF CLUSTER POLICY

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Abstract. Many countries in the world conduct cluster policy as an element affecting economic growth, the level of innovation and the development of cluster connections in particular regions. Cluster policy is variously defined in the literature on the subject. The objectives, instruments and the possibilities of its implementation vary in the diversified conditions of individual national economies. Generally, it can be assumed that cluster policy is all activities directed towards clusters, which in some economies have a formal nature, while in some they are an element of another policy, e.g. innovation. The biggest challenge cluster policy is currently facing are the methods of measuring its effectiveness. In each country, the vast expenditures are spent on strengthening clusters, their innovative potential and their internationalisation, but the impact of these expenditures on the effects of cluster policy is difficult to measure. The paper aims to examine the utility of a logical model in measuring the effectiveness of cluster policy. In the first part, a model of cluster policy will be presented, with particular attention paid to the expenditure of this policy. In the second part of the paper, a logical model used for evaluation will be explained; and in the third part, the authors will analyse the possibilities of implementing this model to study the effectiveness of cluster policy. The paper is based on a critical review of the literature on the subject and international reports and analysis both about cluster policy. In conclusion, the authors emphasised that the logic model can be implemented in measuring the cluster policy effects and effectiveness and it is possible to build a universal procedure of cluster policy evaluation. This research can be used by policymakers to create more purposeful cluster policy where the inputs and outputs are visible.

Key words: *logic model, clusters, cluster policy, effectiveness of cluster policy*

JEL code: L14, O25

Introduction

The origins of the cluster policy can be traced back to the 1990s when the definition of clusters proposed by M. Porter attracted a growing group of supporters. Previously, in their economic policy, the national authorities provided support to some of the chosen industries, but when the concept of clusters became widespread, this support was redirected to groups of companies. According to Ketels, the cluster policy is motivated by the traditional economic arguments connected with the addressing of the market failures (Ketels C., 2009) and can be understood as "all efforts by governments, alone or in a collaborative effort with companies, universities, and others, that are directed at clusters to develop their competitiveness. The cluster-based economic policy is used in a slightly wider sense, including also cross-cluster policies affecting the fundamental conditions for cluster emergence and the use of cluster structures as process tools to improve cross-cluster competitiveness" (Ketels C., 2009). According to Kuchiki and Tsuji, the cluster policy is subtle and complex, requiring not only a traditional combination of targets and policy measures but also related arrangements such as economic reforms, deregulation, construction of infrastructure, the establishment of legal systems,

and so on. (Kuchiki A., Tsuji M., 2008). The definitions of the cluster policy emphasized cluster networks (Raines P., 2001), and knowledge creation in the clusters. According to Lehmann and Menter cluster policy "is concerned about the production and dissemination of knowledge, reducing inefficiencies in absorbing knowledge spillovers, and fostering the commercialization of knowledge within a local area" (Lehmann E.E., Menter M.J., 2018).

The paper aims to examine the utility of a logical model in measuring the effectiveness of cluster policy. In the first part, a model of cluster policy will be presented, with particular attention paid to the expenditure of this policy. In the second part of the paper, a logical model used for evaluation will be explained; and in the third part, the authors will analyse the possibilities of implementing this model to study the effectiveness of cluster policy. The paper is based on a critical review of the literature on the subject and international reports and analysis both about cluster policy. Cluster policy evaluation criteria were developed based on a inductive-analytical approach. In conclusion, the authors emphasised that the logic model can be implemented in measuring the cluster policy effects and effectiveness and it is possible to build a universal procedure of cluster policy evaluation. This research can be used by policymakers to create more purposeful cluster policy where the inputs and outputs are visible.

The cluster policy has various definitions in the literature. This stems from the different objectives, tools and possibilities of policy implementation in the different conditions of the respective national economies. In this article, let us assume that the cluster policy is a series of activities aimed at groups of companies put together in clusters, the purpose of which is to facilitate the development of the companies, and the regions in which they operate. They include all the government measures that use the concept of the cluster to increase the competitiveness - understood in the broad sense of this term - of the companies, regions and countries. The cluster policy addresses both inside and outside of the cluster. The outside of the cluster means the entities, not yet grouped together in the cluster, but which, with appropriate support, include the cluster ideas in their development strategy. The application of the cluster policy brings a shift in the group of beneficiaries, as the focus of this policy is on clusters of companies, and not on single entities. Due to the different approach to cluster policy currently observed in the national economies, different groups are the beneficiaries of this policy. The activities are aimed at micro, small and medium-sized enterprises without the sectoral targeting, up to and including the complex support programs targeted at selected sectors of the economy. The policy goal is to facilitate the development of a network rather than promote the growth of individual agents within that network (Raines P., 2001). The cluster policy focuses on the creation of networks and mutual relations of the whole group, not individual companies. According to Njøs, Jakobsen, Aslesen and Fløysand the intention of cluster policies has been to stimulate the competitiveness of geographical concentrations of similar and related firms and associated institutions (Njøs R., Jakobsen S-E., Aslesen H., Fløysand A., 2017).

The cluster-based policy can take the form of one from among the four model solutions. In the first model, the cluster policy concentrates on creating a competitive advantage of the key sectors of the economy. In the second model, the policy focuses on improving the competitiveness of small and medium-sized enterprises. In the third model, the efforts are concentrated on increasing the competitiveness of entire regions, especially for the new investors. Moreover, last but not least, the fourth model concerns innovation, and the purpose of the cluster policy is to bring the science, research and industry closer together (Skulska B., Jankowiak A.H., Mazurek S., 2014).

In theory, the main policy-making process starts with knowledge, i.e. the scientific research, and ends with the selection of the most appropriate implementing instruments. However, the rational component is constantly affected by other factors deciding about the political choices. Therefore, the process of shaping a specific policy will never be technocratic in nature. It cannot be assumed that the scientific concepts will be translated linearly into political instruments (Flanagan K., Uyarra E., Laranja M., 2010).

The cluster policy can be seen as a cycle that consists of three mutually related elements. These are analysis (understanding the regional potential for cluster development), strategy (setting priorities) and action (translating strategy into action). The first stage should be an analysis of the regional potential that takes into account the region's productivity, profile, the potentiality for development, and available resources. The comprehensive knowledge about clusters is the basis to formulate the strategy and decide on the priorities of the cluster policy. It becomes relevant to identify the key areas and tools, and objectives, which drive the policy created. At this stage, the so-called roadmap for the action of the cluster policy is being created. The final step is to put the developed strategy in operation, implement it actively, and control the progress, and the scope of objective attainment (Jankowiak A.H., 2018).

The models of the cluster policy can be classified according to the different levels of economic development of the country in which the model exists. The type of the cluster support activities depends on the political structure, size and resources of a country (Boekholt P., Thuriaux B., 1999). Difference in models, depending on the level of development, may apply to various aspects of such a policy (Uyarra E., 2014): understanding the role of the clusters and the clusters themselves (cluster definition); scope of the policy and level of policy formulation (national, regional or local policy); policy objectives (subjects) (economic areas, industries, specific groups of companies); principles of identification and selection of clusters to be supported; institutional forms of cluster operation; instruments used for support, and the moment or period of cluster support. In some economies, especially highly-developed ones (e.g. in Japan), the cluster policy is intertwined with the innovative policy; and in countries at a different stage of development, usually in the catching-up or developing countries (e.g. in India), it appears in the context of the development policy. Each country has a complex and multilevel environment rich in interest groups, which results in a specific policy-mix that is a set of policy assumptions, objectives and political instruments dependent on the local possibilities and restrictions. Howlett and Ramesh (Howlett M., Ramesh M., 2003) describe the cluster policy as a policy subsystem, which can include an almost infinite number of different actors and institutions. This composition differs from country to country, from policy area to policy area, and changes over time (Mazurek S., 2014).

According to Polozhentsevaa and Klevtsova, the cluster policy has two basic models, for which the directions of support are the criterion of distinction. In countries, where a major role in cluster development has an active state (federal) policy, there is a cluster policy model based on state regulation of the economy. It is observed in countries such as Japan, South Korea, Singapore, Sweden, France, Finland and Slovenia. The second model is a liberal policy where the cluster is considered to be an element of the market. The role of the federal government is to remove barriers to its development. This model is present in the US, the UK, Australia, Canada (Polozhentsevaa Y., Klevtsova M., 2015).

At present, regardless of the model that is used, the national and regional authorities provide for huge expenditure on conducting the cluster policy. Therefore, a question has to be asked to what extent are these activities effective and to what extent is this policy implemented. As proved by Enright (Enright M., 2000), creating wishful thinking clusters using the top-down method is not possible without the effective involvement of the cluster entities themselves. According to Vernay, D'Ippolito and Pinkse "cluster policy has the underlying aim of pursuing public goals such as stimulating regional competitiveness and job creation so the government also needs to maintain some level of control to ensure that policy objectives are met." (Vernay A-L., D'Ippolito B., Pinkse J., 2018).

The cluster policy impacts on cluster development have not been well recognized. There are no unambiguous, strong and sustainable impacts in terms of innovation, productivity or employment (Uyarra E., Ramlogan R., 2012). The evaluation of the cluster policy impacts requires the use of different methods depending on the objective pursued and the required scope of research (Schmiedeberg C., 2010). The literature offers studies on the macroeconomic impact of this policy (Learmonth D., Munro A., Swales J.K., 2003), studies taking into account the success factors of the cluster policy

(Fromhold-Eisebith M., Eisebith G., 2008) and the degree to which tools fit the assumed objectives of this policy (Nishimura J., Okamuro H., 2011). According to the aim of this article, the authors want to propose the use of a logical model in the evaluation of the cluster policy. This will supplement the research on the subject carried out in the literature.

Measuring cluster policy and methodological issues

Since the 1990s there has been a growing trend to explicitly state the core values of the company or political initiative (Lencioni P.M., 2002). Nowadays, it seems inappropriate for large companies or cluster initiatives not to announce on the website or in all brochures a set of core values or goals. Such practice can set companies or a cluster initiative apart from others. However, values and goals need to have some meaning for the stakeholders involved. Partly, meaning will be established by comparing the actual results with the intended values and goals to be achieved. Also, in a globalized economy, the comparison of different types of cluster policies might enable organizations to extract a core strategy for cluster policy building. Not the least, since the last 30 years there has been a significant demand from funding bodies, tax-payers and the public in general in regard to the transparency and accountability of money spent to show the long-term outcome and impact that policies have been able to generate and the extent to which they have been successful in addressing social and economic problems (for the nonprofit sector see e.g. Alnoor E., Rangan V.K., 2014). Therefore, measuring the actual results of cluster policies regarding output and outcome seems essential for evaluating the success of money spent on one side as well as allowing to focus on successful policy strategies on the other side. However, similar to the situation in the nonprofit sector the literature on measuring cluster policy seems short of the underlying theory and in need of a new conceptual framework.

Measuring impact allows funding bodies to prove that they really are making a difference, to measure cluster progress and to allow the stakeholders or cluster members to compare the impact made by cluster-driven zones to other regions or organizations. Too often, judgement on the regional developments tend to focus on the input/output factors, that is what companies or politics has contributed in terms of money or the number of employees working in a region. It seems still rare to find reports that measure and communicate the long-term outcome or the impact the cluster policy has on the economic development or the region as a whole. Therefore, one needs to focus more on the outcomes of cluster policies than the particular mechanisms, inputs or outputs that make up the policies.

The long-term outcome and/or impact, certainly, can be defined in many ways depending on the policy focus or economic targets. Generally, an interesting definition has been offered by Auerswald (Auerswald P., 2009) describing social impact as "the creation of benefits or reductions of costs for a society – through efforts to address societal needs and problems – in ways that go beyond the private gains and general benefits of market activity". As the impact of cluster policies seems to extend the narrow economic targets and can have widespread influence on the region or community as a whole the concept of impact can be understood as cluster-related impact or social impact that will encompass both the economic and the non-economic impact. Consequently, there is no single indicator system that can be used to measure the impact or success of cluster policy. Impact indicators will always depend on the specific policy focus and development targets such as the nature of clusters, the nature of the policy programme and the overall policy objective. Potential indicators by which the development of clusters can be analysed include:

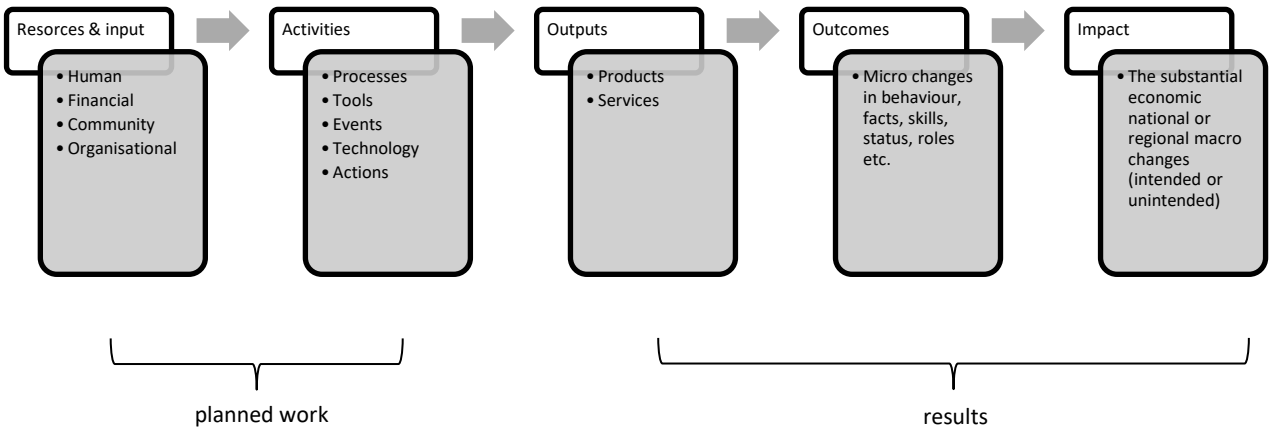
- Network and partnership;
- Innovation and R&E;
- Human resources;
- Economy and firms;
- Region and community.

With more and more policies to improve regional developments or economic agglomerations a need to create and measure cluster programmes became a focus of politics and companies. A variety of assessment tools were suggested and applied, also new tools were developed. There are many cluster analysis tools and approaches, which differ by a) their level of sophistication, b) the knowledge required by its users, c) their target audience and d) whether they refer more to quantitative or qualitative methods. These developments of various forms of cluster analysis made cluster assessment more accessible and contributed to the constant need and desire to measure policy impact.

For example, in networks cooperation seems a valuable indicator of networking/clustering success. The communication about strategic, relevant issues and the information quality exchanged have empirically been identified as crucial success factors in networks (Möller K., Seiter M., 2008). Before evaluating the success of cooperation, it seems important to select a perspective on studying success and identify crucial success factors accordingly. In early studies, the success of cooperation was linked with profitability, smooth procedures, managerial influence and stability of cooperation (see, e.g. Lyles M.A., 1987; Bucklin L.P., Sengupta S., 1993; Horvath P., 1998). Recently, a more flexible approach emphasized the need always to define networking success about the specific factors to which a firm's financial success or failure has been attributed. Three perspectives can be distinguished: a) an overall view, referring to managerial activities which contribute to the economic success of an organisation, b) a cooperative view, focusing on the increase of revenues for all network members, or c) a comparative view, measuring success in relation to other partners or clusters Nevertheless, despite working with common goals in clusters firms establish quite individual interests or goals which also play a major role for the success or not of clusters. As a consequence, it might well be problematic on the one side to use a unified scale to measure networking success and on the other side to distinguish between either the networking influence or individual managerial factors in a single firm. Therefore, measuring the success of cluster policies, it seems essential to define a perspective and an appropriate comparison scale (e.g. Anderson J.C., Narus J.A., 1991; Ritter T., Wilkinson I.F., Johnston W.J., 2004; Möller K., Rajala A., 2007).

In addition to quantitative, economic measures, which are directly available through solid controlling procedures, it seems advisable to use additional qualitative success factors (e.g. customer loyalty or trust). However, to quantify such, often lightly called, soft factors seems less straightforward through controlling. Such qualitative factors can often be seen as highly underspecified in relation to economic success factors. Combining quantitative and qualitative approaches could lead to multi-dimensional evaluation systems in which the advantages and disadvantages of different policy goals and perspectives can be assessed. Furthermore, it can be expected that not a single success factor will be identified, but a combination of several factors will effect a firm's performance level. For example, Nielsen (2007) found relationships between various factors such as collaborative know-how, trust, protectiveness, complementarity, cultural distance and alliance performance. Also, using a multi-criteria model for evaluating cluster initiatives in the mining and manufacturing sector in the Czech Republic, Maresova, Jasikova and Bures found that it seems insufficient to evaluate only economic factors (Maresova P., Jasikova V., Bures V., 2014). Therefore, also evaluating social and ecological factors would considerably improve decision making and evaluation of cluster policies.

In this paper, we will provide information on some of these tools and frameworks and offers a starting point for those interested in assessing the output and impact of cluster policies. Some of the tools were used for years among non-profit organizations, where others are more tailored to the needs of commercial companies. Here, the focus is on logic models of assessment.



Source: Haski-Leventhal, 2018.

Fig. 1. **Overview of the logic model for assessing cluster policy (LMACP)**

A logic models is a graphic illustration of a programme's resources, activities and expected outcomes (e.g. Kaplan S.A., Garrett K.E., 2005). It is a tool to simplify complex relationships between various cluster members during programme planning, implementation and evaluation stages. Logic models are based on a sequential reading and follow several steps of reasoning to assess a cluster policy (see Figure 1). The reasoning follows the "if…then" logic in the evaluation process. Often, the order of components, mistakenly, seems to be used interchangeably and not sequentially. The five components of the logic model for assessing cluster policy (LMACP) are specified in order to assist in discriminating the various phases of outcome and impact creation (see Figure 1). The depicted overview in Fig.1 (aims, resources, output, outcome, impact) can be used as a template. A model can be broad or specific, depending on whether it is describing an activity, programme, initiative, policy or organization. Although details and aims of logic models may differ from one another, the overall structure of the five components (input to impact) remains very similar. In two ways a logic model can be applied, either in a formative way when designing a cluster policy, or in a summative one, when evaluating the policy. Distinguishing and labelling different steps often seems quite arbitrary. What finally counts is to design an abstract map of reality which, as a tool, helps to design or evaluate a cluster policy and not, as an entirely accurate copy as to represent fully a sector of reality. For example, different kinds of logic mapping may use different terminology (e.g. calling outcomes impact or vice versa). The final design of the logic model can change; even a circular model seems possible, allows for great flexibility and depends on the type of information that is being presented and on the needs of the stakeholders. However, in one logical model only a single design, ideally, should be used, as the flexibility of the logic model design should not be mistaken for a one-size-fits-all approach. Decisions and impact judgements of cluster policy measures or any policy will rely on a strict and evidence-based evaluation tool instead of a rather arbitrary list of factors and a criteria mixture as in the latter approach.

Besides the five components described above, there may well be additional components to consider such as situation (e.g. regional stage of development and/or infrastructure), hidden or open assumptions (e.g. beliefs, party political programmes), external forces (e.g. political climate, other policy targets, environmental factors) and strategies (e.g. strengthen economic developments, support regions, energize local communities, create new jobs). These additional components are often described as the context of a cluster policy but could well be included in the logic model as well.

Logic model in cluster policy evaluation

The basic logic model presented above appears to be simple and comprehensible as a theoretical and universal concept. The process of transition from resources and inputs through activities to results with three types of importance is logical and clear. It is hard not to agree with the statement that every well-planned and rationally carried out project should be suitable to be described in this way. We instinctively equate rational activities with the possibility of achieving specific goals in a particular way with a reasonable expenditure of resources. The above is also expected from the cluster policy, and its evaluation is supposed to confirm it.

However, when it is attempted to describe the cluster policy with concepts characteristic for the logic model, problems start to appear. What is instinctively understandable in the model, is not necessarily so unambiguous in practice. To begin with, let us consider what we believe to be the resources and what we believe to be the activities. If financial means are resources, then is every form of spending them (according to specific procedures) an activity that we should include in the model? If our contribution is human resources in an organised form or a network of entities (community), is their further cooperation an activity subject to further analysis? After all, it is necessary for obvious reasons, but it does not necessarily need to be planned as a significant added value. Similar dilemmas may be encountered at the interface of activity and direct results. We usually carry out activities that bring some effect. However, in some cluster policies, we may be confronted with a situation, in which a direct goal of some activities will be the appearance of the subsequent activities. It may also be difficult to distinguish between outputs and outcomes. Both types of results are considered in the short-term, and the difference between them involves the existence of a link with the activities at an earlier stage. We expect that activities will have their direct results (outputs), the consequences of which are noticeable at a different level or in a different area (outcomes).

No such interpretation problems would need to be dealt with, were the cluster policies constructed on the basis of the logic model from the start. Usually, they are not, and this logic model is proposed as an evaluation tool. There is a risk that not every cluster policy can be easily fitted in the framework of this model. Besides, the allocation of even seemingly similar elements into the individual categories may vary depending on the policy and its context.

Another unresolved issue is to decide whether the analysis in the logic model should apply to the elements planned (assumed) in the policy, or perhaps the elements actually observed? Because the assessment with the logic model can mean verification of the coherence, rationality and logic of links between all policy elements. In order to do so, it is enough to use its assumptions, declared tools and anticipated effects. Such a study can be carried out at any time after the policy is formulated, and does not require waiting for its individual stages to be completed in order to make observations in real conditions.

However, the use of the logic model for real policy evaluation will require basing it on policy's actual progress and actual results achieved. Instead of planned expenditure and activities, in the standardised model of cluster policy description, it will be necessary to take into account the actual expenditure incurred, and the actual activities carried out. It will be likewise with the effects. However, insofar as the outputs and outcomes are concerned (which are short-term results), the waiting time to observe and measure them may be relatively short, for impact obtaining the verified (reliably researched) information about its occurrence may be troublesome or distant in time. Adoption of such a somewhat restrictive approach will result in the recognition that the logic model can only apply to the analysis of historical cluster policies with the well-documented analyses of their results.

The time horizon of the analysis is also an essential matter because many cluster policies are built divided into stages. Each stage may have different characteristics. The purpose of such a division is usually to modify the policy after closing a given period. In many cases, it is connected with the evaluation of the activities previously taken. Sometimes, however,

the changes stem from the change in the situation and circumstances, all the more so that policies planned in stages cover very long periods. In this situation, it is justified to ask a question to what extent it is sensible and possible to analyse such a policy as a coherent whole. On the one hand, as a system solution, it deserves a reliable overall assessment. On the other hand, the individual stages of a multiannual cluster policy may substantially differ from each other, which is likely to prevent describing them together with the use of a single logic model.

Considering all the above, we propose as follows:

1. For cluster policies planned in closing stages (those involving evaluation and correction at a certain point in time), we apply the logic model for each stage separately. For cluster policies which are a coherent whole or which are divided into stages for order purposes only, we use one logic model covering the entire period of their duration.
2. For historical cluster policies (with a completed planning period), and for completed stages of cluster policies divided into fragments in the logic model, we take into account the real and confirmed results at the level of outputs and outcomes, and (if there are studies and analyses allowing for this) also at the level of impact. We, therefore, assume the possibility that impact will not be possible to confirm. However, we do not allow a situation, in which, the planned and expected results would be mixed with the actual results in the logic model.
3. For cluster policies (or their stages), which are currently in progress, the logic model-based analysis will apply only to the planned elements and expected results. As in point 2, we do not allow a situation in which assumptions and facts are mixed in the logic model.

The analysis of each cluster policy (or its stage) will be carried out using the same evaluation sheet, which will facilitate the subsequent comparative analyses. The evaluation sheet will consist of the following elements:

1. General information
    a. Country name
    b. Level of development (developed economies, economies in transition and developing economies)
    c. Policy (project) name, including the information whether it is a full policy or only a stage of the policy.
    d. Policy time-frame
    e. Status (completed, in progress)
2. Basic analysis (description)
    a. understanding (definition) of cluster
    b. level of governance (national/regional/local) and institution responsible
    c. level of implementation (national/regional/local)
    d. policy targets
    e. clusters to support (new/existing)
    f. policy instruments
3. Logic model
    a. resources and input
    b. activities
    c. outputs
    d. outcomes
    e. impact

The purpose of including basic descriptive characteristics of cluster policy, other than those provided for in the logic model, is as follows:

- Ability to comprehensibly translate the assumptions and elements of the policy into a logic model with standard elements. As mentioned previously, since the cluster policies are not built based on such a model by default, interpretation difficulties may be encountered which complicate the process of describing the policy in the logic model. The proposed structure of the general characteristics is to facilitate the identification of crucial information that will be the starting point for the logic model.
- Defining the interpretation context for the information gathered in the logic model, which will enable correct conclusions to be drawn from the analysis. An example of this type of information is the level of a country's development, the definition of the cluster or the level of governance. These parameters strongly affect the evaluation of the cluster policy.
- Defining the reference point for the final evaluation of the cluster policy effectiveness based on the logic model. The information about the cluster policy goals and supported entities is necessary to verify to what extent the expectations towards the policy have been met (in the form of outputs, outcomes and impact).

Table 1 shows an of the evaluation sheet with additional explanations regarding use and interpretation. Table 2 shows an example of using an evaluation card to describe a specific cluster policy: Micro and Small Enterprises – Cluster Development Programme in India.

Table 1.

Cluster policy evaluation sheet

CLUSTER POLICY EVALUATION SHEET	
General information	
Country	Name of the country plus basic information about the economy
Level of development	Developed economy, the economy in transition or developing the economy.
Policy name	Policy name, including the information whether it is a full policy or only a stage of the policy.
Policy time-frame	The period when the policy will be implemented.
Status	Completed or in progress
Basic description *(all information according to official documents)*	
Definition (understanding) of cluster	Definition of a cluster according to the official documents (how are the clusters understood by the national authorities).
Level of governance (national, regional, local)	The administrative level is responsible for policy & rules creation and harmonization. The cluster policy is usually an element of the innovation policy, and more broadly – the economic policy of the country, but in some cases, it may be created on a regional or local level. It may be related to the administrative organisation of the state.
Level of implementation	The administrative level is responsible for policy implementation. It may be related to the administrative organisation of the state.
Policy targets (areas, sectors, type of firms)	The support can be expected for the clusters which show high innovation; are mostly made up of small and medium-sized enterprises; fit into the smart specialization strategy; have a high employment concentration; show potential to be the leader in their industry; by their activity – contribute to improving the economic situation in the group of the cluster's stakeholders, and in the region where they operate; have a

	potential for internationalisation of their activity, and in the future, for extending the area of their operation to the foreign markets.
Clusters to support	The solution depends on the phase of the policy. In early stages, support is directed to new initiatives while in a later period the attention is focused mostly on existing clusters with the strong economic power and influence on the local and national economy.
Policy instruments	In most policies, the main instrument is the financial support in the form of special grants. Further, the cluster policy also involved the establishment of the specialist institutions associating the cluster entities, and providing knowledge about the market and the opportunities for development of the industry and the cluster itself.
Logic model	
Resources and input	Human, financial, organizational and community resources actually directed to the programme. Tools and technology ready to use.
Activities	Processes, actions and events planned to be carried out.
Outputs	Direct products of activities actually carried out.
Outcomes	Short term effects or specific changes in activities participants' behaviour, knowledge, skills, status, level of functioning.
Impact	Real intended or unintended long term and macro changes in the environment of the cluster (local, regional or national).

Source: author's own work

Table 2.

An example of using a cluster policy evaluation card for MSE-CDP in India

CLUSTER POLICY EVALUATION SHEET	
General information	
Country	India
Level of development	developing economy
Policy name	**Micro and Small Enterprises – Cluster Development Programme**
Policy time-frame	2007 -
Status	in progress
Basic description *(all information according to official documents)*	
Definition (understanding) of cluster	The cluster is a group of enterprises located within nearby locations and producing the same or complementary products or services.
Level of governance (national, regional, local)	national (The Ministry of Micro, Small and Medium Enterprises (MSME) in Government of India)
Level of implementation	regional + local (State Government, State Level Project Steering Committee)
Policy targets (areas, sectors, type of firms)	1. to support the sustainability and growth of MSMEs by addressing common issues such as improvement of technology, skills and quality, market access, access to capital, etc., 2. enhancing competitiveness of the MSE units to ensure self-sustainability, growth & employment generation, 3. to build the capacity of MSEs for common supportive action through the formation of self-help groups, consortia, upgradation of associations, etc., 4. to create/upgrade infrastructural facilities in the new/existing industrial areas/clusters of MSEs, 5. to set up common facility centres (for testing, training centre, raw material depot, effluent treatment, complementing production processes, etc.).
Clusters to support	new & existing

Policy instruments	Financial support under the MSE-CDP is provided not only for core investments but also for supplementary activities (for example preparation of studies necessary for applying for support). Financing stages are as follow: 1) diagnostic study report, 2) soft intervention, 3) detailed project report, 4) hard intervention in common facility centre and/or infrastructure development.
Logic model	
Resources and input	58048.17 lakh rupees for on-going CFCs 27421.46 lakh rupees for operational CFCs 39876.82 lakh rupees for ongoing IDs
Activities	(i) Setting up of CFCs: Creation of tangible "assets" as Common Facility Centers (CFCs) like Common Production/Processing Centre (for balancing/correcting/improving production line that cannot be undertaken by individual units), Design Centres, Testing Facilities, Training Centre, R&D Centres, Effluent Treatment Plant, Marketing Display/Selling Centre, Common Logistics Centre, Common RaMaterial Bank/Sales Depot, etc. The GoI grant will be restricted to 70% of the cost of project of maximum Rs 15.00 crore. GoI grant will be 90% for CFCs in NE & Hill States, Clusters with more than 50% (a) micro/ village (b) women-owned (c) SC/ST units. (ii) Infrastructure Development: Consist of projects for infrastructural facilities like power distribution network, water, telecommunication, drainage and pollution control facilities, roads, banks, materials storage and marketing outlets, common service facilities and technological backup services for MSEs in the new/ existing industrial estates/areas. The GoI grant will be restricted to 60% of the cost of the project of Rs 10.00 crore. GoI grant will be 80% for projects in NE & Hill States, industrial areas/ estates with more than 50% (a) micro (b) women-owned (c) SC/ST units.
Outputs	398 DSR (301 completed, 96 on-going, 1 not approved), 278 soft interventions (199 completed, 77 on-going, 2 not approved), 125 CFC projects (65 completed, 50 on-going), 215 infrastructure development projects (157 completed, 58 on-going).
Outcomes	
Impact	

Source: author's own work

Conclusions

Past research in the area of program evaluation (e.g., Campbell D.T., 1969; Knowlton W.L., Philips C.C., 2013; Blokdyk G., 2018) is directly relevant to a consideration of the appropriate assessment criteria and intervals for measuring optimization processes within organizations and communities, and the issue of translating environmental-optimization data into guidelines for policy planning. Two of the most promising paths to follow might be the following when evaluating cluster policies and their contribution to long-term economic growth:

- Learning more about the sustainable developments in clusters and the long-term impact on clusters, regions and the national economy. As most evaluations are also performed for specific cluster programs at a national level, it might well be highly informative to use multi-dimensional evaluation systems that can be applied either at a multi-national or a cross-programme level.
- Learning more about the role of structural, non-geographical, features and governance factors. Nowadays, more and more clusters are organized in a supraregional way and include substantial international cooperations. In this sense, the interdependence of such spatial patterns should be better understood with respect to cluster policies. Also, the critical role of forms of cluster organization in relation to the implementation of cluster policies and the related mechanisms of cluster members seems underspecified and needs attention.

Based on the conducted research, the authors made the following conclusions and recommendations:

1. The authors emphasized that the logic model can be proposed as an evaluation tool in the cluster policy effects and effectiveness under some conditions.
2. The use of the logic model for real policy evaluation will require basing it on policy's actual progress and actual results achieved.
3. For cluster policies planned in closing stages, we apply the logic model for each stage separately.
4. For cluster policies which are a coherent whole or which are divided into stages for order purposes only, we use one logic model covering the entire period of their duration.
5. For cluster policies (or their stages), which are currently in progress, the logic model-based analysis will apply only to the planned elements and expected results.
6. For historical cluster policies (with a completed planning period), and for completed stages of cluster policies divided into fragments in the logic model, only the real and confirmed results at the level of outputs, outcomes, and level of impact can be taken into account.

Bibliography

Anderson, J. C., Narus, J. A. 1991. Partnering as a Focused Market Strategy, *California Management Review*, 33, 95-113.

Auerswald, P., 2009. Creating social value. *Stanford Social Innovation Review*, 7, 51-55.

Alnoor, E., Rangan, V.K., 2014. What impact? A framework for measuring the scale & scope of social performance. *California Management Review* 56, 118–141.

Blokdyk, G., 2018. *Logic model. A complete guid*e. Brisbane, Emereo Publishing.

Boekholt, P., Thuriaux, B., 1999. *Boosting innovation: the cluster approach*. Paris: OECD Publications [Online] Available at: http://www.msmetfc.in/images/05_03_2014_Boosting_Inovations_Cluster_Approach.pdf [Accessed 10 November 2018].

Bucklin, L. P., Sengupta, S. 1993. Organizing Successful Co-Marketing Alliances, *Journal of Marketing*, 57, 32-46.

Campbell, D.T., 1969. Reforms as experiments. *American psychologist*, 24, 409-429.

Enright, M., 2000. *Survey on The Characterization of Regional Clusters: Initial Results, Institute of Economic Policy and Business Strategy: Competitiveness Program*, Working Paper, University of Hong Kong, Hong Kong.

Flanagan, K., Uyarra E., Laranja M., 2010. The „policy mix" for innovation: rethinking innovation policy in a multi-level, multi-actor context. *Manchester Business School Working Paper*, MPRA Paper No. 23567, 1-35.

Fromhold-Eisebith, M., Eisebith G., 2008. Looking behind Facades: Evaluating Effects of (Automotive) Cluster *Promotion. Regional Studies* 42 (10): 1343–1356.

Haski-Leventhal D., 2018. *Strategic Corporate Social Responsibility. Tools & Theories for Responsible Management*, SAGE, London.

Horváth, P., 1998. *Controlling*, München: Vahlen.

Howlett, M., Ramesh M., *Studying public policy: policy cycles and policy subsystems* (Second Edition), Oxford University Press 2003.

Jankowiak, A.H., 2018. Cluster Policy Models in the VISEGRAD Group Countries – A Comparative Study, in: *Transformations in Business & Economics*, vol. 17, nr 2A, 447-465.

Kaplan, S.A., Garrett, K.E., 2005. The use of logic models by community-based initiatives. *Evaluation and program planning*, 28, 167-172.

Knowlton W.L., Philips, C.C., 2013, *The logic model guidebook: better strategies for great results*. Thousand Oaks, CA: Sage.

Learmonth, D., Munro A., Swales J. K., 2003. Multi-Sectoral Cluster Modelling: The Evaluation of Scottish Enterprise Cluster Policy. *European Planning Studies* 11 (5): 567–584.

Lehmann, E.E., Menter, M. J., 2018. Public cluster policy and performance, *The Journal of Technology Transfer*, June, Volume 43, Issue 3, 558–592.

Lencioni, P.M., 2002. *Make your values mean something*. HBR, 80, 113117

Lyles, M.A., 1987. Common mistakes od joint venture experienced firms. *Columbia Journal of Economics*, 22, 79-85.

Marešová, P., JašíkováV., Bureš, V. 2014. Multi-criteria model for evaluation of cluster initiatives: the comparative case study. *Procedia-Social and Behavioral Sciences* 109, 1242-1246.

Mazurek, S., 2014. Diversity of Cluster Policies in Asian Countries, *Research Papers of the Wroclaw University of Economics*, Issue 370, 57-70.

Möller, K., Rajala, A., 2007. Rise of strategic nets — New modes of value creation. *Industrial Marketing Management*, 36, 895–908.

Möller, K., Seiter, M., 2008. Erfolgswirkungen von Kommuniation in *Netzwerken. Eine empirische Analyse. Zeitschrift für Management*, 3, 5-26.

Nielsen, B.B. 2007. Determining international strategic alliance performance: A multidimensional approach. *International Business Review*, 16, 337–361.

Nishimura, J., Okamuro H., 2011. Subsidy and Networking: The Effects of Direct and Indirect Support Programs of the Cluster Policy. *Research Policy* 40 (5): 714–727.

Njøs, R., Jakobsen S-E., Aslesen H., Fløysand A., 2017. Encounters between cluster theory, policy and practice in Norway: Hubbing, blending and conceptual stretching. *European Urban and Regional Studies*, Vol. 24(3) 274– 289.

Polozhentsevaa, Y., Klevtsova, M., 2015. Instruments of Development of Cluster Policy: Stages, Models, International Practice, *Procedia Economics and Finance* 27, 529 – 537.

Raines, P., 2001. The Cluster Approach and the Dynamics of Regional Policy-Making. *Regional and Industrial Policy Research Paper*, Number 47, 1-35.

Ritter, T., Wilkinson, I. F., Johnston, W.J., 2004. Managing in complex business networks. *Industrial Marketing Management*, 33, 175-183.

Schmiedeberg, C., 2010. Evaluation of cluster policy: a methodological overview. *Evaluation*, 16(4), 389-412.

Skulska B., Jankowiak A.H., Mazurek S., 2014. *Klastry jako nośnik innowacyjności przedsiębiorstw i regionów. Czy doświadczenia azjatyckie można wykorzystać w warunkach gospodarki polskiej?*, Publishing House of Wroclaw University of Economics, Wrocław.

Uyarra E., 2014. *Cluster Policy in an Evolutionary World? Rationales, Instruments and Policy Learning, presentation for Cluster Policies from a Cluster Life Cycle Perspective*, International Dissemination Workshop, 23-24 June, Berlin.

Uyarra, E., Ramlogan R., 2012. The Effects of Cluster Policy on Innovation Compendium of Evidence on the Effectiveness of Innovation Policy Intervention, *Manchester Institute of Innovation Research*, 1-48.

Vernay, A-L., D'Ippolito B., Pinkse J., 2018. Can the government create a vibrant cluster? Understanding the impact of cluster policy on the development of a cluster, *Entrepreneurship & Regional Development*, 30:7-8, 901-919.

CLUSTER POLICY INSTRUMENTS FOR DEVELOPMENT – A COMPARATIVE STUDY OF VARIOUS CLUSTER POLICIES

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Abstract. The article aims to present currently used cluster policy instruments and to create a set of universal development support tools that cluster policy offers to its beneficiaries. There are the following research questions in the paper: (1) What kind of instruments can the cluster policy use? (2) Are the instruments similar or different in various national economies? (3) Is there a universal set of instruments that can be implemented in every cluster policy? The article presents the experience of the most advanced and comprehensive cluster policies from selected European and non-European countries, and then an attempt will be made to build a universal model of cluster policy instruments. A research method used in the paper was a comparative study of various cluster policies, and the paper adopts a deductive-analytical approach. The article is based on a critical review of the literature on the subject and international reports, and analysis. The main findings of the paper are that the cluster policy is formed not only by national and local authorities but mainly by economic conditions existing in a given economy. The assumptions of the cluster policy are similar throughout the world, but the tools of this policy are diverse and specific depending on the cluster policy phase that the government is currently implementing. The paper has a practical implication on the cluster policy and effective instruments for cluster and regional development. In conclusion, the authors emphasised that assigning specific tools to the phases of development of cluster policy in a given country may affect the effectiveness of using financial and non-financial resources offered by the cluster policy.

Key words: *clusters, cluster policy, instruments of cluster policy*

JEL code: L14, O25

Introduction

Cluster policy is widely used in many countries of the world, both in developed and developing economies. Its task is to support the development of cluster initiatives and already functioning clusters that ensure economic growth and improve the level of innovation of the regions in which they are located. Cluster policy has many support instruments that depend on the specificity of the country, and the available outlays, and that are not unified and standardised. Each policy uses different methods leading to similar assumptions. The article aims to present the currently used cluster policy instruments and to create a set of universal development support tools that cluster policy offers to its beneficiaries. There are the following research questions in the paper: (1) What kind of instruments can the cluster policy use? (2) Are the instruments similar or different in various national economies? (3) Is there a universal set of instruments that can be implemented in every cluster policy? The article will present the experience of the most advanced and comprehensive cluster policies from selected European and non-European countries (China, Japan, Canada), and then an attempt will be made to build a universal model of cluster policy instruments. A research method used in the paper was a comparative study of various cluster policies, and the paper adopts a deductive-analytical approach. The article is based on a critical review of the literature on the subject and international reports, and analysis. The literature on the subject offers a lot of research on diverse aspects of cluster functioning and cluster policy applications. However, research on the real impact

of cluster policy on the development of clusters, the effectiveness of using financial and non-financial inputs as well as the effectiveness of particular policy tools is limited. The article is an attempt to fill the research gap related to the definition of cluster policy tools based on different models used in selected countries.

In the recent years, clusters have been put in the centre of attention by policymakers, because clusters have been seen as the driving force of economic development for enterprises and regions, especially in the context of creating innovation and competitiveness. Many authors emphasise the importance of the flow of knowledge between cluster actors. According to Pohl "A cluster is characterised on the one hand by the value of spatially concentrated knowledge sharing, on the other hand by a spatially specialised division of labour" (Pohl A., 2015). Knowledge in clusters is a source of innovation, which is based on interactions with affiliated companies and external entities. Clusters contribute to increasing the level of innovation by providing links between previously dispersed scientists and researchers, by connecting the right scientists with the right industry, which translates into the interaction between science and the market. Clusters also combine different competencies of the entrepreneurs themselves and favour the inclusion of local enterprises in the network of transnational corporations and their global supply chains. It is thanks to the high-performance clusters that the human resources and their skills, and capital are included in one network to create an innovative environment, in which it is possible to develop knowledge previously hidden. Development through the creation of knowledge is a factor that develops the competitiveness of regions (Choe K., Roberts B., 2011).

Cluster policy can be defined as obligations and actions of state or local authorities aiming at providing support to existing clusters, or creating favourable conditions for the creation of new clusters. However, there is a problem in clearly defining the cluster policy, which may be the result of difficulties in separating the cluster policy from other policies carried out in a given national economy (Boekholt P., Thuriaux B., 1999; Raines P., 2003). Research conducted in individual national economies shows that cluster policy is seen as a separate policy only in a few countries, but in most cases, it is an element of innovation, technology, industrial, regional or development policy. As part of the industrial policy, support is mainly received by small and medium-sized enterprises to which most of the assistance programs are addressed. Only clusters that include a predetermined number or percentage of companies from the SME sector can receive support. Actions supporting clusters in the framework of the technology policy result directly from the existence of the triple helix relations (Etzkowitz H., Leydesdorff L., 2000), in which there was a change in the directions of support - from individual activities to support groups of entities within clusters. Finally, the use of cluster policies within regional policy has been linked to the so-called lagging afflicting regions idea of the innovation paradox (Uyarra E., Ramlogan R., 2012). Based on that Nauwelaers identified three types of cluster policy, including the Mega Cluster (connected with industry competitiveness), the Local Network Cluster (regional institutional thickness) and the Knowledge-Based Cluster (innovation respectively) (Uyarra E., Ramlogan R., 2012). According to Fornahl and Hassink „Cluster policies are just one part of these broader regional innovation policies, and often we find several cluster initiatives under the roof of one regional innovation policy" (Fornahl, D., Hassink, R., 2017).

The most frequent approach to cluster policy is to emphasise its importance for promoting and supporting economic development (Wolfe D., Gertler M., 2004) and raising the level of competitiveness, efficiency and innovation of cluster entities (Aziz A., Norhashim M., 2008). In Porter's opinion „Public policy that provides rules, mechanisms, and incentives for capturing external economies will improve productivity and, with it, job, wage, and innovation growth (Porter M., 2009). Based on these considerations, it can be assumed that cluster policy is a broadly understood concept related to regional, industrial, technological and innovative policy, the main objective of which is to properly use local resources, production factors and knowledge in the process of increasing regional competitiveness. As Lucena-Piquero and Vicente noted, "Cluster policies support the idea that an additional source of R&D productivity at the meso level remains hidden

behind the simple aggregation of the innovative capabilities of each organisation considered in isolation" (Lucena-Piquero D., Vicente J., 2019).

According to Lehmann and Menter, cluster policies have at least two dimensions, one is the focus on promoting innovation and performance of chosen industries, and the second involves insisting on the importance of the local territory with the underlying idea that knowledge and technology spillovers are localised (Lehmann E.E., Menter M., 2018a). They define cluster policy underlying the regional needs and goals that are possible to pursue by making use of the regional or local level assets (Lehmann E.E., Menter M., 2018b). According to the European Commission, cluster policy can be divided into three categories: facilitating policies (creating a favorable microeconomic business environment for growth and innovation that indirectly also stimulates the emergence and dynamics of clusters); traditional framework policies (industry and SMEs policies, research and innovation policies, and regional policy that often use the cluster approach to increase the efficiency of a specific instrument); development policies (creating, mobilizing or strengthening a particular cluster category resulting specific sectoral cluster initiatives) (European Commission, 2008). The diversity of cluster policy is significant and results from the source of support, entities providing it, and the target group. Different types of cluster policies according to individual criteria are presented in Table 1.

Table 1

Types of cluster policy

Criterion	Type
Connected and overarching policies	- Innovation policy - Technology policy - Industrial policy - Regional policy - Development policy
Levels of governance	- Supra-national - National - Regional - Local
Policy targets	- Areas - Sectors - Types of companies
Selection of clusters to support	- Existing clusters - New clusters - Super clusters
Time point and/or duration of support	- Limited time - Unlimited time
Institutional configurations of cluster initiatives	- Top-down - Bottom-up
Sources of founding	- National - External

Source: Author's work

Research results and discussion

The analysis of the cluster policy tools needs to be started by defining the objectives of the policy, which may serve as the basis for assessing the effectiveness of cluster policy. It is possible to indicate many goals of such a policy, especially in the area of increasing the competitiveness of entities and regions, development of basic, technological and scientific infrastructure. Feser points out, however, that in place of direct support for clusters, cluster policy should seek to leverage innovative synergies among business (Feser E., 2008). The aim of the cluster policy can be seen in designing R&D collaborative incentives to strengthen knowledge networks manifested in stimulation of the local spillovers of

knowledge. (Broekel T, Fornahl D., Morrison A., 2015). First of all, the goal of the cluster policy should be to effectively develop scientific and research cooperation between enterprises and entities providing specialist knowledge, such as universities and technology parks. This policy advantage is not direct, but somewhat indirect, and it is a kind of platform for expanding the scientific potential of clusters.

However, Fornahl and Hassink take quite a different approach to this matter, and they undermine the correctness of cluster policy activities undertaken to support selected sectors, industries and technologies that are key to regional development. They propose a concentration of expenditures and resources on processes taking place in clusters relevant for one or several sectors or technologies. Policymakers should choose tools so that they serve to dynamise the processes taking place in the group of cluster entities, and not in the most critical industries. Further support of selected industries is possible, but their significance for development should not motivate it but impulses stimulating the accumulation of knowledge. Cluster policy attention should be focused on adaptability and changes of a cluster, the integration of new knowledge, the fusion of sectors or technologies, the emergence of new industries or technologies, and the use and generation of variety. It should take into account the stage of development of clusters as a basis for the support provided, selecting different tools for individual life stages of clusters (Fornahl, D., Hassink, R., 2017).

Cluster policy is implemented through cluster programs, which most often have a closed time horizon. As part of the programs, tools are created to allow for the allocation of resources (mainly financial), and entities responsible for organising their flows are defined. Aziz and Norhashim point to three groups of tools used in cluster policy (Aziz A., Norhashim M., 2008):

1) interactions between cluster entities in which the authority assumes the role of a broker - cooperation on research, technology development, and technology transfer, inward investments to attract new actors, publicly funded infrastructure like science parks to encourage interactive agglomerations, public sector as brokers for matching actors;

2) ensuring the availability of production factors and resources in which the authority affects the competitiveness of the cluster - enhance and increase/build tacit knowledge, measures to improve access to key business information, investments in technology and business infrastructure, technology transfer activities, tailored skills training programs, etc.;

3) building identity and belonging to a cluster, in which the authorities assume additional activities - cluster mapping activities, external promotion of the cluster, setting up of representative cluster organisation, providing information on technology and market trends through forecasting activities, benchmarking activities with the cluster's major rivals.

Fornahl and Hassink, when analysing cluster policy tools, use the "umbrella policy" concept, which means that this policy can include any tool previously classified as a tool for the development of traditional economic policies. They indicate that the following should be mentioned among the cluster policy tools: R&D funding, setting up of intermediaries, venture capital funds, competence centres, support for training activities, network and identity - building (Fornahl, D., Hassink, R., 2017). The OECD documents specify the cluster policy tools by classifying them into three sets (see Table 2).

Table 2

Instruments of cluster policy according to OECD

Goal	Instruments
Engage actors	
Identify clusters	· Conduct mapping studies of clusters (quantitative and qualitative) · Use facilitators and other brokers to identify firms that could work together
Support networks/ clusters	· Host awareness raising events (conferences, cluster education) · Offer financial incentives for firm networking organisations · Sponsor firm networking activities · Benchmark performance · Map cluster relationships
Collective services and business linkages	
Improve capacity, scale and skills of suppliers (mainly SMEs)	· SME business development support · Brokering services and platforms between suppliers and purchasers · Compile general market intelligence · Co-ordinate purchasing · Establish technical standards
Increase external linkages (FDI and exports)	· Labels and marketing of clusters and regions · Assistance to inward investors in the cluster · Market information for international purposes · Partner searches · Supply chain linkage support · Export networks
Skilled labour force in strategic industries	· Collect and disseminate labour market information · Specialised vocational and university training · Support partnerships between groups of firms and educational institutions · Education opportunities to attract promising students to the region
Collaborative R&D and commercialisation	
Increase links between research and firm needs	· Support joint projects among firms, universities and research institutions · Co-locate different actors to facilitate interaction (i.e., science parks, incubators) · University outreach programmes · Technical observatories
Commercialisation of research	· Ensure appropriate intellectual property framework laws · Overcome barriers to public sector incentives in the commercialisation · Technology transfer support services
Access to finance for spinoffs	· Advisory services for non-ordinary financial operations · Public guarantee programmes and venture capital · Framework conditions supporting private venture capital

Source: OECD, 2010.

Interactions between actors influencing the process of formulating and implementing policies lead to a large variety of final solutions, even if the same starting idea is behind each of them. A perfect example is cluster policy in the world. Not only the approach to cluster support is heterogeneous, but also the concept of using clusters as a tool in broadly understood socio-economic policy. It is the previously described complex nature of the policy formulation process that results in such diversity. Among other reasons, in some economies, especially highly-developed ones (e.g. in Japan), cluster policy permeates with the innovation policy, and in countries at a different stage of development, usually in emerging or developing countries (e.g. in China, India), it appears in the context of development policy. In each country, there is a complicated, multi-level, interest-rich environment, which results in a concrete policy mix, which is a set of assumptions, goals and policy instruments, depending on local possibilities and limitations. Initiatives to create or support clusters have been conducted for many years in various national economies, but also, what is worth emphasising, they are implemented at the level of individual regions (e.g. in Bavaria and Catalonia).

Cluster policy is widely studied by European Union institutions, which creates a set of good practices that can be implemented in individual countries. However, this is not successful, because both the assumptions and tools vary depending on the level of industrial development of the country, its clusters' intensity and adopted development policy.

Despite many EU regulations, so far, the member states have failed to develop a single, coherent cluster policy for all the countries. The European Union initiates actions supporting European clusters, especially in the form of financial support, but they are directed to a narrow group of supra-regional clusters. The activities taken at the EU level are mainly addressed to small and medium-sized enterprises considered to be the beneficiaries of the regional clusters' existence. The tools used as part of the European Union's cluster policy are, above all, financial grants (e.g. Innovation in SMEs work programme with a budget of 24.9 million EUR), provides tools for studying clusters and the effectiveness of the national cluster policy or provides information, mapping tools and analysis of EU clusters and cluster policy with a particular focus on emerging industries (eg. The European Cluster Observatory). The European Commission also organises a series of events aimed at the mutual adjustment of existing clusters and help in establishing cooperation between the European clusters (International Cluster Matchmaking Events) and training for managers (European Foundation for Cluster Excellence). To promote international cluster cooperation, EU created the European Cluster Collaboration Platform (ECCP) that facilitates cluster cooperation within the EU and helps clusters access international markets.

Denmark is an example of a European country that effectively conducts cluster policy. Innovation Network can be used as an example of innovative solutions and tools. This project sets the network apart as a policy instrument compared to other innovative programs. What distinguishes this program from others is not the focus on funding projects but building a special platform for players within a specific technical or professional area to work together. The network has naturally less formal character. Innovation Network should focus on "assisting companies in prioritising research through shared development of strategies and execution of plans and by bringing participating companies in innovation networks together in order to ensure a critical mass in relation to projects" (The impacts, 2011). Another example of the tools used by the Danish cluster policy is the support given to the Welfare Tech Region. As part of cluster policy activities, financial support can be distinguished (over 10 million EUR) granted as part of domestic and venture capital funds. The second action was the support provided in the form of creating a research centre for investigating the opportunities and limitations of public-private innovation. Institutional support was also provided in the form of coordination of cluster entities' activities, which takes place through strong support of the cluster's secretariat by local authorities (Ingstrup M., Damgaard T., 2013).

An interesting solution is cluster certification, which can be observed in the French cluster policy. In the cluster program launched in 2005, state institutions have made it possible to conduct the certification process of selected clusters, guided by their ability to create knowledge and R&D projects. Research projects had to achieve the goals of clusters and cover a large number of cluster entities. In the second phase of the project, certified clusters could apply for funds as part of dedicated paths. Certification aims to motivate clusters to involve their entities more in joint research and development activities and is significant facilitation in the process of launching the next stages of cluster policy in France.

In Germany, the first public grant program focuses on the clusters support, and to strengthen it 25 regional developments were established in 1995 followed by general nationwide programs to support businesses. Cluster policy in Germany has a rather central character and aims to build a bridge between business and science to achieve economic growth and a higher level of innovativeness. The primary instrument is the financial support (e.g. 1.2 billion EUR worth support combined of public and private funding in the cluster program called Leading-Edge Cluster competition). However, the main idea, and at the same time quite innovatory, is to support the connection between not only different industries but various companies if we look at the size of firms (connect huge, transnational corporations with freshly established starts-up).

The cluster policy in China is undoubtedly a part of the innovation policy in this country, though both of them do not have an evident institutional character. Cluster policy in China is not as explicit as it is in other countries of the world,

e.g. in Japan, where it is conducted systematically and has different stages over the years. Such a cluster policy construction is reinforced by the view presented in the article, which assumes that the cluster policy in the developing countries does not appear as a separate activity. In the strategy formulated by the National Development and Reform Commission "Opinion on facilitating the development of industrial clusters" in 2007, the Chinese central government has recognised clusters contribution to the industrial development and assurance of the economic growth of the country. The document also includes specific actions, which are the basis of cluster policy, which can also be viewed as instruments. Among others, the purpose of the cluster policy is to strengthen the planning and guidance, to encourage better utilization of resources, to nurture leading enterprises and enhance specialization, to encourage innovation, to promote sustainable development, to encourage brand building of enterprises and their products, to develop producer services and to ensure coordinated relocation of manufactures (Li&Fung, 2010). Therefore, the cluster policy in China is a resultant of industrial policy, and it is carried out both centrally and at the level of the individual provinces.

The cluster policy in Japan is one of the longest and most effective policies in the global economy. It is firmly rooted in Japanese development policy and is run by clearly appointed units and government agencies. Currently, activities are being carried out under the Fifth Basic Plan of Science and Technology until 2020 under the leading title "Build a Regional Innovation Eco–system". Earlier programs concerned "Start of the Cluster Policy" (2001 – 2005), "Implementation of Cluster Policy" (2006-2010) and "Development of Cluster Policy" (2011 – 2015). According to Nishimura and Okamuro cluster policy tools in Japan can be divided into six groups combined with many specific instruments, and those are as follows (Nishimura J., Okamuro H., 2011):

1) network formation – establishment of organizations promoting cluster formation, networking with related organizations, dispatch of coordinators to participating companies and universities, information transmission through websites and e-mail magazines, holding industry-academia collaboration exchange meetings, joint meetings for announcing the results, symposiums, seminars, and workshops, development of database on companies, researchers, and supporters,
2) R&D support – promotion and collaboration of R&D by public funds based on selective schemes, promotion of utilising research results, support for protection and strategic use of intellectual property (establishment of local intellectual property strategy headquarters, etc.),
3) incubation function – development of incubation facilities, fostering incubation managers, the formation of a network between incubation organisations and incubation managers,
4) marketing support - holding events for business matching and exhibition of products (including the overseas market), collaboration with specialised trading firms, the establishment of the distribution system, market cultivation through coordinators, support for cross-industrial collaboration,
5) financial support - a collaboration with local financial institutions (holding the Industrial Cluster Support Finance Conference), the establishment of local venture capital, holding meetings for announcing business plans,
6) fostering human resources - fostering highly specialised human resources, (manufacturing personnel, technology management personnel, and judging personnel, etc.).

The cluster policy conducted in Canada also demonstrates the level of development comparable to Japan. In the case of Canada, it was decided to invest a significant amount of money (up to 950 million USD over five years 2016-2021) in the creation and development of 5 so-called superclusters as part of the Innovation Superclusters Initiative. They were created on the one hand as leaders in their regions, combining smaller initiatives into larger clusters, and on the other hand, they are characterised by the largest growth potential and the driving force of the entire economy. Cluster tools focus mainly on creating knowledge and conducting scientific research, specialised R&D services and infrastructure such

as incubation. In the Canadian cluster policy, the emphasis is on the development of research and science, so the tools of this policy are all activities aimed at creating favourable conditions for increasing knowledge by clusters (for example, creating a special centre for entrepreneurs and scientists, where they can hold their meetings as part of the project CLARI Network in Nova Scotia). Nowadays, the selection of key clusters by the national authority is an increasingly popular tool of cluster policy used in many countries. This solution has both supporters and opponents, but there are currently no complex studies on the effectiveness of policies based on the choice of super clusters.

Only a few countries or regions achieve a comprehensive success in managing cluster policy, while a large group achieves only a few intended goals. Israel can be used as an example, where there was no effective coordination of activities and a clear division of tasks between government units responsible for supporting cluster support. A clear vision did not conduct cluster activities, and the support of the selected industry was not implemented with sufficient funds and resources (Avnimelech G., 2013).

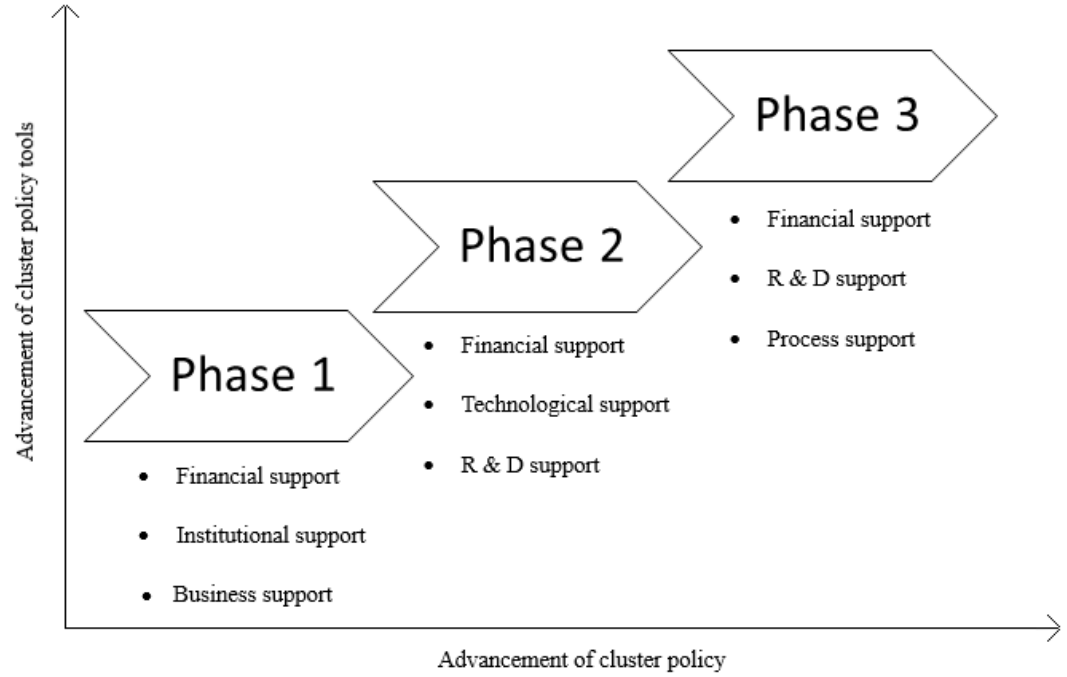
As follows from the examples above, cluster policies are largely different from each other, as are the tools used in them. Cluster policy is extremely individual, which results from, on the one hand, the level of economic development of a given national economy, and on the other hand, it is connected with the stage of cluster development in a given country. In countries where clusters are a relatively new phenomenon, cluster policies are not defined and excluded from development policy. Along with the growing number of clusters and cluster initiatives, they become a separate entity, forming a part of the comprehensive economic strategy. Such action, however, forces us to consider whether the introduction of cluster policy is not too late in relation to the development of clusters. It can also be noted that along with the increase in the level of economic development, the resources and type of cluster policy tools are changing. In less developed economies, such tools are used to improve the functioning of enterprises, create networks between them, develop infrastructure, facilitate the production of cluster products. In more developed countries that have already completed the early stages of cluster policy development, the tools are selected in such a way as to enable cluster entities to primarily develop research potential and new technology products, create knowledge and innovate, without pressure to increase production or trade.

The similarities noticed between the cluster policies surveyed in the article involve the basic tools that are the financial subsidies in the form of grants. In the vast majority of developed countries, there may be clusters for specific measures that have been somehow assessed, these may be clusters that have passed the certification stage, are the largest in the country or have been selected as key clusters. In developing countries, however, the majority of calls for funds are open to every cluster, sometimes with a specific industry affiliation.

Financial support is the dominant tool in the first phase of the cluster policy existence, which the developing countries are currently going through. It can be assumed that financial grants are a less advanced tool of cluster policy, but they are also the most desired by cluster entities. In this phase, tools related to institutional support for clusters, such as training for managers of clusters, assistance in applying for funds, etc. should be enumerated. The last type of tools in this phase are instruments qualified for business support, which are related to the marketing of cluster entities, building the cluster's identity, a cluster membership identification, cluster activities certification, infrastructure construction, etc. Each subsequent tool requires greater institutional involvement from the policymakers, within which one should appoint units designated for the preparation, implementation and control of cluster policy in a given country. It can, therefore, be assumed that the change of tools is connected with the shift in phase of the cluster policy existence from the creation phase to the implementation phase (Fig. 1). In countries, where cluster policy is a part of or is derived from innovation policy, the tools used are primarily those that support the creation of science and the use of the synergy effect of scientific cluster entities. At this stage, tools related to financial support are still used, but as an aid in the creation of new

technologies and leading to the development of research and development potential. Currently, most developed countries can qualify for phase two. The most advanced form of cluster policy is the third phase, in which the tools will be used not only for financial and research support but for supporting processes taking place between cluster entities. Local or national authorities should be a partner for clusters. The actions and tools used are to create a partnership for innovation with cluster entities, and the policy should act as brokers for matching. It can be assumed that in this phase there are only a few countries that have been consciously and effectively building their cluster-based development policy for many years.

Following the research question posed in the article introduction, it can be concluded that creation of a universal set of cluster policy tools is possible, but only when policymakers determine the phase in the development of this policy. With the advancement of the cluster policy development in the national economy, the advancement in the tools of this policy is increasing. Different tools will be effective for both clusters and national authorities at the early stage of development of the clustering phenomenon in a given country, and some others will find effective application in the highly-developed countries, in which cluster policy has been permanently incorporated in the national policy.



Source: Author's work

Fig. 1. **The stages of cluster policy development and the degree of advancement of using the tools**

The one issue concerns the measuring of the cluster policy tools should be mentioned. The evaluation is a challenging thing to manage. Cluster policy in individual countries faces a huge challenge also related to the process of cluster relocation, which is increasingly observed in the global economy. The investment of one country in a cluster characterised by geographical disruption (in contrast to the basic assumption of the required geographical proximity in clusters) will lead to a situation where tools are used, and costs are incurred in a different place than the benefits of cluster policy.

Conclusions, proposals, recommendations

Based on the conducted research, the author made the following conclusions and recommendations:

1. Selected tools of cluster policy should be as measurable as possible, and the ratio of inputs to effects should be the basis for assessing the effectiveness of this policy. Measuring effectiveness is essential for planning further stages and policy phases. Clusters that skilfully prepare applications in competitions often receive support, which

does not mean that they are effective clusters, and their members continue to create synergies and new knowledge by learning from each other.

2. Cluster policy should be understood as multidimensional and multi-tool support targeted at clusters. The goal should be to strengthen links and processes between participants, and not just increase the number of clusters and cluster enterprises. Cluster policies can accelerate cluster growth and create an environment conducive for clustering.
3. In some economies, especially highly developed ones (e.g. Japan), cluster policy is interwoven with innovation policy, and in countries at a different stage of development, usually, in emerging or developing countries (e.g. in China, India), it appears in the context of development policy.
4. Interactions between actors influencing the process of formulating and implementing policies lead to a large variety of final solutions, even if the same starting idea is behind each of them.
5. There is a basis for creating a universal set of cluster policy tools, but this is possible only when policymakers determine the phase in the development of cluster policy that they are currently implementing. With the advancement of the development of cluster policy in the national economy, the advancement in the tools of this policy is increasing. Other tools will be effective for both clusters and national authorities at the early stage of development of the clustering phenomenon in a given country, while others will find effective application in highly developed countries in which cluster policy has been permanently incorporated in national policy.
6. Assigning specific tools to the phases of cluster policy development in a given country may affect the effectiveness of using financial and non-financial resources offered by the cluster policy.
7. Cluster policy in individual countries faces a huge challenge also related to the process of cluster relocation, which is increasingly observed in the global economy. The investment of one country in a cluster characterised by geographical disruption (in contrast to the basic assumption of the required geographical proximity in clusters) will lead to a situation where tools are used, and costs are incurred in a different place than the benefits of cluster policy.

Bibliography

Avnimelech G., 2013. Targeting the Biotechnology Clusters in North Carolina and Israel: Lessons from Successful and Unsuccessful Policy Making, *Technology Analysis & Strategic Management* Volume 25, 2013 - Issue 7, 835-851.

Aziz A., Norhashim M., 2008. Cluster-Based Policy Making: Assessing Performance and Sustaining Competitiveness, *Review of Policy Research* 25(4):349 – 375.

Boekholt P., Thuriaux B., 1999. Public Policies to Facilitate Clusters: Background, Rationale and Policy Practices in International Perspective, in Roelandt, T., den Hertog, P. (eds), *Boosting Innovation: The Cluster Approach*, OECD, Paris, 381-412.

Broekel, T., Fornahl, D., Morrison, A., 2015. Another cluster premium: innovation subsidies and R&D collaboration. *Research Policy* 44 (8), 1431–1444.

Choe, K., Roberts, B., 2011. Competitive Cities in the 21st Century. Cluster-Based Local Economic Development, Asian Development Bank, Manila.

Etzkowitz, H., Leydesdorff, L., 2000. The Dynamics of Innovation: From National Systems and "Mode 2" to a Triple Helix of University-Industry-Government Relations, *Research Policy*, 29, 109-123.

European Commission, 2008. The concept of clusters and cluster policies and their role for competitiveness and innovation: main statistical results and lessons learned, Commission Staff Working Document SEC (2008) 2637, Europe INNOVA / PRO INNO Europe paper N° 9, Brussels.

Feser, E., 2008. On building clusters versus leveraging synergies in the design of innovation policy for developing economies, in Blien U., Maier G. (eds), *The Economics of Regional Clusters: Networks, Technology and Policy*, Cheltenham, Edward Elgar, 191-213.

Fornahl, D., Hassink, R. (eds.), 2017. The Life Cycle of Clusters; A Policy Perspective. Edward Elgar Publishing, 1-10.

Ingstrup M., Damgaard T., 2013. Cluster Development Through Public Sector Facilitation in Brown K., Burgess J.,

Festing M., Royer S., *Resources and competitive advantage in clusters*, Rainer Hampp Verlag, Mering.

Lehmann E., Menter M., 2018a. Public cluster policy and performance, *The Journal of Technology Transfer* 43:558–592.

Lehmann E., Menter M., 2018b. Public cluster policy and neighbouring regions: beggar-thy-neighbour?, *Economics of Innovation and New Technology*, vol. 27, nos. 5–6, 420–437.

Li&Fung Research Center, 2010. Industrial Clusters Series, Issues 6, June.

Lucena-Piquero D., Vicente J., 2019. The visible hand of cluster policymakers: An analysis of Aerospace Valley (2006-2015) using a place-based network methodology, *Research Policy* 48 (2019) 830–842

Nishimura J., Okamuro H., 2011. Subsidy and networking: The effects of direct and indirect support programs of the cluster policy, *Research Policy* Volume 40, Issue 5, 714-727.

OCED Innovation Policy Handbook 2010, available at www.oecd.org/innovation [Accessed 25 November 2018]

Pohl, A., 2015. Eco-Clusters as Driving Force for Greening Regional Economic Policy, *Policy Paper* no 27, 3-65.

Porter M., 2009. Clusters and economic policy: Aligning public policy with the new economics of competition, *Institute for Strategy and Competitiveness White papers*, available at https://www.hbs.edu/faculty/Publication%20Files/Clusters_and_Economic_Policy_White_Paper_8e844243-aa23-449d-a7c1-5ef76c74236f.pdf [Accessed 1 December 2018]

Raines, P., 2003. Cluster behaviour and economic development: new challenges in policy evaluation, *International Journal of Technology Management*, Vol. 26, Nos. 2–4, 191–204.

The impacts of cluster policy in Denmark - An impact study on behaviour and economical effects of Innovation Network Denmark, 2011, Danish Agency for Science, Technology and Innovation available at https://ufm.dk/en/publications [Accessed 16 December 2018].

Uyarra E., Ramlogan R., 2012. The Effects of Cluster Policy on Innovation, Compendium of Evidence on the Effectiveness of Innovation Policy Intervention, *Nesta Working Paper* 12/05, 4-48.

Vernay A-L., D'Ippolito B., Pinkse., 2018. Can the government create a vibrant cluster? Understanding the impact of cluster policy on the development of a cluster, *Entrepreneurship & Regional Development*, 30:7-8, 901-919

Wolfe D., Gertler M., 2004. Clusters from the Inside and Out: Local Dynamics and Global Linkages, *Urban Studies*, Vol 41, Issue 5-6, 1071-1093.

MAIN FACTORS OF EMOTIONALLY ATTACHED CUSTOMERS IN RETAIL BANKING OF LATVIA

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Abstract. How the banking strategy in Latvia is changing? How can banks increase the number of active clients? Are banks in Latvia focusing to attract new clients or prefer to work with the existing client portfolio? How can the retail banking sector in Latvia impact the customer loyalty?

The regulation developed by the Basel Committee and the regulations of The Financial and Capital Market Commission impacted the number of banks in Latvia and the number of active clients in retail banking. Latvian banks are getting more flexible in customer services and actively working to increase customer loyalty. If previously banks actively attracted the new clients to increase the number of customers, now banks are working to increase the number of active loyal clients. Only a totally complacent customer will be a loyal customer.

The purpose of this study is to examine the effects of customer emotional attachment on customer loyalty to the provided goods and services in the retail banking sector in Latvia. The authors used their developed questionnaire that was aimed to the main factors that can increase the customer loyalty. The profitability of each bank directly depends on customer loyalty and how many customers return for goods and services. The main object of loyalty is customer emotional attachment, which is the determining factor in decision making in retail banking. The customer's emotions and feelings drive his/her choice.

When banks interact with customers' emotions, the income could be considerable. That is why it is significant to research customer emotions to create long term partnership in retail banking. Research methods used are clients' survey in the retail banking sector in Latvia.

The banks branding, the personality of produced goods and services, the customer experience and trust, the digitalization and innovation tendency are the factors that can emotionally attach the customer. All these factors, from the new product and services development till the daily provided, affect the customers' value to the bank. As the main result, the strategic goal is to have emotional attached customers in retail banking of Latvia.

Keywords: *emotional attachment, branding, customer loyalty*

JEL code: G21, O16

Introduction

The new regulations of The Financial and Capital Market Commission of 2015-18 set much higher requirement for customer research and risk classification than KYC (know your client) standards and the number of commercial banks of Latvia decreased by 30 percent. From 2015 through 2018, the number of private active customers in Retail banking sector of Latvia decreased by 6 percent – more than 128000 customers. Therefore, commercial banks in Latvia were forced to change their strategy. Now banks in Latvia focusing to attract new clients through the digital channels, such as WEB and Mobile Applications. Bank actively work with the existing client portfolio and tries to find ways how to impact the customer loyalty.

This study will examine the Retail Banking changes in Latvia and the new ways, how to attract the potential customers.

The aim of this study is to examine the main factors of customer emotional attachment on customer loyalty to the provided goods and services in the retail banking sector in Latvia by the analyses of banking products and services in Latvia.

Research starts with literature review and hypotheses promotion. The hypotheses show three directions of the research: the need for banks to digitalize, the new opportunity of cross selling and the factors that can to increase the customer loyalty.

Next step is to analyze statistic data of Retail Banking sector of Latvia. The study employs data collected from 304 respondents from the 6 Commercials Banks of Latvia. Swedbank is the primary bank for 123 respondents, Citadele Bank - 121 respondents, SEB Bank – 34 respondents, Luminor Bank- 22 respondents, Blueorange Bank- 3 respondents, Rietumu bank only for 1 respondent. The main emotional factors, affect the customers' value to the bank, will be analyzed.

Finally, the directions for future banking business model of Retail banking sector of Latvia are generalized.

Research results and discussion

1. Literature review and hypotheses

The banking industry is going through digital changes. New devices and technologies are changing the banking business models.

Digital transformation is a huge opportunity for the financial sector. Digital transformation will help financial companies in customer acquisition, retention and revenue generation. Increasing competition and decreasing customer loyalty has made customer relationship management very useful for banks. Banks need to earn the highest level of trust in order to retain existing customers, acquire new ones, create genuine loyalty and maximize customer lifetime value. Digital technologies will help banks to provide knowledge of customers and target them with customized products and communications remotely all day. (Ernst & Young, 2015). The importance of being easy, credible and secure in order to keep existing customers and acquire new ones is fundamental to banks. Reducing the gap between the customer expectations and delivered service will enhance the customer loyalty and bank's profitability. It is cheaper to keep loyal customers than to acquire new ones (Björk, 2015). Customer migrated to digital channels. Mobile channels are far more likely to delight and less likely to annoy than the branch or call center experiences. It is leading to increase loyalty with higher customer retention, repeat purchases and referrals. Customers increasingly expect to follow up with bank staff through digital chat, video or other real-time options and banks actively develop them (Bain & Company, 2015).

Japparova and Rupeika-Apoga found that Latvian banking sector has adapted to the new conditions with the help of new digital tools, of which the most powerful was the transition to the electronic payment system. With the FinTech development in the world, electronic payment instruments are growing, and traditional payment instruments have decreased in Latvia (Japparova & Rupeika-Apoga, 2017).

Hypothesis 1: Only by becoming digital institutions banks can attract new customers and to increase the loyalty of existing customers.

Selling of banks products/services to an already existing customer—is the broad definition of what cross sell means. It can be selling an existing checking account customer a credit card or selling an existing credit card customer a mortgage. Banks have been using cross sell as a marketing approach to expand their footprint and also increase their customer base (Girish, 2010). The easiest sales that can be made to current customers are engagement services that help a customer use an account they already own. These 'sticky services,' that are also part of most financial institution onboarding programs, include a debit card, online banking, mobile banking, direct deposit, bill pay, automatic savings transfer, personal line of

credit and security solutions such as privacy protection. These services help to ensure the customer will use the products they own more frequently, will significantly improve retention, and will help to improve the overall customer experience. Without customer engagement on the most basic product level, a relationship will have a difficult time growing (Marous, 2016). The cross selling process is regulated by MiFID II. Changes are being made to a key piece of European law whose purpose is to protect the client when the customer buy or invest in financial products. The Markets in Financial Instruments Directive (MiFID) is being updated and strengthened in some important areas and will be known as MiFID II. The regulation provides more confidence that whoever is providing investment services and acts with clients' best interests in mind, not selling or recommending a product to the client because of paid commission. Product governance is a key improvement in MiFID II for investors and their protection. It mean that when a firm designs a new product or makes changes to an existing one, they must consider the investor for whom it is meant and that any risks connected with the product are adequate for those types of investor. The advising about products and services is consistent with the customer investment capabilities and experience (European Securities and markets Authority, 2014).

Hypothesis 2: Cross selling increase the number of active clients in Retail Banking sector of Latvia.

In the twentieth century, the approach that came to dominate economics was known as the neoclassical model. This approach took a narrower view of human motivations. The basic neoclassical or traditional model builds a simplified story about economic life by assuming that there are only two main types of economic actors and by making simplifying assumptions about how these two types of actors behave and interact. The two basic sets of actors in this model are firms, which are assumed to maximize their profits from producing and selling goods and services, and households, which are assumed to maximize their utility (or satisfaction) from consuming goods and services (Neva Goodwin, Jonathan Harris, Julie Nelson, Brian Roach, & Mariano Torras, 2014). In the past few decades, the neoclassical view of human behavior has been challenged by a strong alternative called behavioral economics, which studies how individuals and organizations make economic decisions. Studies in this area suggest that a more sophisticated model of human motivations is required to explain behaviors such as those that lead to stock market swings, the ways that people react to good and bad fortune, and why people often seem to act against their own self-interest (Schwartz, 2005). One of the things that motivate customers to choose and connect to a certain product or service is emotions. The emotional connection between a company and its customers is formed gradually. We live in an emotional world, where feelings influence our decisions (Berry, 2000). For this reason, marketers often try to create an emotional connection between their brands and their customers. The possibility that customers can develop motional connections to brands is suggested and supported in the academic literature (Berry, 2000). In the context of the banking service sector, the long-term efforts of service providers to build up brand personality and create an emotional connection with their customers may lead to customer loyalty and a long-lasting relationship. Thus, we suggest that emotional attachment leads to customers' bank loyalty (Hino, 2016).

Hypotheses 3: The banks branding, the personality of produced goods and services, the customer experience and trust, the digitalization and innovation tendency are the factors that can emotionally attach the customer.

2. Review of retail banking of Latvia

The new regulations of The Financial and Capital Market Commission of 2015-18 was a major shock to the Latvian banking sector. The banks in Latvia operate in a different regulatory & legal environment and have unique institutional and market infrastructure as compared to other European banks which are analyzed in the foreign literature for retail banking (Rupeika-Apoga and Syeda, 2018). The regulations set much higher requirement for customer research and risk classification compared with KYC standards. The number of banks in the Latvian banking sector from 2005 till 2017 rapidly decreased from 22 to 16. Some of them had problems with liquidity and were closed, some of them decided

to make business in other countries, but some of them merged to decrease marginal costs and to increase the competitiveness (Japparova & Rupeika-Apoga, 2018). From 2014 through 2017, the number of commercial banks of Latvia shrank by 30 percent –8 institutions. Most of this decrease was due to the declining the number of commercial banks, which were specialized in foreign customers servicing. All commercial banks in Latvia could be divided in two big parts: banks and foreign branches, as shown in Tab. 1.

Table 1.

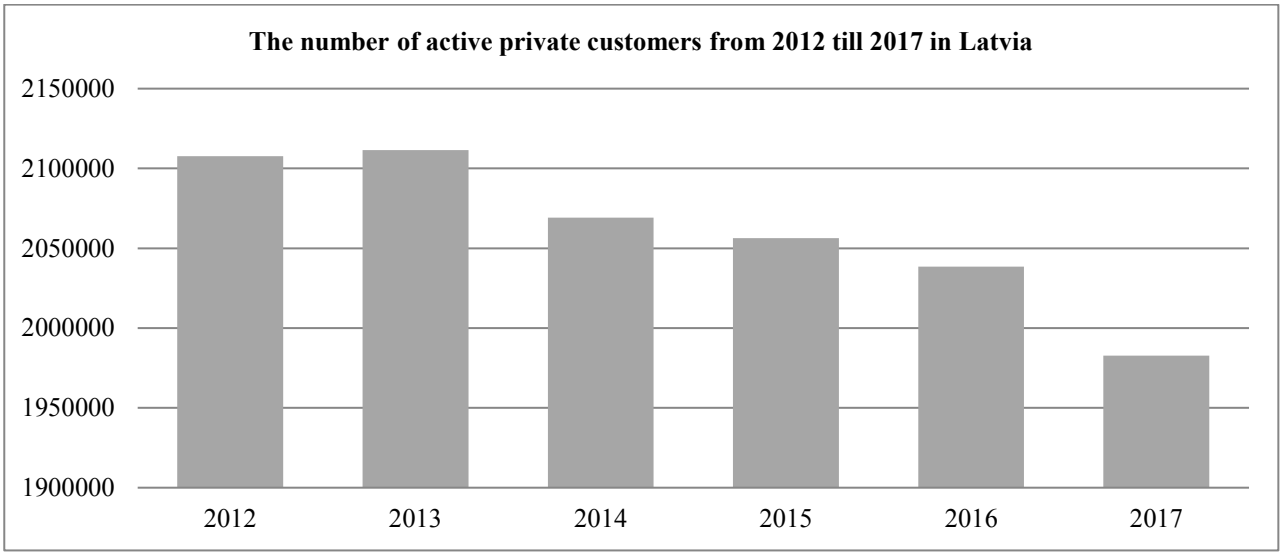
The number of commercial banks of Latvia from 2014 till 2017 (FLA data, 2018)

	2014.	**2015.**	**2016.**	**2017.**
Banks	17	17	16	16
Foreign branches	10	10	7	3
Total banking industry	27	27	23	19

Source: authors' construction based on the FLA data

Commercial banks in Latvia are forced to revise their business models. The Financial and Capital Market Commission developed the new assessment process of bank business models. The essential criteria for future bank activities are: ability to generate sufficient income over the next 12 months, ability to generate sufficient income over the next 3 years, compliance with regulatory requirements, change of target market and target customers, revised financing structure, alternative business lines and services (Financial and Capital Market Commission, 2018).

The achievement of viability and sustainability depend on the number of active customers. Active customer is an individual who have made at least two operations or transactions (excluding bank fee payable) for the last six months (Finance Latvia Association, 2017). From 2015 through 2018, the number of private active customers in Retail banking sector of Latvia decreased by 6 percent – more than 128000 customers, as shown in Fig.1.



Source: authors' calculations based on the FLA data

Fig. 1. **The number of active private customers from 2012 till 2017 in Latvia** (FLA data, 2018)

Commercial banks are actively researching the potential customer structure and attracting new clients. Some years ago, the main channels to attract new customers were: bank branches, telephone calls and active sales in the shopping malls or in the exhibitions. It is very difficult to attract the new customer in a bank branch, because usually the current banks customers visit the bank branch to make the usual operations: to make payments or received a renewed payment card. Advertising campaigns like "advise the friend and earn free points" were not successful and banks did not get the

acceptable amount of the new customers. Bank branches are providing to their customers consult services. Sales though advise not so aggressive and give the opportunity to increase the customer loyalty to the bank.

The EU General Data Protection Regulation (GDPR) fundamentally reshaped the way in which data is handled across banking sector. Part of the expanded rights of data subjects outlined by the GDPR is the right for data subjects to obtain confirmation from the data controller as to whether or not personal data concerning them is being processed, where and for what purpose (EU GDPR Portal, 2019). With the GDPR telemarketing is complicated, because if the customer does not agree to receive information from the bank, bank employee could not make the sales calls to this customer.

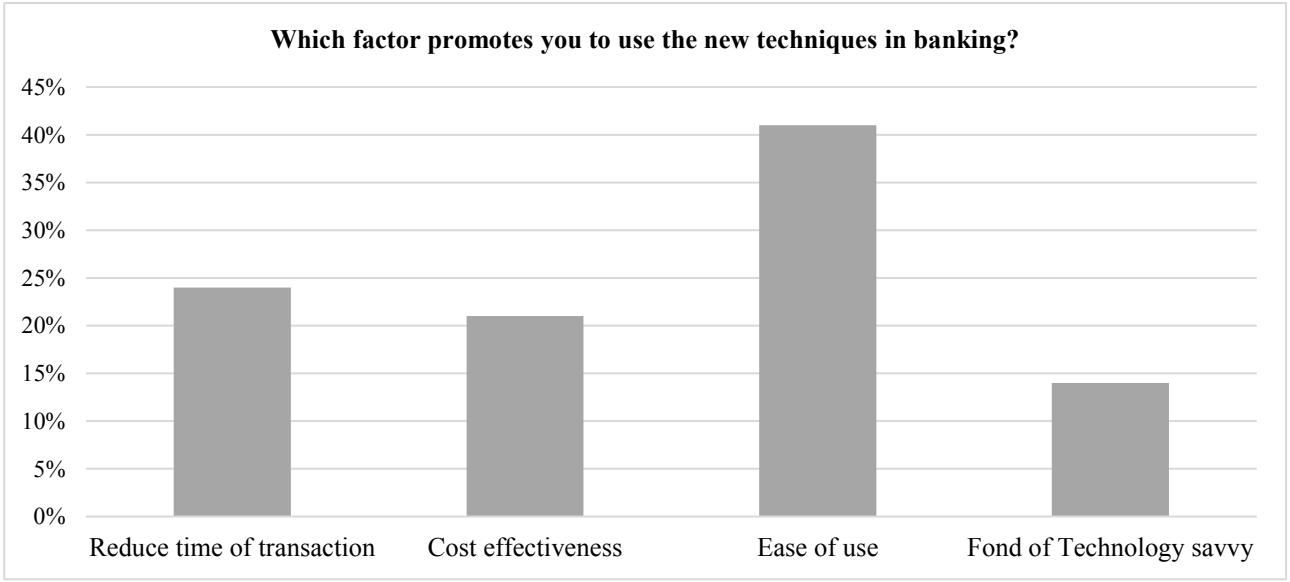
With the GDPR the opportunity to attract the new customers in shopping malls or in other crowded places also declined. Previously banks employee actively shilled the passing by potential customers to introduce the banks products and services. Now if the potential customer will approach to the bank promotional stand, employee could draw attention to banks products and services.

Understanding consumer trends help banks understand how to attract the new customers. Enabled by technology, customers expect the easy control and the variation of their money whenever they want. Customers' needs would be satisfied. Customers move at different speeds and make different decisions, every customer is a digital customer now– someone more and someone less, from the traditional customer to the digital-savvy one. (Accenture, 2015).

The number of people using the internet on regular basis (at least once a week) is rising every year. Kotowska, Rupeika-Apoga and Treapăt (2018) research results demonstrated a clear preference of students in Latvia for digital medium and in particular for Internet. At the beginning of 2018, 81.2 % of population used internet regularly, which is 18.7 percentage points more than in 2010. 76,1 % of population used such internet activity like online banking during the last three months in 2016. The indicator was grown till 79,4 % in 2018 (Central Statistical Bureau of Latvia, 2019).

Banks are finding new opportunities to attract the clients through online and mobile channels, because consumers are increasingly engaged to the convenience and quickness of online and mobile solutions. Now you can open in Citadele bank account without visiting the bank branch or receive the consultation about mortgage through the Skype in Luminor bank. Understanding consumer trends helps to change the banking strategy more efficiently.

The main factors which promote the clients to use the new techniques in banking are: ease of use, cost effectiveness, reduces time if transaction and fond of technology savvy, as shown in Fig. 2.



Source: authors' calculations based on the questionnaire data

Fig. 2. **The factors of using the new techniques in banking** (Author's questionnaire, 2018)

Being cognitive misers, consumers are often intimidated by the large amount of information they are exposed to or the effort that is required for them to move towards a desired goal (Fiske & Taylor, 1991). Therefore, one of the key nudging strategies to elicit positive behavior is simplification (Reisch & Zhao, 2017). Only by becoming digital institutions banks can attract new customers and to increase the loyalty of existing customers.

3. The main factors of emotionally attached customers in Retail Banking sector of Latvia

The profitability of each bank directly depends on customer loyalty and how many customers return for goods and services. With the GDPR, the higher requirement for customer research and risk classification, the new customer attraction through digitals channels, Retail banking sector of Latvia also changing their strategy of work with the existing client portfolio. Latvian banks are getting more flexible in customer services and actively working to increase customer loyalty. If previously banks actively attracted the new clients to increase the number of customers, now banks are working to increase the number of active loyal clients. Only a totally complacent customer will be a loyal customer. The main object of loyalty is customer emotional attachment, which is the determining factor in decision making in retail banking. The customer's emotions and feelings drive his/her choice.

Beyond their functional utility products have a symbolic meaning. Parts of this symbolic meaning are accounted for by concepts like brand personality and product-user image, which describe the symbolic meaning associated with the brand or product class. However, the physical product also carries symbolic meaning. That part of the symbolic meaning that refers to the physical product itself, and is described with human personality characteristic s, is called product personality (Govers, 2018).

Retail banking sector of Latvia offer to their customers products and services with a various functionality and benefits, as shown in Table 2.

Table 2

Statistics of customer's importance to receive the benefits in Retail Banking of Latvia, %

Is it important for You receive following benefits in a bank?			
	Important	Neutral	Not important
Cash withdrawals at bank's ATM for free	96.4	2.4	1.2
Money transfer via EU for free	91.6	6.0	2.4
Possibility to pay worldwide	93.6	3.2	3.2
Payment card without bank charge	80.4	16.0	3.6
Free period for using overdraft (without interest)	64.8	23.2	12.0
Possibility to rent a car and book hotel	74.0	15.2	10.8
Possibility to pay by contactless function	60.4	26.8	12.8
Possibility to receive payment card by post	67.6	21.6	10.8
Travel insurance	66.4	21.2	12.4
Possibility to use money for free from credit card	74.0	18.0	8.0
Individual interest rate for credit	56.0	29.2	14.8
Credit card overdraft with individual interest rate	50.0	36.4	13.6
Cash withdrawals worldwide	92.8	4.8	2.4
Interests for made turnover by card	54.4	35.6	10.0
Bonus point for made turnover by card	50.4	32.8	16.8
Discounts in the shops	57.6	33.2	9.2
Interests for positive balance in account	55.6	35.6	8.8
To set transaction limits in online banking	60.0	31.2	8.8

Purchase insurance	55.6	30.0	14.4
Credit payment insurance	49.2	33.6	17.2
Possibility to pay by card in public transport	36.8	36.8	26.4
Rental car insurance	36.4	37.2	26.4
Temporary card (lost card)	46.0	32.4	21.6
Individual consultant in a bank	33.2	39.2	27.6
Priority Pass	28.0	40.0	32.0
Individual design for payment card	10.4	33.2	56.4

Source: authors' calculations based on the questionnaire data

The most important banks products' functionalities and benefits are: the cash withdraw at Bank's ATM for free, to transfer money via EU for free, to pay with a payment card worldwide, to have payment card for free and the cash withdraw worldwide. Banks in Latvia pay attention to the needs of their customers and make the product personal to their customers, as shown in Table 3.

Table 3

Statistics of offered TOP 5 benefits in Retail Banking of Latvia, %

Which additional benefits offer your primary bank?			
	Offer	Do not offer	Do not know, refuse to answer
Cash withdrawals at bank's ATM for free	84.4	5.2	10.4
Money transfer via EU for free	52.0	21.6	26.4
Possibility to pay worldwide	83.2	2.8	14.0
Payment card without bank charge	40.0	35.2	24.8
Cash withdrawals worldwide	70.0	3.6	26.4

Source: authors' calculations based on the questionnaire data

20.4 % of customers do not know what products' functionality and benefits offer their primary bank. Banks in Latvia offer to their customers a lot of different products and services with different functionality. Customer do not need to have the same personality as a product to feel loyal to a product. Simplicity of products and services positively affect the customer loyalty and delivers greater consumer commitment. The range of banks services, the products and services innovations, payment cards benefits are the reasons of the customer choice of the primary bank for 21.4 % of clients, as shown in Table 4.

Table 4

The reasons of the customer choice of the primary bank in Latvia, %

Why the bank is your primary bank?	
Salary account	37.6
The range of services	12.4
Easy to contact with a bank	4.4
Payment cards benefits	5.8
Bank charges	8.8
Credit	9.2
Availability of Branches, ATM	2.8
Innovative products and services	3.2
Historically opened account	22.8
Family account	4.0

Reputation	5.2
Others	4.0

Source: authors' calculations based on the questionnaire data

The most important reasons of the customer choice of their primary bank are: the company asked to open the salary account in definite bank, the customer opened the account a long time ago and the client have credit in the bank. Firstly, banks in Latvia should change their business strategy and attract more and more new companies with a payroll agreement. This business clients will send their employee to open the salary account in the bank with the payroll agreement. Secondly, banks should offer to their customers products for their children or products for all family, such way to increase the number of historically opened accounts. Thirdly, the bank should analyze the clients used products and services and to increase the number of product in client's portfolio. Such cross selling like from business customers to private customers, from parents to children, can increase the number of active customers in Retail Banking sector of Latvia.

The customer experience and trust are the next factor that can emotionally attach the customer. Customer experience is key to exceeding your customers' expectations. Brands have to be accurate, dependable, and provide the service they guaranteed. The opportunity lies in the ability to deliver what you promised and surprise your customer with extra care and support. A totally satisfied customer contributes 2.6 times as much revenue as a somewhat satisfied customer, and 14 times as much revenue as a somewhat dissatisfied customer. The main goal is to create a consistent customer experience across all touchpoints to exceed your and your customers' standards. By keeping an eye on the entire customer journey, you're making sure that the promise of a positive experience is kept and that you're offering a superior service [Frichou, 2018].

The customer positive experience and trust favorably affect the customer loyalty. The main factors are: the bank stable reputation, the client feel safe, when are using banking products and services and banking service always are fast and easy, as shown in Table 5.

Table 5

Statistic of customer experience and trust in Retail Banking sector of Latvia, %

What are the most important factors for you?	
Bank has stable reputation	20.2
I feel safe using banking products and services	20.3
Bank realize the promises in time	5.6
Bank always solves my problems (with the bank products and services)	8.8
Banking service always get fast and easy	13.1
Bank employee always work quickly and accurately	5.3
Bank employee always ready to help me and realize my requests in time	5.6
Bank employee are experienced and well know bank products and services	5.6
Bank employee are kind and helpful	4.8
Bank has an individual approach to each client	6.4
Bank knows the needs of the client	4.4

Source: authors' calculations based on the questionnaire data

The last factor, then emotionally attract the client is the brand image of the bank. Brand image is more than a logo that identifies your business, product or service. Today, it is a mix of the associations consumers make based on every interaction they have with your business. Brand image is important for any business. When consumers buy a product or service, they aren't just buying a product or service; they're buying what your brand stands for. That's why it's so important to design the brand image to convey exactly what you want it to say [Thimoty, 2016].

The customer of Retail banking sector of Latvia would like to see the brand image, like a modern, stable, trustworthy, positive and digital, as shown in Table 6.

Table 6

Statistic of the factors of brand image in Retail Banking sector of Latvia, %

The brand image of my primary bank is:	
Modern	18.8
Stable	15.0
Trustworthy	13.4
Positive	10.8
Digital	9.1
Social	5.3
Easy to reach	8.3
Respectable	6.8
Personal	3.3
General	4.5
Complex	1.8
Ethical	3.0

Source: authors' calculations based on the questionnaire data

The main factors that influenced customer opinion about the brand image are: personal experience, relatives and friend opinion, as shown in Table 7.

Table 7

Statistic of factors which influenced customer opinion about brand image in Retail banking sector of Latvia, %

Which factor influenced your opinion on the brand image of the primary bank?	
Personal experience	68.4
Conversations with relatives/ friends	9.2
Advertising campaigns	13.8
Information about banks in news web sites/ on television/ radio	8.6

Source: authors' calculations based on the questionnaire data

Conclusions, proposals, recommendations

The retail banking sector of Latvia has had intensive changes during the last three to five years. The new regulations of The Financial and Capital Market Commission of 2015-18 was a major shock to the Latvian banking sector and the number of banks decreased by 8 commercial banks.

The regulations set much higher requirement for customer research and risk classification, so the number of active clients decreased by 6 percentage. Banks changed the target market and target customers from nonresidents to Latvian residents.

The EU General Data Protection Regulation (GDPR) fundamentally reshaped the way in which data is handled across banking sector. Commercial banks in Latvia were forced to change their strategy with GDPR. Banks are finding new opportunities to attract the clients through online and mobile channels, because consumers are increasingly engaged to the convenience and quickness of online and mobile solutions. Our research results confirm the Hypothesis 1, that only by becoming digital institutions banks can attract new customers and to increase the loyalty of existing customers.

The profitability of each Bank directly depends on customer loyalty and how many customers return for goods and services. If previously banks actively attracted the new clients to increase the number of customers, now banks are working to increase the number of active loyal clients.

The most important reasons of the customer choice of their primary bank are: the company asked to open the salary account in definite bank, the customer opened the account a long time ago and the client have credit in the bank. Survey results confirms the Hypothesis 2, that cross selling like from business customers to private customers, from parents to children, can increase the number of active customers in Retail Banking sector of Latvia.

The customer's emotions and feelings drive his/her choice. Our findings confirm the Hypotheses 3, that the banks branding, the personality of produced goods and services, the customer experience and trust, the digitalization and innovation tendency are the factors that can emotionally attach the customer. All these factors, from the new product and services development till the daily provided, affect the customers' value to the bank.

Bibliography

Accenture, 2015. *Banking Customer 2020. Rising Expectations Point to the Everyday Bank*. [Online] Available at: https://www.accenture.com/t20150710T130243__w__/us-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_17/Accenture-Banking-Consumer-Pulse.pdf [Accessed 1 June 2017].

Bain & Company, 2015. *Customer Behaviour, Experience and Loyalty in Retail Banking.* [Online] Available at: http://www.bain.com/publications/articles/customer-loyalty-in-retail-banking-2015-global.aspx [Accessed 3 June 2017].

Berry, L.L., 2000. *Cultivating service brand equity. Academy* of Marketing Science, Vol. 28No. 1, pp. 128-137.

Björk, S., 2015. *Corporate customer loyalty within the banking Sector: The case of SEB.* [Online]Available at: http://www.diva-portal.org/smash/get/diva2:886167/FULLTEXT01.pdf [Accessed 1 June 2017].

Central Statistical Bureau of Latvia, 2018. *98% of households with children have access to the internet at home.* [Online] Available at: https://www.csb.gov.lv/en/statistics/statistics-by-theme/science-ict/computers-internet/search-in-theme/2410-internet-usage-habits-latvian [Accessed 21 January 2019].

Girish P.B., 2010. *Cross Selling at Bank: Adopting the Right Strategy for a Healthy Bottom Line. [*Online] Available at: http://customerthink.com/cross_selling_at_banks_adopting_right_strategy_for_health_bottom_line/ [Accessed 2 Ferbruary 2019]

Goodwin N., Harris J., Nelson J., Roach B., Torras M., 2014. *Microeconomics in context. Third edition.* Library of Congress Cataloging-in-Publication Date, pp.145-157.

Govers P.C.M., 2005. *Product personality and its influence on consumer preference.* [Online] Available at: https://www.emeraldinsight.com/doi/abs/10.1108/07363760510605308 [Accessed 02 January 2019].

Hino H., 2016. *Emotional brand attachment: a factor in customer-bank relationships.* [Online] Available at: https://www.researchgate.net/publication/295519688_Emotional_brand_attachment_a_factor_in_customer-bank_relationships [Accessed 02 January 2019].

Ernst & Young LLP, 2015. *Imagining the Digital future. How digital themes are transforming companies across industries.* [Online] Available at: http://www.ey.com/Publication/vwLUAssets/EY-imagining-the-digital-future/$FILE/EY-imagining-the-digital-future.pdf [Accessed 17 May 2017].

EU GDPR Portal, 2019. *The EU General Data Protection Regulation.* [Online] Available at: https://eugdpr.org/ [Accessed 02 January 2019].

European Securities and markets Authority, 2014. *Enhanced protection for retail investors: MiFID II and MiFIR.* [Online] Available at: https://www.esma.europa.eu/sites/default/files/library/2015/11/2014-726_enhanced_protection_for_retail_investors_-_mifid_ii_and_mifir.pdf [Accessed 15 March 2019].

Financial and Capital Market Commission, 2018. *Assessment process of New bank business models.* [Online] Available at: http://www.fktk.lv/attachments/article/7270/bank_bussiness_models_30102018.pdf [Accessed 30 December 2018].

Finance Latvia Association, 2019. *Industry data.* [Online] Available at: https://www.financelatvia.eu/en/industry-data/ [Accessed 02 January 2019].

Fiske, S. T. and S. E. Taylor, 1991. *Social cognition*, New York: McGraw-Hill.

Frichou F., 2018. *5 Reasons Why Customer Experience Is The Pulse of Every Business.* [Online] Available at: https://business.trustpilot.com/reviews/5-reasons-why-customer-experience-is-the-pulse-of-every-business [Accessed 15 December 2018]

Japparova, I. and Rupeika-Apoga R., 2018. *Assessment of Competition in the Banking Sector of the Baltic States*, New Challenges of Economic and Business Development-2018, LU International Scientific Conference Proceedings, p.280-291

Japparova I. & Rupeika-Apoga R., 2017. *Banking business models of the digital future: The case of Latvia*/ European Research Studies Journal Vol. 20, N 3, p.864-878

Kotowska, B., Rupeika-Apoga R. & Treapăt L., 2018. *How Mass-Media Affects Future Specialists in Economics?* Evidence from Latvia, Poland and Romania, Challenging the Status Quo in Management and Economics, p. 955-969

Marous, M., 2016. *7 Common Sense Ways to Increase Bank Cross-Sellin.* [Online] Available at: https://thefinancialbrand.com/37126/7-ways-to-increase-bank-cross-sales/ [Accessed 02 February 2019].

Reisch L.C., Zhao M., 2017. *Behavioural economics, consumer behaviour and consumer policy: state of the art.* [Online] Available at: https://www.researchgate.net/publication/320260991 [Accessed 1 January 2019].

Rupeika-Apoga, R. and Syeda H. Z., 2018. *The determinants of bank's stability: evidence from Latvia's banking industry*, New Challenges of Economic and Business Development-2018, LU International Scientific Conference Proceedings, p.579-586

Schwartz B., 2005. *The Paradox of Choice*. New York: HarperCollins. [Online] Available at: file://casa/uds$/IrinaJa/Desktop/mic_3e_ch7.pdf [Accessed 1 January 2019].

Thimothy S. 2016. *Why Brand Image Matters More Than You Think.* [Online] Available at: https://www.forbes.com/sites/forbesagencycouncil/2016/10/31/why-brand-image-matters-more-than-you-think/#12f44ad510b8 [Accessed 1 January 2019].

PRODUCTIVITY DYNAMICS AND THE PRODUCTIVITY TRAP: PROBLEMS AND SOLUTIONS IN LATVIA

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Abstract. By analysing changes in productivity and labour costs in Latvia from 2013 till 2017, we can see that growth of labour costs exceeds the growth of productivity by more than 2 times in both, tradable sector and total economy. Slow growth in productivity compared with the labour and other production expenses lead to an increase in the price of final goods and services, which negatively corresponds with producers' competitiveness in both internal and external market. Furthermore, this leads to a drop-in consumption of domestic production and inefficient production facility usage, resulting in declining economic growth rates. The rapid growth in labour costs is mainly associated with the tight situation in the labour market. Even though the unemployment rate is still quite high, especially in the region of Latgale, the absence of working hands is perceptible more and more around Latvia, which also maintains the pressure on the salaries. The upward trend for salaries is also influenced by the convergence process, which is inescapable in EU opened labour markets. Comparatively, high labour emigration reflects Latvia's weak competitiveness in those markets, especially due to the low wage, which in turn is related to the low productivity of internal producers. Therefore, increasing the productivity level and slowing down the gap of productivity with highly developed countries is the most important precondition for Latvia's competitiveness to strengthen and economy to grow. The **goal** of the research is to appreciate the dynamics of labour productivity and the level of productivity between Latvia and EU average, as well as, to find the main factors which influence the productivity convergence rates to drop, making productivity trap. The research tasks, to determine possible solutions for labour productivity increases, are to detect the factors which have influenced the labour productivity in last 10 years in Latvia, to compare the productivity in Latvia with EU, as well as, to detect the factors which influenced the productivity convergence rates to decrease.

In the analysis, there are used different high quality and quantity research methods, for example, analysis of scientific literature, calculation of average and relative sizes, grouping, comparison, decomposition etc.

The results of research conclude, that in the last years productivity growth rates in Latvia before the crisis (2000-2007) were one of the sharpest in EU, which contributed with convergence process, decreasing gap with EU average by 2 pp. annually. However, in after crisis period (from 2011) growth rates of productivity have significantly dropped and the convergence process became more moderate - only 0.8 percent points at average a year, which shows that Latvia is close to or already is into productivity trap. To avoid the trap, it is important to detect separate industry problems (the stud of barriers at individual company and sector level) and to promote the structural changes in the national economy (moving towards high technology industries).

Key words: *productivity trap, labour cost, economic growth, structural changes*

JEL code: E61, O11, O47

1. Introduction

Latvia's economic growth in 2017 and 2018, compared to the previous two years, has accelerated. In 2017, GDP grew by 4.6%, while in 2018 it increased by 4.7% (CSB database, 2019). Productivity growth rates in Latvia are also among the highest in the EU. Since 2011, they have grown by 14.7% (by 4% in EU-28). Dynamics more rapid than in the EU on average have contributed to the reduction of lagging behind of the productivity level of Latvia. However, in comparison with several developed countries of the EU, the productivity gap is comparatively large. In 2017, the productivity level in Latvia was only 46.8% (68% according to PPS) of the EU average, and this is one of the lowest indicators in the EU.

In the long-term view, the productivity dynamics become more moderate. Before the crisis (1996-2007), productivity of Latvia increased by 6.2% per year on average and was an important economic growth driver. The integration of the country in the EU Single Market had a positive impact on the productivity dynamics strengthening economic growth and accelerating the convergence process. However, since 2008 productivity has been growing slower– by 2% per year on average under the influence of cyclical and structural factors.

Although Latvia is in one of the leading positions by productivity growth rates among the EU Member States, yet wages have been growing faster than productivity, reducing the competitiveness of domestic enterprises and increasing the risk of them falling into a low-productivity trap.

The research question is to identify what are the main factors that affect the productivity dynamics in Latvia, as well as to assess how productivity trap can be avoided to strengthen Latvia's convergence with the EU developed countries.

The goal of the research is to appreciate the dynamics of labour productivity and the level of productivity between Latvia and EU average, as well as, to find the main factors which influence the productivity convergence rates to drop, making productivity trap. The research tasks, to determine possible solutions for labour productivity increases, are to detect the factors which have influenced the labour productivity in last 10 years in Latvia, to compare the productivity in Latvia with EU, as well as, to detect the factors which influenced the productivity convergence rates to decrease.

In the research to be used different research methods: literature review on the economic growth and productivity, empirical analysis of data, calculation of average and relative sizes, grouping, comparison, decomposition, shift share analysis etc.

The novelty of the article is to identify the importance of structural factors and their impact on the dynamics of productivity in Latvia.

The main research sources include the information available in the databases of the CSB and Eurostat, as well as the studies and publications on the productivity by World Bank, IMF, OECD, European Commission, the Ministries of Economics Republic of Latvia and Bank of Latvia.

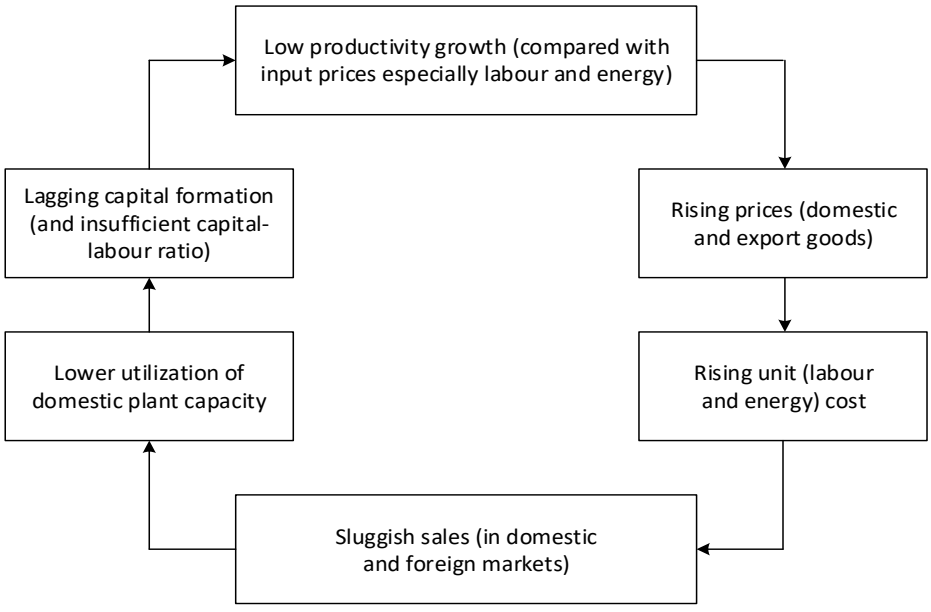
Resulting from the research problematic questions are: 1) how to detect of productivity growth barriers at individual company and sector level and 2) how the government to provide to ensure the reallocation of the its resources to the most productive firms and sectors, i.e. to promote structural reforms for “technological upgrading”.

2. Economic trap concept and types

The theory of economics is widely discussed about various traps, the reasons for their formation, and the possible way out of them. The World Bank, IMF, and other researchers' publications analyze and investigate the poverty trap (for example, Sachs, 2006, Barrett and Carter, 2019), the middle-income trap (for example, Eichengreen et al., 2011 and 2013, Doner and Schneider, 2016), the development trap (for example, Berthelemy, 2006, Ranganathan et al., 2015), the institutional trap (for example, Gradstein, 2008) and other traps.

What do economists understand with a trap? It should be noted that the term “trap”, which is so widely used, has no one-to-one definition. Each "trap" is given its own explanation in a relatively narrow sense. For example, in Investopedia mentions that the poverty trap is a mechanism, which makes it very difficult for people to escape poverty and it’s created when an economic system requires a significant amount of various forms of capital in order to earn enough to escape poverty (Investopedia, 2018). In turn in Handbook of Economic Growth is define, that a poverty trap is a self-reinforcing mechanism which causes poverty to persist (Azariadis and Stachurski, 2005). Summarizing the definitions and explanations of the different types of traps, it can be concluded that the status of an economic system is considered to be a “trap” when no progress has been made in a particular economy for a long time. Therefore, the economic system has formed self-reinforcing mechanism, which maintains the current state. Sometimes such a situation in the economy tends to be called a bad equilibrium. This means that traditional market forces, as well as existing state intervention tools, are weak and ineffective in bringing about a radical change in the current situation.

The concept of low productivity trap is related to the regularity of the relative dynamics of prices of productivity and production factors and their impact on the competitiveness of the company (industry). According to the low productivity trap model (Scott, 1985) a faster increase in resource prices compared to productivity has a negative impact on the overall competitiveness of businesses, industry and the country's economy in the internal and external markets. If the rise in resource prices (such as the increase in labor costs) is offset by higher prices, the producer may lose demand and market share. Low demand will be reflected in lower capacity utilization rates as well as lower investment volumes. Conversely, if higher costs are not compensated for by price increases, then profits will be reduced by limiting the company's investment potential (see Fig. 1).



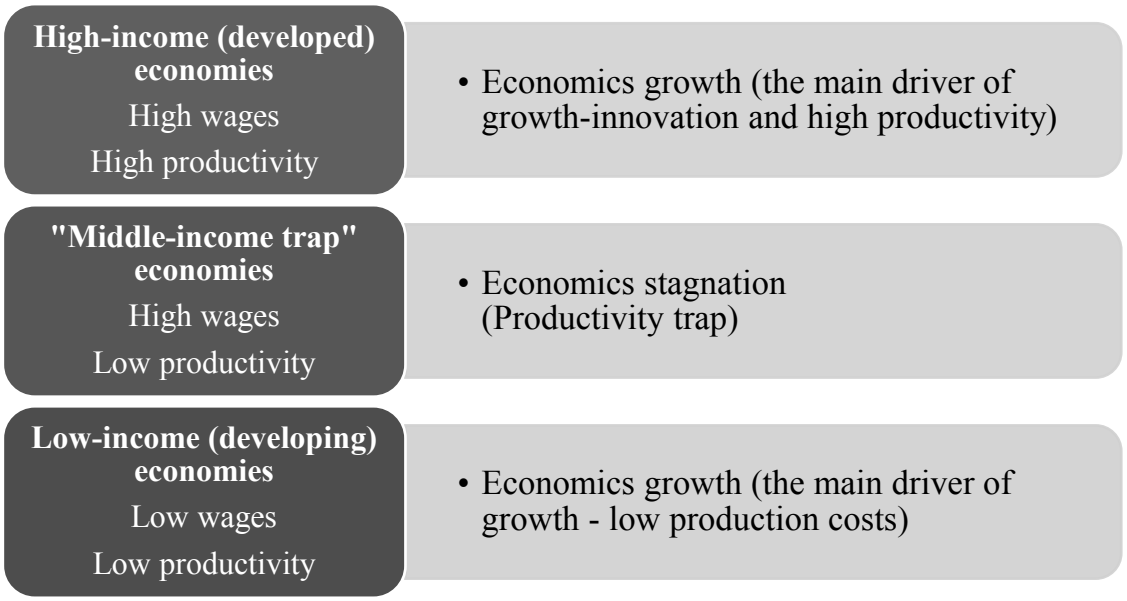
Source: Scott, 1985

Fig. 1. **Model for a low productivity trap**

So, the direct consequences of higher production costs are the reduction of production volumes or the maintenance of the stability of production costs by reducing real wages. Of course, the downward pressure on cost competitiveness can also be offset by the devaluation of the national currency, however, for the single currency area countries (including Latvia) there are no such options. Therefore, the only way to overcome this trap is to increase productivity.

The authors believe that when analyzing various economic traps, one has to look at them complex, because there is a close relationship between them. The low productivity trap has a significant impact on the formation of the middle-income trap.

According to the generally accepted concepts (Im, 2013), the main reason for the middle-income trap is the loss of existing competitive advantages and the weak ability to create new benefits that allow for the transition to a higher, higher income level. (see Fig. 2).

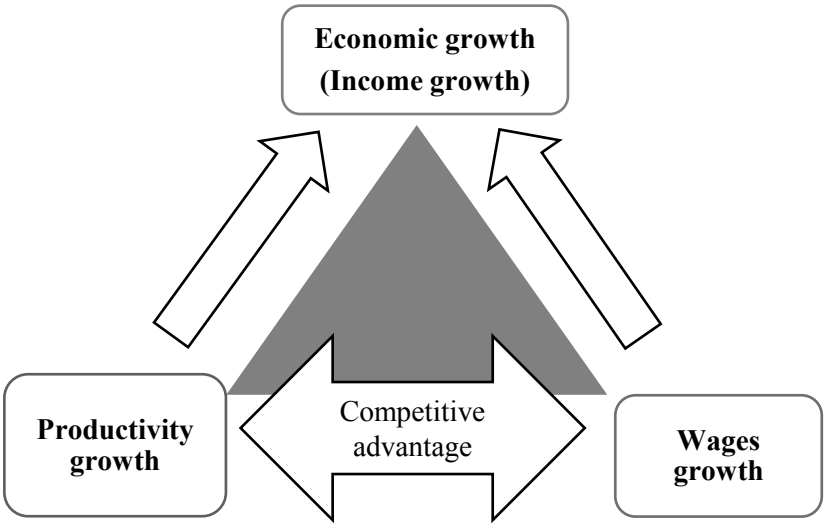


Source: author's construction

Fig 2. **Middle-income and Productivity traps**

"Middle-income trap" arise when countries lose the low-cost (cheap labor) benefits inherent in low-income economies, but their innovative potential is weak to generate high value-added goods and provide productivity-based growth that is characteristic of high-income economies. Due to wage increases, countries are entering a 'middle income trap' and are unable to compete with developed countries (high productivity and innovation economies) or low-income countries (low-wage economies and cheap industrial goods).

Thus, it can be concluded that there is a close relationship between productivity and wage dynamics, competitiveness, economic growth and the well-being of citizens (see Fig. 3).



Source: author's construction.

Fig. 3. **Interaction of Wages, Productivity and Income (*Growth Triangle*)**

Cost competitiveness is important in the short term - wage growth must be balanced with productivity growth, otherwise competitiveness in the tradable sectors is lost, which ultimately does not lead to a steady increase in total income (wealth).

In the medium and long term, the key to competitiveness is productivity. Only by increasing productivity can woven wages and income be maintained while maintaining competitiveness in internal and external markets (Jekabsone et al., 2017).

Opportunities to increase productivity are affected by overcoming technological lag, modernization of production and investment, investment in human capital, research and innovation, etc. supply side factors. Promoting the structural transformation of the economy also plays an important role. It is impossible to attain high rates of growth of per capita or per worker product without substantial shifts in the shares of various sectors (Kutznets, 1979). By allocating resources to the production of higher value-added products at the enterprise level and by reorienting the economic structure towards high added-value sectors, there will be higher-level productivity, increase of welfare level and economy will overcome the productivity traps.

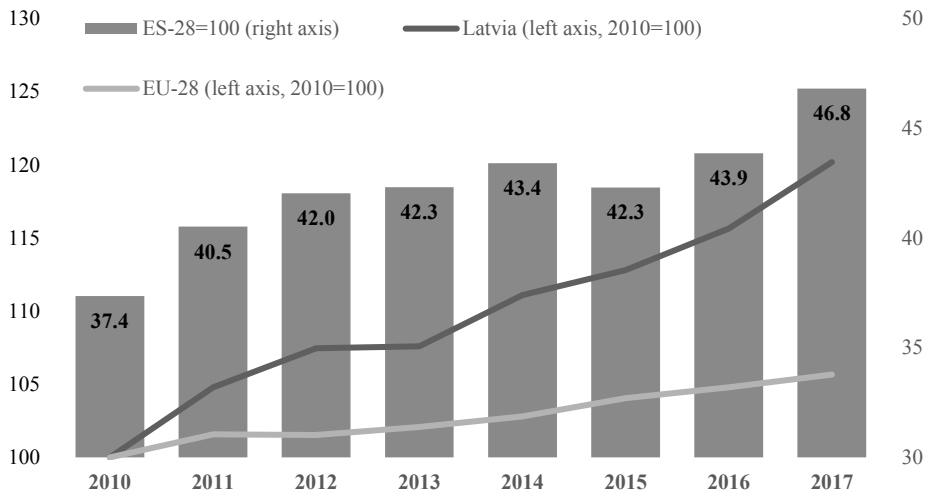
Recently, there have been many studies focusing on the slowdown in economic growth and the trap of productivity (for example, Bahar, 2018, Syverson, 2016). It can be defined as situation, when enterprise or state reaches certain productivity level and after that its growth slows down essentially, staying in a relatively low level for long time (Jekabsone and Skribane, 2018). Analyzing the reasons for the slowdown in productivity the McKinsey Global Institute researchers as the result of microanalysis identified six reasons that affected the slowdown in productivity dynamics (Manyika et al., 2017):

- The weak dynamics of value added after the global financial crisis;
- changes in the structure of the workforce (for low productivity sectors);
- lack of productivity-accelerating sectors (insufficient number of industries and sectors that could serve as productivity accelerators);
- poor dynamics of capital-intensity;
- uneven digitization of sectors (sectors). In addition, sectors with a lower degree of digitization have a greater share in GDP (value added);
- the gap between enterprise productivity levels is increasing.

According to the authors, Latvia is characterized by the weak dynamics of value added after the global financial crisis, the lack of productivity-driven sectors and the weak dynamics of capital-intensity, which is largely related to the existing economic structure. There is also a significant difference in the productivity levels of individual companies (large companies are significantly more productive than small ones, and companies with foreign capital are more productive than local businesses).

3. The analyses of productivity issues in Latvia

Productivity growth rates in Latvia are also among the highest in the EU. Since 2011, they have grown by 14.7% (by 4% in EU-28), as a result productivity gap has decreased. In 2017 productivity in overall Latvian economy, described as GDP per person employed reached 46,8% of average EU level (See Fig. 4).

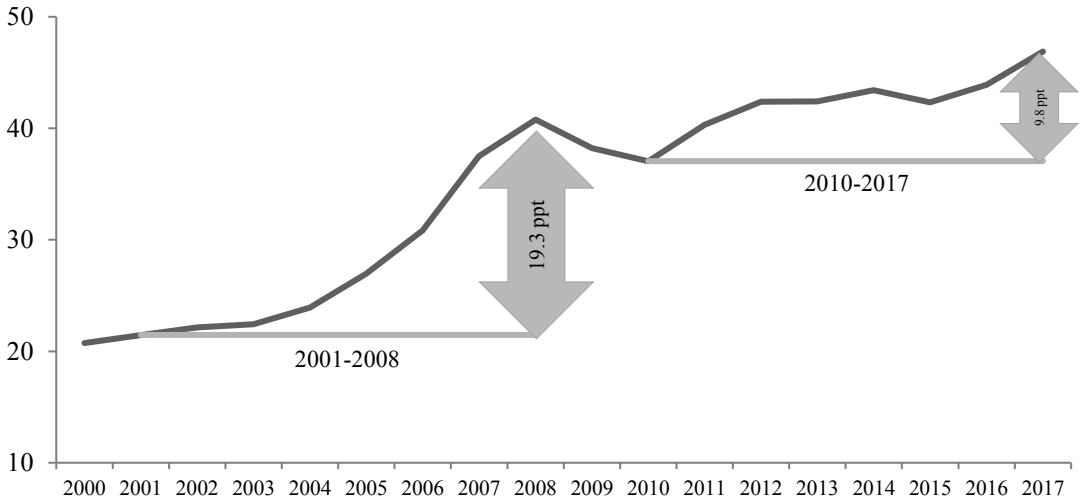


Source: author's construction based on. Eurostat databases.

Fig. 4. **Productivity Changes in Latvia and EU**

Still it is necessary to mark that in the long-term view, the productivity dynamics become more moderate. Before the crisis (1996-2007) productivity increased by 6.2% per year on average, accelerating rapid convergence process. The integration of the country in the EU Single Market had a positive impact on the productivity dynamics strengthening economic growth and accelerating the convergence process. In 2001-2008, the productivity gap among the EU countries narrowed by almost 19 percentage points.

Since 2008, productivity has been growing only by 2% per year on average, which is almost three times slower than before the crisis. The process of convergence of productivity and income also became slower. Over the last seven years (2010-2017) the productivity gap among the EU countries narrowed only by almost 10 percentage points (see Fig. 5)

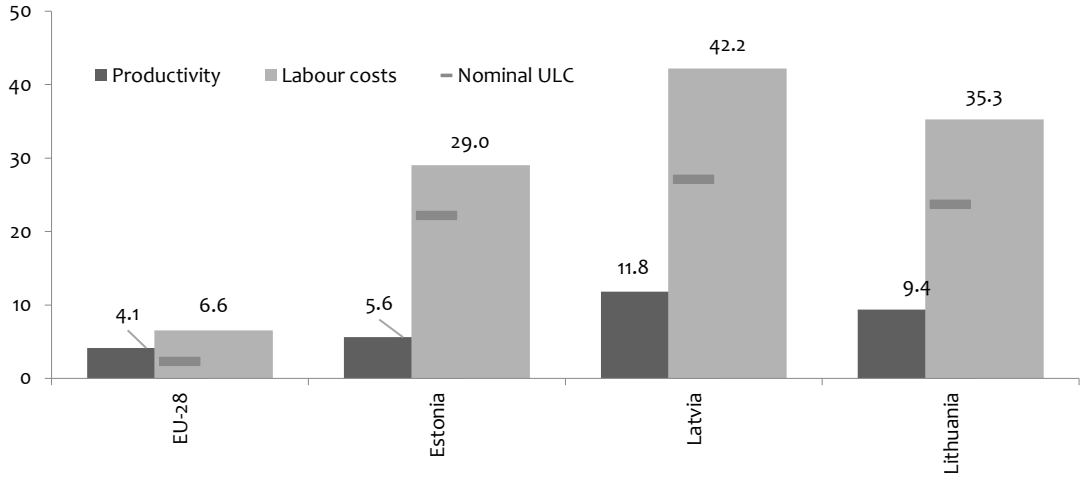


Source: author's construction based on. Eurostat databases.

Fig. 5. **Latvian productivity gap (EU28 =100)**

Figure 5 shows that productivity convergence speed is slowing down, which could indicate on fact that Latvia is close or already in the productivity trap.

Although Latvia is in one of the leading positions by productivity growth rates among the EU Member States, yet wages have been growing faster than productivity, reducing the competitiveness of Latvian entrepreneurs in terms of costs. The increase in product unit labour costs (ULC)[1] also evidences of the risks of losses in cost competitiveness.



Source: author's construction based on. Eurostat databases.

Fig. 6. **ULC, Productivity and Labour Costs in the Baltic Countries and in the EU, 2012 = 100**

From 2013 to 2017, productivity rose almost 3 times faster than wages, and nominal ULC increased by almost 5% per year on average (see Fig. 6). A strong increase in labour costs is affected both by wage convergence processes in the integrated EU labour market and tenser situation in the domestic labour market. A falling unemployment rate and a growing number of vacant jobs evidences that a mismatch between labour demand and supply in the Latvian labour market increases.

Wage is a significant cost competitiveness factor; therefore, its rise should be balanced with a rise in productivity. Otherwise, the competitiveness in tradable sectors is lost, which does not result in a stable growth of income and welfare. Slow productivity growth in comparison with the growth of labour and other production costs leads to price increase of final consumer goods and services, which negatively affect producers' competitiveness and it leads to the decline in market share.

In Latvia, as well as in its neighbouring countries Lithuania and Estonia, the dynamics of price competitiveness (GDP deflator based REER) are growing slower than the cost competitiveness indicator (ULC-based REER) evidencing that the rise in labour costs affected the reduction in the cost-to-price ratio rather than are compensated completely in the rise in prices. This means that the increase in labour costs, which is not compensated by a corresponding rise in productivity, may have a negative effect on the share of company's profits, which entrepreneurs will be forced to adjust to keep price competitiveness in external markets. Trends in recent years show that as economic activities are growing, price and cost competitiveness indicators get worse, and wage convergence is one the most important factors here.

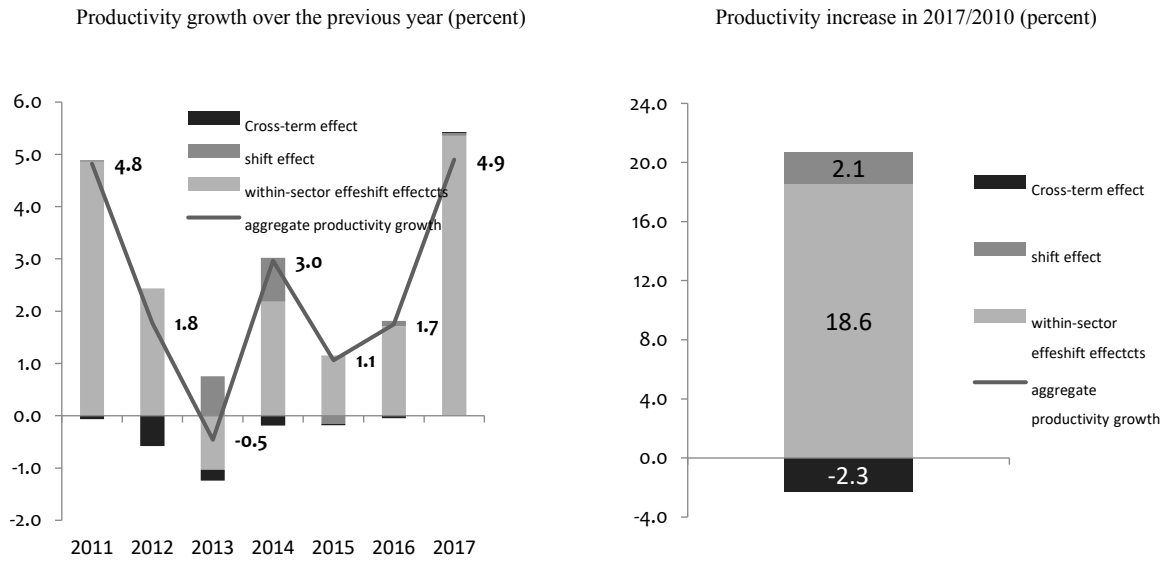
Re-invigorating productivity growth will be the key to keeping Latvian entrepreneurs competitive and getting more quickly to a higher standard of living. Technological factors such as the modernisation of production, the development of existing technologies and the deployment of new technologies are essential to increasing productivity levels. The transition from old to newer technologies contributes to productivity gains at company and industry levels. However, the

[1] ULC is a relationship between labour costs and productivity. If productivity is growing faster than the wages, then ULC is decreasing, which is an indication that competitiveness of state costs increases, and the other way around.

performance of such changes in increasing aggregate productivity levels depends on reallocation of resources from lower to higher productivity activities as well as on activities with higher productivity dynamics.

In order to determine the effect of the redistribution of labour resources on the overall productivity dynamics of Latvian economy, the shift-share analysis method (OECD, 2018 b) was applied. The method in question makes it possible to determine the extent to which overall productivity changes affected individual sectors, assuming that the number of employees remained stable and the extent to which overall productivity was affected by the movement of workers to sectors that have achieved higher productivity levels or productivity gains.

The results obtained (see Fig. 7) show that within-sector effects mainly influenced the overall productivity dynamics in Latvia. Between 2010 and 2017, its contribution to annual productivity growth was 2.4 percentage points (about 90 percent of total productivity growth). This means that productivity improvements mainly occur in every single sector affected by, for example, better management, technology improvement, innovation, employee qualification, favorable market forces and other industry-specific factors. The largest contribution to the *within-sector effects* was in the trade, transport and storage and manufacturing sectors while financial intermediation and information and communication services were negative. The second effect, i.e. the shift effect in Latvia is relatively weak - about 0.3 percentage points of annual productivity growth. This suggests that industries with higher productivity have attracted more labor than the lower productivity sectors in the analysis period. However, its contribution to total productivity growth was rather limited.



Source: author's construction based on. Eurostat databases.

Fig. 6. **Within-sector and shift effects contribution on productivity growth (percentage)**

Third effect (Cross-term effect), i.e. the impact of labor migration on industries with faster (slower) productivity gains on total productivity dynamics was negative during the analyzed period (-0.3 percentage points on average per year). It means that industries with faster productivity dynamics attracted less labor than industry with slower productivity growth. Empirical studies show that in many cases, this effect reduces overall productivity in the country. There are several interpretations of this phenomenon. For example, productivity gains often associated with optimization of production costs, redundancies and labor migration to slower productivity dynamics. Despite the negative nature of cross-term effects in Latvia, its impact on aggregate productivity dynamics is low, which is to be welcomed as it shows that employees are not ready to move to lower economic growth activities.

Overall, the dynamics of attracting labor force by sector shows that in the post-crisis period the Latvian economy is experiencing structural changes in favor of sectors with higher productivity, which also positively affects the aggregate productivity level in the country. However, the pace of structural change is insufficient and the redistribution of labor resources from lower and higher productivity sectors is relatively weak. Therefore, Latvia needs to continue to transform the structure of its economy towards activities that are more productive and products that are more sophisticated and services.

Conclusion

1. Productivity is often used to evaluate countries economic development, it has been one of the most important determinant of economic growth, which is crucial factor to increase population's welfare. The integration of the country in the EU Single Market had a positive impact on the productivity dynamics strengthening economic growth and accelerating the convergence process, however, in comparison with several developed countries of the EU, the productivity gap is comparatively large (in 2017, the productivity level in Latvia was only 46.8% (68% according to PPS) of the EU average).
2. Although productivity growth rates in Latvia are among the highest in the EU and since 2011 productivity have grown by 14.7% (by 4% in EU-28), in last five years productivity growth rates have significantly dropped and they are almost three times slower than in the pre-crisis period. The process of convergence of productivity and income also became slower, over the last seven years (2010-2017) the productivity gap among the EU countries narrowed only by 9.8 percentage points.
3. The productivity trap can be defined as situation, when enterprise or state reaches certain productivity level and after that it's growth slows down essentially, staying in a relatively low level for long time.
4. Slow productivity growth in comparison with the growth of labour and other production costs leads to price increase of final consumer goods and services, which negatively affect producers' competitiveness both in domestic and foreign markets and it leads to the decline in sales and impropriate usage of producers' capacity, thus economic growth rate is decreasing.
5. Latvia currently has a poorly developed base of production (a low level of manufacturing in GDP) and a low level of technological development, which significantly restricts economic readiness for the new competitive challenges.
6. Now Latvia is lagging behind both in high and low technology sectors, but the greatest lag behind is observed exactly in medium-high and medium-low sector groups.
7. In the post-crisis period the Latvian economy is experiencing structural changes in favor of sectors with higher productivity, which also positively affects the aggregate productivity level in the country. However, the pace of structural change is insufficient and the redistribution of labor resources from lower and higher productivity sectors is relatively weak.
8. The shift-share analysis show that within-sector effects mainly influenced the overall productivity dynamics in Latvia (between 2010 and 2017, its contribution to annual productivity growth was 2.4 percentage points), but the shift effect in Latvia is relatively weak (about 0.3 percentage points of annual productivity growth).
9. Opportunities to increase productivity are affected by overcoming technological lag, modernization of production and investment, investment in human capital, research and innovation, etc. supply-side factors, as well as the promotion of structural economic transformation, also play an important role.

10. To increase the total productivity level in Latvia it is important to both identify problems of certain sectors (study of obstacles on a level of certain enterprises and sectors) and promote structural transformation in economics (progress towards high technology sectors).
11. One of the more significant productivity challenge in Latvia is the need to strengthen the production capacity and capacity of the industrial sector, in order to be able to adapt to the challenges of the new industrial age by encouraging investment in new technologies. Therefore, it is important to understand whether we are prepared for the new challenges of competitiveness, i.e. whether we are able to benefit from future production opportunities, reduce risks, and can be flexible in responding to future shocks.

Bibliography

Azariadis C., J. Stachurski J., 2005. *Poverty Traps*, Chapter 5 in Aghion P. and S.N. Durlauf, eds., Handbook of Economic Growth, Volume 1A, Princeton: Princeton University Press.

Bahar D., 2018. *The middle productivity trap: Dynamics of productivity dispersion*, Economics Letters Vol. 167, June 2018, [Online] Available at: https://www.sciencedirect.com/science/article/pii/S0165176518300843 [Accessed 20 December 2018].

Barrett, Christopher B., Carter Michael R., 2019. *The Economics of Poverty Traps*, National Bureau of Economics Research, 413 p.

Berthelmy JC., 2006. *Convergence and Development Traps, How did emerging economies escape the under development trap?* Annual World Bank Conference on Development Economics, The World Bank, pp.127-157.

Central Statistical Bureau (CSB) of Latvia, 2019. *Statistic Database.* [Online] Available at: https://www.csb.gov.lv/lv/statistika/db [Accessed 10 January 2019].

Doner Richard F., Schneider Ben Ross, 2016. *The Middle-Income Trap More Politics than Economics,* World Politics 68, no. 4 (October 2016), 608-44.

Eichengreen B., Donghyuan P., Shin K., 2011. *When Fast Growing Economies Slow Down: International Evidence and Implications for China,* NBER Working Paper No 16919.

Eichengreen B., Donghyuan P., Shin K., 2013. *Growth Slowdowns Redux: New Evidenceon the Middle- Income Trap,* NBER Working Paper No 18673.

Eurostat, 2019. *Statistic Database.* [Online] Available at: http://ec.europa.eu/eurostat/data/database [Accessed 10 January 2019].

Gradstein M., 2008. *Institutional Traps and Economic Growth*, International Economic Review Vol.49, No.3, August 2008.

Im Fernardo G., Rosenblatt D., 2013. *Middle Income Traps: a Conceptual and Empirical Survey,* Policy Research Working Paper 6594, World Bank, September 2013.

Investopedia, 2018. [Online] Available at: https://www.investopedia.com/terms/p/poverty-trap.asp [Accessed 20 December 2018].

Jekabsone S., Skribane I., 2018. *Productivity Trap in Latvia,* European Integration Studies No.12 (2018), p.92-103.

Jekabsone S., Skribane I., Priede J., Skapars R., 2017. *Productivity and its Impact on the Competitiveness of Latvia*. European Research Studies Journal Vol. 20, N 3A (2017), p. 920-930

Kuznets S., 1979. *Growth, population, and income distribution: Selected essays*. Norton, New York.

Manyika J., Chui M., Miremadi M., Bughin J., George K., Willmott P., Dewhurst M., 2017. *A future that works: automation, employment and productivity,* McKinsey Global Institute, 24 Jan 2017.

OECD, 2018. *OECD Productivity Statistics*. [Online] Available at: http://www.oecd.org [Accessed 16 November 2018]

OECD, 2018 b. *OECD Compendium of Productivity Indicators 2018.* [Online] Available at: http://www.oecd.org [Accessed 16 November 2018]. The shift-share analysis, 28.

Ranganathan S., Stamatios Nicolis C., Spaiser V., Sumter David J.T., 2015. *Understanding Democracy and Development Traps Using a data-Driven Approach,* Big Data. 2015 Mar 1; 3(1): 22-33.

Scott S., 1985. *Productivity Management: Planning, Measurement and Evaluation, Control and Improvement* John Wiley and Sons, New York, 8-9.

Sachs J., 2006. *The End of Poverty*, Penguin Books, London, UK.

Syverson, C., 2016. *Challenges to Mismeasurement Explanations for the U.S. Productivity Slowdown*, NBER Working Paper, Working Paper 21974.

MODELS OF TAX PAYMENTS OF PERFORMERS OF ECONOMIC ACTIVITY IN LATVIA

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Abstract. Economic theory sources widely discuss the fiscal policy, the ways of encouraging economic development, improve the welfare of people, improve employment and promote progress by fiscal instruments. On one side, it is possible to use the expenditure policy, on the other side, tax revenue can be optimised by reducing tax gaps. State officials often view self-employment as a missed opportunity deserving more focused attention. The European Union also supports this position. The question of self-employment is important for performers of economic activity.

The aim of the research: on the basis of theoretical (legislative) and empirical analysis to find out advantages and disadvantages of tax payments of performers of economic activity in Latvia.

Key words: *tax payment, Latvia, performer of economic activity*

JEL code: H25, H26, F38

Introduction

Description of the situation

Economic theory sources widely discuss the fiscal policy, the ways of encouraging economic development, improve the welfare of people, improve employment and promote progress by fiscal instruments. On one side, it is possible to use the expenditure policy, on the other side, tax revenue can be optimised by reducing tax gaps.

State officials often view self-employment as a missed opportunity deserving more focused attention. The European Union also supports this position.

The question of self-employment is important for performers of economic activity from the point of view of several aspects.

First, a large part of people in the countryside and towns in Latvia do something and gain income and they don't pay taxes not because they cannot pay them, but because they are not able to understand the tax payment regimes applicable to small business and requirements thereof. Let's have a look at statistics.

Table 1.

Proportion of people below the minimum income level in Latvia statistic regions 2016, %

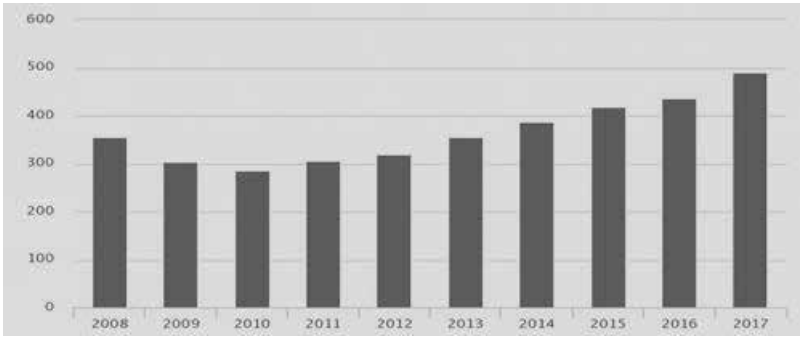
No.	Regions of Latvia	Proportion below the ML
1	Total	7.8
2	Riga region	3.7
3	The Greater Riga region	5.9
4	Vidzeme	10.9
5	Kurzeme	8.0
6	Zemgale	9.7
7	Latgale	16.1

Source: Personu īpatsvars zem …

The minimum income level is the amount of minimum income for an individual or a household defined by the state. The minimum income level is defined equal to 40 per cent of the median of the income available to households per equivalent consumer.

From the Table 1 it can be seen that 16% of people in Latgale and 11% of people in Vidzeme live in poverty. There are no statistics data as to what proportion of the group referred to in the Table work without declaring any income and the tax gap is formed by unpaid taxes to the budget.

The income available to households increased by 11.8% in 2017 in comparison to 2016 and amounted to 489 euro per household member per month. The rate of increase of household income was highest in comparison to the increase recorded in preceding years (4.9% in 2016, 7.6% in 2015, 9.3% in 2014).



Source: CSB data base

Fig. 1 **Income available to households in Latvia 2008-2017 (Average amount (euro) per household member per month)**

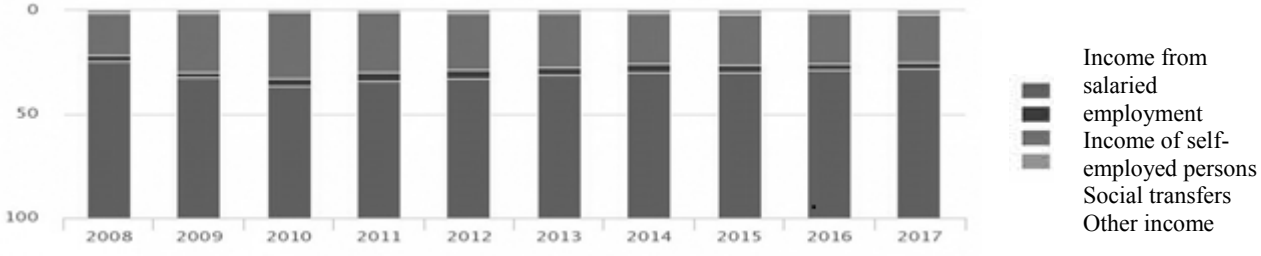
Difference in income can be seen among various regions of Latvia:

- the available income was lowest in Latgale and amounted to 330 euro per household member per month. The household income has increased by 10.3% in this region since 2016.
- the income was highest in Riga and Greater Riga region amounting to 592 euro and 536 euro per month accordingly. The income available to households increased by 12.2% in these regions.
- the income available to households amounted to 442 per month in Zemgale (a 14.4% increase).
- in Kurzeme it was 431 per month (a 8.8% increase).
- in Vidzeme it was 401 per month (a 9.6% increase).

The income available to households per household member amounted to 518 euro per month (a 10.9% increase) in cities and to 425 euro per month in the countryside (a 14.2% increase).

The household income per household member per month gained from salaried employment increased by 13.1% from 311 euro to 252 euro during a year. Income per household member gained from pensions, benefits and other budget payments grew at a slower rate, i.e. by 4.2% (from 108 euro per month in 2016 to 112 euro per month in 2017).

Income from salaried employment accounted for 72% of the income available to households in 2017 (71.2% in 2016) and the proportion of social transfers equalled 23% (24.7% in 2016). (Pērn Latvijā pieaugusi …)



Source: CSB data base

Figure 2. **Structure of income available to households 20028-2017, %**

Besides the above, each local government has defined the status of a poor and low-income person. Social insurance cannot help to everybody facing poverty because the state and municipal funding pillow is too little. A person gets used to comfortable living fast and is not willing to refuse this status. This does not apply to retired persons or persons who are sick.

Second, the ones who want to return closely follow up developments in Latvia. They are interested whether they will be able to find a job in Latvia and what living conditions there are. Not all of those who return to Latvia have a safety pillow for minimum 1 or 2 months. As I studied the developed re-emigration plan, I did not see a single support item specifying actual support to the ones who have returned.

Third, fragmented tax payment regimes applicable to small business do not encourage starting of a business. All this makes administration of taxes more difficult. ‘

The aim of the research: on the basis of theoretical (legislative) and empirical analysis to find out advantages and disadvantages of tax payments of performers of economic activity in Latvia.

Research methods: analysis of used scientific literature review (Latvian and foreign literature and scientific publications) and legal documents, comparison of information, systematization, detalisation and conclusion methods, analysis of statistical data. such as dynamic row analysis.

The research covers the period 2016-2018, sometimes a shorter period is analysed due to the lack of data and tax changes after 01.01.2018.

Due to the limited space, only the most important results of the research are outlined in the paper.

Scientific knowledge. Various scientific research have analyzed tax, tax income in budget, tax effect on companies income, tax effect on persons income, but only some Latvian scientist (Leibus, Ketners) and only some article in scientific literature can be founded about performer of economic activity.

Status of the performer of economic activity

The concept "economic activity" as used in tax legislation is very broad as it covers the complete economic activity. Even if you enter into a contract with a person for painting a wall at this person's home, this is economic activity and you will go with this contract to the SRS to register economic activity. The SRS will not specify that you are a painter, it will be specified as economic activity, in particular, a private individual has provided some kind of services.

The term "a self-employed person" is used as a legal term only if a natural entity has also registered for making social insurance mandatory contributions in order to engage in economic activity, i.e. pays the so called social tax from the income.

The term "a self-employed person" cannot be found in any other tax laws, it is only referred to in the Law "On State Social Insurance". The definition of "a self-employed person" can only be found in this law, in particular, a self-employed person is a person who earns income as:

- a person that performs individual work,
- a person whose permanent place of residence is in the Republic of Latvia and who receives a royalty
- a sworn notary, a sworn attorney, a sworn auditor, a sworn bailiff
- a doctor in practice, a pharmacist in practice, a veterinary practitioner, an optometrist in practice,
- another natural entity whose permanent place of residence is in the Republic of Latvia and who has registered as an economic activity income tax payer,
- an owner (owners) of a farm (fishing undertaking)
- an individual merchant (Linde B)

The status of a performer of economic activity is the simplest way for registration of economic activity. It is a common practice to refer to performers of economic activity as self-employed persons. Registration does not involve any additional costs and registration is done by submitting an application of a defined form to the State Revenue Service.

A performer of economic activity - a payer of the Personal Income Tax

Pursuant to the Law "On Personal Income Tax" the Personal Income Tax (PIT) is paid by all natural entities.

The tax on income from economic activity is also paid by the so called self-employed persons or performers of economic activity. There are also other taxable income which a natural entity is obliged to declare and for which the Personal Income Tax should be paid. A natural entity may register or not register his/ her economic activity. Standard performers of economic activity.

Table 2.

Personal Income Tax rates in Latvia 2017-2018, %

	2017	2018
PIT of economic activity	23%	20%, 23%, 31.4%
PIT of capital	10%	20%
PIT of capital growth	15%	20%
PIT of the income from the alienation of a forest growing on the property of a natural person for felling and the alienation of the timber obtained thereof	10%	10%
PIT of sale of metal scrap	10%	10%
PIT of the lease or rent of property if a contract is submitted to the SRS	10%	10%
Loans equivalent to income	23%	20%, 23%, 31.4%

Prior to evaluating the types of taxes of economic activity, let's see what is offered. On the website of the State Revenue Service there is information about that a performer of economic activity may select among the regimes of payment of taxes upon planning to become a self-employed persons.

Regimes of tax payments of performers of economic activity

Usually performers of economic activity pay the Personal Income Tax of the income from economic activity. Following registration, the performer of economic activity does not obtain any additional registration numbers and specify their taxpayers' details, i.e. the name, surname and personal ID code, in all documents.

A performer of economic activity is allowed to employ staff (except when it is prohibited under a particular tax regime). Pursuant to the Commercial Law, a natural entity shall become an individual merchant or register in another status if the annual revenue has exceeded 284.600 euro or the revenue has exceeded 28,500 euro and more than five persons are simultaneously employed.

A performer of economic activity is also allowed to pay the Micro-enterprise Tax.

A self-employed person may register as a Value Added Tax payer.

Self-employed persons usually maintain their accounting records according to the single-entry system (fill in the "Log of registration of revenue and expenses of economic activity"), however, it is also allowed to maintain accounting according to the double-entry system. Although the simple accounting may seem comprehensive for everybody, it is advisable to ask a knowledgeable accountant for advice in order to gain assurance that everything will be done correctly.

Registration as an individual merchant (IM) is possible according to the requirements of the Commercial Law. An individual merchant is a natural entity registered with the Commercial Register. An IM has a name and a taxpayer's registration number is assigned to it. If this form is selected, one should take into account that it involves some registration costs because a state fee is set for registration of an IM. Equity capital is not necessary. An IM pays the Personal Income Tax of the income of economic activity, or the Micro-enterprise Tax may be selected. If the turn-over of an IM does not exceed 300,000 euro, it is allowed to maintain accounting records based on the single-entry accounting system, however,

if the above threshold is exceeded the accounting records shall be kept according to the double-entry accounting system. A merchant may withdraw funds needed for personal consumption from his/ her enterprise.

In order to understand which of the options is most suitable, the following should be evaluated:

Another option is *payment of the Personal Income Tax (PIT) in full scope*. Different from the MET, this tax shall only be paid of the obtained profit, i.e. expenses incurred at work should be subtracted from the revenue. The current tax rate is 23%. This option is appropriate in the situation when there are considerable monthly expenses, for example, purchases of raw materials or comparatively high transportation expenses.

Table 3.

Number of taxpayers in Latvia 2016-2018

	Legal entities	Legal entities	IM	TOTAL	VAT payers	ME
2016	221,727	129,197	12,481	350,924	49,293	91,459
		10,635*				
2017	222,643	117,899	11,848	352,390	45,411	89,681
		11,451*				
2018	217,772	122,605	11,629	352,006	84,622	44,373
		24,710*				

Performers of economic activity who pay SSIMC are labelled by*. This means that only 8% of all the performers of economic activity registered with the SRS were actually operating in 2016 (10,635/129,197), 10% in 2017 (11,451/117,899), 20% in 2018 (24,710/122,605).
58.7% of all the enterprises registered with the SRS are active in Riga in 2019 (122,532/ 208,593).
Source: VID, Nodokļu maksātāju skaits .., VID, Pašnodarbināto personu skaits.., VID, Nodokļu maksātāju (juridisko personu) skaits

Patent Fee Payers

Cabinet Regulations No. 28 (16.01.2018) define the professions of economic activity for which *the patent fee or reduced patent fee should be paid*. The amount of the monthly patent fee is set equal to 100 EUR in the territory of Riga municipality and 50 EUR in the territories of the other municipalities for the following types of activity:

- Handicraft of leather and textile products, as well as production and repair of clothing and footwear
- Repair of clocks and locks and other household services
- Production of handicraft products
- Floristics
- Photography, video recording services
- Beauty treatment services
- Private household services and house care services

The tax reform has expanded the range of patent fee payers by defining the reduced patent fee of 17 EUR per year and 9 EUR per six months for particular groups of taxpayers. The above payment only comprises the PIT.

According to this method of tax payment, a self-employed person shall pay a particular fixed amount not dependent on the amount of income every month.

The above list of types of activity could be supplemented by adding other types of economic activity, for example, interior design, installation of furniture, firewood cutting, lawn mowing, adjustment and production of music instruments, interior construction works, etc.

The patent fee is a fixed payment for economic activity of a natural entity in a particular profession as defined by the state. The patent fee comprises the Personal Income Tax and the State Social Insurance Mandatory Contributions. The tax regime is really simple.

As on 23 January 2017 there were 2246 patent fee payers registered in the SRS Tax Information System, including 533 reduced patent fee payers (Zālīte L). In 2017 the paid patent fee amounted to 1286.84EUR (VID, Kopsavilkums par budžeta ieņēmumu daļa 2017) which means that on average one patent fee payer pays the tax in the amount of 572.95

(1286840/2246) EUR to the central budget or 47.75 EUR per month. The amount paid by patent fee payers during 11 months of 2018 equals 1418.82 thous. EUR of tax (VID, Kopsavilkums par budžeta ieņēmumu 2018).

If the type of activity complies with the requirements of the Law "On Personal Income Tax", the payment of the patent fee may be selected.

Individual merchant is a natural entity who performs economic activity and who is entered in the Commercial Register as an individual merchant. An individual merchant is responsible for his/ her liabilities by all of his/ her property. An individual merchant (IM) may select to pay the Personal Income Tax of income from economic activity or the Micro-enterprise Tax.

According to the amendments of 2018 in the first case 20% of income not exceeding 20,004 euro per year or 23% of the part of the annual income which exceeds 20,004 euro, but does not exceed 55,000 euro or the Micro-enterprise tax 15% of revenue. Pursuant to the Law "On State Social Insurance", an individual merchant is a self-employed person who shall make the state social insurance mandatory contributions (SSIMC) as a self-employed person.

The main different between an IM and a standard self-employed person is that the IM is entered in the Commercial Register, thus a firm with a name, registration number) and it may employ more than 5 employees.

The revenue of the Micro-enterprise in 2017 amounted to 82,115,30. if (82,115,300/89681)=915.64 . In year 2016 (63,494,610/91459)=694.24, in 2017 the average monthly payment by a ME was (915,64/12)=76.30 EUR to the central budget.

Table 3.

Summary of models of payment according to the type of economic activity

Type of economic operations	Rate	Turnover	Registration
Patent	50-100 per month (including PIT and SSIMC)	Up to 15,000 EUR	SRS
Tax on income from economic operations	20%, 23%, 31.4% of profit (including PIT, SSIMC, mandatory health insurance payments should be made additionally)	to	SRS
Micro enterprise	15%	Up to 40,000 EUR	SRS
IM	20%, 23%	284,600 euro	ER

However, attention should be paid not only to the profitability of tax in selecting the most suitable tax payment regime, also the amount of social contributions is important. Even if as low as possible social contributions or complete avoidance of this payment in compliance with the procedure provided by the law might seem profitable at a first glance, this can cause negative consequences over long term, for example, a low old-age pension.

The high activity of people in Latvia trying to submit their tax returns for the preceding year on the first day is a warning sign of general poverty in the country according to the opinion expressed by Ilze Cīrule, the Head of the State Revenue Service (SRS) on the LNT channel today.

The general poverty in the country is among the reason why fast recovery of comparatively small amounts, for instance, a couple of tens of euro, is very important for a very high number of people.

However, in selecting the most suitable regime of tax payment attention should be paid not only to its profitability, but also social guarantees.

We are a small country with various tax regimes for small-scale business, moreover, these models historically are characterised by various restrictions and different rates which are difficult to administer. The new tax system is complicated and not understandable for the small-scale business, and as regards the effect, the PIT plan of 2018 has not been fulfilled.

A part of the PIT is received by local governments and therefore the PIT should be transparent in order for the local governments to be interested to collect it. The question is how big amounts are paid by self-employed persons, but there is no such statistics.

Simplification of tax administration is important, the people's thinking should be changed by improving the culture of tax compliance. There are problems of accounting records, as there are unemployed persons who actually work and are not willing to declare their income.

Although the status of a self-employed person provides several advantages, it also involves responsibility, as contrary to salaried employees whose taxes are taken care of by the employer, a self-employed person should settle own taxes by himself/ herself. This, of course, means also the obligation to follow up on legislation amendments not to miss anything important.

Upon registration as a self-employed person, various questions emerge, like what taxes should be paid. What are social guarantees? Which regime of payment of taxes on economic activity should be selected?

There are also certain advantages, for example, an opportunity to make one's income from economic activity legal, an opportunity to sign contracts with customers obtaining additional guarantees that the payment for goods or work will be received, a simple and cheap registration process as there is no foundation agreement, articles, signatures attested by the notary and other documents, neither the start capital is needed. All the social guarantees depend on the made contributions. .

The status of a self-employed person means not only freedom, but also responsibility as one should take care not only for the present, but also for the future.

FOREIGN EXPERIENCE

Great Britain and Northern Ireland (sole trader) tax payment

A. It is necessary to register with the Tax Service (self-employed), to pay the Income Tax and make the National Insurance contributions; in addition, it is possible to register as a VAT payer if the turnover has reached 82,000 Pounds. Registration is very simple.

B. Revenue and expenses shall be accounted for

C. Taxes shall be paid twice a year as on 31.01 and 31.07.

The non-taxable minimum amount equals 10,600 pounds. If the taxable income does not exceed 31,785 pounds the applicable basic tax rate is 20%. If the taxable income is from 31,785 to 150,000 pounds a higher rate of 40% applies and if the income exceeds 150,000 pounds an additional rate of 45% applies. There are two types of social contributions. If the annual profit equals or exceeds 59,654 pounds 280 pounds a week shall be paid. If the profit equals or exceeds 8060 pounds, the payable amount is 9% of profit (from 8060 to 42,385 pounds and 2% of the profit above 42,385 pounds (Working for yourself, UK).

Experts, moderators, observers, property administrators and lessors, priests, investors (who invest for themselves or the public, however, this cannot be regarded as business (donations)) can voluntarily join the social contributions.

USA experience regarding payment of taxes by performers of economic activity

15.3% of the first net income in the amount of $ 128 400 + 2.9% of net income above $ 128,400. In other words, the tax rate of a self-employed person comprises all the below listed payments:

- the employee's part of the social insurance amounting to 6,2% of the first income of $ 128,400 USD net
- the employer's part of the social insurance tax amounting to 6.2% of the first income of $ 128,400 USD net
- the employee's part of the medicine tax amounting to 1.45% of all the net income
- the employer's part of the medicine tax amounting to 1.45% of all the net income

- A self-employed person whose net income in 2018 equalled $ 128,400, should pay the tax of $19,645.20 ($ 128,400 X 15.3%) (What is the self-employed ..).

In Belarus the agro-eco tourism is developed and it is mainly used by the residents of Belarus by ranting rooms and providing catering and entertainment events (Министерство по налогам). In Russia performers of economic activity pay taxes depending on whether they cooperate with a natural or legal entity. 4% of the taxable income should be paid in case of cooperation with a natural entity and 6% of the taxable income should be paid in case of cooperation with a legal entity.

In Latvia the taxation system is very complicated and difficult to understand, there are various regimes of tax payments. The tax payment regimes for performers of economic activity should be simplified by establishing one or two models for small scale business. Both the accounting records and administration matters would be solved. The taxation system should be clear and comprehensive because by engaging in small scale business a person often provides only for the family and does not have time to check legislation on daily basis or to respond to all amendments. Introduction of a particular uniform or fixed tax without restrictions as to a particular amount could be proposed. It should not be forgotten that handicraft should be separated from professional activity, it is necessary to identify the situation and to find solutions for improving tax payment in case of self-employment.

Conclusions, proposals, recommendations

1. The regime of tax payments of performers of economic activity in Latvia needs to be simplified. It is necessary to develop criteria which are specific for each industry as regards performers of economic activity and to introduce a fixed tax rate or a fixed tax amount without restricting economic activity. The fixed tax could be the turnover which could be transmitted to the SRS electronically on quarterly basis and the turnover would be the taxable income.
2. The fixed tax rate should comprise all the types of tax payment, including the mandatory health contributions. The payment should be uniform.
3. The time of submission of documents and reports to the SRS shall be reduced by SIMPLIFYING THE REPORTING SYSTEM and reducing the SRS ADMINISTRATION BURDEN.
4. The system of support of performers of economic activity shall be provided in relation to procurements, receipt of aid funds and availability of cooperation partners.
5. In order to encourage entrepreneurship initiative and to involve not employed natural entities in economic activity, it is necessary to expand the range of activities for which registration of economic activity is not necessary by payment of a fixed tax, for example, in the amount of 10% and the health tax of 1%, totally 11%.
6. The principle of flexibility should be followed by timely responding to changes in the economics, the efficiency of decision depends on compliance with the time factor, and the discipline of payment of taxes should be improved and activity of people should be increased.

Recommendation for future research

This was a small pilot study, where the authors compared tax legislation qualitative information. The first recommendation for future study is to obtain data from performers of economic activity persons to compare tax amount from different persons for example persons how have other income and no other income. The second recommendation is to take interview. Interview - how performers of economic activity persons understand different tax differences.

Bibliography

Boden, Rebecca. (1997) Self Employed People: A literature review for the Contributions Agency. [Online] http://eprints.whiterose.ac.uk/73433/1/Document.pdf [Access: 10.03.2018]

CSB data base [Online] https://www.csb.gov.lv/lv/statistika [Access: 29.12.2018]

Finanšu ministrija [Ministry of Finance] [Online] www.fm.gov.lv [Access: 21.12.2018]

Krūmiņa, M., Paalzow, A. (2017) The Business Cycle and Early-Stage Entrepreneurship in Latvia. Entrepreneurship in Transition Economies pp 135-152

Leibus, I., Irmeja, A., Miceikien., A. (2016). Imperfections of Social Insurance for Self-Employed Persons In Latvia. roceedings of the 2016 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT" Jelgava, LLU ESAF, 21-22 April 2016

Leibus., I., Lazdina, M. (2015) Proceedings of the 2016 International Conference "ECONOMIC SCIENCE FOR RURAL DEVELOPMENT. SCEE 2015 Proceeding. Rīga:RTU.

Linde, B. Ko nozīmē būt pašnodarbinātajam jeb saimnieciskās darbības veicējam [Head of the Department of Application of the Direct Tax Methodology of the Main Tax Authority of the State Revenue Service]. [Online] http://www.kvestnesis.lv [Access: 29.11.2018]

Pērn Latvijā pieaugusi ienākumu nevienlīdzība [Inequality of income in Latvia last year] [Online] https://www.lsm.lv/raksts/zinas/latvija/pern-latvija-pieaugusi-ienakumu-nevienlidziba.a303540/ [Access: 21.12.2018]

Personu īpatsvars zem minimālā ienākuma līmeņa Latvijas statiskajos reģionos (%), CSB [Online] http://data1.csb.gov.lv/pxweb/lv/sociala/sociala__nabadz_nevienl__min_ien/MIG020.px/table/tableViewLayout1/?rxid=e45ef2d5-450f-48ea-a2d8-0abd02396aa7 [Access: 21.12.2018].

VID, Kopsavilkums par budžeta ieņēmumu daļa s izpildi 2018.gada 11 mēnešos [SRS, Summary of fulfilment of the revenue part of the budget during 11 months of 2018] , https://www.vid.gov.lv/sites/default/files/ienemumi_11_2018_publikacijai.pdf

VID, Kopsavilkums par budžeta ieņēmumu daļas izpildi 2017.gada 12 mēnešos [SRS, Summary of fulfilment of the revenue part of the budget during 12 months of 2017] , https://www.vid.gov.lv/sites/default/files/ienemumi_12_2017_publikacijai.pdf

VID, Nodokļu maksātāju (juridisko personu) skaits 2019.gada 1.janvārī [SRS, Number of taxpayers (legal entities) as on 1 January 2019] [Online] https://www.vid.gov.lv/sites/default/files/nm_statistika_02012019.pdf [Access: 10.0.2018]

VID, Nodokļu maksātāju skaits 2018.gada 1.janvārī [SRS, Number of taxpayers as on 1 January 2018] [Online] https://www.vid.gov.lv/lv/nodoklu-maksataju-skaits-2018gada-1janvari [Access: 10.0.2018]

VID, Pašnodarbināto personu skaits 2018.gadā [SRS, Number of self-employed persons in 2018] [Online] https://www.vid.gov.lv/lv/pasnodarbinato-personu-skaits-2018gada [Access: 10.01.2018]

What is the self-employed person's FICA tax rate for 2018 and 2019. [Online] https://www.accountingcoach.com/blog/what-is-the-self-employed-persons-fica-tax-rate-this-year [Access: 10.01.2018]

Working for yourself [Online] https://www.gov.uk/working-for-yourself [Access: 10.01.2018]

Zālīte L. Patentmaksājums un sociālā apdrošināšana [Patent fee and social insurance], [Online] https://lvportals.lv/skaidrojumi/285012-patentmaksajums-un-sociala-apdrosinasana-2017 [Access: 8.01.2018]

Zelgalvis, E., Joppe, A., Sproge, I. (2010). Role of Taxes in the Promotion of Innovative Activity. Driven Entrepreneurship Conference Proceedings 14-16th October 2010., ISSN 2029-5448. Retrieved: http://www.ism.lt/bmra/2010/CP%2080%20Zelgalvis-Joppe-Sproge.pdf. [Access: 20.03.2018]

Yarbrough, Jillian, R. (2016). Managing the Self-Directed and Self-Motivated The Journal of Global Business Management Volume 12* Number 2 * October 2016 issue

Министерство по налогам и сборам Республики Беларусь. [Online] *http://www.nalog.gov.by/ru/* [Access: 10.01.2018]

EVALUATION OF TANGIBLE ASSETS ACCOUNTING INFORMATION DISCLOSURE QUALITY IN THE PUBLIC SECTOR: THE CASE OF LITHUANIA

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Abstract. The disclosure of information in the private and public sectors is insufficient. The issue of accounting information disclosure quality is encountered. It is essential to evaluate the requirements which the accounting information has to meet in order to be viewed as qualitative.

The question of accounting information disclosure quality in the Lithuanian public sector is also relevant, as since 2010, after the Accounting and Financial Reporting Reform in the Public Sector, the accounting system has been changed from the cash basis to the accrual basis. The Public Sector Accounting and Financial Reporting Standards have been introduced which are employed to improve the presentation quality of the financial statements of the public sector entities. Furthermore, the research of accounting information disclosure quality in the Lithuanian public sector is insufficient.

The research object: accounting information disclosure quality of the non-current tangible assets (hereinafter referred to as tangible assets) in the financial statements of the public sector. The financial statements of the municipalities of Lithuania have been selected for the analysis of this research.

The aim of the research: to examine and evaluate the accounting information disclosure quality of the tangible assets in the financial statements of the municipalities of Lithuania.

In this research the concepts of accounting quality, disclosure quality have been analysed. After the analysis of the performed research, the theoretical evaluation model of accounting information disclosure quality has been designed. In accordance with the designed disclosure index, the disclosure quality in the financial statements of the tangible assets of the municipalities of Lithuania has been evaluated and compared.

Keywords: *accounting quality, disclosure quality, financial reporting, municipality*

JEL code: H83, M41, M48

Introduction

Financial statements are the most important regulated source of financial information. According to International Financial Reporting Standards (IFRSs), the objective of financial statements is to provide information about the financial position, financial performance and cash flows of an entity that is useful to a wide range of users in making economic decisions. Companies must satisfy the information needs of all stakeholders. Thus, the problem of financial reporting quality arises. In this research, we define financial reporting quality (FRQ) according to Biddle, Hilary and Verdi (2009), i.e. FRQ is the precision with which financial reporting conveys information about the operations of entities. In 2001, Healy and Palepu (2001) distinguished the research directions related to financial reporting and disclosure that remained important for the past two decades. The significance of these research directions is based not only on theoretical but also on empirical results.

Results of research related to mitigating information and agency problems (Gomariz & Ballesta, 2014; Brown & Hillegeist, 2007; Healy & Palepu, 2001) indicate that firms can reduce information asymmetries by enhancing FRQ.

Lambert, Leuz and Verrecchia (2007) argue that the link between accounting information and the cost of capital of firms is one of the most fundamental issues in accounting (Lambert, Leuz & Verrecchia, 2007). In scientific literature (Brown & Hillegeist, 2007; Botosan & Plumlee, 2002) a negative relation between disclosure quality and cost of capital is indicated**.**

Not only theoretical but also empirical research confirms that higher FRQ increases investment efficiency (Biddle & Hilary, 2006; McNichols & Stubben, 2008; Biddle, Hilary & Verdi, 2009; Gomariz & Ballesta, 2014). This relationship is explained from the perspective of the agency theory by Gomariz and Ballesta (2014), Biddle, Hilary and Verdi (2009), i.e. the financial reporting of higher-quality increases shareholder's ability to monitor managerial investment activities (Gomariz & Ballesta, 2014; Biddle, Hilary & Verdi, 2009).

Finally, researchers seek to identify the factors that have an impact on FRQ. Scientists analyse various factors. For instance, findings indicate that wealth, population and audit findings have positive correlations with the disclosure in the public sector. (Martani & Lestiani, 2012). Falkman & Tagesson (2008) have determined that the size of municipalities and the audit quality influence the compliance with accounting standards.

The question of FRQ in the Lithuanian public sector is also relevant, as since 2010, after the Public Sector Accounting and Financial Reporting Reform, the accounting management has been changed from the cash basis to the accrual basis. The Public Sector Accounting and Financial Reporting Standards have been introduced which are employed to improve the presentation quality of the financial statements of the public sector entities. The financial statements prepared according to these standards would help the users of financial information to make more reasonable economic decisions that deal with the distribution of resources. In addition, the transparency indicators of the financial statements would increase. However, this aim can be reached only if the information introduced in the financial statements meets all of the requirements in the standards. Generally, the questions of FRQ gain quite some attention in the private sector; nevertheless, the research on this issue is insufficient in the public sector. The research of FRQ in Lithuania is scarce in both theoretical and empirical fields.

Moreover, further FRQ research is also limited in the Lithuanian public sector, as in order to assess the FRQ impact on management decisions or the economic consequences of FRQ, primarily, the state of FRQ in the Lithuanian public sector should be assessed. However, no such studies have been carried out. The financial statements of the municipalities of Lithuania have been selected for the analysis of this research. The majority of assets in municipalities are tangible assets, therefore, to analyse the issue of the accounting information disclosure quality this type of assets was selected.

The research object: accounting information disclosure quality of the tangible assets in financial statements of the public sector.

The aim of the research: to examine and evaluate the accounting information disclosure quality of the tangible assets in the financial statements of the municipalities of Lithuania.

In order to reach the aim, the following objectives have been set:

1. To analyse the concepts of financial reporting quality and accounting information disclosure quality.

2. Having analysed the performed research of accounting information disclosure in financial statements, to design the theoretical evaluation model of accounting information disclosure quality.

3. In accordance with the designed disclosure index, to evaluate and compare the accounting information disclosure quality in the financial statements of the tangible assets of the municipalities of Lithuania.

The rest of the paper is structured as follows. The subsequent section describes the financial reporting quality and disclosure. It ends with the theoretical evaluation model of accounting information disclosure quality. It is followed by a section describing the methodology of research. The next section provides the empirical results and discussion. In the last section, the concluding remarks are presented.

Financial reporting quality and disclosure

Financial reporting quality and disclosure are one of the many control mechanisms to attenuate information asymmetries and information risk and to enable better supervision of managerial activity (Gomariz & Ballesta, 2014; Healy & Palepu, 2001).

According to Renkas, Goncharenk and Lukianets (2016), the FRQ is a structured display of the financial state and financial performance of the company that can be considered as a set of components: (i) the quality of presentation of financial information; (ii) the quality of financial information. As reported by this researcher the quality of presentation of the financial information is realised through the form and structure of financial reporting. Whereas the assessment of the accounting information disclosure quality can only be possible in terms of the notes to the financial statements (Renkas, Goncharenk & Lukianets, 2016; Hassan, Saleh & Rahman, 2008).

Such research is carried out not only in the private but also in the public sector. This is supported by these findings. Adi, Martani, Pamungkas et al. (2016) have identified that in empirical research on local government disclosure, many types of research are more focused on disclosure attached to financial statements of local governments in the form of notes to the financial statements of local governments. (Adi, Martani, Pamungkas et al., 2016). This can be confirmed by the research examples. Martani and Lestiani (2012) have investigated the level of disclosure of local government financial statements that are presented in the notes of financial statements based on Indonesia Government Accounting Standard (Martani & Lestiani, 2012). Adi, Martani, Pamungkas et al. (2016) have focused on the quality of management information, since "management report shows that the accountability to the public is not only accountable for financial aspects but also the quality of local government performance" (Adi, Martani, Pamungkas et al., 2016).

In the context of accounting information disclosure quality, it is important to underline that accounting information disclosures in the annual financial statements can be voluntary or mandatory. Of the one part, as Abdullah and Minhat (2013) claim, "voluntary disclosure refers to any information disclosed in excess of mandatory disclosure". Of the other part, "mandatory disclosure refers to the presentation of the minimum amount of information as required by law, stock exchange and the accounting standards-setting body, which is enforced on applicable companies" (Abdullah &Minhat, 2013).

It is worth remembering that corporations that issue securities to the general public are required to produce financial statements that comply with accounting standards, e.g. IFASS. According to Watts and Zimmerman (1979), "government regulation creates a demand for normative accounting theories employing public interest arguments, that is, for theories purporting to demonstrate that certain accounting procedures should be used because they lead to better decisions" (Bertomeu & Magee, 2015). In this way, higher disclosure quality increases the visibility of a firm (Brown & Hillegeist, 2007), and reduces information asymmetry.

However, much empirical research shows that not all companies fully comply with mandatory disclosure requirements (Abdullah & Minhat, 2013). Non-compliance with accounting standards or mandatory disclosure requirements is established among companies in both developed and developing countries. (Abdullah & Minhat, 2013; Glaum, Schmidt, Street et al., 2013; Street & Gray, 2002). Empirical research shows that IFRS reporting increases transparency and improves the FRQ (Daske, Hail, Leuz et al. 2008). Additionally, Martínez-Ferrero (2014), Abdullah and Minhat (2013)

emphasize that their prior studies have indicated that the adoption of high-quality accounting standards in private sector such as the IFRSs does not automatically lead to high-quality financial reporting or an increase in transparency.

The studies on accounting information disclosure quality are also conducted in the public sector. On the basis of the New Public Management reform, nowadays these issues have become relevant as to many countries have changed from cash-based accounting towards accrual accounting in their public sector (Falkman & Tagesson, 2008). There are given several examples of research when the level of the disclosure in local governments financial statements, i.e. compliance with disclosure requirements was investigated. Martani and Lestiani, (2012) used the mandatory disclosure required by the Indonesian Government Accounting Standard have examined compliance of local government financial accounting with accounting standards. The research result shows that the disclosure level of the local government is very low (on average, 35.45%). Falkman and Tagesson (2008) have investigated the compliance with accounting standards in Swedish municipalities. The findings of the research reveal that, in general, the compliance with accounting standards was poor. (Falkman & Tagesson, 2008). Adi, Martani, Pamungkas et al. (2016) have analysed the disclosure of management performance in the Government of Indonesia and showed that the information published disclosed only 35.46% of the required information (Adi, Martani, Pamungkas et al. 2016). Consequently, it is interesting whether the situation is similar in the Lithuanian public sector, i.e. mandatory disclosure requirements are not fully met in the financial statements of public sector entities.

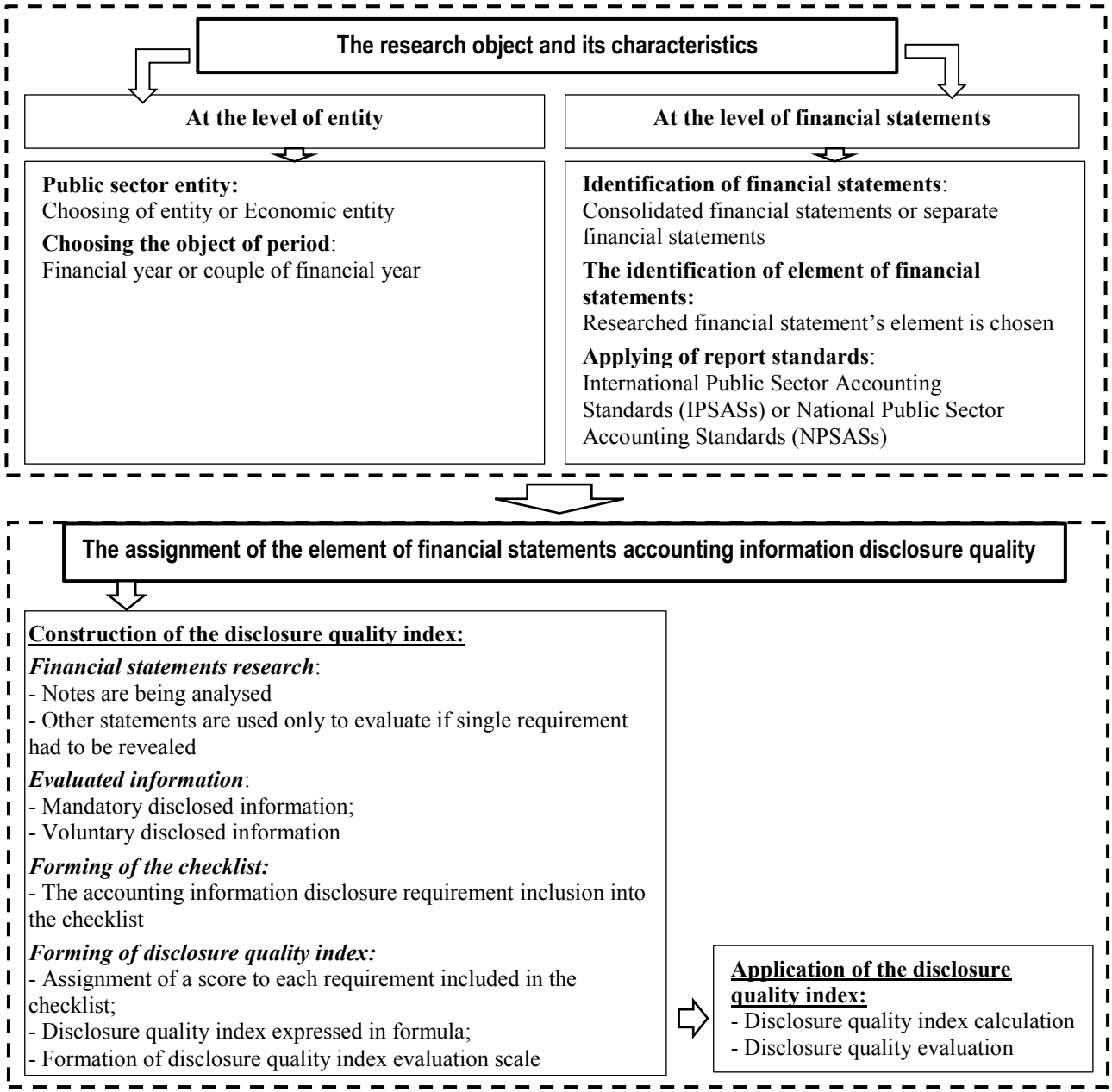
Theoretical evaluation model of accounting information disclosure quality. It is purposeful to make a theoretical evaluation model of accounting information disclosure in the annual financial statements quality. It is not suggested to evaluate the whole set of financial statements, but its single elements (e.g., intangible assets, inventories, revenue and so on.) of accounting information disclosure quality. Hence, this model is orientated to a certain (chosen) element of financial statements accounting information disclosure quality.

Firstly, the research object and its characteristics are identified. Research object is the element of financial statements accounting information disclosure quality (hereinafter accounting information disclosure quality (AIDQ)). The characteristics of the research object are elaborated at the level of the entity and financial statements (Figure 1), which will be discussed in detail. (1) The entity or economic entity is chosen. According to IPSAS 1, economic entity means a group of entities comprising a controlling entity and one or more controlled entities. (2) Evaluation according to which standards annual financial statements are prepared (IPSASs or NPSASs) is discussed. (3) AIDQ evaluated by analysing the notes. As mentioned earlier, the AIDQ can only be possible in terms of the notes to the financial statements. The notes shall present information about the basis of preparation of the financial statements (IPSAS 1). Hence, it is indicated, under which standards financial reports are prepared: according to International Public Sector Accounting Standards (IPSASs) or National Public Sector Accounting Standards (NPSASs) – in Lithuania case Public Sector Accounting and Financial Reporting Standards (PSAFRSs). (4) Accounting information disclosed in the annual financial statements can be voluntary or mandatory.

Secondly, in order to evaluate AIDQ, a checklist is being constituted. Using the checklist, particular public sector subject AIDQ, which is expressed with the help of an index: an accounting information disclosure in the annual financial statements quality index (hereinafter disclosure quality index (DQI)) is being evaluated.

Methodology of research

During the research, the analysis of financial statements was carried out in order to evaluate the accounting information disclosure quality of the tangible assets in the financial statements of the municipalities of Lithuania. The accounting information disclosure quality is measured by the disclosure index method.



Source: author's construction

Fig. 1. **Evaluation model of accounting information disclosure in the annual financial statements quality**

Method selection. Hassan and Marston (2010) emphasize that "disclosure is a theoretical concept that is difficult to measure directly". Aforementioned problem can be solved by applying the disclosed index. (Beattie, McInnes & Fearnley, 2004). Beattie, McInnes and Fearnley (2004) characterised the disclosure index as "a fairly objective, form-oriented content-analytic method".

Prior research distinguishes advantages of the disclosure index. They indicate that (1) the disclosure index can cover information reported in one or more disclosure vehicles such as corporate annual reports, interim reports, investor relations, etc. (Hassan & Marston, 2010); (2) the disclosure index could include mandatory items of information and/or voluntary items of information (Pivac, Vuko & Cular, 2017); Hassan and Marston, 2010). Hassan and Marston (2010) summarise that the use of disclosure indices in the literature demonstrates a wide variety of approaches indicating the flexibility of the disclosure index method. However, there are also some characteristics that limit the disclosure index application. Hassan and Marston (2010) point out that disclosure index measure "information reported in a particular

disclosure vehicle(s) by a particular entity(s) according to a list of selected items of information". Hence, this index has to be used appropriately.

The beginning of the application of the disclosure index is dated back to 1961. As showed in information disclosure methodical research (Legenzova, 2012; Hassan & Marston, 2010; Beattie, McInnes & Fearnley, 2004), this method has been used widely hitherto.

Index development. Usually, previously structured indexes are used. Hassan and Marston (2010) emphasize that when disclosure index is not developed by prior studies or professional organisations, hence a researcher has to develop his/her own measure of disclosure depending on the research purpose.

A disclosure quality index is being created according to other research (Pivac, Vuko & Cular, 2017; Adi, Martani, Pamungkas et al. 2016; Al Mamun & Kamardin, 2014; Hassan, Romilly, Giorgioni & Power, 2009; Hassan, Saleh & Rahman, 2008; Leung, Parker & Courtis, 2015) methodology.

During the development of the accounting information disclosure in the annual financial statements quality index (hereinafter disclosure quality index (DQI)), these regulations have been followed: (1) According to Pivac, Vuko and Cular (2017), disclosure indexes are commonly based on a text analysis conducted through an a priori defined checklist. In this research an original checklist is structured, to evaluate the accounting information disclosure quality of the tangible assets in the financial statements of the municipalities of Lithuania. (2) DQI includes mandatory information; voluntarily provided information is not being assessed. (3) The items included in the index can be weighted differently (Pivac, Vuko & Cular, 2017) or equally (Hassan, Saleh & Rahman, 2008). In this research, we measure disclosure quality based on an un-weighted index.

The process of the disclosure index construction and application involves three main steps.

In the first step, the checklist is prepared. The checklist consists of information that the municipalities have to disclose in their annual reports.

The second step was to assign a score to each requirement included in the checklist. A score of 1 is assigned to a requirement disclosed, and 0 otherwise.

In explanatory notes, the information is given in the form of text and tables. In the research, the criteria are provided in explanatory notes tables, which are not followed by zero meaning (as the confirmation that during the reporting period the scope of the researched criterion equals zero) or hyphen (as confirmation that VSS did not have any assets during the reporting period), but by the empty square without data is considered as the refusal to present any particular information. Explanatory notes in the form of text are rated analogically. If there is no information related to a certain criterion, it is considered that the information was not disclosed.

*In the third step***,** the DQI is defined following the viewpoint by Pivac, Vuko and Cular (2017), Hassan, Romilly, Giorgioni & Power (2009), who claims that, "the total disclosure index is measured as the sum of scores awarded to a particular entity in a particular year divided by the maximum number of applicable items (in order not to penalize entities for disclosing clearly non-applicable items of information)".

The DQI Index was computed by the following equation:

$$DQI = \frac{\sum_{i=1}^{N} x_i}{N - n} \times 100$$

Where $\sum_{i=1}^{N} x_i$ is entity's actual disclosure score; x_i is score of i component (i = 1 to N) (a score of 1 is assigned to a requirement disclosed, and 0 otherwise); N is the amount of mandatory disclosed elements; (N-n) is the amount of applicable elements; n is the amount of non-applicable elements.

In this research, the DQI rating scale suggested by Pivac, Vuko and Cular (2017) is used: the financial statements quality measures are: poor quality (DQI 0–20), low quality (DQI 21–40), average quality (DQI 41–60), sufficient quality (DQI 61–80) and high quality (DQI 81–100) (Pivac, Vuko & Cular, 2017).

Finally, descriptive statistics and paired-samples of t-tests are used for data analysis. The DQI central tendency and the spread are measured by the use of descriptive statistics. To choose a statistical test, it is necessary to verify that data are drawn from a normally-distributed population. In the case of a small sample, the main tests for the assessment of normality include the test proposed by Shapiro-Wilk (S-W). The null hypothesis (H_0) is drawn – the data come from a normally-distributed population. The alternate hypothesis H_1 claims that the data come from a population that is not normally distributed. If the results of the Shapiro-Wilk test are significant, ($p < \alpha$, there α – the level of significance ($\alpha = 0.05$)) rejecting the null hypothesis means rejecting the assumption of normality for the distribution.

If the assumption of normality is valid, we use the paired samples t-test. Null hypothesis H_0: the mean difference between the paired samples is equal to zero, i.e., DQI means do not differ in 2013–2016 – (i) each year compared with the previous year and (ii) 2016 compared with 2013. The alternate hypothesis H_1: DQI averages differ in 2013–2016. The decision is made based on the following provisions: 1) H_0 is rejected, means differ, if $p < \alpha$ 2) H_0 is not rejected, means do not differ, if $p \geq \alpha$ ($\alpha = 0.05$).

Empirical results and discussion

To achieve the aim of the research, i.e., to examine and evaluate the accounting information disclosure quality of the tangible assets in the financial statements of the municipalities of Lithuania, the disclosure index has been designed and the disclosure quality in the financial statements of the tangible assets of the municipalities of Lithuania have been evaluated and compared.

Construction of the disclosure index. In accordance with the requirements of accounting information disclosure by the PSAFRS 12, in this research an original checklist has been structured, to evaluate the accounting information disclosure quality of the tangible assets in the financial statements of the municipalities of Lithuania.

As it is seen in Table 1, the components of DQI are divided into two groups: (1) *common requirements* – disclosed information about tangible and intangible assets (11 components); (2) *specific requirements* – given information includes tangible assets only (6 components). Thus DQI consists of 17 components. Each disclosure index component has a code too.

In accordance with the designed checklist, each requirement included in the checklist has been assigned (a score of 1 is assigned to a disclosed requirement, and 0 – otherwise) and the disclosure quality index (DQI) of the tangible assets in the annual financial statements of the municipalities has been calculated (Table 3).

The disclosure index application. In accordance with the designed disclosure index, the accounting information disclosure quality of the tangible assets in the financial statements of the municipalities of Lithuania have been evaluated and compared. The accounting information disclosure quality measured by the DQI method is analysed in two ways: firstly, according to the components of the DQI; secondly, according to the DQI variation trends in 2013–2016.

Table 2 provides the information on the tangible assets that must be disclosed in the explanatory note, the frequency of the disclosures is expressed as a percentage of all analysed municipalities. The information presented according to the components of the disclosure index allows analysing the quality of each mandatory component disclosure in the explanatory notes.

Table 1

Components of disclosure quality index (DQI)

DQI component code	Information concerning tangible assets, which Public sector entity (PSE) has to disclose in the notes	Reference	Score
G	**General requirements:**		
G1	Accounting policies of assets and its change:	Art. 74 of PSAFRS 12	
G1.1	Assets recognition methods		1
G1.2	Assets depreciation method		1
G1.3	Assets measurement methods		1
G2	The useful life of each asset group	Art. 74 of PSAFRS 12	1
G3	Assets reconciliation of the carrying amount at the beginning and end of the period	Art. 75 of PSAFRS 12; Annex 1 of PSAFRS 12	1
G4	The acquisition or production cost of fully depreciated assets, which is still in use in the activities of Public sector entity (PSE)	Art. 76.1 of PSAFRS 12	1
G5	Carrying amount of assets restricted by contracts and law acts.	Art. 76.2 of PSAFRS 12	1
G6	Carrying amount of assets pledged as security for liabilities	Art. 76.2 of PSAFRS 12	1
G7	Carrying amount of assets retired from active use in PSE activity	Art. 76.3 of PSAFRS 12	1
G8	Carrying amount of temporarily idle assets in PSE activity	Art. 76.4 of PSAFRS 12	1
G9	The reconciliation of the carrying amount at the beginning and end of the period of the state-owned assets managed under the municipality trust law	Art. 79 of PSAFRS 12; Annex 3 of PSAFRS 12	1
S	**Specific requirements**		
S1	Carrying amount of land and buildings, no longer in use in PSE activity and held to earn rentals	Art. 76.5 of PSAFRS 12	1
S2	The total value of contracts for the future acquisition of assets on the last day of the reporting period	Art. 76.7 of PSAFRS 12	1
S3	Carrying amount of groups pursuant to finance lease of redeemable assets agreements	Art. 76.6 of PSAFRS 12	1
S4	The given information of PSE having tangible assets attached to the land, personal or real cultural value groups, or having other values:		
S4.1	The fair value of the last date assets groups	Art. 77.1 of PSAFRS 12	1
S4.2	Carrying amount of movable and immovable cultural value or other values of which fair value was estimated according to hedged value	Art. 77.2 of PSAFRS 12	1
S4.3	Carrying amount of movable and immovable cultural value or other values, registered in accounting on the symbolic value of one euro	Art. 77.3 of PSAFRS 12	1

Source: author's calculations based on PSAFRS

The research showed that, during the reporting period, the number of cases of information disclosure on tangible assets in the explanatory notes increased according to these DQI components: G1, G3, G4, G7, S3, S4.1, S4.2. In a general analysis of the frequency of disclosure of tangible assets in municipal explanatory notes, the disclosure of the disclosure quality index (DQI) components is (Table 2):

1. The most frequent: G1.2, G1.3, G3, G4, G9. It can be concluded that general requirements are disclosed best. Information on (i) assets accounting policies: depreciation and measurement methods (G1.2, G1.3) is best disclosed, however, assets recognition methods are disclosed less frequently (G1.1); (ii) the acquisition or production cost of fully depreciated assets, which is still in use in the activities (G4); (iii) assets reconciliation of the carrying amount at the beginning and end of the period (G3, G9). G3, G9 may be explained by the fact that this information must be included in the tables of the standard format.

2. The least frequent: G6, G8, S1, S2, S4.1, S4.2. It can be concluded that the specific requirements are the least disclosed. The following disclosures are least frequent: (i) Carrying amount of assets pledged as security for liabilities (G6); Carrying amount of temporarily idle assets in PSE activity (G8) (ii) Carrying amount of land and buildings, no

longer in use in PSE activity and held to earn rentals (S1); (iii) the total value of contracts for the future acquisition of assets at the last day of the reporting period (S2); and (iv) information on land, movable or immovable cultural values (S4.1, S4.2).

Table 2

Accounting information disclosure of the tangible assets in the annual financial statements of the municipalities according to DQI components

DQI component code	Financial year							
	2013		2014		2015		2016	
	The number of municipalities that disclosed DQI components							
	amount	%	amount	%	amount	%	amount	%
G1.1	7	53.8%	8	57.1%	8	53.3%	9	60.0%
G1.2	12	92.3%	13	92.9%	13	86.7%	14	93.3%
G1.3	10	76.9%	12	85.7%	13	86.7%	14	93.3%
G2	4	30.8%	4	28.6%	4	26.7%	4	26.7%
G3	11	84.6%	14	100.0%	15	100.0%	14	93.3%
G4	11	84.6%	12	85.7%	14	93.3%	14	93.3%
G5	1	7.7%	5	35.7%	4	26.7%	3	20.0%
G6	0	0.0%	0	0.0%	2	13.3%	0	0.0%
G7	4	30.8%	4	28.6%	8	53.3%	8	53.3%
G8	4	30.8%	4	28.6%	5	33.3%	2	13.3%
G9	10	76.9%	14	100.0%	15	100.0%	13	86.7%
S1	2	15.4%	4	28.6%	4	26.7%	3	20.0%
S2	0	0.0%	1	7.1%	1	6.7%	1	6.7%
S3	3	37.5%	4	50.0%	6	54.5%	6	54.5%
S4.1	1	7.7%	3	21.4%	4	26.7%	4	26.7%
S4.2	0	0.0%	4	28.6%	5	33.3%	5	33.3%
S4.3	3	23.1%	6	42.9%	6	40.0%	5	33.3%
APSS*	13		14		15		15	

*The number of the municipalities that disclosed financial statements

** The values of the codes of disclosure index components are presented in Table 1. Three-colour coding is used to visualize partial grouping of information disclosing by component. For each component, municipalities are divided into three groups of approximately equal size (terciles): the top third [.....], the middle third [.....], and the bottom third [.....].

Source: author's calculations

In the second stage of the research, the analysis of the municipal tangible assets DQI of the 2013–2016 periods was performed (Table 3).

Having analysed the DQI variation trends in 2013–2016, it was found out that (1) since 2013 to 2016, DQI increased in 8 municipalities (X3, X4, X5, X8, X9, X11, X12, X15); however, having made the DQI regression equation for each municipality, a stable growth trend of DQI can be distinguished in 4 municipalities (X4, X5, X12, X15, $R^2 > 0.6$); (2) 2 municipalities (X1, X2) observe a decrease in the disclosed information.

DQI analysis showed that (1) in 2013, the accounting information disclosure quality was: (i) very low (DQI 0–20) in 1 municipality; (ii) low (DQI 21–40) in 6 municipalities; (iii) the average (DQI 41-60) in 6 municipalities; (2) in 2016, the accounting information disclosure quality was: (i) very low in the 1 municipality (DQI 0–20); (ii) low (DQI 21–40) in 3 municipalities; (iii) the average (DQI 41–60) in 8 municipalities; iv) sufficient (DQI 61–80) in 3 municipalities. It means that during the reporting period the municipal DQI has increased.

Descriptive statistics of DQI are reported in Table 4. Results indicated the DQI increased during the reporting period (2013–2016).

Table 3

Disclosure quality index (DQI) of the tangible assets in the annual financial statements of the municipalities

Municipality	DQI				Regression equation	R^2
	2013	2014	2015	2016		
X1	56	56	47	18	y = -12.3x + 75	R^2 = 0.7776
X2	53	53	53	53	y = 53	R^2 = #N/A
X3	44	44	53	47	y = 1.8x + 42.5	R^2 = 0.3
X4	12	71	76	76	y = 19.7x + 9.5	R^2 = 0.6621
X5	31	44	44	50	y = 5.7x + 28	R^2 = 0.8428
X6	44	31	50	25	y = -3.8x + 47	R^2 = 0.1819
X7	29	18	18	29	y = 23.5	R^2 = 0
X8	24	56	50	50	y = 7.2x + 27	R^2 = 0.4235
X9	59	65	59	65	y = 1.2x + 59	R^2 = 0.2
X10	41	41	59	41	y = 1.8x + 41	R^2 = 0.0667
X11	35	53	53	47	y = 3.6x + 38	R^2 = 0.3
X12	38	38	38	44	y = 1.8x + 35	R^2 = 0.6
X13	n/a*	n/a	29	47		
X14	n/a	71	82	71	y = 74.667	R^2 = 0
X15	35	35	47	47	y = 4.8x + 29	R^2 = 0.8

*n/a – the financial statements are not published on the municipal website

Source: author's calculations

Municipalities of Lithuania in 2013 on average have revealed 38.54% (respectively, 48.29% in 2014, 50.53% in 2015 and 47.33% in 2016) of the information of mandatory disclosure about tangible assets. The lowest observed value of the disclosure index during this period was 12 (18 in 2014–2016, respectively) and the highest – 59. The lower quartile in 2013 has shown that 25 % of Lithuanian municipalities have disclosed less than 30% (37.25% in 2014, 44% in 2015 and 41% in 2016, respectively) of the information of mandatory disclosure. The top quartile shows that 75 % of all analysed municipalities revealed less than 48.5% (58.25% in 2014, 59% in 2015 and 53% in 2016 respectively) of the information of mandatory disclosure on tangible assets (see Table 4).

Table 4

Summary of descriptive statistics of DQI in the 2013–2016 financial statements of the municipalities

DQI	n*	Mean	Std. Deviation	Minimum	Maximum	Percentiles		
						25	50	75
DQI_{2013}	13	38.54	13.19	12	59	30	38	48.5
DQI_{2014}	14	48.29	15.35	18	71	37.25	48.5	58.25
DQI_{2015}	15	50.53	15.92	18	82	44	50	59
DQI_{2016}	15	47.33	15.78	18	76	41	47	53

* a number of municipalities that the annual financial statements had been analysed.

Source: author's calculations

The assessment of normality. The results of the Shapiro-Wilk's test have shown that the data come from a normally-distributed population (p=0.958 in 2013; p=0.851 in 2014; p=0.512 in 2015; p=0.439 in 2016; p>α=0.05). Therefore, DQI is explored with the paired samples t-test.

Paired samples t-test. Paired samples t-tests were conducted to test the research question R1- Has the quality of disclosure increased during the period analysed? The results indicated that DQI mean level increased from 38.54 (SD = 13.19) in 2013 to 47.33 (SD = 15.78) in 2016 as it is seen in Table 4. However, this difference was not statistically significant ($t_{2016\text{-}2013}(12) = 1.071$, $p = 0.305$, $p > \alpha = 0.05$) (Table 5). Results showed the mean difference between the paired samples (year compared with the previous year) is equal to zero, too ($t_{2014\text{-}2013}(12) = 1.491$, $p = 0.162$; $t_{2015\text{-}2014}(13) = 1.608$, $p = 0.132$; $t_{2016\text{-}2015}(14) = -0.950$, $p = 0.358$; $p > \alpha = 0.05$). Consequently, the conclusion of this

hypothesis test is acceptable, i.e., there is no difference between DQI in different years. Hence, the DQI did not improve over the period analysed (2013 to 2016).

Table 5

Paired samples t-test. Comparison of DQI means

The difference of DQI means		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	DQI_{2014} - DQI_{2013}	8.00	19.35	5.366	-3.69	19.69	1.491	12	0.162
Pair 2	DQI_{2015} - DQI_{2014}	3.79	8.81	2.354	-1.30	8.87	1.608	13	0.132
Pair 3	DQI_{2016} - DQI_{2015}	-3.20	13.05	3.368	-10.42	4.02	-0.950	14	0.358
Pair 4	DQI_{2016} - DQI_{2013}	7.00	23.58	6.539	-7.25	21.25	1.071	12	0.305

Source: author's calculations

Conclusions

The quality of disclosure of accounting information is understood as the compliance of accounting information with the requirements of accounting standards, ensuring transparency, completeness and comparability of information to meet the needs of information users. Based on the analysis of scientific literature, it was proposed the evaluation model of accounting information disclosure quality, that allows assessing the quality of accounting information disclosure of different elements of financial statements. The research suggests assessing the compliance of the information provided with the requirements of the standards using the disclosure quality index (DQI).

In order to carry out more extensive FRQ research in the Lithuanian public sector, first, the status of FRQ must be evaluated. In the course of this research, in accordance with the accounting information disclosure requirements by the national public sector accounting standards (more specifically PSAFRS 12), an original checklist has been structured in this research, to evaluate the accounting information disclosure quality of the tangible assets in the financial statements of the public sector entities of Lithuania. Based on this checklist, DQI was constructed to evaluate not only the change of disclosure quality of the tangible assets over different years in different entities of the public sector but also to compare each entity to each other.

The empirical research showed that the quality of disclosure of tangible assets in separate municipalities of Lithuania increased during the reporting period (2013–2016). Although the overall quality of tangible assets disclosure has improved over time (the results have indicated that DQI mean level increased from 38.54 (SD = 13.19) in 2013 to 47.33 (SD = 15.78) in 2016), however statistically insignificantly; the disclosure of certain information remains problematic. The identification of these areas may help public sector entities focus on information disclosure in the sets of financial statements.

The results of this research are shaping possible future trends in public sector accounting information disclosure research. For the additional research, it would be appropriate to extend the research period and the number of researched subjects.

Bibliography

Abdullah, M., Minhat, M. (2013) Corporate Disclosure Quality in Malaysia. *International Journal of Education and Research Paris* [Online] 1(7), p. 1-14. Available from: http://www.ijern.com/journal/July-2013/32.pdf.

Adi, Sasono; Martani, Dwi; Pamungkas, Bambang; et al. 2016. Analysis of the quality of performance report of the local government on websites: Indonesian case. *Cogent business & management* 3: UNSP 1229393.

Al Mamun, Syed Abdulla & Kamardin, Hasnah. 2014. Corporate voluntary disclosure practices of banks in Bangladesh. *Procedia Social and Behavioral Sciences* 164: 258-26.

Beattie, V., McInnes, B. & Fearnley, S. (2004) A methodology for analysing and evaluating narratives in annual reports: a comprehensive descriptive profile and metrics for disclosure quality attributes. *Accounting Forum*, 28, pp. 205–236.

Beattie, Vivien & Smith, Sarah Jane. 2012. Evaluating disclosure theory using the views of UK finance directors in the intellectual capital context, Accounting and Business Research, 42:5, 471-494, DOI: 10.1080/00014788.2012.668468

Beest, F., Braam, G. & Boelens, S. (2009) Quality of Financial Reporting: measuring qualitative characteristics. *NiCE Working Paper 09-108*, pp. 1-40.

Bertomeu, Jeremy & Magee, Robert P. 2015. Mandatory disclosure and asymmetry in financial reporting. *Journal of Accounting and Economics* 59: 284–299.

Biddle, G. C., Gilles, H., Verdi, R.S. (2009) How does financial reporting quality relate to investment efficiency? *Journal of accounting and economics*, 48, pp. 112-131.

Biddle, G., Hilary, G., 2006. Accounting quality and firm-level capital investment. The Accounting Review 81, 963–982.

Brown, Stephen & Hillegeist, Stephen A. 2007. How disclosure quality affects the level of information asymmetry. *Review of accounting studies* 12(2-3): 443-477

Daske, Holger; Hail, Luzi; Leuz, Christian; et al. 2008. Mandatory IFRS Reporting around the World: Early Evidence on the Economic Consequences. J*ournal of accounting research* 46(5): 1085-1142.

Falkman, Par & Tagesson, Torbjorn. 2008. Accrual accounting does not necessarily mean accrual accounting: Factors that counteract compliance with accounting standards in Swedish municipal accounting. *Scand. J. Mgmt* 24: 271–283

Glaum, Martin; Schmidt, Peter; Street, Donna L.; et al. 2013. Compliance with IFRS 3-and IAS 36-required disclosures across 17 European countries: company- and country-level determinants. *Accounting and business research* 43(3): 163-204.

Gomariz, Ma Fuensanta Cutillas & Ballesta, Juan Pedro Sanchez. 2014. Financial reporting quality, debt maturity and investment efficiency. *Journal of banking & finance* 40: 494-506.

Hassan, O. & Marston, C. (2010) Disclosure Measurement in the Empirical Accounting Literature: A Review Article. *Economics and Finance Working Paper Series*, pp.1-59.

Hassan, O. A. G., Romilly, P., Giorgioni, G. & Power D. (2009) The value relevance of disclosure: Evidence from the emerging capital market of Egypt. *The International Journal of Accounting,* 44, pp. 79-102.

Hassan, S., Saleh, N. & Rahman, M. (2008) Determinants of Financial Instruments Disclosure Quality among Listed Firms in Malaysia. *Social Science Research Network* [Online] pp. 1-27. Available from: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1157788

Healy, PM; Palepu, KG. 2001. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of accounting & economics* 31(1-3): 405-440

International Financial Reporting Standards *(*IFRSs). 2008. Commission Regulation (EC) No 1126/2008 of 3 November 2008 adopting certain international accounting standards in accordance with Regulation (EC) No 1606/2002 of the European Parliament and of the Council. Available from: http://eur-lex.europa.eu

Lambert, Richard; Leuz, Christian; Verrecchia, Robert E. 2007. Accounting information, disclosure, and the cost of capital. *Journal of accounting research* 45(2): 385-420.

Leung, S., Parker, L. & Courtis, J. (2015) Impression management through minimal narrative disclosure in annual reports. *British accounting review*, 47(3), pp. 275-289.

Martani, Dwi; Lestiani, Annisa. 2012. Disclosure in Local Government Financial Statements: the Case of Indonesia. *Global Review of Accounting and Finance* 3(1): 67 – 84

McNichols, M., Stubben, S., 2008. Does earnings management affect firms' investment decisions? The Accounting Review 83, 1571–1603.

Pivac, S., Vuko, T. & Cular, M (2017) Analysis of annual report disclosure quality for listed companies in transition countries. *Economic Research - Ekonomska Istraživanja*, 30(1), 721-731, Available from: doi: 10.1080/1331677X.2017.1311231.

Public Sector Accounting and Financial Reporting Standards (PSAFRSs). Available from: http://finmin.lrv.lt/lt/veiklos-sritys/apskaita-ir-atskaitomybe/viesojo-sektoriaus-subjektu-apskaita-ir-atskaitomybe/finansine-atskaitomybe/viesojo-sektoriaus-apskaitos-ir-finansines-atskaitomybes-standartai-vsafas.

Renkas, J., Goncharenk, O. & Lukianets, O. (2016) Quality of financial reporting: approaches to measuring. *International Journal of Accounting and Economics Studies* [Online] 4 (1), pp. 1-5. Available from: doi: 10.14419/ijaes.v4i1.5509.

Street, Donna L & Gray, Sidney J .2002. Factors influencing the extent of corporate compliance with International Accounting Standards: summary of a research monograph. *Journal of International Accounting, Auditing & Taxation* 11: 51–76.

THE PERSPECTIVES OF ORGANIC AGRICULTURE IN RUSSIA AND ITS CONTRIBUTION TO SUSTAINABLE DEVELOPMENT. COMPARISON WITH THE WORLD PRACTICE

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Abstract. Recent years agriculture has been considered as one of the most actively developing sector of economy in Russia but there are some niches that are not developed sofar. For example organic farming is promising to be a very perspective project that would positively contribute to sustainable development of Russian economy. The aim of our work is to study the prerequisites and preparedness of Russia to implementation of organic farming on its territory and investigate the advantages and disadvantages of transition from conventional to organic agriculture in Russia.

The first part of the research work is devoted to description and analysis of current state of agricultural companies in Russia. In addition a comparative analysis of the results of the all-Russian Agricultural Census for years 2006 and 2016 was performed that allowed to highlight most important changes and tendencies in Russian agriculture over the last decade. The fact is that Russia currently possess great reserves of long-fallow lands that are perfectly suited for organic farming, besides the development of this sector could positively influence the employment in rural areas. However according to the current statistics there are very few organic farms in Russia, usually it's considered as something exotic and its contribution to the regional gross production is negligible.

At the next stage the main laws in agriculture sector are examined, including the Federal Law about organic products (№ 280 of 3th August 2018) that will come into force in January 2020 and Interstate Standard of Organic production, production regulations, processing, labelling and implementation (GOST 33980-2016). In 2 years the standardization system will be more severe. We're trying to picture how such farming corporations, private farms and individual entrepreneurs will survive in new conditions and in order to create the full overview we analyze the nonfinancial reports of the biggest agricultural companies in Russia. We have selected four largest companies according to the magazine Agroinvestor "Leaders of Russian arable land. Top 22 agricultural holdings by land in processing". On the basis of the above standards we have made 20 evaluation criteria. We used the method of content analysis, having studied the materials of the official website of companies, articles in specialized journals and reporting of these companies.

Key words: *organic agriculture; farming, CSR; sustainable development*

JEL code: O13 Economic Development: Agriculture; Natural Resources; Energy; Environment; Other Primary Products; Q10 Agriculture: General

Introduction

According to definitions of the international federation of organic agriculture movements (IFOAM) and FAO organic agriculture is a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects.[*] So the

[*] IFOAM, Organics International, Available at: https://www.ifoam.bio/en/organic-landmarks/definition-organic-agriculture

use of artificial products, such as genetically modified organisms (GMO), chemical fertilizers, pesticides etc. is eliminated throughout the agricultural cycle and strict adherence to crop rotation is required. At one time due to the creation and distribution of chemical fertilizers and plant protection agents the system of traditional agriculture was formed, that allowed to increase yields several times, free up labor resources and reduce production costs. However, intensive agriculture in case of not competent approach leads to depletion of the soil. In addition, today the issues of the quality of traditional agricultural products have become more acute. Supporters of organic farming argue that the introduction of organic production technology not only provides healthy products, but will also contribute to the preservation of soil fertility and the ecology of the environment.

Recent years agriculture has been considered as one of the most actively developing sector of economy in Russia – its annual growth rate exceeded the growth of Russian economy in general. Last years were characterized even by historical records, for example in 2017 the greatest grain harvest was fixed (taken into account the Soviet period as well). However there are some niches that are not developed sofar. In particular organic farming is promising to be a very interesting and perspective project that would positively contribute to sustainable development of Russian economy. The aim of our work is to study the prerequisites and preparedness of Russia to implementation of organic farming on its territory and investigate the advantages and disadvantages of transition from conventional to organic agriculture in Russia. A special attention is taken to the common problems of low level of organic production of agriculture companies and their sustainable development.

The first part of the research work is devoted to description and analysis of current state of agricultural companies in Russia. We study the current statists and also perform comparative analysis of the results of the all-Russian Agricultural Census for years 2006 and 2016 for all 85 regions in Russia. Thus we can track the most important changes and highlight tendencies in Russian agriculture over the last decades. It was found that in most regions of the Russian Federation there has been a significant reduction in the number of agricultural producers, simultaneously their consolidation was recorded. But although agricultural organizations continue to play a major role, private farms and individual entrepreneurs confidently win their positions. Unfortunately there is a negative trend of decrease in the number of people working in agriculture even in villages. The fact is that Russia currently possess great reserves of long-fallow lands that are perfectly suited for organic farming, besides the development of this sector could positively influence the employment in rural areas. However according to the current statistics there are very few organic farms in Russia, usually it's considered as something exotic and its contribution to the regional gross production is negligible. But comparative analysis of other countries shows that higher level of development of organic farming brings a lot of benefits to the regional economies.

At the next stage the main laws in agriculture sector are examined, including the Federal Law about organic products (№ 280 of 3th August 2018) that will come into force in January 2020 and Interstate Standard of Organic production, production regulations, processing, labelling and implementation (GOST 33980-2016). In 2 years the standardization system will be more severe. We're trying to picture how such farming corporations, private farms and individual entrepreneurs will survive in new conditions and in order to create the full overview we analyze the nonfinancial reports of the biggest agricultural companies in Russia.

The world trends

According to forecasts, the population of the planet could increase to 9 billion people by 2050, which would instigate a huge demand for food: according to the Food and Agriculture Organization of the United Nations (FAO), it is likely that "... by 2050, humanity will have to increase food production by 1.5-2 times ..."[†]. The

[†]Organic agriculture, environment and food security. Environment and Natural Resources Series No.4. - Rome: Food and Agriculture Organization of the United Nations, 2002. {http://www.fao.org/family-farming/detail/en/c/285489/}.

issue of providing the population with food was always open and have frequently country-level. It is, thus, a key challenge to enhance food security. This requires a multifaceted global strategy at all scales, from farm to global level, including factors, such as reducing food production limits, reducing temporal yield variability, reducing food waste and changing diets.[‡] Moreover, stable food production will be a greater challenge under a changing and less predictable climate.[§]

In recent years, the organic agriculture is rapidly rising and organic products are in high demand in the market. For 10 years (from 2008 to 2017) area under organic farming land increased more than twice – from 34.5 mln. hectares to 69.8 mln. hectares. In 2017 certified agriculture practiced in 164 countries of the world where there are about 2.9 mln. manufacturers.[**]. According to data of Research Institute of Organic Agriculture (FiBL) the world organic retail sales have been constantly growing from year 2000. In 2017 the sales grew by 9,0% YoY and amounted 92.1 bln. euros (Fig. 1), compared with the level of year 2000 it increased more than 6 times. At the same time, 87.3% of retail sales of organic products in the world accounted for North America and Europe. It is noteworthy that even 10 years ago the share of Asian countries was insignificant, but by 2017, the Asian region increased its share to 10.4% (Fig. 2).

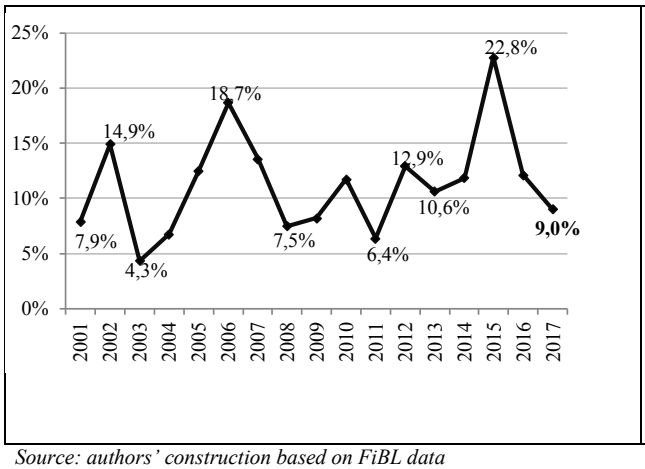
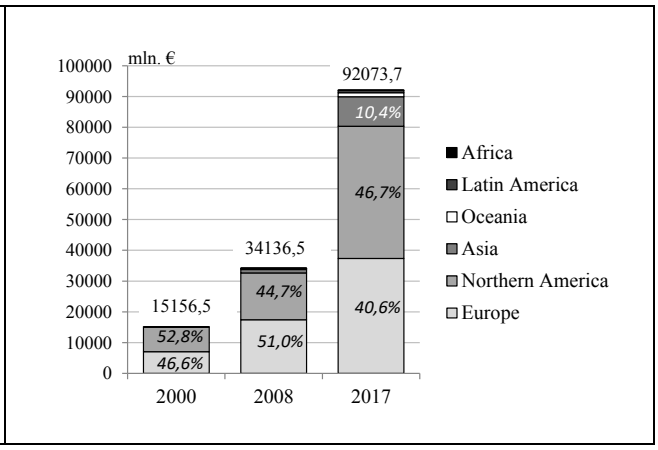


Fig. 1. **Annual growth rate (in %) of world organic retail sales**



Source: authors' construction based on FiBL data

Fig. 2. **World organic retail sales (mln. €) and its distribution by regions**

Current state of agricultural sector and organic agriculture in Russia

Last years the agricultural sector shows a great positive dynamic of its development, many years the growth rate of this sector exceeded the growth rates of the Russian economy as a whole. According to the Ministry of agriculture of Russian Federation in the period from 2007 to 2017, agricultural production at actual prices increased 2.7 times, simultaneously the average annual growth over this period was about 3.5%.

The largest contribution to the production of the agricultural sector is made by agricultural organizations, but in recent years there has been a trend - the role of private plots is gradually decreasing, and the role of farmers and agricultural organizations is growing. In 2017, 52.7% of all agricultural products were produced

[‡]Godfray, H.C.J.&Garnett,T.Food security and sustainable intensification. Philos.Trans.R. Soc.Lond.B Biol.Sci.369,20120273 (2014).
[§]Schmidhuber, J., & Tubiello, F. N. Global food security under climate change. Proc. Natl Acad. Sci. USA 104, 19703–19708 (2007).
[**]FiBL&IFOAM:The World of Organic Agriculture.Statistics&Emerging Trends2017. Frick and Bonn. available at: www.organic-world.net/ yearbook-2017.html.

by agricultural organizations, 34.6% by personal plots, 12.7% by farmers and individual entrepreneurs (Rosstat). At the same time, the private farms traditionally demonstrated the highest growth rates of production - the volume of agricultural production for this type of farms grew by 11.1% compared to 2016, while the volume of production by agricultural organizations grew by 5.2%. The volumes of products produced by private plots again fell in 2017 by 4.4%YoY.

According to the results of the all-Russian Agricultural Census of 2016, over the past 10 years in all federal districts of the Russian Federation there has been a significant reduction in the number of agricultural producers. The data of the Census fix a decrease in the number of agrarians in all categories of agricultural producers, except for personal subsidiary plots and other individual farms of citizens (Fig. 3). In particular, the number of agricultural organizations for 10 years decreased by 39.1% and amounted to 36.0 ths. in 2016. The number of farms and individual entrepreneurs decreased in 10 years by 38.7% to 174.8 ths. In particular, the number of farmers decreased almost twice (by 46.0%) to 136.7 ths. farms, but the number of individual entrepreneurs increased by 19.1% - up to 38.0 ths. Meanwhile, the number of personal subsidiary plots and other individual farms of citizens slightly increased by 3,1% to 23.5 mln. in 2016. Probably, an increase in the attractiveness of this form of organizations of agribusiness are largely associated with improved sales conditions for domestic agricultural products (due to food embargo), government support and a general crisis situation (when, in conditions of high food prices and low incomes, it sometimes becomes profitable to produce independently agricultural products for both own consumption and sale).

The reduction in the number of agricultural producers is taking place against the background of increasing concentration and enlargement of agribusiness. For 10 years, both in plant growing and in animal husbandry, the concentration of agricultural production in the hands of the largest companies has been increasing. Thus, the share of small agricultural organizations with the size of the cultivated area up to 10 hectares fell from 12.3% in 2006 to 5.0% in 2016, while the share of relatively large enterprises (with an area of crops more than 4000 hectares) increased from 11, 6% to 18.0%. It is noteworthy, in particular, that although enterprises with an area of crops more than 10,000 hectares now constitute only 4.9% of all agricultural organizations, they own 35.0% of the total sown area.

Market participants confirm the trend of consolidation of farms. For example, according to representatives of the Institute of Agrarian Marketing, the land area of large agricultural companies (which include those whose land area is more than 100 ths. hectares) has grown at least 4 times over 10 years. In 2017, BEFL presented the ranking of the largest owners of agricultural land in Russia for 2016[††]. According to their estimates, as of April 2016, the area of agricultural land owned by 43 largest agricultural companies increased by almost 16% in annual terms and amounted to 10,4 mln. hectares.

A similar situation is observed in animal husbandry. For example, the share of agricultural organizations with a cattle population of over 3000 is 4.3%, while they account for 31% of the total cattle population, the share of organizations with a livestock of pigs above 25,000 is 9.3%, while 85.6% of the whole livestock of pigs is concentrated in them. Accordingly, in general, there is a tendency of agribusiness enlargement. Thus,

[††] BEFL report 2017, Available at: http://www.befl.ru/news/detail.php?ID=954

the number of livestock of pigs per agricultural organization increased over 10 years 11 times and amounted to 10597 heads (against 956 in 2006), for farmers and individual entrepreneurs the same indicator showed an increase of 84.8% (61 in 2016 against 33 in 2006). Significant growth was also observed in the poultry industry - the average number of poultry in agricultural organizations increased almost twice (to 323188), for farmers and individual entrepreneurs - more than 6 times (from 156 in 2006 to 976 in 2016).

Russian statistics shows that regardless the high share of rural population, employment in agriculture is not high and for the last 10 years it shortened significantly. According to Rosstat data the share of rural population in Russia equals 25.5% of all citizen (37.7 mln. people in 2017). Since the 90s this share remained practically unchanged. Meanwhile the number of people employed in agricultural sector has been constantly decreasing. According to the all-Russian Agricultural Census for years 2006 and 2016 the number of employees in agricultural companies during 10 year practically twice decreased – from 2.61 mln. of people in 2006 to 1.39 mln. in 2016, the number of those who work in farms and for individual entrepreneurs decreased during the same period of time almost by one third (from 553.5 ths. to 377.43 ths. of people,Fig. 5).

On the one hand, this can be explained by the fact that agriculture has for a long time been, in principle, not a popular occupation. In this industry, the lowest wage rates are also recorded - according to Rosstat, in 2017, the average monthly wage of agricultural workers was 23,3 ths. rubles (≈300 euros) - and despite the fact that this figure grew by 10.8% compared to 2016, in absolute terms, it is much less than even the average wage for the Russian economy as a whole (in 2017, 39,2 ths. rubles). On the other hand, the decline in the labour force can also be explained by the fact that agriculture is becoming increasingly technological, the need for workers in the field is simply reduced. Today programmers, specialists who are ready to work with new equipment and systems of precision farming, GIS, etc. are more likely to be needed.

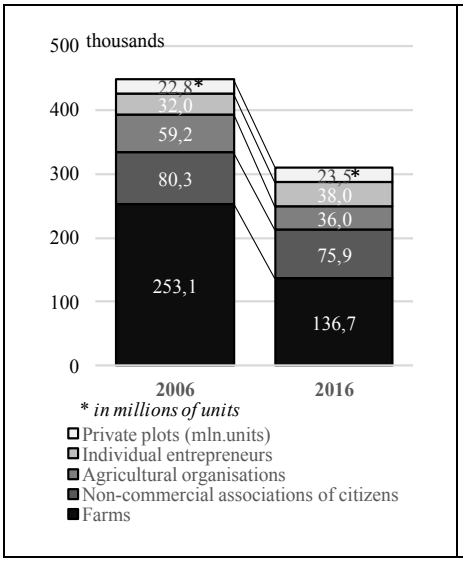


Fig. 3. **Number of entities in agricultural sphere according to Census 2006 and 2016**

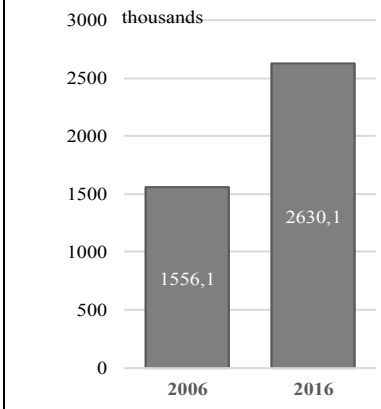


Fig. 4. **Number of personal subsidiary economies with neglected**

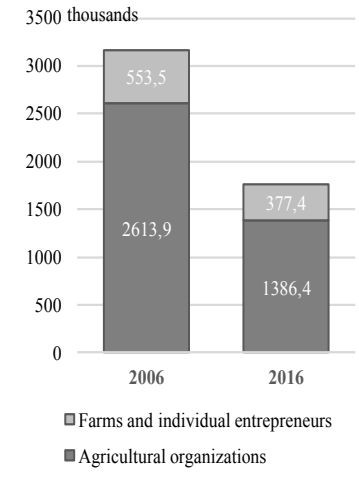


Fig. 5. **Number of employees in some basic categories of producers in agricultural sphere**

Source: authors' construction based on Rosstat data, Census 2006 and 2016

In addition, the fact of significant "aging" of agricultural workers is recorded. If in 2006 the number of permanent employees of agricultural organizations of retirement age (for men - over 60 years old, for women - over 55 years old) was about 4%, in 2016 it increased to almost 10%. As for the heads of farms and individual

entrepreneurs - here it is also noted that the share of people over 50 years old has increased by 10 p.p. over 10 years. (from 39.5% in 2006 to 48% in 2016).

Last years there appeared a negative tendency of social desertification of rural areas. It is alarming that the share of personal subsidiary plots and other individual subsidiary farms of citizens with abandoned land during 10 years increased from 6.8% in 2006 to 11.2% in 2016, in particular in rural settlements and villages the share of abandoned farms made up even 13.7% (in 2006 - 9.2%) (Fig. 4).

These aspects confirm the great potential of organic agriculture in Russia – it could solve the problem of employment of rural population and encourage their involvement in quite profitable agricultural business using traditional technologies even in our century of robots and digitalization. Simultaneously it will influence positively the ecology of the regions, preserve the environment and stimulus sustainable development and efficient use of extensive land resources.

Regardless the perfect base for the development of organic agriculture in Russia currently this niche is practically not represented. At present, Russia is very modestly represented on the world market for organic products - in 2017, Russia's share was only 0.13% of the world market. According to the data of FiBL in 2017 Russia possessed 0.67 mln. hectares of organic area – it increased twice in comparison with 2016 and 9,3 times during 10 years (from 2007). By this indicator Russia is in the top-15 countries with the largest organic area in the world. However the organic area share of total farmland is only 0,3%, which is one of the lowest level in the world practice. At the same time, in Russia in 2017, only 89 official producers of organic products were registered. Of course one can see a positive dynamic here as well since in 2007 for example there were just 12 registered organic producers, so during ten years the number has increased more than 7 times, however for the country with such land resources this speed of organic farming implementation is not enough. For comparison, in India the number of producers of organic agricultural products is 835.0 ths. units, in Mexico - 210.0 ths., in Turkey - 75.1 ths., in Italy - 66.8 ths., in Germany - 29, 8 ths., in the USA - 14,2 ths.; even many countries of the near abroad are distinguished by a greater number of producers: Latvia (4178), Lithuania (2478), Georgia (1075), Kyrgyzstan (1097), Azerbaijan (305), Ukraine (304).

Benefits of developing organic farming

Despite the cost and weight of possible inconveniences in the development of organic agriculture, the potential benefit is quite significant. As for the domestic market, no doubt one can hardly expect that organic products will become a mass segment and there will be increased domestic demand for it, however, according to estimates of the Union of organic farming, now in Russia more than 90% of the organic products are imported[‡‡]. Thus, it turns out that even within the country, this small luxury niche is now occupied mainly by non-domestic products. With a successful entry into the markets of other countries, the profitability of the business is high. In general, in world practice organic farming is considered as a high-margin business. So far, the global market for organic products is growing and there is no reason for a decline in global demand. Moreover, according to the Union of Organic Farming, Western companies show a high demand for certified products from Russia, and they are satisfied, according to their estimates, by only 5% with the existing state

[‡‡] Union of agricultural farming in Russia, reports available at https://soz.bio/

of affairs. European countries also import a lot of organic products, since the cultivation opportunities due to not so extensive land resources are limited. Especially European consumers demand organic wheat, corn, spelled, seeds and sunflower cake, flax, barley, rye.

Without a doubt, Russia has an ideal base for the development of organic agriculture in terms of land resources. Firstly, in Russia there are many unused lands suitable for agriculture, which are ideally suited for the launch of organic production. The fact is that, as a rule, in order to start organic production, it takes 3-5 years for the soil to "have a rest" if it was previously treated with chemical fertilizers, i.e. usually it is impossible to start organic farming immediately. Meanwhile, in the Russian Federation an estimated 30–40 million hectares of arable land that was not cultivated for the last years, which makes it possible to start production immediately. Secondly, it would be useful to launch organic agriculture in areas where agricultural activity is already underway, thereby possibly locally slowing down the process of arable land disposal: now many farmers are faced with the fact that with intensive use of land, non-application of natural fertilizers and non-compliance crop rotation, the soil is very depleted and no longer yields in 5-10 years. Large farms as a rule can afford to move to another field, but for representatives of small and medium-sized businesses this is difficult. In addition, this approach is already problematic in many of the leading agricultural regions of Russia, where almost all plots of land are distributed (like Krasnodarskyi krai). Finally, the development of organic agriculture will have a positive impact on the development of rural areas and will contribute to the growth of rural employment.

Impediments to development of organic agriculture in Russia

In a message to the Federal Assembly, president of Russian federation V. Putin ordered the government to make a roadmap for the creation of Russian protected brands of environmentally friendly agricultural products by July 1, 2019. The topic of development of this industry has been discussed for a long time, but only in 2018 the federal law on organic products was approved, and but again it would come into force only from January 1, 2020, until this time the industry is granted a transition period. However, even a partial transition to this system will be rather difficult due to the fact that the relevant institutions in Russia are practically underdeveloped.

Despite a good base and a great potential for the development of this area in Russia, there are currently many obstacles and limitations. Firstly, in general, institutions are not developed, the legislative base and the domestic certification system are not particularly developed, there are no educational programs, special laboratories, etc. Until recently, there was even no clear definition of organic products or labeling standards. In general, there is also no data collection system, even for foreign trade in the customs nomenclature codes of foreign economic activity there are no separate articles for organic products, which complicates the analysis of export-import volumes.

Secondly, from the point of view of business, the cost of organic production is very high. In organic farming, due to the greater use of manual labor, the wage item increases; the certification is a rather expensive procedure - according to different estimates of market participants, it costs the manufacturer 200-500 ths. rubles (about

2,5-7 ths. euros) in year. Besides organic products, as a rule, are characterized by shorter storage periods, which increases logistics costs.

Thirdly, against the background of higher production costs, many manufacturers do not want to engage in organic agriculture because of problems with the further realization of such products. At the moment, the domestic market is limited - these products are usually classified as "premium", the prices for such products are often many times higher than those of traditional agriculture. Given the low level of solvency of the population there are unlikely to be improvements. According to the Union of Organic Farming, more than 70% of organic products are sold in Moscow and St. Petersburg, and it is clear that sales in the regions will be complicated.

So far, the most obvious potential source of income for this area of agribusiness could be access to foreign markets. Developing countries with a large number of organic producers mainly focus on this. However, the Russian domestic certification system is often not particularly compatible with the certification systems of other countries, which undoubtedly makes it difficult to export such products. Market participants also talk about quite absurd situations when farmers certified according to international standards are not recognized as such in the Russian Federation. As a result, businesses need to obtain several certifications, which is quite expensive. In addition, currently there are no separate system measures to support the promotion of exports of Russian organic products.

Thus, in the conditions of high cost of organic production and unguaranteed sales of products both domestically and externally, adding the general problems of financing farmers, this trend risks remaining only a narrow niche. For the development of this area, strong state support is needed, for example, in compensation of costs for certification, preferential loans, etc. In such a case, a reduction in the cost of production would also contribute to a fall in domestic prices and, accordingly, an improvement in domestic demand for organic products.

Europe and Russia: the time lag in the legislation of organic agriculture

The adoption of agricultural regulation (EC) № 2092/91[§§] on organic farming and the corresponding labelling of agricultural and food products in 1991 by the European Council of Ministers was a major breakthrough in the development of organic production. Since the introduction of these rules, organic agriculture has been officially recognized as part of the reform of the common agricultural policy of the European Council (Common Agricultural Policy). This made it possible to recognize the production criteria and quality management systems of third countries as equivalent to European ones and to organize the import of organic products. The regulation establishes common standards for the whole of the European Union, which contributes to the trust of consumers, for whom conditions have been created for the purchase of environmentally friendly products produced by official standards from other member States of the European Union. At the same time, the EU countries are allowed to adopt standards of organic production of their country,

[§§] Council regulation (EEC) No 2092/91 of 24/06/1991,On organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs, available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1991R2092:20060506:EN:PDF

additional and more stringent. EU regulation No. 834/2007[***] (paragraph 1) for organic production defines: "Organic production is an overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes. The organic production method thus plays a dual societal role, where it on the one hand provides for a specific market responding to a consumer demand for organic products, and on the other hand delivers public goods contributing to the protection of the environment and animal welfare, as well as to rural development." According to the definition, the USA, Canada, Japan, Australia and other developed countries have common legislative approaches to organic agriculture.

In Russia, before the adoption of the Federal law "Organic products and amendments to certain legislative acts of the Russian Federation" № 280-FZ dated 03.08.2018[†††], there was no uniform terminology in the field of organic agriculture. The law also provides for the need to confirm the production of organic products and the need to establish a unified state register of organic producers. The law should come into force on the 1th January 2020. Some regions have already taken the initiative in the field of «green farming» in 2013- 2014. For example Voronezh region (№226-OL "On the production of organic agricultural products in the Voronezh region"), Krasnodar region (№2826-KL "On the production of organic agricultural products in the Krasnodar region") and Ulyanovsk region (№106-LO "On measures of state support for producers of organic products in the Ulyanovsk region")[‡‡‡]; where the interests of private enterprise in the field of "green farms", as well as methods of regulation of these enterprises were considered.

An important standard is the interstate standard in the field organic production, production regulations, processing, labelling and implementation (CAC/GL 32-1999, NEQ). This standard is developed taking into account the main regulations of the International standard of the Codex Alimentarius SAS/GL 32-1999 "the Manual on production, processing, marking and realization of organic food" ("the manual on production, processing, marking and sale of organic products", adopted in 1999. Changes in 2001, 2003, 2004 and 2007. Amendments 2008, 2009, 2010, 2012, NEQ). The standard is the first part of a set of interrelated standards developed in accordance with CAC/GL 32-1999 and relates to organic products. This standard contains 14 sections that cover the entire cycle from production to delivery of the goods to the consumer. Sections of the standard can be systematized: Scope (1), Terms and definitions (2), General provisions (3), including both technical requirements and General rules of organic production. Section 4 contains information on the timing and procedure for the transition to organic production, the entire standard is systematized further in 4 blocks: crop, livestock, beekeeping and aquaculture. Section 5 contains the rules of organic crop production and contains the rules of production, requirements for land use and fertilization, separately disclosed requirements

[***]Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation(EEC)No2092/91,available at:https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32007R0834&from=EN

[†††] Federal law "Organic products and amendments to certain legislative acts of the Russian Federation" № 280-FZ dated 03.08.2018, available at: http://www.consultant.ru/document/cons_doc_LAW_304017/

[‡‡‡] Voronezh Law «On the production of organic agricultural products in the Voronezh region" № 226-OL from 30.12.2014, available at: http://docs.cntd.ru/document/423907952; Uljanovsk Law «On measures of state support for producers of organic products in the Ulyanovsk region» № 106-LO from 05.07.2013, available at: http://docs.cntd.ru/document/463702462; Krasnodar Law On the production of organic agricultural products in the Krasnodar region» № 2826-KL from 1.11.2013, available at: https://rg.ru/2013/11/07/krasnodar-zakon2826-reg-dok.html

for growing mushrooms. Section 6 is devoted to organic farming and formulates requirements for animals origin, and formulates the requirements for the origin of animals, the use of animals that do not meet the requirements for organic production, the General rules for the placement and maintenance of animals, special rules for their maintenance, as well as special rules for the maintenance of poultry, conditions for access of animals to free-range areas, restrictions on the placement of animals, rules for keeping animals in parallel production, rules for the treatment of animals, conditions for their breeding, requirements for feed and prevention of diseases and their treatment. Section 7 deals with similar issues in the field of beekeeping, and section 8 in the field of aquaculture. Section 9 describes the requirements for the production of organic food and feed, section 10 is devoted to the rules of collection, packaging, transportation and storage, separate sections are allocated for labeling issues (11), confirmation of compliance with the organic manufacturer (12), the requirement for imported goods claiming "organic status", and section 14 tells us about the exceptions to the rules.[§§§]

The Annex to the standard contains a detailed list of permitted and prohibited fertilizers, plant protection products and agrochemicals, requirements for minimum areas for animal accommodation, feed raw materials and additives permitted for use, substances for cleaning and disinfection, food additives for use in the production of organic food products. A significant list of indicators that require management-product quality and relevant reporting information. For further research, we have selected four largest companies according to the magazine Agroinvestor "Leaders of Russian arable land. Top 22 agricultural holdings by land in processing". On the basis of the above standards we have made 20 evaluation criteria. We used the method of content analysis, having studied the materials of the official website of companies, articles in specialized journals and reporting of these companies. The aim was to see the degree of readiness of the largest Russian companies to declare themselves as organic producers. Each criterion was evaluated on a scale from 0 to 4[****]: 0 points-the specified indicator is not presented in the report; 1 point-the report contains too generalized (or abbreviated) reflection of the indicator, without specific information about the approaches of the reporting enterprise; 2 points-the report contains more valuable data that characterize indicator, however, there are significant gaps in its coverage; 3 points-the information is clear and shows that the company has developed the necessary systems and processes to collect data on the assessed indicator, built graphs of past impacts on the basis of already available information "and tries to present it in a consistent way" (meaning graphically); 4 points — the coverage of the indicator can be described as "complete", meeting the GRI guidelines and reflecting the company's policy, procedures / programmes and monitoring results (including schedules past effect) and trends of future changes.

As a result none of the analyzed companies scored 80 points, one of the companies has no information about quality control and any programs and activities related to the sustainable development of the company.

[§§§] Standard in the field organic production, production regulations, processing, labelling and implementation (CAC/GL 32-1999, NEQ), available at: http://docs.cntd.ru/document/1200141713

[****] Cappuyns V., Vandenbulcke Ch., Ceulemans K. 2015. Economic and Environmental Performance Indicators in Belgian GRI Reports. Environmental Management and Sustainable Development (Macrothink InstituteTM) 4 (1): 206–227
Kalabikhina I. E., Krikunov A. S. A New Method of Assessing the Quality of NonFinancial Reporting (on the Example of Energy Companies). Vestnik of Saint Petersburg University. Management, 2018, vol. 17, issue 3, pp. 297–328. https://doi.org/10.21638/11701/spbu08.2018.303 (In Russian)

None of the companies describes the transition plan for starting organic production, at least partially. Two companies pay attention to social responsibility and sustainable development, but none of them publish relevant reports. The standard on organic products contains requirements for each stage: production, labeling, transportation. Such complete information could not be found in any company. A significant part of the standard is devoted to standards for the maintenance, transportation and slaughter of animals. It is worth noting that no company discloses such information. On the basis of this, it can be concluded that both small and large companies of the agro-industrial complex will have to work on the formation of transparent and accessible to stakeholders data on all stages of production and bringing to the consumer their products, if companies consider it appropriate and cost-effective to obtain the status of "producer of organic products".

Conclusions, proposals, recommendations

Compared to conventional agriculture, organic agriculture generally has a positive effect on a range of environmental factors, including above and belowground biodiversity, soil carbon stocks and soil quality. Moreover, organic farming can reduce soil erosion and has a reduced global warming potential. However, higher productivity and increased relative stability in conventional agriculture are strengths compared to organic agriculture. Thus, in order to benefit from the strengths of organic farming (e.g., reduced environmental impact and enhanced biodiversity) a multifaceted strategy is necessary to improve its yield and relative yield stability. Such a strategy should focus on enhanced plant nutrition, breeding, weed and disease control, and consider the use of state of the art technologies including precision farming, remote sensing (e.g., through drones or satellites) to detect disease or nutrient deficiency, and robotics (e.g., for weed control). Moreover, measures such as the inclusion of cover crops or active stimulation of soil life through soil ecological engineering are especially promising for lower intensity systems such as organic agriculture, and this can further help to reduce the yield gap and the yield stability gap between organic and conventional systems. Further studies also need to assess how environmental stresses, such as drought or the negative effects of climate change, influence yield stability in organic and conventional production systems. Finally, when comparing organic and conventional agriculture, it is important to provide an ‘output and input footprint’ and assess the overall impact of organic and conventional farming practices, including yield, yield stability, energy use, pesticide use, fertiliser use, and overall environmental performance.

Bibliography

BEFL report 2017, available at: http://www.befl.ru/news/detail.php?ID=954

Cappuyns V., Vandenbulcke Ch., Ceulemans K. 2015. Economic and Environmental Performance Indicators in Belgian GRI Reports. Environmental Management and Sustainable Development (Macrothink InstituteTM) 4 (1): 206–227

Council regulation (EEC) No 2092/91 of 24 June 1991, On organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs, available at: https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1991R2092:20060506:EN:PDF

Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91, Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32007R0834&from=EN

Federal law "Organic products and amendments to certain legislative acts of the Russian Federation" № 280-FZ dated 03.08.2018, Available at: http://www.consultant.ru/document/cons_doc_LAW_304017/

FiBL & IFOAM: The World of Organic Agriculture. Statistics & Emerging Trends 2017. Frick and Bonn. Available at: http://www.organic-world.net/ yearbook-2017.html

Foley, J. A. et al. Solutions for a cultivated planet. Nature 478, 337–342 (2011)

Godfray, H. C. J. et al. Food security: the challenge of feeding 9 billion people. Science 327, 812–818 (2010).

Godfray, H. C. J. & Garnett, T. Food security and sustainable intensification. Philos. Trans. R. Soc. Lond. B Biol. Sci. 369, 20120273 (2014)

IFOAM, Organics International, available at: https://www.ifoam.bio/en/organic-landmarks/definition-organic-agriculture

Kalabikhina I. E., Krikunov A. S. A New Method of Assessing the Quality of NonFinancial Reporting (on the Example of Energy Companies). Vestnik of Saint Petersburg University. Management, 2018, vol. 17, issue 3, pp. 297–328. https://doi.org/10.21638/11701/spbu08.2018.303 (In Russian)

Krasnodar Law On the production of organic agricultural products in the Krasnodar region» № 2826-KL from 1.11.2013, Available at: https://rg.ru/2013/11/07/krasnodar-zakon2826-reg-dok.html

Organic agriculture, environment and food security. Environment and Natural Resources Series No.4. - Rome: Food and Agriculture Organization of the United Nations, 2002. {http://www.fao.org/family-farming/detail/en/c/285489/}

Rosstat data, All-Russian Agricultural Census of years 2006 and 2016, available at http://www.gks.ru/free_doc/new_site/inspection/vsxp/itog_vshp.htm

Schmidhuber, J., & Tubiello, F. N. Global food security under climate change. Proc. Natl Acad. Sci. USA 104, 19703–19708 (2007)

Standard in the field organic production, production regulations, processing, labelling and implementation (CAC/GL 32-1999, NEQ), Available at: http://docs.cntd.ru/document/1200141713

Tilman, D., Balzer, C., Hill, J. & Befort, B. L. Global food demand and the sustainable intensification of agriculture. Proc. Natl Acad. Sci. USA 108, 20260–20264 (2011)

Uljanovsk Law «On measures of state support for producers of organic products in the Ulyanovsk region» № 106-LO from 05.07.2013, available at: http://docs.cntd.ru/document/463702462

Union of agricultural farming in Russia, reports available at https://soz.bio/

Voronezh Law «On the production of organic agricultural products in the Voronezh region" № 226-OL from 30.12.2014, available at: http://docs.cntd.ru/document/423907952

THE PRINCIPAL-AGENT PROBLEM WITHIN SUSTAINABLE INVESTING

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Abstract. Recent studies show the positive impact of sustainability factors within the investment process. Mostly these studies concentrate on performance effects while disregarding existing agency problems. In this paper we deal with the principal-agent problem within sustainable investing, as corporate executives (agents) try to maximize their personal utility at the cost of investors (principals). We examine how *adverse selection* and *moral hazard* can be mitigated by signalling and monitoring mechanisms and how effective these are. The results indicate that sustainability reportings and ESG ratings can visualize company's sustainability efforts and reduce *ex ante* information asymmetries. However, we find evidence that reports and ratings are not standardized and not easily accessible. To reduce *ex post* asymmetries, we propose specific incentive-type contracts for corporate executives to participate in a sustainable development, albeit lacking standardized performance measures.

Key words: *Theories of the Firm, Sustainable Finance, Principal-Agent Problem*

JEL code: G1

1. Introduction

Over the last decade, the interest in Sustainable Investing – also known as Socially Responsible Investing (SRI) – has grown steadily.

> *"Sustainable and Responsible Investment ("SRI") is a long-term oriented investment approach, which integrates Environmental, Social and Governance factors [ESG] in the research, analysis, and selection process of securities within an investment portfolio. It combines fundamental analysis and engagement with an evaluation of ESG factors in order to better capture long term returns for investors, and to benefit society by influencing the behaviours of companies."* (Eurosif, 2016, p. 9)

The market of SRI is constantly increasing with reported $22.89 trillion of assets at the end of 2016, which were globally managed under socially responsible investment strategies. This equals 26 percent of all professionally managed assets worldwide. Hereof the US, Canada and Europe are the most important markets with $12.04 trillion directly apportioned to Europe by the end of 2016 (GSIA, 2017). Many surveys show the importance of SRI in practice. More than three quarters of the investors highlighted that SRI is more important now than three years ago. This development is mostly driven by concentrating on ethical values within the investment process, pressure for institutional investors from stakeholders to meet ethical obligations and strong positive returns (CAIA, 2017).

The perspective of having a positive impact on society and environment is an important aspect of nowadays investing. The outdated view on companies as solely profit maximizing entities (S*hareholder Theory)* shifted towards companies with various tasks and stakeholders *(Stakeholder Theory)*, including Corporate Sustainability and Corporate Social Responsibility (Soppe, 2004). Since the 1970s many studies have been conducted dealing with sustainable corporations, sustainable investing and corporate financial performance. Several of these analyse the impact of sustainability on firm's financial performance, finding overall a positive correlation (Simpson & Kohers, 2002; Cheung, 2011; Flammer, 2013). In a recent meta-analysis by Friede, Busch, and Bassen (2015), they report a majority of studies with a positive correlation

between ESG factors and corporate financial performance. A study of European SRI funds by Cortez, Silva, and Areal (2009) reveals that SRI funds compared to regular funds bear no losses, emphasizing that performing well by doing good is possible.

Multiple attempts have been made to reduce the agency conflict between corporate executives (agents) and investors (principals). On the one hand signalling in form of ratings, on the other hand more advanced monitoring options with the help of financial service providers. However, the Principal-Agent Problem (P- A Problem) still persists, associated with increasing agency costs. The paper answers the question which information asymmetries exist within the concept of sustainable investing and provides useful mechanisms to overcome this Principal-Agent Problem. In order to answer the proposed research question, relevant literature is reviewed in both the field of *Theories of the Firm* research and *Sustainable Investing* in the second section. Section 3 introduces the investment decision making and information process. Section 4 analysesthe information asymmetries within the Principal-Agent Problem and describes attempts to overcome agency costs and the information asymmetries between sustainably oriented investors and company managers. Also, the papers show certain limitations associated with the proposed mechanisms. Finally, section 5 concludes the paper at hand.

2. Related Research

Theory of the Firm. Before the 1930s internal processes of firms have been disregarded, seeing the firm as a black box. Focus was set on markets and the firm was seen as an entity with profit maximization as its ultimate target. According to the *Neo-Classical Theory of the Firm* (NCT) the processes inside of the firm are not relevant, solely input and output are of concern (Foss, 1998). Underlying assumptions include rational market participants, perfect markets and the absence of information asymmetry. The neo-classical economic theory originally was grounded by Veblen's work *The Theory of the Leisure Class* in 1899. However, the firm as a black box and the underlying assumptions do not hold true in real world, seeing firms as complex entities, engaging in various fields and comprising of different subunits. With regard to these weaknesses several other *Theories of the Firm* emerged. The ground-breaking is the work on *The Nature of the Firm* by Coase (1937). By introducing the *Transaction Cost Theory*, he answers the question why firms exist. According to Coase (1937) the production of goods by firms as organizations is less cost intensive than coordinating production through market exchange. In a market setting with perfect information and costless contracting firms would therfore not exist (Coase, 1937).

Other significant contributions within this field are among others *The Evolutionary Theory* (Nelson & Winter, 2004), *The Resource-Based View* (Penrose, 1959; Wernerfelt, 1984), *The Knowledge-Based Theory* (Grant, 1996; Kogut & Zander, 1992), *The Contract-Based Theory* (Ross, 1973) and *The Behavioral Theory of the Firm* (Cyert & March, 1992). In this paper we concentrate on the *Agency Theory* and the underlying Principle-Agent Problem (Jensen & Meckling, 1976; Ross, 1973).

Principal-Agent Problem. *Agency theory* covers conflicts of interests arising from delegating contracts between two parties, where asymmetric information is present. One party – the principal – is delegating the task to the other party – the agent –, who gets compensated for acting in the interest of the principal (Jensen & Meckling, 1976). The Principal-Agent Problem emerges, when the interests of both parties are not aligned and the agent does not act in favour of the principal, but rather tries to increase his personal utility (profit maximization). Thereof the principal suffers a loss on his own benefit. *Agency Theory* aims at optimal contracts between two parties where agency costs and information asymmetries are minimized and the utility of both parties is maximized (Jensen & Meckling, 1976; Ross, 1973).

In his often-cited paper *The Market of Lemons*, Akerlof (1970) describes the risk of *adverse selection* as a consequence of *hidden characteristics*. Akerlof uses the example of the used car market where buyers cannot differentiate high-quality

cars, so called "peaches", from low-quality cars, so called "lemons". The quality uncertainty of products before a contract (*ex ante*) leads to a situation where customers will not pay adequate prices for high-quality products. As a consequence, high-quality products are forced out of the market and market fails to allocate resources efficiently, i.e. market failure (Akerlof, 1970). Later this concept was transferred to the insurance market. Insurance companies do not have all the information about possible customers which may lead to insufficient insurance contracts and coverage. To overcome these information asymmetries, agents signal information, e.g. in form of a track record of diseases and principals can screen the customers, e.g. with the help of questionnaires (Spence & Zeckhauser, 1971).

After signing the contract (*ex post*) two types of information symmetries may occur: *hidden information* and *hidden action* (Arrow, 1985). On the one hand, *hidden information* describes the situation where the principal can observe the agent's action, but cannot assess the quality of the behaviour due to a lack of specialized knowledge. An example is the examination of client's creditworthiness by banks. On the other hand, *hidden action* describes a post-contract behaviour where the principal cannot fully observe the agent's actions and hence may suffer a loss in utility. As a consequence of situations where market participants do not have to bear the whole risk of their actions *moral hazard* may arise. The term originally emerged within the insurance industry and describes the tendency of individuals to be more risk-seeking in their behaviour after signing a insurance contract, because the insurance company covers the additional cost of risk (Milgrom & Roberts, 1992).

Corporate Sustainability and Sustainable Investing. As described, in the early days firms were seen as black boxes, only looking at input, output and most importantly at profit maximization. In 1970, Milton Friedman wrote an article for *The New York Times Magazine* and stated that firms have minimal ethical obligations and cannot – in contrast to individuals – have responsibilities (Friedman, 2007). The only responsible individuals within a firm are corporate executives who, according to the *Shareholder Theory*, act as employees of the shareholders. The overall objective is to make profits while following the laws and ethics of society (Friedman & Friedman, 1982). In contrast to the *Shareholder Theory* Freeman (1984) introduced the *Stakeholder Theory*, defining the firm as an entity which serves both internal and external stakeholders. These stakeholders include employees, shareholders, managers, suppliers, political institutions as well as customers (Freeman, 1984). Within this theory, besides acting profit oriented, corporate managers have ethical duties and engage in actions that help directly the society and the environment (Freeman, 2010). These include concepts like Corporate Social Responsibility and Corporate Sustainability, which help firms to distinguish themselves within their industry (Drumwright, 1994; Soppe, 2004). Several authors analysed the impact of socially responsible behaviour on the financial performance of firms. Griffin and Mahon (1997) and Simpson and Kohers (2002) review numerous studies and exhibit contradictory results with some authors indicating a positive relationship between corporate sustainability and financial performance and vice versa. Flammer (2013) tests the effect of announcements of eco-friendly corporate initiatives and eco-harmful events on the shareholder value. The author discovers a positive respectively negative impact of these events and that environmental factors matter (Flammer, 2013). Cheung (2011) analyses stock price reactions, also the impact by risk and liquidity on inclusions and exclusions from the Dow Jones Sustainability World Index. The author states that there is no reaction on the announcement date but a temporary one on the actual day of exchange (Cheung, 2011). Analogue to Cheung, Lackmann, Ernstberger, and Stich (2012) set up an event study and examine market's reaction to events that increase the reliability of sustainable information about companies. Firstly, the authors measure a positive stock price reaction for a short window around the addition to a sustainability index. Secondly, a higher investment risk of a company is positively correlated to the reaction. Thirdly, higher volatility or crisis situations reinforce the impact of reliability of sustainability information.

As stated in the introduction, the concept of sustainable investing is not new, however gaining tremendous attention in recent years. Many empirical studies aim to examine whether it is possible to perform well by also having a positive

impact on society, environment and the governance of firms, respectively. Due to voting rights and the direct influence on management, equity vehicles are a well suitable asset class for SRI investments. Therefore, we concentrate in this paper predominantly on stocks and consequently the relationship between investors and corporate executives.

3. Investment Decision Making and Information Processing

On capital markets information on investment opportunities is a precious resource. As investors acquire shares of companies they want to gain profits in the future. The current market value of the shares reflects the aggregated expectations of the market participants (Bodie, Kane, & Marcus, 2008). These expectations on future companies' earnings are influenced by new information on the market, whereby a greater amount of information leads to a more precise forecast and to a more efficient allocation of money. Correspondingly, market values of financial investments better reflect the fair value (Beaver, 1968).

Before an investment in financial assets possible investors need to decide in which asset they want to invest. The decision-making process contains three major steps: *investment target and need*, *information process* and *selection of alternatives*. The investment target and need are the starting point of the process. Whereas according to the NCT, utility maximization is prioritized, recent studies consider individual objectives like sustainability factors. Investors are influenced not only by rational objectives but also by personal factors, e.g. sociodemographic environment and situational factors, e.g. the complexity of the decision. Besides the investment target and the need as a trigger for the whole decision-making process, the major component is the information process. It starts with the reception of information by chance or by searching actively. Because of the increasing amount of data and the complexity of the investment target, investors might react selectively on new information. Consequently, investors tend to disregard some information and rely on well-known patterns. Besides external information like fundamental data, internal information like past experience influence the decision-making process. Individuals process this information internally where newly perceived news are connected with affiliated information to reduce the complexity of the decision. In the last step of the decision-making process, the investor selects an asset based on the changed expectations about the investment possibilities.

As discussed, information processing and the investment decision making process differ with regard to the applied economic theories and models. In NCT a firm is a profit oriented black box with unknown future earnings. It assumes perfect and complete capital markets with neither transaction costs nor taxes. Every market participant has every information available and acts rationally with homogeneous expectations. It is therefore impossible to profit from an arbitrage strategy (Grossman & Stiglitz, 1980). Fama (1970) provides a theoretical concept for information processing on complete and perfect markets: the *Efficient Market Hypothesis*. The primary role of capital markets is the adequate allocation of capital and ownership. In the optimal state "security prices always 'fully reflect' all available information" (Fama, 1970, p. 383) and the market "adjusts rapidly to new information" (Fama, Fisher, Jensen, & Roll, 1969, p. 1). Consequently, information is reflected immediately in the financial markets and hence investors cannot achieve abnormal returns. Fama (1970) differentiates between weak, semi-strong and strong form of information efficiency. Assuming the weak form, security prices only reflect historic information. On the basis of the assumption of semi-efficient markets, all publicly available information is processed immediately by all investors. Furthermore, the strong form covers all information, including non-public information (Fama, 1970; 1991). The validity of the efficient market hypothesis was tested widely, whereby the semi-efficient form is accepted (Fama, 1991). On the one hand, authors argue in favour of the semi- efficient form that even professional investors cannot beat the market. On the other hand, the assumptions of the NCT do not hold true in real world. Market participants have heterogeneous expectations and often do not act rationally (Merton, 1987). Most importantly, transaction costs are not zero. In comparison to retail, institutional investors have access to

financial data service providers with more specific data. Also, different types of news are noticed faster than others. Barber and Odean (2008) confirm the hypothesis of irrational individual investors as buyers of attention-grabbing stocks, e.g. stocks of companies with spectacular news. Concluding, we assume that markets are not fully efficient and imperfect. As previously discussed, investors may have different expectations on assets, also influencing the Principal-Agent Relationship between the investor and the corporate executives.

4. Resolving the Agency Problem within Sustainable Investing

4.1 Information Asymmetries within Sustainable Investing

Within the investment process of Sustainable Investing various Principal-Agent relationships exist. On the one hand, investors do not want to deal with investment decisions and therefore delegate their portfolio to investment managers. Principal-Agent problems in delegated portfolio management are studied by Bhattacharya and Pfleiderer (1985). In this case information asymmetries between the investor (principal) and portfolio manager (agent) arise after contracting. On the other hand, direct investments by the individual or institution take place. Often used vehicles are actively managed Sustainable Investment Fund or passive managed Exchange Traded Funds which lead to no direct P-A relationship between the investor and the corporate manager. In this case the investor is not the principal of the corporate executive. As stated in section 2, we will focus on the relationship between investors as shareholders (principals), either individual or institutional and corporate executives (agents). According to Boatright (1996) and Machlup (1967) *Agency Theory* is linked to NTC with firms seen as black boxes which overall seek to maximize profits. Nevertheless, derived from *Stakeholder Theory* and the existing information asymmetries, we apply the P-A model within the field of Sustainable Finance, adding a new dimension of sustainability to the existing model. Corporate Sustainability engagement initially leads to higher transaction costs, reducing the firm's profit and therefore need incentive systems to be initially developed (Lorne & Dilling, 2012). It is however important to mention that sustainable investing can also imply the exclusion of certain industries from the investment horizon, which is not considered at that point (Eurosif, 2016).

The sustainably oriented investor, respectively, shareholder as the principal and the corporate executive as the agent have different levels of information on the contract, i.e. the participation in equity. The investor who seeks positive returns and at the same time a positive impact on Environment, Society and Governance (ESG) has less information on the inside and actions of the company than the executive. These asymmetries differ with regard to the observed point of time: *ex ante* and *ex post*.

Ex ante. Before the investor buys shares he has no comprehensive information on the targeted company, especially regarding corporate sustainability aspects. Certain sustainability ratings and indices, which will be later discussed extensively, provide hints, yet no thorough view on the company and its executives (*hidden characteristics*). It remains unclear if corporate executives tend to change their strategy and no longer consider socially responsible aspects, even if the suggested ratings were true in the first place. Therefore, shares of sustainable companies might be overlooked due to insufficient information, resulting in the problem of *adverse selection*. Assuming the higher value of sustainably oriented companies the high-quality share is devalued or even pushed out of the market.

Ex post. After the SRI investor bought the shares he is the owner of the company and controls the corporate executive, depending on the legislation of the country, via the supervisory board. According to Arrow (1985), *hidden information* and *hidden action* may occur. On one side, the shareholder can see the actions of corporate executives, yet unable to assess these correctly. On the other side, corporate executives act secretly and not all actions can be supervised by the shareholders.

This dilemma leads to *moral hazard* where corporate executives as agents tend to realize riskier projects to increase the investment returns, disregarding ESG considerations.

As seen above, there exist tensions between ownership and governance (Jensen & Meckling, 1976). In the literature, different authors within the field of *Corporate Governance* analyse the behaviour of corporate executives which try to exploit information asymmetries to increase their personal utility. The phenomenon *empire building* describes the situation where managers think about expanding their own area of power instead efficiently allocating resources. Another problem in the agency relationship is *short-termism*, i.e. the focus of executives on short-term success, which is often caused by suboptimal compensation incentives. Corporate executives tend to target short-term returns instead of future investments. According to Roll (1986) corporate executives overestimate themselves and the upcoming revenue growth (*hybris*). This results in overinvestment and increase of leverage.

4.2 Mechanisms to resolve the Principal-Agent Problem

As described in the previous subsection complete information does not exist within the agency problem. Therefore the first best solution – the case of symmetrical information – never can be achieved. Hence, the objective is to get the second-best solution. Corporate executives intend to maximise their personal utility at the cost of the investor. To overcome information asymmetries between principal and agent, various mechanisms, known as corporate governance, are applied. The occurring expenses are seen as part of the agency costs (Dietrich & Krafft, 2012). In the following we distinguish between *ex ante* and *ex post* mechanisms to minimize agency costs, leading to an overall higher level of personal utility, both for the principal and the agent.

Ex ante. Existing information asymmetries prior to the contract between principal and agent lead to the previous described *adverse selection*. In order to reduce these asymmetries, agents can signal their intentions. The original idea of *signalling* was explained by Spence (1973) with an example on the labour market. Referring to Sustainable Investing, corporations signal their confession to act responsibly with the help of sustainability reportings. Several reporting initiatives and standards have emerged. Amongst others is the Global Reporting Initiative (GRI), introduced in 1997. As an independent organization, GRI provides standards to governments and businesses advising them to report their sustainability efforts. In contrast to common credit ratings, where the business as a prospective debtor employs and pays an agency e.g. Moody's, Fitch or Standard & Poor's, sustainability ratings mostly rely on public data (Novethic, 2013). Hence, nearly every corporation has a sustainability rating. To receive higher ratings, corporate executives are urged to provide more data on sustainability either publicly or directly to sustainability rating agencies. For the agent, these forms of signalling are costly, reducing the utility but build up trust and reputation. According to the concept of *screening* (originally proposed by Stiglitz, 1975) the sustainably oriented investor can inform himself about the company with the help of the described sustainability ratings. Most known financial service providers like Bloomberg and Thomson Reuters EIKON already include ESG research data. Another option to screen firms are sustainability indices and the inclusion of the targeted companies. Well known indices are the Dow Jones Sustainability Index World (DJSI) and the MSCI ESG Index. Given the investment size and importance, institutional investors have additional opportunities to analyse the characteristics of the corporate executives by having conversations on the company's strategy on sustainability.

Ex post. Besides the pre-contractual relationship, principal and agent face information asymmetries effecting *moral hazard* after contract signature. To avoid corporate executives to work with low effort and not in line with the principal, an incentive driven compensation system has to be set up (Eisenhardt, 1989). Besides variable bonuses linked to earned profits, corporate executives additionally need to participate in the sustainable value development. To ensure a high transparency these sustainability performance measures need to be visible for both current and prospective shareholders.

Short-termism behaviour of executives can be faced with long-term incentive plans. Even after being a board member they participate in long-term success of the corporation. To further diminish information asymmetries, shareholders can *monitor* the agent's actions within the corporate governance system. Monitoring mechanisms include the supervisory board as well as the external audit of the financial accounting.

4.3 Limitations of the presented Mechanisms

The proposed mechanisms are limited in resolving all existing information asymmetries. In the following, we analyse the applied mechanisms according to subsection 4.2.

Ex ante. By *signalling* their engagement in ESG related topics, corporate executives try to build up their reputation and avoid *adverse selection*. Although reporting seems to be an appropriate method, depending on the jurisdiction, the applied standards vary. Although the GRI initiative and the German Commercial Code provide guidance for investors, it remains complex to compare companies from different jurisdictions. Alternatively, investors may look at ESG ratings. But likewise, the scales and ratings differ throughout various service providers like Bloomberg and Thomson Reuters Eikon. As explained, the ratings are based on mostly public data and questionnaires, consequently only included if available. In addition, ESG ratings often include geographical biases due to different ESG disclosure requirements which are higher in Europe than in the rest of the world (SustainAbility, 2016). Rating scales vary from a numeric scale (0-100), letter designations (AAA-CCC) to percentile ranks. Furthermore, ESG ratings remain vague looking at a wide range of ESG aspects. However, looking at different industries, not every ESG issue is relevant to every company. A recent study by Khan, Serafeim, and Yoon (2016) finds that firms "with strong ratings on material sustainability topics outperform firms with poor ratings on these topics" (Khan et al., 2016, p. 1799). In addition, corporations try to be included in SRI indices and thus be more visible within the SRI environment. These efforts may lead the executives to an inefficient allocation of resources, only because of the willingness to be included in the index (Novethic, 2013). Similar to credit ratings, ESG ratings lack transparency. Investors might use *screening* to inform themselves, however, the access to ESG ratings is relatively costly, especially for individuals.

Ex post. To resolve *moral hazard*, profit and ESG performance-based contracts for corporate executives are vital. These provide incentives for managers to target not only profit and share value maximization, but also to incorporate sustainability criteria. The problem is that agency theory assumes the principal as risk-neutral whereas the agent as risk-averse. Consequently, with a profit and sustainable performance participation, corporate executives bear higher risk, which leads ultimately to higher agency costs. To this day, ESG performance measures are not standardised, fostering corporate executives to exploit the incentive-type contracts for their own benefit. Another issue of resolving this asymmetry is the influence of individual investors. The question that arises is whether these have the power influence the supervisory board to modify contracts of corporate executives towards a participation in sustainable performance. Dispersed shareholders also lead to free-riding with regard to *monitoring*. Due to high costs of monitoring small shareholders will trust in other shareholders to do the *monitoring* (Hart, 1995) . As a governance body, the supervisory board is dependent on the information of the management board, resulting in another Principal-Agent relationship. Since the members of the supervisory board may not have equity, they can be motivated to collude with the management board resulting a loss in utility for the shareholders. Overall, the efficiency of the controlling supervisory board is conclusively affected by the know-how, composition and independence of its members. Ultimately, the shareholders can sanction the management board by selling stocks, resulting a price drop (Hart, 1995). To sum up, the proposed mechanisms, as effective they might be, are costly and harm the profits of the market participants.

5. Conclusion

The field of sustainable investing has grown 25.2 % from 2014 to 2016, resulting global SRI assets of $22.89 billion. Given the risen interest in socially, responsible and environmentally friendly corporations, it is of great importance to analyse the investment process and the existing P-A relationship within this process. With the help of the agency theory this study reveals arising information asymmetries between investors (principals) and corporate executives (agents). Both parties try to maximise their personal utility, which leads to agency costs for both the principal and the agent. Before the contract, the investor is not able to get comprehensive information on the socially responsible behaviour of the corporate executive and the company, respectively. As a consequence, adverse selection can lead to market failure where high quality shares are forced out of the market. With the help of sustainability reportings and ESG ratings, corporate executives try to signal their reputation and attract investors. However, from a principal's perspective it remains complex to get objective information due to different standards and scales within these mechanisms. Furthermore, ratings always include all ESG aspects, yet disregarding specific factors for each industry. Especially for retail investors, it is difficult to access all the ratings and get a market overview. From the agent's perspective, ESG ratings and indices provide a good mechanism to overcome the described information asymmetries. Presumably, engaging in corporate sustainability initiatives will gain future attention. After the contract is signed, the investor is not able to either fully see nor control the corporate executives' actions which can lead to moral hazard where the management disregards ESG considerations and invests in riskier projects. To avoid unintended actions by the agent, the principal tries to monitor the situation with the help of the supervisory board. However, in many cases the phenomenon of free-riding appears. Due to high controlling costs small shareholders will hope, that other shareholders will do the monitoring instead of themselves. Furthermore, know-how and composition of the supervisory board are crucial for an effective control of the executives. From a principal's perspective, a performance-based compensation system, including sustainability performance measures, is vital to align the agent's intentions and actions. A high transparency is only guaranteed if the benchmark is visible for current and prospective shareholders. To avoid short-term behaviour, wages need to be linked to long-term strategic goals. Nevertheless, similar to the missing standards of ESG ratings, ESG performance indicators remain vague, encouraging the corporate executives to exploit their superior situation.

This study builds upon literature on the Principal-Agent Problem by Akerlof (1970); Jensen and Meckling (1976) and Arrow (1985). Despite the displayed mechanisms to resolve the Principal-Agent Problem, information asymmetries are still present between corporate executives and SRI investors, resulting in enormous agency costs. Lastly, we find evidence that the existing instruments like ESG ratings, reportings and monitoring bodies bear risks and lack standards. Future research shall most importantly concentrate on implementing standardized and transparent ESG reporting systems and ratings which are independent from jurisdiction.

Bibliography

Akerlof, G. A., 1970. The Market for "Lemons": Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics*, *84*(3), pp. 488-500.

Arrow, K. J., 1985. Informational Structure of the Firm. *The American Economic Review*, *75*(2), pp. 303-307.

Barber, B. M. & Odean, T., 2008. All That Glitters: The Effect of Attention and News on the Buying Behavior of Individual and Institutional Investors. *Review of Financial Studies*, *21*(2), pp. 785-818.

Beaver, W. H., 1968. The Information Content of Annual Earnings Announcements. *Journal of Accounting Research*, *6*, pp. 67-92.

Bhattacharya, S. & Pfleiderer, P., 1985. Delegated portfolio management. *Journal of Economic Theory*, *36*(1), pp. 1-25.

Boatright, J. R., 1996. Business Ethics and the Theory of the Firm. *American Business Law Journal*, *34*(2), pp. 217-238.

Bodie, Z., Kane, A. & Marcus, A. J., 2008. *Investments.* 8th ed. Boston: Irwin: McGraw-Hill.

CAIA, 2017. *Responsible Investing Growing in Importance Driven by Ethical Principals, Institutional Investor Demands, and Business Opportunities, says New Survey from CAIA and Adveq | CAIA Association.* [Online] Available at: https://caia.org/news/ responsible-investing-growing-importance-driven-ethical-principals-institutional-investor. [Accessed 02 February 2019]

Cheung, A. W. K., 2011. Do Stock Investors Value Corporate Sustainability? Evidence from an Event Study. *Journal of Business Ethics*, *99*(2), pp. 145-165.

Coase, R. H., 1937. The Nature of the Firm. *Economica*, 4(16), pp. 386-405.

Cortez, M. C., Silva, F. & Areal, N., 2009. The Performance of European Socially Responsible Funds. *Journal of Business Ethics*, *87*(4), pp. 573-588.

Cyert, R. M. & March, J. G., 1992. *Behavioral Theory of the Firm.* 2nd ed. Cambridge, Mass., USA: Wiley- Blackwell.

Dietrich, M. & Krafft, J., 2012. *Handbook on the Economics and Theory of the Firm*. Edward Elgar Publishing.

Drumwright, M. E., 1994. Socially Responsible Organizational Buying: Environmental Concern as a Noneconomic Buying Criterion. *Journal of Marketing*, *58*(3), pp. 1-19.

Eisenhardt, K. M., 1989. Agency Theory: An Assessment and Review. *The Academy of Management Review*, *14*(1), pp. 57-74.

Eurosif, 2016. *European SRI Study 2016.* [Online] Available at: http://www.eurosif.org/wp-content/uploads/2016/11/SRI-study-2016-HR.pdf. [Accessed 02 February 2019]

Fama, E. F., 1970. Efficient capital markets: A review of theory and empirical work. *The journal of Finance*, *25*(2), pp. 383-417.

Fama, E. F., 1991. Efficient capital markets: II. *The journal of finance*, *46*(5), pp. 1575-1617.

Fama, E. F., Fisher, L., Jensen, M. C. & Roll, R., 1969. The adjustment of stock prices to new information. *International Economic Review*, *10*(1), pp. 1-21.

Flammer, C., 2013. Corporate Social Responsibility and Shareholder Reaction: The Environmental Awareness of Investors. *Academy of Management Journal*, *56*(3), pp. 758-781.

Foss, N. J., 1998. *Theories of the firm: Critical Perspectives in Economic Organisation*. London: Taylor & Francis Ltd.

Freeman, R. E., 1984. *Strategic Management: A Stakeholder Approach*. Boston: HarperCollins College Div.

Freeman, R. E., 2010. *Stakeholder theory: the state of the art*. Cambridge; New York: Cambridge University Press.

Friede, G., Busch, T. & Bassen, A., 2015. ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, *5*(4), pp. 210-233.

Friedman, M., 2007. The Social Responsibility of Business Is to Increase Its Profits. In W. Zimmerli, W.C., M. Holzinger, & K. Richter, eds. 2010. *Corporate Ethics and Corporate Governance.* Springer, Berlin, Heidelberg. Pp. 173-178.

Friedman, M. & Friedman, R. D., 1982. *Capitalism and freedom*. Chicago: University of Chicago Press. Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal*, *17*(2), pp. 109-122.

Griffin, J. J. & Mahon, J. F., 1997. The Corporate Social Performance and Corporate Financial Performance Debate Twenty-Five Years of Incomparable Research. *Business and Society*, *36*(1), pp. 5-31.

Grossman, S. J. & Stiglitz, J. E., 1980. On the impossibility of informationally efficient markets. *The American economic review*, *70*(3), pp. 393-408.

GSIA, 2017. *Global Sustainable Investment Review.* [Online] Available at: http://www.gsi-alliance.org/wp-content/uploads/2017/03/GSIR_Review2016.F.pdf. [Accessed 02 February 2019]

Hart, O., 1995. Corporate Governance: Some Theory and Implications. *The Economic Journal*, *105*(430), 678.

Jensen, M. C. & Meckling, W. H., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), pp. 305-360.

Khan, M., Serafeim, G. & Yoon, A., 2016. Corporate Sustainability: First Evidence on Materiality. *The Accounting Review*, *91*(6), pp. 1697-1724.

Kogut, B. & Zander, U., 1992. Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology. *Organization Science*, *3*(3), pp. 383-397.

Lackmann, J., Ernstberger, J. & Stich, M., 2012. Market Reactions to Increased Reliability of Sustainability Information. *Journal of Business Ethics*, *107*(2), pp. 111-128.

Lorne, F. T. & Dilling, P., 2012. Creating Values for Sustainability: Stakeholders Engagement, Incentive Alignment, and Value Currency. *Economics Research International*, *2012*, pp. 1-9.

Machlup, F., 1967. Theories of the firm: marginalist, behavioral, managerial. *The American economic review*, *57*(1), pp. 1-33.

Merton, R., 1987. A Simple Model of Capital Market Equilibrium with Incomplete Information. *Journal of Finance*, *42*(3), pp. 483-510.

Milgrom, P. & Roberts, J., 1992. *Economics, Organization and Management* (US Ed ed.). Englewood Cliffs, N.J: Prentice Hall.

Nelson, R. R. & Winter, S. G., 2004. *An evolutionary theory of economic change* (digitally reprinted ed.). Cambridge, Mass.: The Belknap Press of Harvard Univ. Press.

Novethic, 2013. *Overview of esg rating agencies.* . [Online] Available at: http://www.novethic.com/fileadmin/user_upload/tx_ausynovethicetudes/pdf_complets/2013_overview_ESG_rating_agencies.pdf. [Accessed 02 February 2019]

Penrose, E., 1959. *The Theory of the Growth of the Firm*. New York: John Wiley.

Revelli, C. & Viviani, J.-L., 2015. Financial performance of socially responsible investing (SRI): what have we learned? A meta-analysis. *Business Ethics: A European Review*, *24*(2), pp. 158-185.

Roll, R., 1986. The Hubris Hypothesis of Corporate Takeovers. *The Journal of Business*, *59*(2), pp. 197-216.

Ross, S., 1973. The Economic Theory of Agency: The Principal's Problem. *American Economic Review*, *63*(2), pp. 134-39.

Simpson, W. G. & Kohers, T., 2002. The link between corporate social and financial performance: Evidence from the banking industry. *Journal of business ethics*, *35*(2), pp. 97-109.

Soppe, A., 2004. Sustainable corporate finance. *Journal of Business Ethics*, *53*(1-2), pp. 213-224.

Spence, A. M., 1973. Job Market Signaling. *The Quarterly Journal of Economics*, *87*(3), pp. 355-374.

Spence, A. M. & Zeckhauser, R., 1971. Insurance, Information, and Individual Action. *American Economic Review*, *61*(2), pp. 380-87.

Stiglitz, J. E., 1975. The Theory of "Screening," Education, and the Distribution of Income. *The American Economic Review*, *65*(3), pp. 283-300.

SustainAbility, 2016. *What Do ESG Ratings Actually Tell U s ?* [Online] Available at: http://sustainability.com/our-work/insights/what-do-esg-ratings-actually-tell-us/. [Accessed 02 February 2019]

Wernerfelt, B., 1984. A resource-based view of the firm. *Strategic management journal*, *5*(2), pp. 171-180.

A BEHAVIOURAL FINANCE EXPLANATION OF SPECULATIVE BUBBLES: EVIDENCE FROM THE BITCOIN PRICE DEVELOPMENT

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Abstract. In 2008 a group of programmers, alias Satoshi Nakamoto, introduced bitcoin. Bitcoin is a cryptocurrency or virtual money derived from mathematical cryptography and is conceived as an alternative to government authorised currency. The founder anticipated, through bitcoin's construction and his digital mining processes, that bitcoin prices would be relatively stable. However, the recent bitcoin price decline proves that bitcoin is extraordinarily volatile and is not that stable as hoped. Although some scientists have already shown that the fundamental value of bitcoin is zero, the price of bitcoin has reached over 19.000$ in December 2018. Since then, bitcoin prices dropped nearly 70% from their peak value and showed in addition to that the typical trends of a speculative bubble.

Hyman Minsky and Charles Kindleberger discussed three different patterns of speculative bubbles. One is when price rises in an accelerating way and then crashes very sharply after reaching its peak. Another is when the price rises and is followed by a more similar decline after reaching its peak. The third is when the price rises to a peak, which is then followed by a period of gradual decline known as the period of financial distress, to be followed by a much sharper crash at some later time. One of the key findings of this study is that all these three patterns occurred during 2017-18 for the bitcoin price.

Therefore, the purpose of this paper is to analyse the historical bitcoin prices in context with the typical five-step characteristics of a speculative bubble. Furthermore, each phase of a speculative bubble is explained by a behavioural finance approach and answer the price development of this cryptocurrency. The result is frightening, bitcoin can be seen as a perfect textbook example of a speculative bubble.

Key words: *Bitcoin, Cryptocurrencies, Bubbles, Behavioural Finance, Volatility*

JEL code: G41, E31, G12

Introduction

The history of finance is filled with asset bubbles, from the Dutch tulip mania in the 1630s, the Dot-Com bubble of the early 2000s to the US housing bubble which led to the 2007/08 global financial crisis (see Abreu and Brunnermeier, 2003). The most recent example, however, can be found in the overheated Bitcoin market. Initially introduced in 2008 by a group of programmers, under the pseudonym Satoshi Nakamoto, Bitcoin is a cryptocurrency or virtual money derived from mathematical cryptography. It was initially envisaged that its construction and digital mining processes would mean, that Bitcoin prices should be relatively stable. However, the fact that Bitcoin prices have recently fallen about 80 per cent from their peak value shows that Bitcoin is anything but not stable. Furthermore, academic literature on analysing digital currencies such as Bitcoin argues that the fundamental value of Bitcoin is zero (Cheah and Fry, 2015); Baur et al., 2017). This raises two critical questions of interest. Firstly, does the Bitcoin price show a typical development of a speculative bubble? Secondly, how can a behavioural finance approach explain the Bitcoin bubble?

The academic literature on digital currencies, such as Bitcoin, has only recently begun to emerge (see e.g. Grinberg 2012; Maurer et al., 2013; Bauer et al., 2017) and is even more dwarfed by a multitude of popular articles and unpublished working papers. Much of the academic literature concentrates upon legal aspects and one the analysis related to the fundamental value of these cryptocurrencies. This paper differs from previous work on Bitcoin and digital currencies in trying to understand the typical characteristics of the Bitcoin bubble based on Aschinger (1991), Kindleberger and Aliber (2005). Papers on Bitcoin pricing tend to investigate the pricing efficiency of Bitcoin (e.g. Hong, 2016; Urquhart, 2016) or pricing determinants using past information (e.g. Kristoufek, 2013; Li and Wang, 2017). This study contributes to the rising debate on the cryptocurrency market investment from a behavioural finance perspective. Therefore, a more theoretical framework of the Bitcoin price development is established with some of the current academic empirical literature. For instance, one aspect, which was analysed by Yao et al. (2014) and Bouri et al. (2017), is herding behaviour. It can offer a behavioural explanation for the extreme volatility and trends observed in many cryptocurrencies. Some rolling analysis (Stavroyiannis and Babalos, 2017) provides evidence in favour of such herding.

The remainder of the paper is organised as follows. Section 2 provides some background into speculative bubbles (section 2.1) and describes the typical steps of those phenomena (section 2.2). Part 3 presents the analysis of the Bitcoin bubble in the context of the classical development steps. Chapter 4 explains the excess volatility clusters with the help of behaviour finance approaches. Finally, section 5 summarises the main findings of the paper and provides concluding remarks.

What is a bubble?

Many papers focus on the explication, proof and analysis of market mispricing. Mainly, many well-known scientists - leading by Shiller (2000) and Fama (1965) - are engaged in the detection of bubbles. There are different opinions on how to define a price-bubble as there are two kinds of bubbles: The deterministic bubble, which will burst in a specific time or the stochastic, which will increase to infinite, as seen in figure 1. Trivially said and known from the efficient-market hypothesis of Fama (1970): An investor cannot score abnormal returns, because all relevant and available information are included in stock prices.

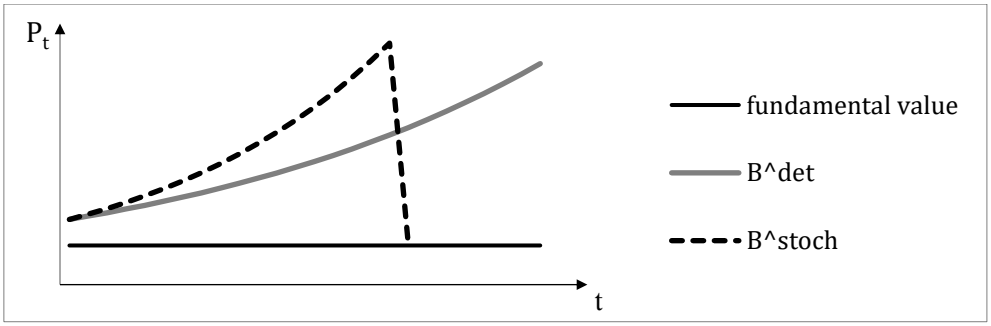
Nevertheless, at the beginning of every speculative price-bubble there is a belief of high probability of excess returns, see Garber (1990). In an efficient market, stock-market changes are only justified with new information. During the development of a speculative bubble, the investor knows that the prices are overvalued. Even normally no further information is published, which could explain those high stock prices.

Notwithstanding, one of the most-known definitions is following: A positive price-bubble is the deviation of market price from the expected discounted dividends (as known as the fundamental value) and is based on the dividend model of William (1938):

$$P_t > \sum_{t=1}^{\infty} \frac{E(D_t)}{(1+\mu)^{t-1}}$$

P_o defines market price, D_t dividends and μ returns. Speculative bubbles can arise from stock's price-expectation. As mentioned before, there are two types of bubbles. The main focus of this paper, as those of Scherbina (2013), Jarchow (1997), will be stochastic bubbles. These can burst with a specific probability during the time period. In contrast to stochastic bubbles, deterministic bubbles increase to infinite.

Figure 1**,** based on the theory of Aschinger (1991) and Jarchow (1997), shows two different scenarios: a deterministic (B^{det}) and a stochastic bubble (B^{stoch}) under the assumption that the fundamental value stays constant over time.



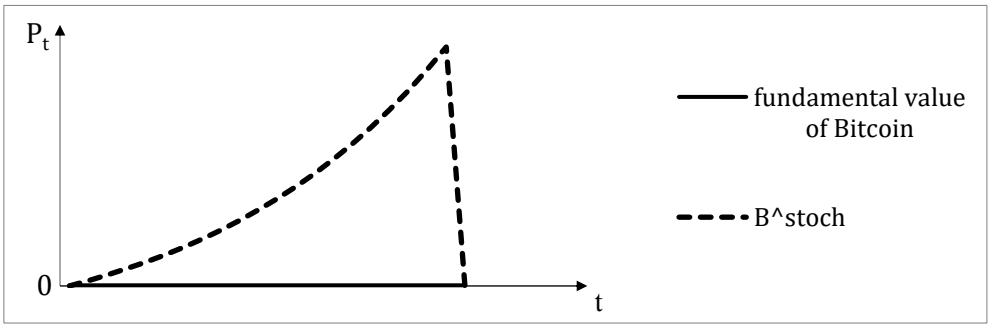
Source: author's construction based on Aschinger (1991) as well Koehn and Valls (2017)

Fig. 1. **Stochastic and deterministic bubbles**

Consequently, one key question arises: What is the fundamental value of Bitcoin? One answer to that specific question is presented in the paper of Cheah and Fry (2015). They analysed the fundamental value of Bitcoin and came to the conclusion, that the value of Bitcoin, P_F, should be zero in the long run:

$$\lim_{t\to\infty} P_F(t) = 0$$

Hence, the figure below shows the potential price trend of Bitcoin under the assumption that the fundamental value is zero and Bitcoin is a stochastic bubble.



Source: author's construction based on Aschinger (1991) as well as Koehn and Valls (2017)

Fig. 2. **Bitcoin as stochastic bubble with its fundamental value**

Development of a speculative bubble

There is no standard definition of a typical bubble, but all bubbles look alike because they all go through similar phases. The majority opinion about the typical development of a bubble is based on Kindleberger and Aliber (2005) and Aschinger (1991). The characteristics and phases of a speculative bubble are described as follows:

Phase 1: Displacement. The beginning of each bubble is initiated with an exogenous shock, which implicates pervasive economical changes. In this phase, a full branch of an industry can be changed. A displacement could be the end of a war, a significant political change, a technological or a financial innovation or a shift in monetary policy. Structural changes raise the optimism of investors, banks and companies. The optimism and the expectation of new welfare and new expected profit of the companies encourages investments into risky stocks, which results in a confident expectation of the stock market. Therefore, investors hope for higher returns than in a status quo ante.

Phase 2: Boom. The next step of a speculative bubble is reached by the expectation of continuing raising returns and a potential new market. Meaning, that the optimism begins to grow. The result is a positive feedback loop as the price of stocks, commodities, or real estate increase, which lead to greater consumption and investment, which will finally lead to higher economic growth. Credit fuels the boom. Borrowers become more willing to take on debt and lenders are increasingly willing to make riskier loans as economic prospects improve. In contrast to William (1938), the market price is now a multiple of its proper fundamental value.

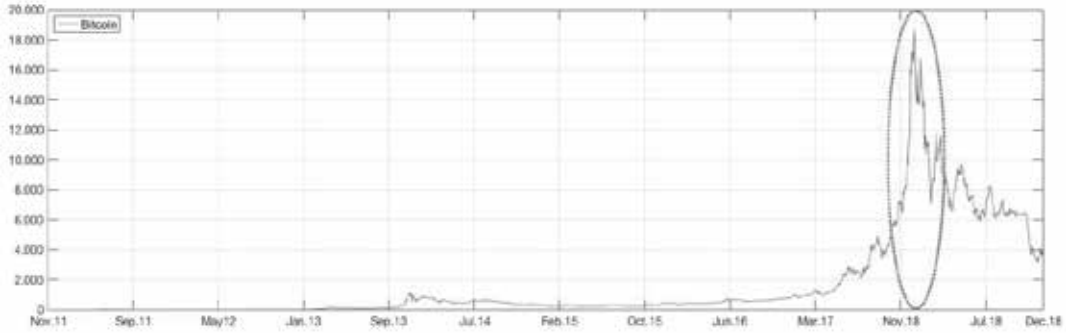
Phase 3: Euphoria. More and more euphoric outsiders begin to enter the market as media attention grows and individuals see others getting high returns. As Kindleberger and Aliber (2005) mentioned, "there is nothing as disturbing to one's well-being and judgment as to see a friend get rich." In this phase, behavioural and irrational factors determine the investors' buying behaviour. For instance, bandwagon effects are incorporated into behavioural effects: Following the devise, if others are buying, I will also buy. These herd instincts happen avalanche-like and increase the capital inflow of each bubble, as Weil (2010) showed. The abnormal increase of the stocks allures speculators. Individuals invest with the hope of short-term capital gains, and debt compounds as people borrow or trade on margin to further speculate. The credit activities are expanded for instance by lower interest rates. A perpetual growing spectrum of participants from wealthy investors, debt-financed investors, and in the end, speculators characterise the climax of each bubble.

Phase 4: Distress. At some point, an event hits that causes a decline in confidence and stops the explosive prices. This event could be bankruptcy, a change in government policy or any news flow. The response to these events differs in bubbles because of the debt build-up. People who financed their purchases with borrowed money become distressed sellers as the income on their assets drops below their interest payments. In this – also called - crisis phase, the insiders originally involved start to sell their assets. The selling begins to gain momentum, as speculators realise that they need to sell, too. However, once prices start to fall, the asset prices start to crash. The only way to sell is to offer prices at a much lower level as someone else. The bubble bursts and euphoric buying is replaced by panic selling.

Phase 5: Panic. Not everyone realises that a crisis is unfolding at the same time. Professional investors, like an insider or institutional, usually sell first. Once other market participants realise the gravity of the situation, run-of-the-mill selling turns into outright panic as everyone tries to get out at the same time. Prices plummet, and levered companies increasingly go bankrupt as they can't meet their interest payments. The sell-off typically spreads to other sectors and other countries. This will lead to a massive increase in the demand for liquids funds in fear of illiquidity. The masses get into a kind of a panic state and sell their stocks at any price. As bankruptcies mount, banks begin to fail, further drying up credit when it's needed the most. The panic continues until a lender of last resort convinces investors that cash will be made available to meet the demand, or prices fall so low that value investors start to buy back in. The speculative bubble has burned, and the prices should go back to their fundamental value.

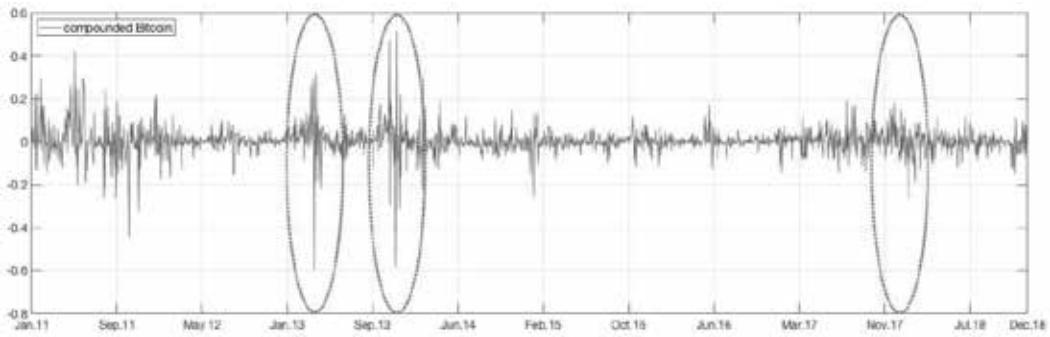
Bitcoin-Bubble and its Development

The majority opinion about the typical development of a bubble is based on Kindleberger and Aliber (2005), Rosser et al. (2012) and Aschinger (1991). In the following, the Bitcoin price development is analysed with the help of the previously shown development of a typical bubble. In advance, the volatility of Bitcoin is quite noticeable. The next figures show the historical Bitcoin price development as well the compounded return of Bitcoin between 2011 and 2018. These figures illustrate exemplary the typical trend of a speculative bubble with their high excess volatility clusters around the peak.



Source: author's construction based on data from coinmarketcap.com

Fig. 3. **Bitcoin Price 2011-2018**



Source: author's construction based on data from coinmarketcap.com

Fig. 4. **Compounded Bitcoin Returns 2011-2018**

In 2008, a "whitepaper" was published called "Bitcoin: A Peer-to-Peer Electronic Cash System" by Satoshi Nakamoto (Nakamoto, 2008). The whitepaper's idea had ambitions to secure digital signatures, not requiring the use of a third party, proof-of-work, and hashing the transactions together to form a chain. Satoshi Nakamoto, an unknown person or group of people, wrote the Bitcoin paper. This can be seen as the exogenous shock from phase 1 of the typical development of a speculative bubble.

The first-ever block of Bitcoins, known as the Genesis Block, was mined in early 2009. By the 9th of January, the first iteration of Bitcoin software was released, and on the 12th of January, the first ever Bitcoin transaction occurred as Nakamoto sent 10 Bitcoins (BTC) to noted computer programmer and developer Hal Finney. Toward the end of the year, the New Liberty Standard publishes the first Bitcoin exchange rate in the young cryptocurrency's history, deeming $1 to be worth around 1,309 BTC.

In May 2010, the first purchase with Bitcoin was made. Florida-based programmer Laszlo Hanyecz sent 10,000 BTC to a man in London in exchange for two pizzas, valued $25 in that time. By November, the market cap for Bitcoin surpassed $1 million for the first time. This still valued a single Bitcoin as a fraction of a penny, exactly $0.0025.

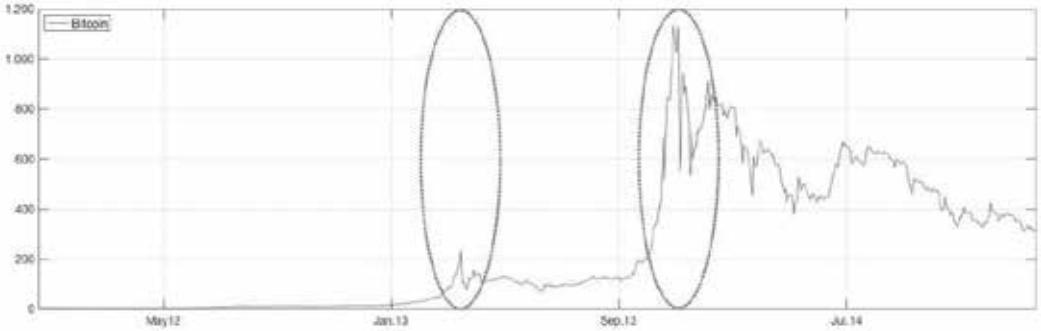
In 2011, for the first time, 1 Bitcoin was worth $1. Bitcoin began receiving press - both good and bad. TIME Magazine published an article on Bitcoin for the first time, and in the same year, there was an article on Gawker (Gawker, 2011) detailing Silk Road, the dark web drug market where Bitcoin was frequently used as a payment option. The publicity got people talking, and by June, Bitcoin was worth over nearly $30. Soon after, it crashed back down to about $10. The most significant catalyst for this crash was the hacking of Mt.Gox, by far the biggest Bitcoin exchange at that time. The transaction was compromised by a hacker, who gained access to customer accounts and artificially pushed the price of Bitcoin on the exchange to $0.01. Even though the crash to 1 cent was artificial, the hack resulted in a substantial hit to the confidence in Bitcoin and played a significant part in an over 93% price decline.

Among notable moments for Bitcoin on its way to becoming the world's top digital coin was its crossing of the $100 threshold in 2012. But also, 2012, no year without any scandal. In August of 2012, Bitcoin dropped nearly 50% in just three days after Bitcoin Savings & Trust, a Ponzi scheme that promised substantial weekly payouts to its investors, had halted its promised payouts. The scheme's operator, Trendon Shavers, claimed that more than 500,000 BTC in total was deposited into the scheme. Later in 2016, Shavers was sentenced to 18 months in prison. According to New York prosecutors, Shavers had obtained a total of about 146,000 BTC through his fraudulent activities.

2013, Bitcoin's price saw its share of ups and down, but it passed a value of $1,000 for the first time and was becoming the most recognisable and successful wallet and exchange available. Bitcoin had started gaining significant traction in mainstream media, and new investors were flocking onto the market. Bitcoin was on a tear and rallied for four months before topping out at around $260 on the 10th of April. The price then crashed, and the previously mentioned Mt.Gox struggled to handle the sheer volume of trading, causing even more uncertainty in the process. Cyber attackers took the opportunity to create even more chaos and started targeting Mt.Gox with specific hacking attacks. While it's likely that

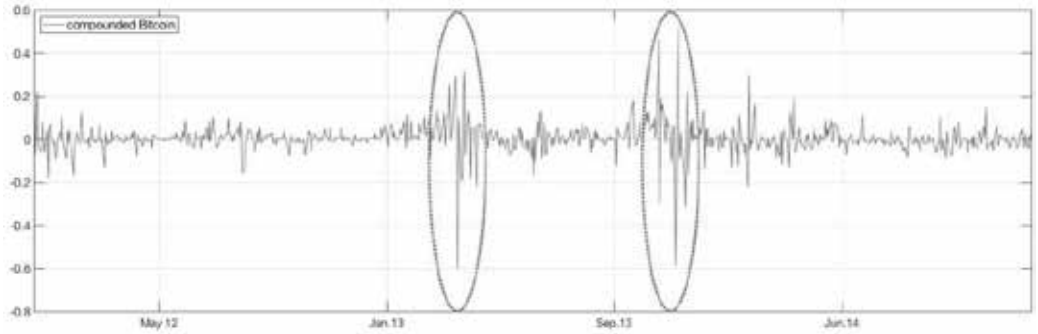
Bitcoin was due for a correction anyway, the confusion surrounding Mt.Gox contributed additional selling pressure and exposed the many risks of relying on a single entity as the nexus of the Bitcoin ecosystem.

In 2014 and 2015, Bitcoin stalled for a while. Quickly in January 2014 it fell below $1,000 and struggled below crucial level for a few years. A few things of note happened, Crypto exchange Mt. Gox went bankrupt and shut down, but this period mostly saw Bitcoin rising and falling somewhat while failing to reach its high. Although there was a rally that started in May of 2014, which saw Bitcoin grow from about $440 to around $650, the second half of 2015 was decisively negative as BTC bottomed out at approximately $177 in January 2015.



Source: author's construction based on data from coinmarketcap.com

Fig. 5. **Bitcoin Price 2012-2014**

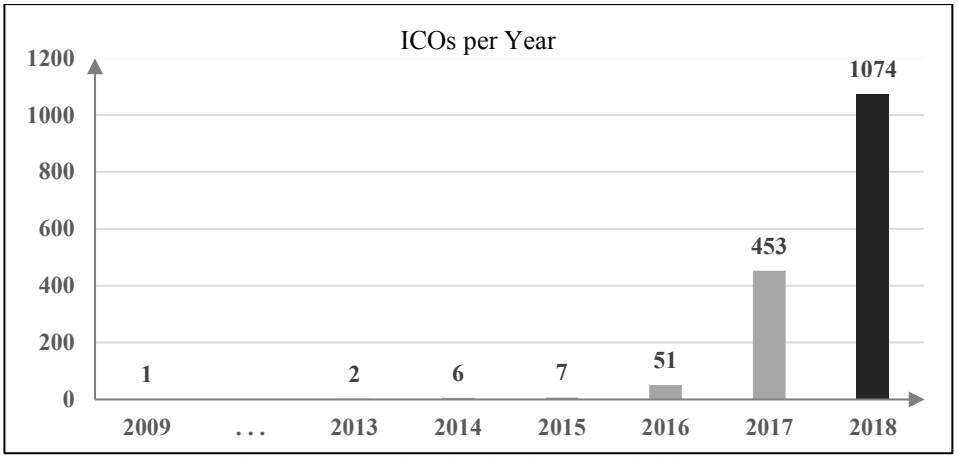


Source: author's construction based on data from coinmarketcap.com

Fig. 6. **Compounded Bitcoin Returns 2012-2014**

2017 was the most prominent and busiest year for Bitcoin. After spending 2016 desperately trying to claw its way back up, 2017 was when it finally reached and passed the $1,000 mark. It kept ascending. By June, Bitcoin was worth over $3,000. By October, it was topping $6,000. It ended November at nearly $10,000, and by the end of December, Bitcoin hit a peak of $19,783, intraday. More and more people and companies began chasing the trend as the price just kept rising. Unsurprisingly, it wouldn't continue that strong growth.

2017 brought a fundamental transformation to the cryptocurrency landscape, and Bitcoin's iron grip on the cryptocurrency market began to slip. At the start of the year, BTC dominance was at roughly 85%. Meaning that the market capitalisation of Bitcoin was 85% of the full cryptocurrency market capitalisation. In March, however, BTC dominance started to decline drastically as Ethereum ETH, another cryptocurrency, began taking significant chunks out of Bitcoin's market share. By June, BTC dominance was sitting at around 38%, while ETH represented about 30% of the cryptocurrency market. Ethereum's smart contract capabilities, combined with the fact that the platform allows users to issue tokens that function on Ethereum's blockchain easily, provided the ideal infrastructure for initial coin offerings (ICOs). With more tokens issued by ICOs rewarding their backers with astronomical returns after hitting cryptocurrency exchanges, the ICO frenzy was in full effect as people rushed into the market in hopes of finding the next 10x, 100x or even 1000x ICO token. The positive momentum and extreme confidence did not affect just ICOs but was evident in the market as a whole. The next figure shows that the amount of ICOs increased significantly from the first ICO in 2009 with Bitcoin to over 1.000 ICOs in 2018

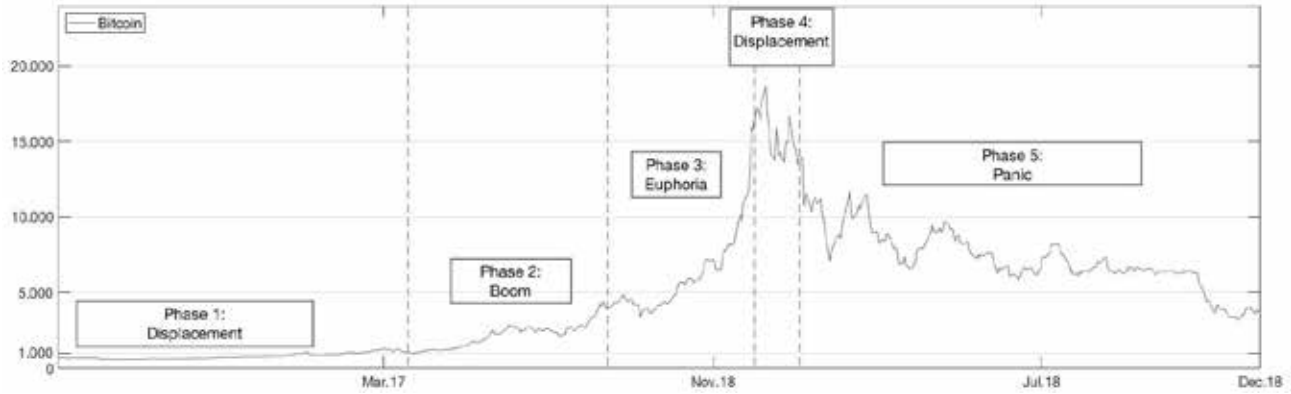


Source: author's construction based on data from coinschedule.com

Fig. 7. **Amount of ICO's per year**

2018 was a rough year for Bitcoin users, especially for those who held out their cryptocurrency on assuming the price would keep ascending. Many sold their Bitcoins while they could, and the price steadily dropped all year. At the end of 2018, Bitcoin's price had declined over 75% to $3,674.

One could argue, that the development of the Bitcoin price shows more than one bubble in the last 10 years, one quite obviously in the price development between early 2017 to end of 2018, as shown in the figure below.



Source: author's construction based on data from coinmarketcap.com

Fig. 8. **Bitcoin Price Bubble 2017-2018**

Behavioural Finance Explanation

The main important part of the puzzle of a speculative bubble is the assumption of a Homo Oeconomicus, a fully rational individual. But especially individuals, like investors – both private as professionals - tend to overreact or make decisions regarding irrelevant information. This is in contrast to the assumption of an entirely rational investor, who will always make rational, utility-maximising decisions, like Sheffrin (1983) and as well Simon (1979) point out. This irrational behaviour tends to a result in excess volatility clusters. Therefore, to understand more in detail which physiological factors drive a bubble, the Bitcoin bubble is analysed. Behavioral finance is a new behavioural-scientific approach, which explains stock volatilities during speculative bubbles with the help of psychology and rational models.

One of the main discussed models of behavioural finance is the Feedback Trading model on the stock market or other tradable assets, like Bitcoin. This model produces a speculative bubble under the assumption that the stock demand of an investor's group is based only on historical trading information. The bubble will grow with more capital inflow until a particular time. At this moment when the capital inflow will rapidly decrease, the bubble will break down. The following example explains this theory:

Caused by positive news of a cryptocurrency their coin price increases. Cheah and Fry (2015) analysed the google trends for the search term "Bitcoin" and showed notable peaks before higher volatility and higher coin prices, reinforcing an important social dimension to bubbles (Kindelberger and Aliber, 2005). Some investor groups buy these coins with the expectation that the coin price will increase and therefore, getting high returns. The first step is to define the traded volume as the amount of trading coins of cryptocurrencies. The demand for these coins increases with the expectation of growing returns which involves that the coin price will be higher than the fundamental value of the coin. The trading volume also increases because of the amount of money inflow. These will also attract other Feedback Traders, who are expecting growing price. This schematic repeats as long as no capital is invested anymore. At this point, the price increases will stop. Investors would like to sell their assets profitably, and the necessary demand of capital threatens the bubble which would lead the bubble, see Scherbina (2013) for more details.

A bubble will burst when the supply of capital is exhausted. To keep a speculative bubble growing new invested capital is needed. Once the capital inflow decreases, the prices will fluctuate. The result of this will change the optimistic mood, which will deflate the bubble as well. In fact, there are some indicators that a bubble will burst as soon as a massive amount of unprofessional investors are speculating with those overpriced assets, as Scherbina (2013) showed.

Many behavioural models assume that competitive arbitragers limit the huge price volatilities. The following model by De Long et al. (1990) shows that rational arbitragers intensify more than dissolving the price volatilities under certain circumstances. The model implies three investor types:

1) Positive Feedback Trader: The base of the asset demand is based only on past price changes.

2) Passive Trader: The trading base is dependent on the asset value relative to their fundamental value.

3) Informed rational speculators: The foundations of their tradings are news about the fundamental value as a hypothesis for future price movements.

With the help of those models and the knowledge from section 2, that the fundamental value of Bitcoin is zero, passive traders as well as the informed, rational speculators should not invest in Bitcoins or cryptocurrency.

Overconfidence and overoptimism are essential for the evaluation of stock prices, as De Bondt (1998) found out, but as well for cryptocurrencies. Individuals tend to be overoptimistic if they have their own influence on stock prices. The phenomenon of overconfidence explains that every individual has higher confidence in his own expectation and evaluation. Both phenomena are documented by experiments: Cryptocurrencies, which are held in their own portfolios, are getting overvalued belong their returns and expected growth. Moreover, this self-reliance on personal judgments entails concepts such as miscalibration, over precision, which are at the same time associated with an overreaction to random events (Barber and Odean, 2013; Barberis and Thaler, 2003). A classic illustration of overconfidence bias is the "better than the average" beliefs, which is the perception of a more than proportional of a group's composition that they perform better than the mean for the same group for certain activities.

Another effect is called the bandwagon effect or the herding behaviour, based on DeBondt and Forbes (1999). This phenomenon explains the buying behaviour, which is influenced by the buying behaviours of others. This means: A non-professional investor buys/ sells stocks analogue to the market/investors-majority in a speculative bubble. He makes his decision based on other market participants, which emblematizes the majority. This behaviour is relevant: On the right hand, he does not deviate from the majority opinion, because the majority cannot be wrong. On the other side, he is not willing to swim against the stream and bet against the majority. Nguyen and Schueßler (2011) analysed this specific behaviour in different speculative bubbles. Stratopoulos and Calderon (2018), Belhoula and Naoui, (2011) as well Bouri et al. (2017), analysed the cryptocurrency market and found out that investors frequently deviated from the rational asset pricing benchmark, and instead follow the consensus in market stress situations.

Another aspect that occurs during a bubble is Narrow Framing, researched and introduced by Barberis and Thaler (2003) and Barberis et al. (2005). Individuals judge differently over same stocks in the same decision situations if the stock or portfolio strategy is positive described. In the initial stage of the Bitcoin, one assumed a massive benefit of a new technology of this virtual currency. Potential users of those virtual currencies like Bitcoin as a medium of exchange may be attracted by its low transaction costs, its peer-to-peer, global and government free design and the possibility to purchase special goods which the seller may prefer virtual currency. In those times coins of those companies, which expected a huge excess profit regarding the new technologies, get an even higher rating than if they were objectively rated. Interestingly, this same phenomenon was also indicated during the Dot-Com bubble in the early 2000s, like Barberis et al. (2005) found out. Another behavioural aspect is loss-aversion. Non-professional investors tend to hold bad performed stocks too long, in order not to have to realise their losses. That loss-aversion affects the behaviourism of each investor and like shown by Tversky and Kahneman (1991).

To understand the formation phase of a speculative bubble you have to take these previous behaviours into consideration. Under the rational assumption, it does not make sense to invest in assets, which have a higher market value than their fundamental value. But this happens exactly during bubbles as shown by Weil (2010) and as well by Nguyen and Schueßler (2011). Non-rational investing means not only that stock prices are determined not always objectively by future expectations, but also biased by individual characters and their emotional factors, as respectively shown by the studies of Barberis et al. (2005), Kugler and Hanusch (1992).

Conclusions

Amid increasing levels of interest and popularisation (see, e.g. Frisby, 2014), Bitcoin and other cryptocurrency markets have been underexplored academically. This paper analyses the question of whether the most prominent virtual currency, Bitcoin, shows the typical development of speculative bubbles. One of the assumptions of this paper is, that the fundamental value of Bitcoin in zero (Cheah and Fry, 2016). Adopted with this, the bitcoin price was investigated. The paper found out that Bitcoin showed high volatility around their peak prices. This is a typical trend of a speculative bubble with its high excess volatility clusters around the peak. Nevertheless, academic literature mentions and talks about one Bitcoin price bubble. Using the compounded return of Bitcoin, three excess clusters were indicated. Therefore, one can say, Bitcoin had some price bubbles within their nearly ten-year history.

After describing some of the evidence, we can draw understandings about Bitcoin price formation, given cryptocurrency markets idiosyncrasy formation of pure beliefs and fuzzy expectations. Mainly, herding behaviour, overconfidence as well loss-aversion can be found as well. This was described by empirical herding analysis, which has been studying investors' behaviour during a momentum- following or positive feedback trading based on the decision on past price pattern. Therefore, behavioural finance can once again be used to explain those price bubbles. But as history shows, price bubbles will repeat themselves again and again. Clearly, overoptimism and overconfidence about the future of blockchain technology, Bitcoin or other cryptocurrencies should be avoided as irrational exacerbation often leads to financial disaster. Future work should undertake further empirical analyses of cryptocurrency markets, and the comparison with findings reported for other asset classes appears interesting.

Finally, in an ever-changing financial world with new technologies popping up, one should bear in mind the proverb: caution is the parent of safety.

Bibliography

Abreu, D. and Brunnermeier, M., 2003. Bubbles and Crashes. *Econometrica*, pp. 173-204.

Aschinger, G., 1991. Theorie der spekulativen Blasen. *Wirtschaftswissenschaftliches Studium*, pp. 270-274.

Baur, D., Hong, K., Lee, Adrian D., 2015. Bitcoin – Currency or Asset? Melbourne Business School, 2016 Financial Institutions, *Regulation & Corporate Governance (FIRCG) Conference*.

Barber, B. and Odean, T., 2013. The behavior of individual investors. *Handbook of the Economics of Finance*, pp. 1533-1570.

Barberis, N. and Thaler, R., 2003. A survey of behavioral finance. *Handbook of the Economics of Finance*, pp. 1053-1128.
Barberis, N., Shleifer, A., Wurgler, J., 2005. Comovement. *Journal of Financial Economics*, pp. 283-317

Bouri, E., Gupta, R., Hosseini, S., Lau, C., 2017. Does global fear predict fear in BRICS stock markets? Evidence from a Bayesian Graphical Structural VAR model. *Emerging Markets Review*, pp. 124-142.

Belhoula, M. and Naoui, K., 2011. Herding and Positive Feedback Trading in American Stock Market: A Two Co-directional Behavior of Investor. *International Journal of Business and Management*, pp. 244-252.

Cheah, E. and Fry, J., 2016. Speculative bubbles in Bitcoin markets? An Empirical investigation into the fundamental value of Bitcoin. *Economics Letters*, pp. 32-36.

Coinmarketcap. [Online] Available at https://coinmarketcap.com [Accessed 1 January 2019]

Coinschedule. [Online] Available at: https://www.coinschedule.com/stats.html?year=2015 [Accessed 21 December 2018]

De Bondt, W., 1998. Behavioral Economics: A Portrait of the individual Investor. *European Economic Review*, pp. 831-844.

De Bondt, W. and Forbes, W., 1999. Herding in Analyst Earnings Forecasts: Evidence from the United Kingdom. *European Financial Management*, pp. 143-163.

De Long, J., Shleifer, A., Summers, L., Waldmann, R., 1990. Positive Feedback Investment Strategies and Destabilizing Rational Speculation. *Journal of Finance*, pp. 379-395.

Fama, E., 1970. Efficient Capital Markets: A Review of theory and empirical Work. *Journal of Finance*, pp. 383-417.

Frisby, D., 2014. Bitcoin: The Future of Money? Unbound, London.

Garber, P., 1990. Famous First Bubbles. *Journal of Economics Perspectives*, pp. 35-54.

Gawker, 2011. [Online] Available at https://gawker.com/5808314/everyone-wants-bitcoins-after-learning-they-can-buy-drugs-with-them [Accessed 2 January 2019]

Grinberg, R., 2012. Bitcoin: an alternative digital currency. *Hastings Science and Technology Law Journal,* pp. 159–208.

Hong, K., 2016. Bitcoin as an alternative investment vehicle, *Information Technology and Management*, pp.1-11.

Jarchow, H., 1997. Rationale Wechselkurserwartungen, Devisenmarkteffizienz und spekulative Blasen. *Wirtschaftswissenschaftliches Studium*, pp. 509-516.

Kindleberger, C. and Aliber, R., 2005. Manias, Panics, and Crashe. Hoboken: John Wiley & Son.

Koehn, M. and Valls, P., 2017. Speculative bubbles and contagion: Analysis of volatility's clusters during the DotCom bubble based on the dynamic conditional correlation model. *Cogent Economics & Finance. Vol. 5.*

Kristoufek, L., 2013. Bitcoin meets google trends and wikipedia: Quantifying the relationship between phenomena of the internet era, *Scientific reports*.

Kugler, F. and Hanusch, H., 1992. Psychologie des Aktienmarktes in dynamischer Betrachtung: Entstehung und Zusammenbruch spekulativer Blasen. *Volkswirtschaftliche Diskussionsreihe* No. 77.

Li, X. and Wang, C., 2017. The technology and economic determinants of cryptocurrency exchange rates: The case of bitcoin, *Decision Support Systems*, pp. 49-61.

Nakamoto, S., 2008. Bitcoin: A peer-to-peer electronic cash system. [Online] Available at: https://Bitcoin.org/Bitcoin.pdf [Accessed 4 September 2018]

Nguyen, T. and Schueßler. A., 2011. Behavioral Finance als neues Erklaerungsansatz fuer irrationales Anlegerverhalten. *Diskussionpaper No. 33.*

Maurer, B., Nelms, T., Swartz, L., 2013. When perhaps the real problem is money itself! The practical materiality of Bitcoin. *Social Semiotics*, pp. 261-277

Rosser, J., Rosser, M., Gallegatiti, M., 2012. A Minsky– Kindleberger Perspective on the Financial Crisis. *Journal of Economic Issues*, pp. 449-459.

Scherbina, A., 2013. Asset Price Bubbles: A Selective Survey. *IMF Working Paper* 13/45.

Simon, H., 1979. Rational Decision Making in Business Organizations. *American Economic Review*, pp. 493-513.

Sheffrin, S., 1983. Rational Expectations, Cambridge University Press

Shiller, R., 2000. Measuring Bubble Expectations and Investor Confidence. *Journal of Psychology and Financial Markets*, pp. 49-60.

Stavroyiannis, S. and Babalos, V., 2017. Dynamic Properties of the Bitcoin and the US Market. [Online] Available at: https://ssrn.com/abstract=2966998 [Accessed 9 December 2018]

Stratopoulos, T. and Calderon, J., 2018. Introduction to Blockchain. [Online] Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3189518 [Accessed 16 November 2018]

Tversky, A. and Kahneman, D., 1991. Loss Aversion in Riskless Choice: A Reference Dependent Model, *Quarterly Journal of Economics*, pp. 1039-1061.

Urquhart, A., 2016. The inefficiency of bitcoin. *Economics Letters*, pp. 80-82.

Weil, H., 2010. Why Markets make Mistakes. *Kybernetes*, pp. 1429-1451.

Williams, J., 1938. The Theory of Investment Value. Cambridge, Harvard University Press.

Yao, J., Ma, C., He, W.P., 2014. Investor herding behaviour of Chinese stock market. *International Review of Economics & Finance*, pp. 12-29.

NON-FINANCIAL REPORTING IN THE MICRO ENTERPRISES IN SELECTED EUROPEAN COUNTRIES

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Abstract. The micro entities are important element of European economies. They constitute average 93% of all registered companies and employ nearly 30% of all workers. For recent years, European Union countries have been seeking solutions and tools to help micro undertakings collecting and presenting information. The European Directive 2013/34/EU is a first huge step for taking care of the micro entities, which finally can prepare financial statement in simpler form. This Directive introduces among others: limitation the scope of regulations, improving competitiveness and internationalization of information, providing necessary but not excessive financial information for competing with other micro units. Suggestions for presenting non-financial information are included in the Directive 2014/95/EU, but only for large entities, not micro. It should be highlighted that not only stakeholders of large companies but also of medium, small and even micro are interested in collecting and getting information about their sustainable development. Nowadays, when the European market is a global market the accountability, sustainability and reporting back become extremely important.

The main aim of this research paper is to carry out a comparative analysis of the non-financial reporting obligations of micro enterprises which keep account books in selected European countries.

At the beginning of this paper, criteria for classification of micro undertakings will be presented and compared. The analysis of the legal regulations will allow on identification and comparison of the registration requirements arising from the accounting law regarding these units. Next will be presented place and scope of non-financial data in the financial statement for micro in the researched countries.

The main conclusion of the analysis is: micro entities do not have to obligatory present non-financial information. It means that in each country the scope of disclosures of this information is not homogenous.

This paper is a basis for seeking the best solutions and practices of presenting non-financial information, which will be adequate to ensure the needs all groups of the stakeholders especially in their sustainable development.

Key words: *Financial statement, Micro enterprise, Non-financial reporting, Stakeholders, Sustainable development*

JEL code: L25, M13, M41

Introduction

Accounting provides quantitative information, primarily financial in nature, about economic entities that is intended to be useful in making economic decisions, in making reasoned choices among alternative courses of action (Accounting). The accounting system is a source of information for the internal and external stakeholders. Owners, employees, cooperators, suppliers, clients, competitors, financial institutions, government and social institutions as well as local, regional or national communities are groups of stakeholders expecting other types of information and other activities carried out by the company. The important issue is delivered optimal information, which should be characterised by credibility, usability, neutrality, comprehensibility, comparability (Martyniuk O., Szramowski D., 2017).

Studies made by Eirle and Schonefeldt (2010) indicates the research gap in the literature on financial reporting in SME sector, especially relating to micro enterprises. This gap has been partly fulfilled by the analysis carried out by the European Commission published in 2011 (Study on …, 2011) and in 2015 (Accounting Guide for SME, 2015) and studies carried out by Kotowska, Martyniuk (2016).

The European Directive 2013/34/EU has introduced to harmonise the requirements financial reporting for micro, small, medium and large enterprises throughout the European Union. In each EU country has been described situation and changes after that implementation, for instance: Croatia (Mamić Sačer I., Dečman N., Sever I., 2015), Estonia (Güldenkoh1 M., Silberg U., 2014), Italy (Provasi R., 2015), Poland (Sawicki K., 2014), Romania (Deac M., 2014), The Czech Republic (Žárová M., 2013), Serbia and Slovenia (Jovanović T., 2014), Croatia, Germany, United Kingdom, Slovakia, Romania (Zager K., Decman N., 2016), Latvia, Lithuania, Poland, Ukraine (Martyniuk O., Szramowski D., 2017), Latvia, Poland, United Kingdom (Kotowska B., 2018). Mentioned papers focus only about financial statement without additional non-financial information.

For purposes of that paper was conducted the literature review by using an electronic database Scopus, WEB of Science and EBSCO. Three groups of key words were used:

- non-financial reporting, micro,
- sustainable development, micro,
- information, sustainable development, micro.

For each search a key-word from each group was used simultaneously. The limitation of study was the fact that the publication had to be written in English. The result was always the same - no publication. That survey shows a research gap in literature on presenting sustainable development and other non-financial information in micro entities. This paper may fill it partially. The main purpose of this research paper is to carry out a comparative analysis of the non-financial reporting obligations of micro enterprises which keep account books in selected European countries. For the analysis was chosen four countries: Latvia, Lithuania, Poland with common political, economic and historical background and United Kingdom with other maturity level of economic development than chosen countries from Central Eastern Europe.

At the beginning of this paper, criteria for classification of micro undertakings will be presented and compared. The analysis of the legal regulations will allow on identification and comparison of the registration requirements arising from the accounting law regarding these units. Next will be presented place and scope of non-financial data in the financial statement for micro in the researched countries and sustainable development in micro entities in Poland.

1. Financial reporting in micro entities after implementation The Directive 2013/34/EU

A financial statement of an SME, according to IFRS for SMEs, should consist of: a balance sheet, a profit and loss account, a statement of stockholders' equity, a cash flow statement, and notes to the financial statement. In certain cases, an entity can prepare a statement of the revenues from a retained income instead of a profit and loss account and a statement of stockholders' equity. The standard does not lay down any specific patterns of reports (Jaworski J., 2012).

On 26 June 2013, was published the Directive 2013/34/EU about the annual financial statements, which allow to micro undertakings for many simplifications in preparation financial statements. According this Directive, these types of entities (FEE – Introduction):

- prepare abridged balance sheet and profit and loss account,
- publish an abridged balance sheet only,
- have no obligation to prepare notes to the financial statements and management report,

- use of "Cash +" accounting: accruals basis only for revenue, raw materials\consumables, staff costs, value adjustments to assets and tax,
- no Fair Value accounting,
- need to keep accounting records.

The New Accounting Directive for Small and Micro undertakings has a task to support governments, standard setters, EFAA (European Federation of Accountants and Auditors for SMEs) member organizations and other interested stakeholders in the efforts to transpose into National Legislation and jurisdictions. This supporting is extremely important. The significance of micro entity sector is confirmed by the macroeconomic data presented in table 1, which shows that micro undertakings constitute nearly 93.1% of the total number of enterprises in EU. Number of entities constitutes from 90.0% in United Kingdom till 95.7% in Poland.

Table 1

Micro entities – important numbers, as of 2017

Enterprise	Latvia		Lithuania		Poland		United Kingdom		EU 28
	Number	%	Number	%	Number	%	Number	%	%
Number of entities	104 795	92.1	170 659	92.8	1 623 093	95.7	1 930 179	90.0	93.1
Number of employees	208 970	33.4	277 281	29.4	3 445 505	37.8	3 657 105	18.3	29.4

Source: SBA – Latvia 2018; SBA – Lithuania 2018; SBA – Poland 2018, SBA – United Kingdom 2018

Comparison of share of the employed in this sector clearly indicates significance of the work positions offered by these entities for economies of the discussed countries. Employment in micro entities in the analyzed countries constitutes – from 18.3% in United Kingdom to 37.8% in Poland of the total number of the employed. In the EU countries, average employment in micro enterprises amounts to 29.4%.

In analysing countries, definition of micro is describing by three measures: employment, revenues from sales and the total assets (table 2). Two criteria for micro entities in Poland and United Kingdom – revenues from sales and total assets - are followed the maximum allowed in the Directive 2013/34/EU - approximate EUR to PLN and GBP translation, as in Latvia and Lithuania.

Table 2

Definition of micro enterprises according to size arising Accounting Law

Enterprise	Employment	Revenues from sales	Total assets	Other
Latvia				
Micro	0 - 9	≤ EUR 700 000	≤ EUR 350 000	-
Lithuania				
Micro	0 - 9	≤ EUR 700 000	≤ EUR 350 000	-
Poland				
Micro	< 10	< PLN 3 mln	< PLN 1.5 mln	Commercial companies
		EUR 2 mln		Natural persons, civil partnerships, general partnerships, professional partnerships
United Kingdom				
Micro	0 - 9	≤ GBP 632 000	≤ GBP 316 000	-

Source: author's description based on Law on the Annual Financial Statements and Consolidated Financial Statements – Latvia, The Republic of Lithuania Law on financial reporting by undertakings – Lithuania, Act of 29 September 1994 about accounting – Poland, FRS105 The Financial Reporting Standard applicable to the Micro-entities Regime - United Kingdom.

In the researched countries, the criteria for exempting micro units from keeping accounting books are: the legal form and the sales income. While analysing the legal form criterion, it can be noticed that natural persons are exempt from keeping accounting books (Latvia, Poland), partnerships (Poland). Private limited companies in all analysed countries are not subject to this exemption. In case of the sales income, the limits exempting enterprises differ significantly. In Latvia EUR 300 000, in Poland this limit is EUR 2 000 000. Lithuania has not a such limitation. Author did not find information about United Kingdom, which does not mean that such sales income limit do not exist.

In table 3 are presented mandatory elements of financial statement for micro undertakings.

Table 3

Mandatory elements of a financial statement for micro undertakings in selected European countries

Element of financial statement	Latvia	Lithuania	Poland	United Kingdom
Balance Sheet	+	+	+	+
Profit and Loss Account	+	+	+	+
Notes to the Financial Statement	-	-	-	-
Other	-	-	-	Management report

Source: author's description based on Lang M., Martin R. 2016, Act of Accounting – Poland and Sawicki K., 2014, Law on the Annual Financial Statements and Consolidated Financial Statements – Latvia, The Republic of Lithuania Law on financial reporting by undertakings – Lithuania, FRS105 The Financial Reporting Standard applicable to the Micro-entities Regime - United Kingdom.

In all analysed countries, for the micro entities is compulsory to prepare a balance sheet and a profit and loss account. They can prepare a simplified form of that element of financial statement. In Lithuania, Poland and United Kingdom, there are special layouts of balance sheet and profit and loss account. In Latvia, the simplified form does not exist.

This comparison shows similarities in the financial reporting obligations of the micro entities. In selected countries the scope of disclosures of information in financial statement, which is a basis for decision-making and for evaluation of the enterprises, is not homogenous (Kotowska B., 2018).

It can be stated that the mandatory set of the elements of financial reports of micro-entities is similar in all the researched countries. In Latvia, Poland and United Kingdom accounting principles and the rules for preparing financial statements are regulated by one legal act. The most extensive regulations related to financial reporting can be found in Lithuania, where the regulations in this field are included in three legal acts: Republic of Lithuania Accounting Law, Law of the Republic of Lithuania on financial reporting by undertakings and Business Accounting Standards. It seems that this may reduce the transparency of these regulations and can constitute a certain administrative barrier for micro-entities.

The European Directive 2013/34/EU is a first huge step for taking care of the micro entities, which finally can prepare financial statement in simpler form. This Directive introduces among others: limitation the scope of regulations, improving competitiveness and internationalization of information, providing necessary but not excessive financial information for competing with other micro units.

2. Non-financial reporting in The Directive 2014/95/EU

The Directive 2014/95/EU of the European Parliament and of the Council of 22 October 2014 amends Directive 2013/34/EU as regards disclosure of non-financial and diversity information,is extending the scope of non-financial information:

1) introduction of the requirement to disclose in the activity report a minimum of relevant information regarding at least environmental issues, social and labor matters, respect for human rights and counteracting corruption and

bribery (the so-called reporting on corporate social responsibility - CSR); member states using the option in the directive will be able to allow disclosure of this information by companies in the form of a separate report;

2) the disclosures will take the form of, among others description of the policy conducted in a given area, its results and risks and risk management in non-financial matters;
3) the possibility of reporting according to the rules chosen by the companies (own, national, EU or international);

The Directive also introduces an obligation to disclose - in a statement on the application of corporate governance principles (which is part of the activity report) - information on the company's diversity policy composition of its administrative, management and supervisory bodies (regarding aspects such as: age, gender, geographical origin, education and professional experience), objectives of this policy, its implementation and results in a given reporting period.

Organisations must prepare a non-financial report if they:

1) are a large undertaking - exceeding 2 out of 3 of the following criteria for two successive accounting periods:
   - a balance sheet total of EUR 20 million, or
   - a net turnover of EUR 40 million, or
   - average number of employees of 250
2) are a public-interest entity, meaning any entity which is: trading transferable securities on the regulated market of any Member State, a credit institution, an insurance undertaking, designated by a Member States as a public interest entity;
3) have an average number of employees exceeding 500 during the financial year.

In this Directive are included suggestions for presenting non-financial information only for large entities and groups. Nowadays, when the European market is a global market the accountability, sustainability and reporting back become extremely important. It means that not only stakeholders of large companies but also of medium, small and even micro are interested in collecting and getting information about their sustainable development.

It is widely recognized that environmental, social and governance information reporting is important. The lack of corporate information disclosure restrains corporate accountability and responsible behaviour. For the companies themselves, non-financial reporting is a way to improve risk management and long term social, environmental and financial performance and competiveness. For the communities and citizens affected by the activities of the corporation, non-financial information disclosure enables them to assert their rights and restore their trust in businesses. For investors and Stakeholders, non-financial reporting is also a way to reinforce the stability and predictability of the firm's performance on financial markets [What is …]

As stated in the Directive 2014/95/EU: "*...Indeed, disclosure of non-financial information is vital for managing change towards a sustainable global economy by combining long-term profitability with social justice and environmental protection. In this context, disclosure of non-financial information helps the measuring, monitoring and managing of undertakings' performance and their impact on society...*" [Member state…]

Non-financial information and development of the company in sustainable way become crucial for all groups of stakeholders.

3. The place and scope of non-financial data in the financial statement of micro entities

In each country, the main national laws and accounting regulations are to adjust the presentation of financial information in the financial statements and annual reports. Indirectly, however, it can be found connections to the regulation of non-financial data. Companies are required to prepare annual reports, mandatory for financial and non-financial performance analysis, as well as environmental and employee-related information (Dagilienė, 2017).

Therefore, the entity has the right to decide how much non-financial information they want to disclose. Other necessary information in the annual report includes financial performance aspects, such as additional explanations to annual financial reports, changes in shares, activity of the company's branches and representative offices, other important events, operating plans and forecasts, financial instruments, research and development activity, sustainable development etc. The law sets out what non-financial data should disclosed not defining more detailed how it has to be carried out.

Micro undertakings have to prepare obligatory: the balance sheet, profit and loss account and very short and pure general and supplementing information the balance sheet. They do not have to mandatory prepare the annual report, thus disclosure of non-financial information in the financial statements is not mandatory. Analysis of detailed information which should be presented in financial statement prepared by micro in chosen countries is presented below.

Latvia

In Latvia, in the Law on the Annual Financial Statements and Consolidated Financial is mentioned that if a micro-entity does not exceed two of limit values, it is permitted not to draw up an annex to the financial statement. In such case the detailed information shall be provided in the end of the balance sheet in the form of notes with figures, text or tables (hereinafter - notes to the balance sheet), as well as information regarding the average number of employees in the financial year.

The limit values referred to shall be as follows:

1) balance sheet total - EUR 50,000,
2) net turnover - EUR 100,000,
3) average number of employees during the financial year - 5.

A micro-entity which does not draw up an annex to the financial statement and in the financial year:

1) has changed the layout of the profit or loss account, in addition shall explain the reason for such change,
2) has combined insignificant amounts, which apply to several balance sheet items, in one balance sheet item, in addition shall provide details of such total amount,
3) has detected mistakes of the previous financial years or changed the accounting policy and accordingly adjusted the data of the previous financial years, in addition shall provide an explanation regarding each case,
4) has included interest of received borrowings in the production cost price of the newly established object, in addition shall provide information regarding the amount of interest included in the cost price.

Lithuania

In Lithuania, the 6th Business Accounting Standard "Explanatory notes" sets out what information shall be presented in explanatory notes in order to provide a fairer understanding of the information contained in other financial statements and to disclose additional material information excluded from such other statements.

Explanatory notes – a financial statement explaining amounts disclosed in other financial statements and disclosing additional material information that is not presented in such other financial statements. They include the following parts: a general part, accounting policies, comments.

The general part of explanatory notes shall provide general information about the entity:

1) the entity's registration date.
2) if the entity belongs to a group of entities, the names, codes and head offices of the parent and principal parent entity.
3) if the entity holds an interest in a legal person of unlimited civil liability, the name, code, head office and legal form of such legal person.

4) the number of branches and representative offices of the entity; the names, codes and head offices of subsidiaries, associates and jointly controlled entities.
5) a brief description of the entity's activities.
6) an average number of employees during the current and previous reporting year, or a number of employees at the end of the current and previous reporting year.

Explanatory notes shall disclose information about accounting policies applied by the entity for keeping accounting records and preparing financial statements, which is likely to influence the decisions of the users of information provided in the financial statements. This part of explanatory notes shall specify and briefly describe the main accounting principles, methods and rules, which have been applied to material items and in accordance to which the entity has kept its accounting records and prepared financial statements.

In the event of changes in accounting policies the reasons for such application shall be disclosed.

Comments of explanatory notes shall disclose the information of the reporting period and at least one previous reporting period (comparative information). Comments of explanatory notes shall explain only the material amounts of financial statements and reasons for their changes.

Poland

In Poland, in Annex No 4 the Act of Accounting is included the scope of information which should be disclosed in the financial statement for micro entities.

The entity has to prepare general information about:

1) business name, head office and address or place of residence and address as well as the number in the relevant court or other register,
2) the duration on the undertaking's activity, if limited,
3) the period covered by the financial statements,
4) the applied accounting principles provided for micro undertakings, indicating the selected simplifications,
5) an indication of whether or not the financial statements were prepared under the assumption that the undertaking would continue operations in the foreseeable future, and whether there are any circumstances indicating that the continuation of the undertaking's operations may be at risk,
6) a presentation of the accepted accounting principles (policy), including the methods of measuring assets and liabilities (including depreciation and amortisation methods), of measuring the financial results, as well as the method of preparing financial statements, to the extent left to the discretion of the undertaking by the Act.

Next, should be presented information supplementing the balance sheet:

1) amount of any financial liabilities, including on account of debt instruments, guarantees and suretyships or contingent liabilities not shown in the balance sheet, indicating the nature and form of collateralised amounts payable; any liabilities relating to pensions as well affiliated or associated undertakings are disclosed on a separate basis;
2) amounts of advance payments and loans granted to members of managing, supervising or and administrative bodies, indicating the interest, main terms and conditions thereof, as well as any amounts repaid, written off or cancelled as well as liabilities incurred on their behalf in the form of guarantees or suretyships of any kind, indicating the total amount for each category;
3) treasury shares, including:
   a) the reason for the undertaking acquiring its own shares in the financial year,

b) the number and nominal value of shares acquired and disposed of in the financial year, and in the event that they do not have a nominal value, their carrying value, as well as the percentage of the share capital that these shares represent,
c) in the event that they are acquired or disposed for consideration, also the equivalent value of such shares,
d) the number and nominal value or, in the event that they do not have a nominal value, the carrying value of all the shares acquired and retained, as well as the percentage of the share capital that these shares represent.

United Kingdom

In UK, FRS 105 The Financial Reporting Standard applicable to the Micro-entities Regime what kind of information which should be presented in the notes to the financial statements, which are as the foot of the statement of financial position. Supplementing information lists below:

1) advances, credit and guarantees granted to directors - the details required are: its amount, an indication of the interest rate, its main conditions, any amounts repaid, any amounts written off, any amounts waived. The details required of a guarantee are: its main terms, the amount of the maximum liability that may be incurred by a micro-entity, any amount paid and any liability incurred by a micro-entity for the purpose of fulfilling the guarantee (including any loss incurred by reason of enforcement of the guarantee,
2) financial commitments, guarantees and contingencies.

In all mentioned countries, what is common, presentation and analysis of obligatory scope in additional information to the financial statement clearly indicate that micro entities should prepare only a few detailed information supplementing for better understanding the financial report. It can be noticed that they are focused only about few aspects. Disclosure of non-financial information in the financial statements is not mandatory. Thus, the entities can omit to present non-financial information such as analysis of financial and non-financial performance, information relating to environmental and employee matters. Micro entities do not have to prepare and deliver non-financial information about their activities. They could present this information in report of management if they want to, but usually they do not do this. For large and medium enterprises have been prepared many regulations, tools, clues and layouts suitable for preparing and presenting a such information – Global Sullivan Principles, Initiative Global Impact, ISO 26000, ISO 14000, EMAS, standard Social Accountability 8000, standard AccountAbility 1000 and Global Reporting Initiative. Taking into consideration the fact that micro undertakings have limitation of financing and human resources the mentioned layouts and tools are to difficult to use by them. The lack of support for micro entities on this area lead the gap of presentation non-financial information.

Financial statements presented by micro entities are focused generally on obligatory elements, not taking care about additional information which are connected with their development in sustainable way, what is extremely important for present and future society. Nevertheless, the awareness of micro companies still increase. In 2011, at the request of PARP, was conducted the largest and most comprehensive study - "Evaluation of the implementation of the standards of corporate social responsibility, along with developing a set of indicators of social responsibility in the micro, small, medium and large companies"[1].

The most important conclusions for micro undertakings are listed below:

1) the term "corporate social responsibility" is familiar to 57% representatives of micro-enterprises,

[1] The methodology has been based on ISO 26000 allowed to ensure that the study was conducted in relation to the best international practice. The study used a nationwide sample of companies - 850 units, of which micro-enterprises accounted for 200 units, 250 small, medium 300, a large 100 [*Ocena*, 2011]. The study has been consisted of two parts: the first was focused on the meaning of the concept of CSR, the second - on the activities of companies in different areas of CSR.

2) the analysis of key CSR issues for enterprises indicates that there are mainly four areas: consumer issues (74%), labor practices (68%), organizational governance (58%) and fair operating principles (50%); less emphasis is placed on issues related to human rights (14%), the environment (13%) and community involvement (5%),
3) 58% of micro enterprises recognize the benefits of CSR principles in business activities,
4) size of the enterprise is a crucial decisive factor to determine who is responsible for the supervision of CSR - in 59% of micro CSR activities are primarily the owner or co-owner[2],
5) enterprises partners in the CSR-related activities are the most common customers 30% and suppliers 26%.

The concept of corporate social responsibility could bring benefits to the company, but it can also involve financial outlays which entity have to bear. However, there are many activities related to the CSR concept that can be used by enterprises without having a large budget, especially by newly established business entities, very often micro. Various types of training, educational and charitable activities will not constitute a significant burden on the company's activity and may be an important factor influencing the improvement of the competitive situation of the company. These activities of the company can become more visible on the market at an early stage of development, which will positively affect its image and reputation. The society increasingly demands that enterprises engage socially and ecologically [Leoński, 2014].

Conclusions and proposals

Nowadays, it can be observed the growing expectation of corporate social responsibility acticvity in companies. It can be seen as an ethical and honest proceeding towards a wide group of stakeholders, as well as providing financial and substantive support to the local community. Corporate social responsibility is a concept that affects both the environment and the enterprise itself. Micro entities have noticed that pro-social and pro-ecological activities are profitable in the long-term and may contribute to the organization's success on the market. These activities improve the company's image, but also give to specific financial effects. [Leoński, 2015].

Results of the PARP studies suggest that micro enterprises are aware that in a competitive environment, it is necessary to create programs aimed at local communities, employees and other stakeholders what is increasingly important way of achieving profit and the accompanying elements development.

Internal and external users have different needs of information, but the basis for their acquisition and collection is accounting. Reporting becomes more and more important by preparation and presentation of financial statements from activities of companies guided by social responsibility.

The main conclusion of the analysis is: micro entities have duties to present only few supplementing information for balance sheet and profit and loss account, which is not homogenous in analysing countries. Disclosure of non-financial information in the financial statements is not obligatory for micro entities. Thus, the undertakings can omit to presentation of information such as analysis of financial and non-financial performance, information relating to environmental and employee matters. It does not mean that they could not present this information in report of management if they want to.

Stakeholders of micro entities are become interested in collecting and getting information about their sustainable development. For large companies and groups was prepared many layouts and guidlines about presentation this information. It is significant the lack of layouts and standards for presenting and scope of non-financial for micro. Taking care of micro entities should be connected with supporting them in collecting and presenting that information.

[2] The results confirm that in the SME sector, many functions are automatically assigned to the management board or the owner. However, for each company the final responsibility for CSR, as a philosophy of doing business, always rests with the leadership, because it is out the directions and standards and building a base of organizational culture. Operational activities in the field of CSR, where necessary, can be delegated - whether CSR department, or to a marketing or HR.

Limited source of human resources and financing are obstacles for that companies. Nevertheless, it is crucial to deliver non-financial information for all interested stakeholders.

The concept CSR and sustainable development becomes important for micro entities although they rather do not disclosure this information in notes to the financial statement.

This paper is a basis for underline the problem, which in author's opinion becomes crucial to solve - how to present this information – taking into consideration the scope and possibilities suitable for micro entities for delivering non-financial information for interested stakeholders. In author's opinion it should be prepared a layout for micro, which will be simple to fill, what will be next step of the future study.

Bibliography

Accounting, [Online] Available at: http://www.accountingverse.com/accounting-basics/introduction-to-accounting-summary.html, [Accessed 1 March 2018].

Accounting Guide for SME. SME Accounting in Europe: insights provided by a desk research and survey, CIP Programme 153/PP/ENT/CIP/12/F/S01C04, Ernst&Young 2015. [Online] Available at: https://ec.europa.eu/growth/smes/business-friendly-environment/accounting_en [Accessed 7 January 2019].

Act of September 29, 1994, about accounting, Dz. U. 121/1994, pos. 591 as amended.

Dagilienė, L. 2017. Sustainability reporting in Lithuania: the perspective of integrated reporting. Horváth, P., Pütter, J, Eds. *Sustainability reporting in Central and Eastern European companies: international empirical insights*; Springer International Publishing: Cham, Switzerland, 87-107.

Deac M., 2014. The New EU Accounting Directive – A Comparison of Reporting Requirements, *Annals of the „Constantin Brâncuşi" University of Târgu Jiu, Economy Series, Issue 2/2014*, 197-205.

Directive 2013/34/EU of the European Parliament and of the Council of 26 June 2013 on the annual financial statements, consolidated financial statements and related reports of certain types of undertakings, amending Directive 2006/43/EC of the European Parliament and of the Council and repealing Council Directives 78/660/EEC and 83/349/EEC [Online] Available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:182:0019:0076:en:PDF [Accessed 1 April 2016].

Directive 2014/95/EU of the European Parliament and of the Council of of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups [Online] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014L0095 [Accessed 7 January 2019].

Eirle, B., Schonefeldt, A., 2010. The Research Landscape: research in SME financial reporting. *Presentation 33rd EAA Congress 2010*. [Online] Available at: http://eaa2010.eaa-online.org/userfiles/file/EAA%202010%20-%20Symposium%205%20-%20B_%20Eierle.pdf [Accessed 1 March 2016].

FEE, *Introduction to the New EU Accounting Directive*. [Online] Available at: https://www.google.pl/url?sa=t&rct=j&q=&esrc=s&source=web&cd=10&ved=0ahUKEwiJ9tbUxcXZAhVEUhQKHY9yB_kQFgh1MAk&url=https%3A%2F%2Fwww.accountancyeurope.eu%2Fwp-content%2Fuploads%2FNew_Accounting_Directive_Presentation.pdf&usg=AOvVaw0BfnxnrLPYvjlslTQlkeqE [Accessed 1 February 2018].

FRS 105 The Financial Reporting Standard applicable to the Micro-entities Regime. [Online] Available at: https://www.frc.org.uk/accountants/accounting-and-reporting-policy/uk-accounting-standards/standards-in-issue/frs-105-the-financial-reporting-standard-applicabl [Accessed 7 January 2019].

Güldenkoh1 M., Silberg U., 2014. *Impact of the changing European Union regulations on Estonian accounting policies*. [Online] Available at: https://www.researchgate.net/publication/307796908_Impact_of_the_changing_European_Union_regulations_on_Estonian_accounting_policies_Euroopa_finantsaruandluse_muudatuste_sobivus_Eestis [Accessed 10 April 2018], 80-98.

IFRS for SMEs, International Financial Reporting Standard for Small and Medium Sized Entreprises. [Online] Available at: http://www.ifrs.org/IFRS-for-SMEs/Pages/IFRS-for-SMEs-and-related-material.aspx [Accessed 1 March 2016].

Jovanović T., 2014. *Comparison of Accounting Systems for Micro Legal Entities in Slovenia and Serbia referring to the New EU Accounting Directive*. Financial Reporting Function of the Corporate Governance, 16-19.

Jaworski, J., 2012. *Informacja finansowa w zarządzaniu małym przedsiębiorstwem. Potrzeby – źródła – wykorzystanie*, CeDeWu, Warszawa.

Kotowska B., 2018. Financial reporting in the micro enterprises in selected European countries. *New challenges of economic and business development - 2018: productivity and economic growth*. International Conference, Riga, Latvia, May 10–12, 2018: Proceedings. Riga: University of Latvia, 335-347.

Kotowska B., Martyniuk O., 2016. Financial and Tax Reporting in The SME Sector in Selected Eastern-European Countries. *New Challenges of Economic and Business Development – 2016*. International Conference, Riga, Latvia, May 12–14, 2016: Proceedings. Riga: University of Latvia, 407-421.

Lang M., Martin R., 2016. *The New Accounting Directive: A Harmonised European Accounting Framework?* [Online] Available at: https://www.google.pl/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0ahUKEwi2gYbKwv3ZAhUI2KQKHVH_DPwQFggsMAA&url=http%3A%2F%2Fwww.efaa.com%2Fcms%2Fupload%2Fefaa_files%2Fpdf%2FPublications%2FArticles%2FEFAA_Accounting_Directive_Survey_2016.pdf&usg=AOvVaw3YKOyLVGjjGNgUeq4q9AjI [Accessed 7 January 2019].

Law on the Annual Financial Statements and Consolidated Financial Statements [Online] Available at: https://likumi.lv/ta/en/id/277779-law-on-the-annual-financial-statements-and-consolidated-financial-statements [Accessed 7 January 2019].

Law of the Republic of Lithuania on financial reporting by undertakings [Online] Available at: https://e-seimas.lrs.lt/portal/legalActPrint/lt?jfwid=-fxdp7asq&documentId=bfadd74232fb11e6a222b0cd86c2adfc&category=TAD [Accessed 7 January 2019].

Leoński W., 2014. Koncepcja CSR na wczesnym etapie rozwoju firmy, in *Ekonomia i Zarządzanie*, 6-8.

Leoński W., 2015. *Koncepcja CSR w polskim sektorze małych i średnich przedsiębiorstw*. Studia Ekonomiczne . Zeszyty Naukowe Uniwesrytetu Ekonomicznego w Katowicach, nr 229, 92-102.

Mamić Sačer I., Dečman N., Sever I., 2015. *The influence of accounting regulation simplification on the financial reporting of micro entities – the case of Croatia*. Economic Research-Ekonomska Istraživanja, 28:1. DOI: 10.1080/1331677X.2015.1084888. 593-607.

Martyniuk O., Szramowski D., 2017. *Financial Reporting for Micro-entities - A Case of Selected Eastern European Countries.* [Online] Available at: https://www.researchgate.net/publication/324173986_FINANCIAL_REPORTING_FOR_MICRO-ENTITIES-A_CASE_OF_SELECTED_EASTERN_EUROPEAN_COUNTRIES [Accessed 7 January 2019], 143-156.

Member State Implementation of Directive 2014/95/EU. [Online] Available at: https://www.globalreporting.org/resourcelibrary/nfrpublication%20online_version.pdf [Accessed 7 January 2019].

Ocena stanu wdrażania standardów społecznej odpowiedzialności biznesu. Zestaw wskaźników społecznej odpowiedzialności w mikro, małych, średnich oraz dużych przedsiębiorstwach. Raport, MillwardBrown SMG/ KRC PwC, Projekt współfinansowany przez Unię Europejską ze środków Europejskiego Funduszu Rozwoju Regionalnego, Warszawa, 9 grudnia 2011 roku.

Provasi R., 2015. *The New European Directive 2013/34/EU on the Financial Statements. Evidence about its Introduction in the Italian Accounting System*. [Online] Available at: https://www.researchgate.net/publication/284716565_The_new_European_Directive_201343UE_on_the_Financial_Statements_Evidence_about_its_introduction_in_the_Italian_Accounting_System [Accessed 10 April 2018], 1-8.

Republic of Lithuania Accounting Law [Online] Available at: https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/1fd977c249b611e68f45bcf65e0a17ee?jfwid=rp9xf49px [Accessed 7 January 2019].

Sawicki K., 2014. *Podstawowe kierunki zmian w sprawozdaniach finansowych mikroprzedsiębiorstw według nowej dyrektywy Unii Europejskiej*. Zeszyty Naukowe Uniwersytety Szczecińskiego, nr 827, Finanse, Rynki Finansowe, Ubezpieczenia nr 69, 231-242.

SBA – Latvia, The Small Business Act for Europe, SBA Fact Sheet 2018 – Latvia [Online] Available at: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=2ahUKEwjIqe7ty93fAhVusIsKHYWeDRoQFjABegQICRAC&url=https%3A%2F%2Fec.europa.eu%2Fdocsroom%2Fdocuments%2F32581%2Fattachments%2F17%2Ftranslations%2Fen%2Frenditions%2Fnative&usg=AOvVaw0uBiPcsTs6gaFaj3gqyzic [Accessed 7 January 2019].

SBA – Lithuania, The Small Business Act for Europe, SBA Fact Sheet 2018 – Lithuania [Online] Available at: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=2ahUKEwj4172PzN3fAhVooosKHReaCNQQFjACegQIBBAC&url=https%3A%2F%2Fec.europa.eu%2Fdocsroom%2Fdocuments%2F32581%2Fattachments%2F18%2Ftranslations%2Fen%2Frenditions%2Fnative&usg=AOvVaw3JG2FZBbzbn6aLMNEexEVF [Accessed 7 January 2019].

SBA – Poland, The Small Business Act for Europe, SBA Fact Sheet 2018 – Poland [Online] Available at: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=2ahUKEwjKzOixzd3fAhUDi8MKHcudA3wQFjABegQICRAC&url=https%3A%2F%2Fec.europa.eu%2Fdocsroom%2Fdocuments%2F32581%2Fattachments%2F22%2Ftranslations%2Fen%2Frenditions%2Fnative&usg=AOvVaw0Jo_DPQGlRHex7cvMr50hD [Accessed 7 January 2019].

SBA – United Kingdom, The Small Business Act for Europe, SBA Fact Sheet 2018 – United Kingdom. [Online] Available at: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=2ahUKEwjv7PC-zt3fAhXEposKHaX7CR8QFjABegQICRAC&url=https%3A%2F%2Fec.europa.eu%2Fdocsroom%2Fdocuments%2F32581%2Fattachments%2F29%2Ftranslations%2Fen%2Frenditions%2Fnative&usg=AOvVaw1Qogb3ZHu1BQ8d-yvQsR5L [Accessed 7 January 2019].

Study on Accounting requirements for SMEs, 2011. [Online] Available at: http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=8381 [Accessed 24 February 2016].

What is non financial reporting and why is it important for corporate transparency?, [Online] Available at: https://www.access-info.org/cos/12195 [Accessed 7 January 2019].

Zager K., Decman N., 2016. *Guidelines and Recommendations for Improving the Micro Entities Model of Financial Reporting*. [Online] Available at: https://www.sciencedirect.com/science/article/pii/S2212567116303483 [Accessed 1 March 2018], 451-457.

Žárová M., 2013. *Changes in EC Directives and Impact on Presentation of Financial Statements in the Czech Republic*. [Online] Available at: https://www.vse.cz/efaj/99 [Accessed 10 April 2018], 21-45.

EMIGRATION AND REMITTANCES PATTERN ANALYSIS IN LAGGING BEHIND REGIONS IN BALTICS: CASE STUDIES OF NARVA, DAUGAVPILS AND VISAGINAS

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Abstract. In this paper author is researching the economic effect of emigration in Baltic region. Author is particularly looking at three economically lagging behind regions and emigrations impact on regional economies in last decade. Author has chosen several significant factors of economic influence: remittances and migration flows size, Gross domestic product, level of average and minimal salaries, labour and Value Added Taxes, which all affect local economies/communities.

The regional scope of this research is linked with distinctive economically lagging behind regions: Estonian Narva, Latvian Daugavpils and Lithuanian Visaginas. All three regions for long time were showing comparatively high unemployment rates, average and minimal salaries in these regions are as well much smaller than in capitals. Another common feature of these Baltic lagging behind regions is its Russian socio-linguistic environment- these regions have high density of Russian speaking minority population.

The objective of this research paper is (i) to measure the behaviour of the emigration in selected regions, (ii) compare emigration process and its patterns within three Baltic countries and (iii) evaluate the overall impact of emigration in economically lagging behind regions.

The overall impact of emigration on the economies of Baltic countries is evaluated by weighting negative and positive factors. Two quantitative approaches were developed in order to measure emigration's influence on the selected Baltic economies and have more realistic results. Each of these scenarios contains different set of parameters and these combinations describe economic impact of the migration. Underlying formula of the undertaken approaches, with small modifications may be used for examination of similar issues in other regions and countries.

Emigration certainly has an economic impact, moreover on economies of lagging behind regions. In this paper it is proved, that negative effects of emigration increases, if the level of life/ salary grows in emigration-source country. Overall economies of Baltic countries receive fewer transfers from abroad, than taxes, which could have been paid by current emigrants. However, situation is different in economically lagging behind regions, where salaries are smaller and remittances have relatively higher value. That is why in some cases regional economies are gaining much more from remittances, than they could have earned from taxes of current emigrants, at least in current socio-economic environment.

Key words: *economic migration, remittances, taxes, Baltic region, lagging behind regions*

JEL code: J11, J15

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Introduction

Migration nowadays is a new norm of expression of attitude. People are leaving one socio-economic environment in order to explore the benefits of another. Migration derives from a set of fundamental causes: inequalities in development, employment prospects, incomes and living conditions between and within countries. (King, R. 2008)

Worldbank's annual research on migration shows that the quantity of people changing locations is constantly growing. (Worldbank, 2017) Size of remittances and money transfers services are following the same trend and developing rapidly.

Latvian emigration studies done by O. Krasnopjorov and M. Hazans prove that emigration from Latvia had a significant impact on the economy. M. Hazans (2013) reported that emigration could be up to 200 000 people, which is more than 10% of the Latvian population. Migration researcher O. Krasnopjorov (2011) analysed emigration size by comparing inflows and outflows of people at the Riga airport and Latvian harbours. He concluded that the total number of emigrants could be around 177 000 people.

Baltic region in last ten years was heavily influenced by the emigration, both positively and negatively. Latvians, Lithuanians and Estonians were massively leaving in the direction of the Western and Northern Europe. (Krasnopjorov O., 2011; Hazans M.,2013) Number of studies show the negative impact of emigration as brain drain and labour force (Barcevicius, 2015) and much less researches are taking a balanced approach in analysing not only negative side of the emigration, but as well the benefits.

It is calculated that migration's impact can be analysed by weighting four main factors: Eligibility concept, requirements and needs; status security and associated rights. (Niessen, J. 2014) However these quality-factors and many others are not quantifiable. That is why in this research not considered.

Migration can be seen through a resource allocation framework, because migration is a mean in promotion of efficient resource allocation. (Sjaastad L., 1962) In this research only part of resource allocation framework is taken in consideration- remittances are main instruments of bringing positive economic change in origin countries.

While migration has economic, social, and cultural implications for the sending and host societies, remittances the migrants send home are perhaps the most tangible and least controversial link between migration and development. (Ratha D, 2007)

In this research author is modelling economic impact of emigration not only on National economies of each of the Baltic countries, but as well on the regions, which are to the highest extent exposed to the emigration. Economically lagging behind regions in Baltics during last ten years were experiencing both positive and negative impacts of the migration.

The regional scope of this research is linked with the distinctive economically lagging behind regions in Baltics: Estonian Narva, Latvian Daugavpils and Lithuanian Visaginas. Selected regions are sharing many common features: high level of unemployment, one of the smallest average wage within the countries, distant location from the capital, proximity of the border, high density of Russian speaking minority populations and others. The objective of this research paper is (i) to measure the behaviour of the emigration in selected regions, (ii) compare emigration process and its patterns within three Baltic countries and (iii) evaluate the overall impact of emigration in economically lagging behind regions.

Main limitation for the research was an unavailability of regional statistics and segmentation of national data into the regions. Research is based on statistical information analysis and adjustment of available data on lagging behind regions.

While studying emigration and remittances in the lagging behind regions author was using different International organisations sources- Worldbank annual reports, International organisation of a migration and three Baltic countries statistic bureau information.

Economy is based on a taxation system and a society. As a result, in economic terms, emigration translates into unpaid taxes from salaries and from the everyday expenditure on goods and services. At the same time, migrant's origin-country economy is gaining remittances and expenditure tax, which is paid from spending received remittances. Two scenarios were developed with different impact ratio to the emigrants 'origin-countries' economies.

In the first model, the smallest impact on emigrant's origin-countries economies is projected. In this scenario, factors such as average emigration size, minimal wage level and Value Added Tax (VAT) are taken in consideration.

The second model is an average impact scenario on migrant's origin-countries economies. Average emigration size, average wage, Income tax and VAT are considered. It projects that all the emigrants would have been paying taxes from average salary and VAT from the expenditure had the emigrants stayed in the origin-country.

Data and methodology

Main limitation for the research is unavailability of regional statistics and segmentation of national data into the regions. Research is based on statistical information analysis and adjustment of available data on economically lagging behind regions in Baltic countries.

From a variety of indications for the economic impact author has chosen a limited number the most available and effective measurements. Number and quality of selected factors is dictated by availability of data throughout three Baltic region countries and its economic importance. These factors are divided into (i) positive economic impact indications like size of remittances, share of the remittances in GDP and (ii) negative economic impact indications which are calculated by weighting unpaid labour tax, Value Added Tax from either average or minimal salaries.

While studying emigration and remittances in the lagging behind regions author was using different International organisations sources - Worldbank annual reports (2017), International organisation of a migration and three Baltic countries statistic bureau information (2018), information from National statistical offices of Lithuania, Latvia and Estonia.

Skilled and unskilled migrants have opposite effect on expenditure of governments programs such as unemployment compensation and other existing social benefit. (Borjas G.J., 1995) Models in this research are examining the basics relationship between migrants and their countries economies and skills and professional degrees of the emigrants are not taken in consideration in these basic scenario calculations.

Economy is based on a taxation system and society. As a result, in economic terms, emigration translates into unpaid taxes from salary and from the everyday expenditure on goods and services. (Borjas G.J., 1995) At the same time, migrants origin-country economy is gaining remittances and expenditure tax, which is paid from spending the money received from emigrants.

In order to visualise information about emigration and make it comparable in between three Baltic countries - author presumes that every emigrant would have had employment and paid taxes, if stayed in the country of origin. In more comprehensive models it is possible to differentiate in between migrants, including various income or different society groups (children, students, retired, unemployed). But in this research author prepared only two models with a narrow and straightforward economic effect on the selected country economies. Much more detailed models of economic impact are built in authors masters degree thesis (M.Kozlovs, 2013), where four models are built. Due to the length of this publication it was impossible to include more comprehensive models.

Two scenarios were developed with different impact ratio to the emigrants 'origin-countries' economies. In the first model, the smallest impact on the economy is projected. In this scenario, factors such as average emigration size, minimal wage level and Value Added Tax (VAT) are taken in consideration. This scenario includes a limited number of factors and provides quite a narrow impact scenario on economy.

The second model is an average impact scenario on migrants' origin-countries' economies. Average emigration size, average wage, Income tax and VAT are considered. It projects that all the emigrants would have been paying taxes from average salary and VAT from the expenditure had the emigrants stayed in the origin-country.

In both models author is comparing unpaid taxes with the size of existing remittances. In the first scenario VAT from minimal wage expenditure shows an impact of every migrant. In the second scenario impact of one migrant is judged by

VAT and Income taxes from the average wage expenditure. In both scenarios emigration's economic affect is compared with existing remittances flow's size.

Author was gathering data through National statistic agencies in Lithuania, Latvia and Estonia. In several cases regional data was not available and author was adjusting data with GDP and population size. In this research observation period was set to five years from 2014 until 2018.

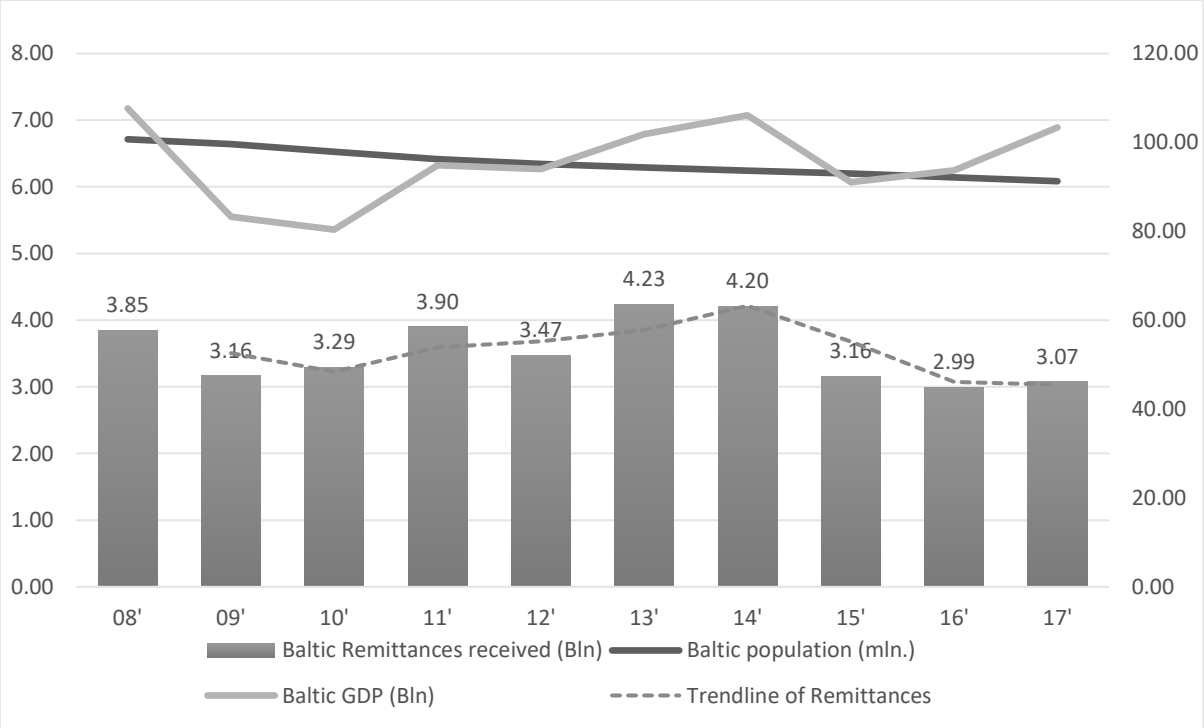
Data on remittance size and average number of emigrants was used in order to identify possible positive impact of emigration on home countries economies. Labour tax, VAT and emigration size were the main criteria to judge about negative impact of the emigration. The author developed mathematical equations in both impact scenario measurements.

Research results and discussion

The three Baltic countries – Latvia, Lithuania and Estonia in last decade were facing brutal reality of the EU competition for the labour. Baltic region is part of common Schengen market, which provides equal opportunities for the migration of labour within the European union. Access to the free movement in the EU in combination with economic problems in Baltic region was a big impact for the society. The population of the Baltic region in 2008 accounted for 6.7 mln. population. In less than a decade Baltic region's population shrunk down approximately by 630.000 people. (Figure 1)

However, in the same time period all three Baltic economies gained significant amount of remittances, which were sent back by migrants to their families and friends back at home. Since 2008 emigrants from Baltic countries transferred more than 35 Bln EUR to their homes. (Worldbank, 2018)

Baltic GDP was constantly growing since 2010, but still in 2017 it didn't reach pre-crisis level. Baltic remittances were following the track of the GDP fluctuations, but during the economic downturn's remittances were more likely to grow, than fall. For example in 2009 remittances slightly grew, while the economies of three Baltic countries continued to shrink. (Figure 1)



Source: author's calculations based on CSB; stat.ee; stat.gov.lt

Fig. 1. **GDP, Remittances and population change in Baltic region 2008-2017**

Baltic countries in less than ten years lost lots of its population: Lithuania - more than 370000, Latvia 240000 and Estonia 50000 people.

Remittances sent to Baltics were following countries economic curves and only Estonian market showed constant remittance growth throughout last ten years. In Latvia flow of remittances was constantly falling since 2008. In Lithuania growth of remittance amounts was rapid until 2015 and then remittances had a downturn by more than 35%, however, the pace of de-population in Lithuania continued at 40 thousands of people per year.

Another level of complexity is connected with regional disparities and level of economic development within the Baltic countries. In the EU context Baltic region is not at all perceived as a lagging behind region. Since the economic crisis back in 2008 economies of Baltic countries are showing significant economic growth of more than 3% annually. Nevertheless, several regions of Latvia, Lithuania and Estonia are lagging behind the average economic prospects in Baltic region.

Latvian Daugavpils, Estonian Narva and Lithuanian Visaginas regions have many social, economic and even linguistic characteristics in common. All three towns are located in close proximity to EU Eastern border, predominantly having Russian socio-linguistic environment and all three regions are sharing bad economic situation.

Baltic "economically lagging regions" can be divided in poor "low-income" and "low-growth" areas. For example, Estonian Narva and Latvian Daugavpils match with characteristics of "low-income" area. These cities are converging rapidly and gaining higher value respectively for Estonian and Latvian economies. However, Lithuanian Visaginas is a "low-growth" area, as it is experiencing stagnant productivity and job destruction.

Table 1

GDP share in Visaginas, Daugavpils and Narva (2008-2018)

% of the GDP	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Ida Viruma county	8,0%	7,60%	8,20%	8,30%	7,60%	7,90%	7,30%	6,50%	6,00%	6,00%
Daugavpils	2,99%	3,19%	3,02%	3,28%	3,19%	3,20%	3,10%	2,90%	2,90%	2,88%
Utena county	4,10%	4,20%	3,50%	3,50%	3,30%	3,20%	3,20%	3,10%	2,90%	2,80%

Source: author's calculations based on CSB; stat.ee; stat.gov.lt

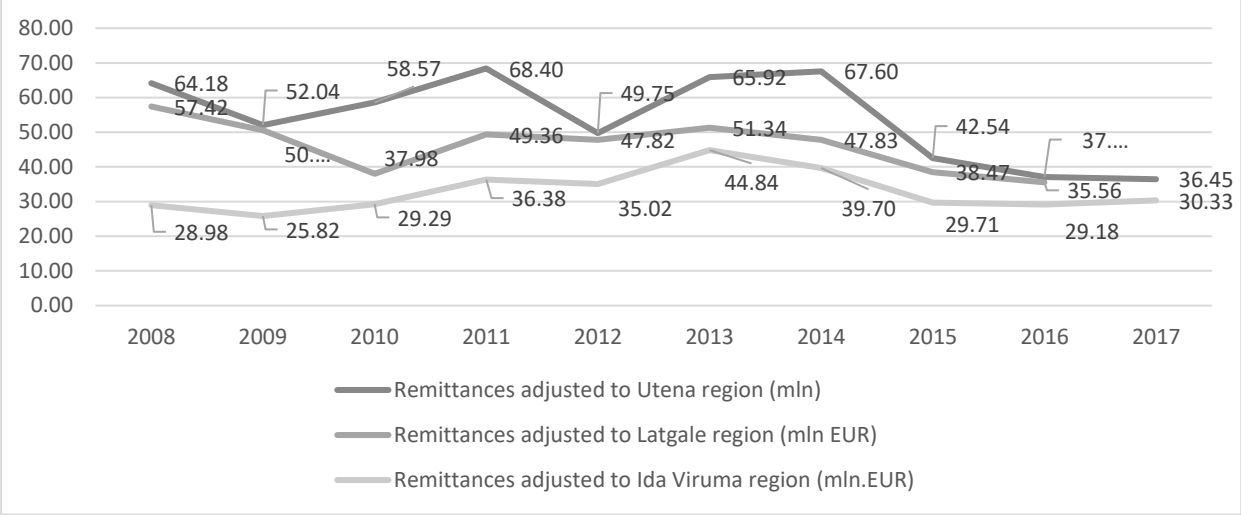
Daugavpils is the second largest town in Latvia by population size, but it accounts only for less than 3% of the GDP. (Table 1) Capital of Riga accounts for 54% of GDP. The situation is similar with other Latvian cities with national status: Liepaja, Rezekne, Jelgava, Jekabpils, Jurmala, Valmiera and Ventspils. Total share of 8 Latvian national-status cities accounts for less than 15% of Latvian GDP. And the weight of these towns is even downsizing: from 2013 to 2016 GDP share dropped by 0,9%. (CSP, 2018)

Narva city is the second largest town in Estonia in terms of population size. It is located in Ida-Viruma region, which is facing similar regional development problems. Ida-Viruma share in Estonian GDP is shrinking throughout last decade and now it is around 6%. (Table 1) Similarly as in Latvian case - most of the Estonian economic activity is concentrated in the capital town, which accounts for more than 53% in Estonian GDP and as well Tallinn's share of Estonian GDP is continuously growing. (Stat.ee,2018)

In Lithuania the bulk of GDP is concentrated around several Lithuanian cities: Vilnius, Kaunas and Klaipeda. Economic activity in these three municipalities is generating more than 70% of Lithuanian GDP. Other four regions of Telšiai, Alytas, Marijampole and Utena account approximately for 15% of the national GDP. Economic activity is wider distributed around Lithuania, than it is in Latvia and Estonia. However, lagging behind regions have similar characteristics: Utena counties share in National GDP decreased throughout last decade from 4,1% down to 2,8% share in the GDP. But from the perspective of the population – Visaginas in 10 years lost 35% of its population. (OSP, 2018)

Throughout last decade remittance level in some of the Baltic countries decreased. In Latvia it dropped by 35%, in Lithuania by 17%. Estonia was the only country out of the Baltic trio to see the uplift of remittances in last decade by over 39%.

There is no official information about distribution of remittances flows within each of the three Baltic countries. That is why the distribution of the remittances is adjusted to regional share of the GDP. In such a way, remittances are distributed economically evenly. (Figure 2)



Source: author's calculations based on CSB

Fig. 2. **Remittances adjusted to GDP share in lagging behind regions in Baltics**

Adjusted distribution of the remittances in Latvian and Lithuanian case followed and even deepened the trend as of on national level: remittances in Latgale region decreased by more than 38%, in Utena region by more than 43%. in Estonian Ida-Viruma region grew by only 5%. So in the economically lagging behind regions in Baltics distribution of the remittances is not following the same direction.

Discussion on positive and negative factors of migration

All the models, which were developed for this research, are taking into account a limited number of factors. It is important to consider that this approach provides a possibility to measure only short-term impact of the emigration. In a long-term calculation many more factors must be considered.

Level of remittance is still relatively small in all three Baltic countries. As a five-year trend shows: the size of the remittances continuously decreases over the last five years. Still, the relative size of the remittances in 2017 in Baltics is around 3%. (Figure 1)

Table 2

Model of emigration's minimal-impact scenario on Latvian economy

''EUR	Minimal wage	VAT	Loss from 1 migrant/monthly	Loss from 1 migrant/annually
2014	320,0	21%	67,2	806,4
2015	360	21%	75,6	907,2
2016	370	21%	77,7	932,4
2017	380	21%	79,8	957,6
2018	430	21%	90,3	1083,6

Source: author's calculations based on CSB

In the first model it was projected that if all the emigrants stayed in Latvia they would have spent only minimal wage and pay VAT to the country's budget. This scenario shows that in 2018 one emigrant would have generated approximately 1083 EUR as VAT. (Table 2) On average during last 5 years every emigrant would approximately generate 937 EUR paid as VAT. Alternatively, one emigrant, on average, in one year sends more than 2000 EUR as remittances. That means that emigrants, in terms of factors included in first model bring more benefits for the origin-country than they could give by staying in the country.

Table 3

Model of emigration's average-impact scenario on Latvian economy

''EUR	Average wage	VAT	Income Tax	Loss from 1 migrant/monthly	Loss from 1 migrant/annually	Loss from 220 thousands of migrants annully (mln.)
2014	740	21%	24%	333,0	**3996,0**	879,1
2015	786	21%	24%	353,7	**4244,4**	933,8
2016	827	21%	24%	372,2	**4465,8**	982,5
2017	884	21%	24%	397,8	**4773,6**	1050,2
2018	961	21%	24%	432,5	**5189,4**	1141,7

Source: author's calculations based on CSB

The second model on Latvian market shows, that one emigrant in economic terms for the Latvian budget equals in average to 4500 EUR in unpaid taxes annually. This model projects that each year, on average, the Latvian budget loses around 1 bln. EUR from 220 thousand emigrants. (Table 3) Remittances sent from abroad are boosting annually Latvian economy. Since 2008 these remittances were fluctuating a lot, but in last decade level of remittances never dropped under 1,2 bln EUR benchmark. In terms of factors included in the second model that means that emigration is still beneficial for the economy of the origin-country. But if the average wage continues to grow, then benefit from the taxes should outstand current benefit from the remittances.

Similarly if Lithuanian economy observed through the prism of the first model, then value of one emigrant per year is on average 866 EUR. Overall an effect from 350 thousand migrants annually was constantly growing during last five years and in 2018 reached 353 mln. per year. (Table 4)

Table 4

Model of emigration's minimal-impact scenario on Lithuanian economy

''EUR	Minimal wage	VAT	Loss from 1 migrant/monthly	Loss from 1 migrant/annually	Loss from 350 thousands of migrants annually (mln.)
2014	289,6	21%	60,8	729,8	255
2015	300	21%	63,0	756,0	265
2016	350	21%	73,5	882,0	309
2017	380	21%	79,8	957,6	335
2018	400	21%	84,0	1008,0	353
			Average:	866,7	303,3

Source: author's calculations based on stat.gov.lt

On average in last 10 years Lithuanian emigrants sent back home a total amount of 1,606 bln. EUR annually. In economic terms every emigrant generates 4590 EUR value for Lithuanian economy annually. This economic positive impact is 5 times higher, than annual loss of unpaid Value Added Tax from the minimal wage. (Table 4)

In the second model more factors are taken in consideration including average wage, Value Added Tax and income tax. Even with an average monthly wage of more than 895 EUR each economically active person annually provides around 3867 EUR in taxes for Lithuanian state budget. (Table 5)

Table 5

Model of emigration's average-impact scenario on Lithuanian economy

'' EUR	Average wage	VAT	Income Tax	Loss from 1 migrant/monthly	Loss from 1 migrant/annually	Loss from 350 thousands of migrants annually (mln.)
2014	670,70	21%	15%	241,45	**2897,4**	1014,1
2015	699,80	21%	15%	251,93	**3023,1**	1058,1
2016	748,00	21%	15%	269,28	**3231,4**	1131,0
2017	817,6	21%	15%	294,34	**3532,0**	1236,2
2018	895,20	21%	15%	322,27	**3867,3**	1353,5

Source: author's calculations based on stat.gov.lt

In last five years level of remittances decreased, but it is still a substantial amount and it is higher than possible unpaid VAT and income tax from the average salary. However, if the decrease of remittances continues, then almost certainly total amount of unpaid taxes of 350 thousands emigrants will have a higher economic impact on Lithuanian state budget.

Size of the emigration flow in Estonia was much smaller than in two other Baltic countries. Overall 50 thousands people emigrated and annually on average 451 mln. EUR were sent as remittances. This means that every Estonian emigrant generated more than 9030 EUR annually for Estonian state budget. This is twice as much as Lithuanian emigrant and 1,5 more than Latvian emigrant.

Table 6

Model of emigration's average-impact scenario on Estonian economy

''EUR	Average wage	VAT	Income Tax	Loss from 1 migrant/ monthly	Loss from 1 migrant/ annually	Loss from 50 thousands of migrants annully (mln.)
2014	1005	20%	20%	402,00	**4824,0**	241,2
2015	1065	20%	20%	426,00	**5112,0**	255,6
2016	1146	20%	20%	458,40	**5500,8**	275,04
2017	1221	20%	20%	488,40	**5860,8**	293,04
2018	1242	20%	20%	496,80	**5961,6**	298,08

Source: author's calculations based on stat.ee

Models of both scenarios (minimal and average) show that emigration is still beneficial for Estonian economy. Value of unpaid taxes even in the most positive case scenario was reaching 5961 EUR per person annually. (Table 6) Though this amount exceeds any other Baltic emigrants possible positive impact on the economy, but it is still two times less, than already existing annual remittances flow.

Table 7

Model of emigration's minimal-impact scenario on Baltic regions

	Minimal annual unpaid taxes by 1 emigrant (EUR)	Size of the Emigration	Total amount of unpaid taxes (mln.EUR)
Daugavpils	937,4	8720,0	8,2
Visaginas	866,7	2338,0	2,0
Narva	1081,1	7170,0	7,8

Source: author's calculations based on CSB; stat.ee; stat.gov.lt

Both minimal and average impact scenarios indicated, that regionally emigrants could heavily support Estonian Narva, Latvian Daugavpils and Lithuanian Visaginas, if they stayed and paid at least VAT from a minimal salary. Minimal envisaged impact on regional economies from unpaid taxes in minimal impact scenario is measured from 2 mln. EUR up to 8,2 mln. EUR annually. (Table 7) The impact is dependent on the size of the emigration and the level of wages.

In average impact scenario envisaged annual effect from unpaid taxes is 7,7 mln. EUR in Visaginas, 39,1 mln. EUR in Narva and 39,5 mln.EUR in Daugavpils. (Table 8) Meaning that regional cities could have earned up to 39 mln.EUR, if emigrants came back and started to pay VAT and income tax from an average salary. Overall economic impact depends on average salary level and the size of the emigration in the corresponding country.

Table 8

Model of emigration's average-impact scenario on Baltic regions

	Average annual unpaid taxes by 1 emigrant (EUR)	Size of the Emigration	Total amount of unpaid taxes (mln.EUR)
Daugavpils	4533,8	8720,0	39,5
Visaginas	3310,2	2338,0	7,7
Narva	5451,8	7170,0	39,1

Source: author's calculations based on CSB; stat.ee; stat.gov.lt

Calculated effect from unpaid taxes even in average impact scenario reaches maximum 72% of the annual total amount of remittances. That means that with current socio-economic environment in the regions of Baltic countries it will be at least 30% more beneficial for local economies to receive remittances from abroad. Of course, this assumption is based only on those economic factors, which are included into average impact model.

Conclusions

1. Economically lagging behind regions in Baltics are sharing many common problems, like comparatively small remittances, emigration and limited opportunities. Even though it is evident that remittances are essential part of the economy, the current trend shows that the amount of remittances is decreasing throughout the last five years across the Baltic countries.
2. It is obvious that following the trend of remittances - the value of each emigrant increases. Economic weight of each emigrant in terms of capability of paying taxes is growing. In the light of economic growth of Baltic economies- minimal and average salary are growing and that increases as well the total value of unpaid taxes.
3. All three Baltic countries are currently benefiting from remittances on average receiving 3,5 bln. EUR annually. With current socio-economic environment benefit from remittances is higher than the total amount of unpaid taxes of all the emigrants living abroad.

4. Among three Baltic countries the most generous regional emigrants are from Narva, generating more than 9000 EUR annually in form of remittances. Emigrants from Daugavpils are on average sending 6700 EUR and emigrants from Visaginas 4600 EUR.
5. Model of emigration's average-impact scenario on Baltic regions showed that amount of taxes, which emigrants could have paid is not passing 75% threshold of the current remittances. In Daugavpils - 68%, Visaginas - 72% and Narva – 60% of the remittances.
6. It is important to mention, that this research is based only on two mathematical models. Both of these scenarios are taking into account a limited amount of factors, which makes it possible to measure only short-term impact of the emigration. In a long-term calculation many more factors must be considered, such as profile of the society, emigrants' intellectual capacity, possible value adding production, investments in social care, education and others.
7. Calculated positive effect of remittances in the Baltics may be reversed if more factors are taken into account.

Recommendations

1. The research of the economic impact of the emigration should be continued. Much more detailed scenarios of impact should be elaborated;
2. Positive economic impact is judged only by one factor- level of remittances. Author could develop current scenarios including more factors, like social care services and other offers from the state.
3. For a better understanding of lagging behind regions- it is important to have a qualitative data analysis, like, in-depth interviews with experts, scientists and municipality representatives.

Bibliography

Barcevičius, Egidijus. 2015. "How Successful Are Highly Qualified Return Migrants in the Lithuanian Labour Market?" [Online] Available: https://onlinelibrary.wiley.com/doi/pdf/10.1111/imig.12224 [Accessed January 14th, 2019]

Borjas, G. J. 1995,"The economic benefits from immigration", *Journal of Economic Perspectives* 9 (2, 3):.pp. 22.

Hazans, M. 2013. "Emigration from Latvia: Recent trends and economic impact," *Coping with Emigration in Baltic and East European Countries*. OECD Publishing. pp. 65-110.

Hazans, M. 2012. Selectivity of migrants from Baltic countries before and after enlargement and responses to the crisis. Intra-EU Migration in Troubled Times: Skills Mismatch, Return Migration and Policy Responses. Farnham, UK: Ashgate. p. 169-207.

Hazans, M. 2011. The changing face of Latvian emigration, 2000-2010. Zepa,B (red.), Latvia. Human Development Report 2010/2011: National Identity, Mobility and Capability. Riga: Advanced Social and Political Research Institute of the University of Latvia. 77-101.

Hazans, M. 2011. Labour market integration of ethnic minorities in Latvia", in Martin Kahanec and Klaus F. Zimmermann (eds), Ethnic minorities in European labor markets: Challenges and solutions, Cheltenham, UK – Northampton. p.163-197.

King, R., Skeldon R., Vullnetari, J. 2008, "Internal and International Migration: Bridging the Theoretical Divide," Sussex Centre for Migration Research, University of Sussex, UK

Kozlovs, M. 2014, "Comperative analysis of economical migration in Serbia and Latvia in period 2008 till 2013" University of Latvia. pp.1-69.

Niessen, J. 2014. Labour migration in the Baltic Sea countries Dealing with the consequences: integration and

citizenship. p.30

Ratha,D., Mohapatra,S., Scheja, E. 2011, "Impact of Migration on Economic and Social Development: A Review of Evidence and Emerging Issues", Worldbank policy researh working paper Nr.5558

Schoeni, R.F. 1997. The Effect of Immigrants on the Employment and Wages of Native Workers: Evidence from the 1970s and 1980s". The RAND Corporation, March.

Sjaastad, L.A. 1962. The Costs and Returns of Human Migration. Journal of Political Economy. p.80-93.

European Comission, 2017, 'Competitiveness in low-income and low-growth regions.' [Online] Available: https://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/lagging_regions%20report_en.pdf. [Accessed January 14th, 2019]

Estonian official statistics portal, 2019, [Online] Available https://www.stat.ee/en. [Accessed January 15th, 2019]

Krasnopjorov, O. 2011, Cik cilvēku pameta Latviju un cik vēl pametīs? (How many people emigrated from Latvia and how many are planning to do so?). [Online] Available: http://www.makroekonomika.lv/cik-cilveku-latviju-pameta-un-cik-vel-pametis [Accessed December 19, 2019]

Latvian central statistics office, 2019, [Online] Available www.csb.lv. [Accessed January 15th, 2019]

Lithuanian official statistics portal, 2019, [Online] Available https://www.stat.gov.lt. [Accessed January 15th, 2019]

Migration Policy Centre, 2013, The politics of European Union migration governance. [Online] Available: http://cadmus.eui.eu/handle/1814/57305?show=full. [Accessed January 21, 2019]

Worldbank (2017), "Migration and Remittances Recent developments and outlook." [Online] Available: https://www.worldbank.org/en/topic/labormarkets/brief/migration-and-remittances . [Accessed January 20th, 2019]

IMPLICATIONS OF FUZZY DELPHI METHOD IN ASSESSING THE EFFICIENCY OF FINANCIAL LITERACY PROMOTION

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Abstract. Evaluation of the efficiency of financial literacy promotion efforts has always been an interesting and challenging problem for both the researchers in the field as well as practitioners. Although there are several sources of measurement tools for the actual levels of financial literacy available and tested in an international setting, the overall evaluation of efficiency of actions, programmes, strategies and approaches targeted towards improving financial literacy among the general population are difficult to construct. Therefore an approach based on multi-faceted international expert panel judgment can be introduced as a source of more uniform point of view.

The paper discusses the implications, possibilities and limitations of Fuzzy Delphi Method (FDM) when applied to conceptualization, inception and formation of a questionnaire-based evaluation tool targeted towards evaluating the efficiency of a multitude of financial literacy promotion efforts. Using this method a set of key efficiency appraisal instruments can be constructed and established on multiple dimensions – time, population, topics and fields. The paper demonstrates the process of initiating and forming the research structure, selecting the experts, providing feedback and collecting responses in multiple rounds. As the error level is reduced, using fuzzy sets allows for the quantification of expert opinions and variables to be more related and consistent with human socio-linguistic behaviour on an international level. The paper concludes that FDM is a valuable tool in expert opinion-gathering when the topic of interest is prone to bias, vaguely defined and may not be easily quantifiable.

Key words: *Financial Literacy, Fuzzy Delphi Method*

JEL code: A20 Economic Education and Teaching of Economics: General, F69 Economic Impacts of Globalization: Other

Introduction

The research on financial literacy should be viewed as a closely linked process of research objects, where each of the components can affect each other not only by endogenous, but also by many exogenous factors. To further review the impact of various financial literacy on a plethora of more or less significant economic development indicators, and vice versa, calls for a need for data that is obtained through a rather unorthodox set of methods, i.e., via the application of Delphi method, while keeping in mind the Fuzzy set methodology, with regard to comparability and scalability issues.

The aim of this research paper is to discuss and investigate the implications of Fuzzy Delphi method in evaluating and assessing the factors that promote financial literacy. This survey can be supplemented with questions that are not included in comparable survey question lists, however it shall comply with the common subject of the survey: measuring financial literacy. Therefore, in addition to the universally accepted OECD / INFE Core standard questionnaire (OECD, 2017), the research might supplement a section where it would be asked to assess three key financial literacy and domestic economic activity influencing factors resulting from Delphi expert survey results.

The Delphi method is a survey method that is increasingly used in many complex areas to reach expert consensus through intensive questionnaire rounds. For several decades, the Delphi technique has been used in various areas of research, such as strategic planning, health and social science.

For the past decade following the global financial crisis an increased volume of academic and institutional contributions to the field of financial literacy promotion have gained prominence. Individuals participating in (but not limited to) the financial services sector, make a myriad of decisions on a day-to-day basis. Research suggests that there are several key areas where promotion of financial literacy has a substantive impact on financial behaviour of market participants, i.e., promotion of savings, reduction of consumer debt and the psychology of budgeting (Greenberg, Hershfield, 2019). Researchers have pointed out that individuals should appropriate significant share of their income to retirement savings during their working years (Munnell, Webb, & Golub-Sass, 2012). In terms of long-term savings, many consumers approaching the point in time of retirement do not have sufficient resources to cover regular living expenses (Benartzi & Thaler, 2013). Consumers sometimes opt to advance payments for consumption over actively delaying payment (Gourville & Soman, 1998; Patrick & Park, 2006). Furthermore, while repaying debt is often painful (Greenberg & Hershfield, 2016), holding debt can cause stress (Brown, Taylor, & Price, 2005) and influence consumer behaviour erratically. Consumers possess finite resources with which to make purchases. Therefore, they must constantly make trade-offs and consider how they structure their personal budgets (Du & Kamakura, 2008). Individuals also differ in how much they consider how to allocate their funds into categories, i.e., the extent to which they mentally create a budget and plan, as well as adhere to the said budgeting framework (Lynch, Netemeyer, Spiller, & Zammit, 2009; Stilley, Inman, & Wakefield, 2010; Van Ittersum, Wansink, Pennings, & Sheehan, 2013).

Therefore the promotion of financial literacy is in a unique position affecting the well-being of individuals, since financial decision making is consequential for all walks of life. Research suggests that the promotion of financial literacy and financial decision making can thus be organized into three categories (Greenberg, Hershfield, 2019):

- behaviours that promote financial wellbeing;
- the psychosocial determinants of financial wellbeing;
- the role of situational factors in financial wellbeing.

This article further explores a method of determining the factors that are by far the most important determinants of efficiency of financial literacy promotion.

Research results and discussion

A fuzzy concept is a concept in which the limitations of the application can vary considerably depending on context or conditions rather than being fixed once and for all (Haack, 1996). This means that in some way it is vague and has no fixed meaning without being entirely unclear or meaningless (Dietz, Moruzzi, 2009). The field of study is called fuzzy semantics, which examines the characteristics of furious concepts and fuzzy language (Zadeh, 1971).

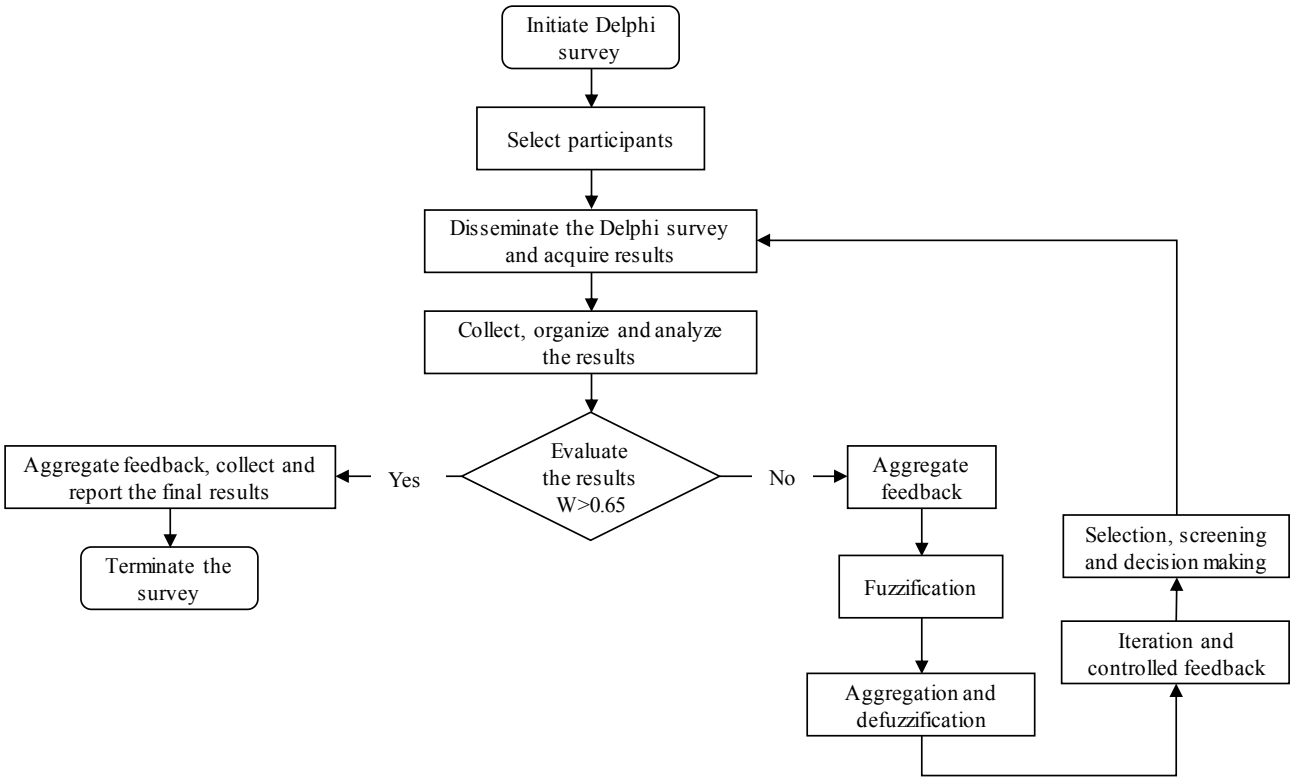
In the mid-1960s of the 20th century Zadeh introduced the theory of fuzzy sets (Zadeh, 1965). Fuzzy set theory provides a strict mathematical framework for accurate and rigorous study of vague conceptual phenomena. Fuzzy set theory is an appropriate tool to strengthen the exhaustiveness and accuracy of the decision-making stages. Fuzzy set theory is a fundamental approach to measuring the uncertainty of concepts associated with subjective judgments of human beings, including language terms, the level of satisfaction and the level of importance, which are often vague and unclear. A language variable is a variable whose values are not quantitative, but natural language phrases. In the case of situations too complicated or not properly defined to be described rationally in usual quantitative expressions, the concept of a language variable is very beneficial to deal with. For example, the natural expressions of human preference or judgment,

such as satisfied, fair and unhappy, are usually considered natural representations. Herrenera and Herrera-Viedma describe the intuitive use of language terms when decision-makers voice the subjectivity and inaccuracy of their assessment. The fuzzy set theory is used for these reasons.

The aim of the application of the Delphi method is to achieve a possible quantification of one leading point of view within an expert group. The leading point of view is extracted through a survey questionnaire, which provides that the experts participating in completing the questionnaire adjust their responses, therefore providing a more accurate response and outcome.

Fig. 1

Framework for the Fuzzy Delphi method

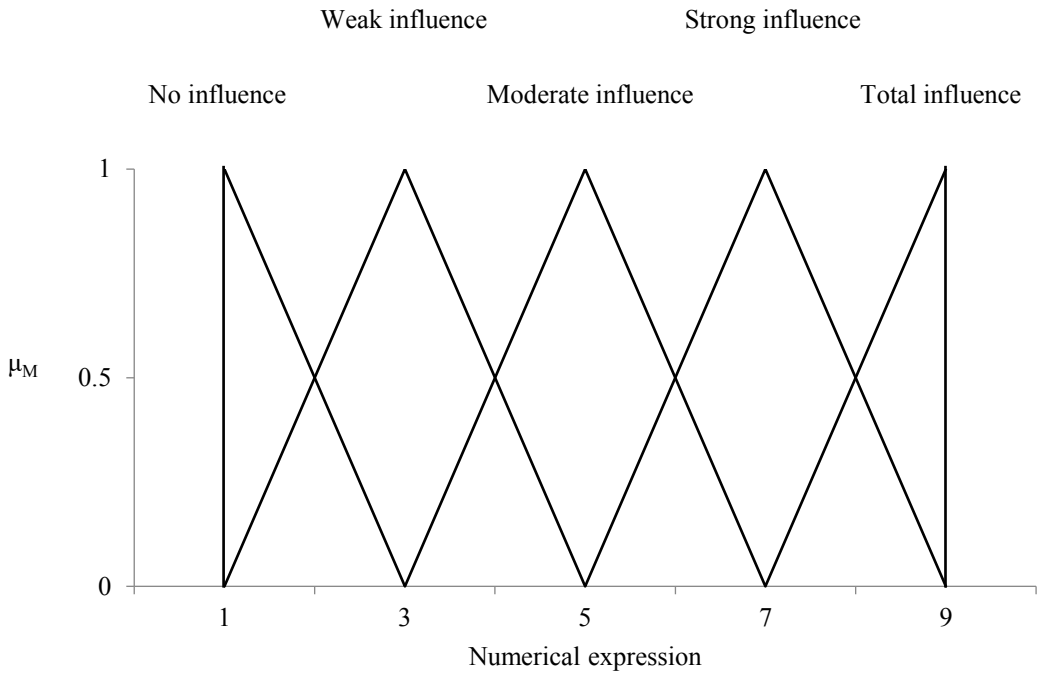


Source: author's visualization and recent approach by Habibi et al. (2014), based on Zadeh (1965) and Dalkey, Norman; Helmer, Olaf (1963)

The Delphi technique procedure can be summarized up to three rounds. In the first round, the experts would be asked to evaluate the presented factors based on a linguistic and numerical model (see Fig. 2) and rank the coordination factors and add their own views to the list, if any. In the second round, the consolidated results from the first round were provided to the respondents and they were asked to give ratings to all coordination factors without adding new factors. The third round is used to summarize the final results.

Fig. 2

Fuzzy Delphi method linguistic and numerical model for a 5 point Likert scale



Source: author's visualization

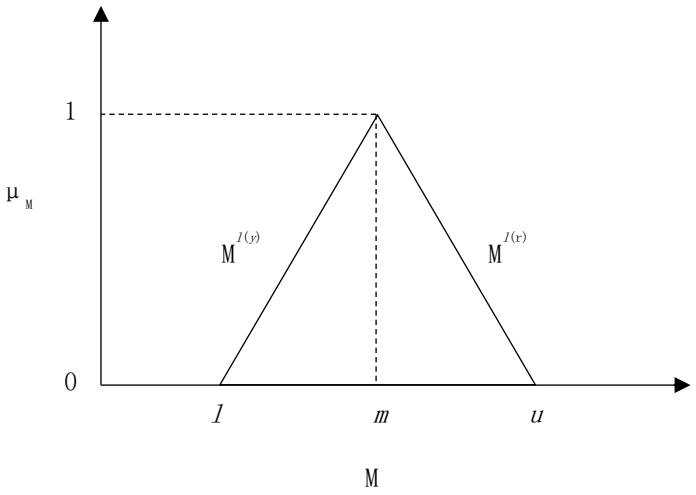
This study suggests to employ the three-stage custom designed Delphi method, where:

- during the Stage 1 experts' proposals on the factors that may affect the financial literacy and domestic consumption interaction are collected, compiled and coded, as well as a unique code is assigned to every expert - respondent;
- during the Stage 2 experts are offered to measure these factors in terms of potential impact and importance on a scale from 1 (completely insignificant factor) to 10 (strongly influencing factor); upon the collection of the results the factors are processed and analyzed employing descriptive and multivariate regression analysis methods, after that the processed and analyzed factors with comments are offered to the experts for a review and possible results correction, the number of the factors is reduced, retaining only the most significant ones;
- during the Stage 3, upon the collection of the revised results, analysis under Delphi fuzzy method is performed, Stage 2 and 3 results are normalized and compared and the final result is summarized.

The responses provided by the experts should be summarized based on the Delphi Fuzzy-numbers model (see Fig. 3)

Fig. 3

Delphi Fuzzy-numbers model



Source: author's visualization

Therefore any value in the construct can be described as:

$$\mu\left(\frac{x}{M}\right) = \begin{cases} 0, & x < l, \\ \dfrac{x-l}{m-l}, & l \le x \le m, \\ \dfrac{u-x}{u-m}, & m \le x \le u, \\ 0, & x > u \end{cases} \qquad [1]$$

Definitions of linguistic indicators allow for several values to be present at once, therefore it is essential that the definitions of the indicators are created with great care and attention to detail, since for the purposes of this research the materials are disseminated in English, which is a foreign language to the majority of experts involved in the study.

The Fuzzy Delphi method requires average triangulated values to be calculated:

$$A_m = \frac{\widetilde{A_1} + \widetilde{A_2} + \ldots + \widetilde{A_n}}{n} \qquad [2]$$

Triangulated values in figure 2 are connected with values of each i and $\widetilde{A_m}$, where their mean value is determined by each of responses in the 3rd phase of the survey:

$$\left(A_1^m - A_1^i, B_1^m - B_1^i, C_1^m - C_1^i\right) \qquad [3]$$

When the mean value of each $\widetilde{A_m}$ is determined, as demonstrated in figure 3, each expert opinion's deviation from the mean is calculated. In figure 3, A_1^m, B_1^m and C_1^m i are the lowest, mean and highest numerical equivalent for each i.

$$S\left(\widetilde{N_\iota}, \widetilde{N_\jmath}\right) = \frac{(l_1 + 2m_2 + u_3)}{4} \qquad [4]$$

Figure 4 determines the median value, which in this case is equivalent to the centroid Am. Also l_1, m_2, u_3 are to be treated as the lower, middle and upper boundary to the indicators determined by the experts in the Stage 3 of the Delphi survey.

The list of factors to be included in the Delphi survey is presented in Table 1.

Table 1

Factors for the Delphi survey in Baltic States (Stage 1 survey results)

Numeracy skills	Total economic activity	Inflation impact on income
Intellect and cognitive abilities	Existing income	Impact of inflation
Education Level	Access to financial services	Availability of insurance
Occupation	Credit history	State aid
Financial interest	Characteristics	Social insecurity
Rural or urban environment	Experience in using financial services	Aging factors
Household Income	Negative economic shocks	Gender related factors
Household size	Unemployment	Factors related to health
Marital status	Demand for financial services	Propensity to consume
Religious beliefs	Trust in the financial system	Propensity to spend

Source: author's compilation

In this context, the first step of the Delphi method is to select qualifying panel members. This article outlines the institutions that might be of interest in Table 2. The results of the research undertaking are valid depending on the competence and expertise of the panel members. A combination of people with multiple species is better used, and snowball sampling technique can be used for selecting these samples (Powell (2003), Somerville (2008), van Zolingen and Klaassen (2003), Hsu and Sandford (2007)).

The research identifies first some eligible people and then asks them to introduce other people after receiving information (Babbie, 2002; Macnee and McCabe, 2008). Hogarth (1978) argued that the Delphi technique is suitable between six and twelve members.

As there are six categories of fields of expertise, which are comprised of 22 institutions, as seen in Table 2, the spectrum of opinions is deemed complete and sufficient. Representatives of the Financial sector and government authorities are represented by most institutions, since these experts are of greatest interest for the research as they are directly involved in shaping the financial environment. Financial service providers, such as commercial banks and insurers, among others, tailor their business practices based on the consumer behaviours, which, in turn, are involved in determining the levels of financial literacy.

On the other hand, NGO's, representatives of the public sector, as well as media and research facilities are capable of influencing consumer behaviour and therefore would seek representation in research as well.

Table 2

Experts and stakeholders to be involved in Delphi fuzzy method for Financial Literacy

Financial sector	**Government authorities**	**Financial service providers**
Central bank Ministry of Finance Supervision of the pension system Supervision of the insurance market Financial and Capital Market Monit oring	Consumer rights protection Ministry of Education Development institutions Social protection agencies	Commercial banks Micro-finance companies Non-banking sector Investment firms Insurers
NGO and the public sector	**Media**	**Research**
Financial literacy providers Trade unions	Tv/radio/cinema Printed media Telecommunications operators Internet/social networks	Universities Think tanks

Source: author's compilation

According to Clayton (1997), between five and ten members is an adequate mix of experts with different specialties. Although some Delphi studies included less than 10 panel members (Malone et al. 2005; Strasser et al. 2005), more than 100 participants also participated in other studies (Kelly and Porock 2005; Meadows et al. 2005). For the collection of expert opinions the various types of the Likert scale can easily be used. The significance of their views on each dimension will be calculated after the experts have gathered their opinions. The experts will be provided with the calculated mean as controlled feedback together with a questionnaire if there is no consensus in the theoretical framework. When a consensus was reached, the items are screened through several Stages.

Different studies have suggested various methods of consensus determination. In a study by von der Gracht (2012), the researcher presented 15 ways of achieving consensus by reviewing 114 papers on the technique of Delphi (von der Gracht, 2012). To determine the degree of consensus of the panels, Kendall's W – coefficient of concordance may be used (Schmidt, 1977; Siegel and Castellan, 1988; Habibi et al, 2014, employed in the model described in Fig. 1). Assume, for example, some people have been called upon to rank from the most important to the least important a list of factors that would have an influence on the level of financial literacy. From these data, Kendall's W can be computed. When the test statistics W is 1, all survey respondents have been unanimous, and the same order has been assigned to the list of concerns by each respondent. If W is 0, then the respondents do not agree overall and their responses can be considered essentially random. Intermediate W values show a greater or lesser unanimity between the different reactions.

Conclusions, proposals, recommendations

The research paper discussed the implications, possibilities and limitations of Fuzzy Delphi Method (FDM) when applied to conceptualization, inception and formation of a questionnaire-based evaluation tool geared towards evaluating the efficiency of a multitude of institutional financial literacy promotion efforts. Using this method, a set of key efficiency appraisal instruments have be constructed.

1. Promotion of financial literacy in a society is a multi-faceted process and the factors that affect the outcomes are determined by a variety of influencing institutions and organizations.

2.The Fuzzy Delphi Method (FDM) is a valuable tool in expert opinion-gathering when the topic of interest is prone to bias, vaguely defined and may not be easily quantifiable;

3. More research is needed towards implementing the research method in different populations with similar properties, such as small open economies (e.g. the Baltic States)

4. The improvements of the approach would focus on increasing comparability and robustness.

Bibliography

Altrock, C.V., Krause, B., Multi-criteria decision-making in German automotive industry using fuzzy logic, Fuzzy Sets and Systems 63(3), 1994, pp. 375– 380.

Ayag, Z., Ozdemir, R.G., A fuzzy AHP approach to evaluating machine tool alternatives, Journal of Intelligent Manufacturing 17, 2006, pp. 179–190.

Babbie E. (2002). The basics of social research. 2nd ed. ed. Belmont, Calif. ; London: Wadsworth/Thomson Learning; 2002.

Bellmann, R.E., Zadeh, L.A., Decision Making in Fuzzy environment, Management Science 17(4), 1970, pp.141- 164.

Benartzi, S., & Thaler, R. H. (2013). Behavioral economics and the retirement savings crisis. Science, 339(6124), 1152–1153. https://doi.org/10.1126/science.1231320

Bozbura, F. T., Beskese, A., Kahraman, C. . Prioritization of human capital measurement indicators using fuzzy AHP. Expert Systems with Applications, 32(4), 2007. pp. 1100-1112

Brown, S., Taylor, K., & Price, S. W. (2005). Debt and distress: Evaluating the psychological cost of credit. Journal of Economic Psychology, 26(5), 642–663. https://doi.org/10.1016/j.joep.2005.01.002

Buckley, J. J., Fuzzy hierarchical analysis. Fuzzy Sets and Systems 17,1985, pp. 233–247.

Clayton, M. J. (1997). Delphi: A technique to harness expert opinion for critical decision-making tasks in education. Educational Psychology, 17(4), 373-384.

Dalkey, Norman; Helmer, Olaf (1963). "An Experimental Application of the Delphi Method to the use of experts". Management Science. 9 (3): 458–467. doi:10.1287/mnsc.9.3.458.

Deng, Multicriteria analysis with fuzzy pair-wise comparison, International Journal of Approximate Reasoning 21, 1999, pp.215–231.

Du, R. Y., & Kamakura, W. A. (2008). Where did all that money go? Understanding how consumers allocate their consumption budget. Journal of Marketing, 72(6), 109–131. https://doi.org/10.1509/jmkg.72.6.109

Gourville, J. T., & Soman, D. (1998). Payment depreciation: The behavioral effects of temporally separating payments from consumption. Journal of Consumer Research, 25(2), 160–174. https://doi.org/10.1086/209533

Greenberg, A. and Hershfield, H. (2018). Financial decision making. Consumer Psychology Review.

Greenberg, A. and Hershfield, H. E. (2016). Debt aversion and the trajectories of psychological pain. In P. Moreau, & S. Puntoni (Eds.), Advances in consumer research, Vol. 44 (pp. 123–127).

Haack. S, Deviant logic, fuzzy logic: beyond the formalism. Chicago: University of Chicago Press, 1996.

Habibi et al. (2015). Asian Journal of Research in Business Economics and Management, Vol. 5, No. 2, pp. 130-143.

Habibi, Arash., Sarafrazi, Azam., Izadyar, Sedigheh (2014). Delphi Technique Theoretical Framework in Qualitative Research, The International Journal Of Engineering And Science (IJES) Volume 3 Issue 4 Pages 08-13 2014 ISSN (e): 2319 – 1813 ISSN (p): 2319 – 1805

Hadi-Vencheh, A., Mohamadghasemi, A., A fuzzy AHP-DEA approach for multiple criteria ABC inventory classification, Expert System with Applications 38(4), 2011, pp.3346-3352.

Herrera, F., Herrera-Viedma, E., Linguistic decision analysis steps for solving decision problems under linguistic information, Fuzzy Sets and Systems 115(1), 2000, pp.67–82.

Hogarth, R. M. (1978). A note on aggregating opinions. Organizational Behavior and Human Performance, 21, 40-46.

Hsu, C., &Sandford, B. (2007). The Delphi technique: Making sense of consensus. Practical Assessment, Research and Evaluation, 12, 1—8

Kelly KP and D Porock (2005). A survey of pediatric oncology nurses' perceptions of parent educational needs. Journal of Pediatric Oncology Nursing 22(1), 58–66

Lynch, J. G. Jr., Netemeyer, R. G., Spiller, S. A., & Zammit, A. (2009). A generalizable scale of propensity to plan: The long and the short of planning for time and for money. Journal of Consumer Research, 37(1), 108–128. https://doi.org/10.1086/649907

Macnee C.L, McCabe SRN (2008). Understanding nursing research: using research in evidence-based practice.2nd ed. ed. Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins

Meadows A, Maine, E Keyes, K Pearson and K Finstuen (2005). Pharmacy executive leadership issues and associated skills, knowledge, and abilities. Journal of the American Pharmacists Association 45(1), 55–62.

Mikhailov, L., Tsvetinov, P., Evaluation of services using a fuzzy analytic hierarchy process, Applied Soft Computing 5, 2004, pp.23–33.

Munnell, A. H., Webb, A., & Golub-Sass, F. (2012). The national retirement risk index: An update. Center for Retirement Research at Boston College, 1, 719–744

Murugasu, D., Wei, A.J., Hwa, T.B. The Marginal Propensity to Consume Across Household Income Groups. Bank Negara Malaysia Working Paper Series, WP2/2013. pp 6.

OECD PISA For Development Assessment And Analytical Framework. 2017. Available https://www.oecd.org/pisa/pisaproducts/PISA-D%20Assessment%20and%20Analytical%20Framework%20Preliminary%20Version.pdf, accessed January 11, 2019.

Powell, C. (2003). The Delphi technique: Myths and realities. Journal of Advanced Nursing, 41(4), 376-382.

Richard Dietz & Sebastiano Moruzzi (eds.), Cuts and clouds. Vagueness, Its Nature, and Its Logic.Oxford University Press, 2009; Delia Graff & Timothy Williamson (eds.), Vagueness. London: Routledge, 2002.

Schmidt R.C (1997). Managing Delphi surveys using nonparametric statistical techniques; Decision Sciences, Vol.28, No.3

Seçme, N.Y., Bayrakdaroglu, A., Kahraman, C., Fuzzy performance evaluation in Turkish Banking Sector using Analytic Hierarchy Process and TOPSIS, Expert Systems with Applications 36, 2009, pp.11699– 11709.

Siegel, S., and Castellan, N. J., Jr., (1988). "Nonparametric statistics for the behavioral sciences (2nd ed.)", NewYork: McGraw-Hill.

Somerville, Jerry A (2008). Effective Use of the Delphi Process in Research: Its Characteristics, Strengths, and Limitations

Stilley, K. M., Inman, J. J., & Wakefield, K. L. (2010). Planning to make unplanned purchases? The role of in-store slack in budget deviation. Journal of Consumer Research, 37(2), 264–278. https://doi.org/10.1086/651567

Strasser S, L London and E Kortenbout (2005). Developing a competence framework and evaluation tool for primary care nursing in South Africa. Education for Health 18(2), 133–144.

Van Ittersum, K., Wansink, B., Pennings, J. M., & Sheehan, D. (2013). Smart shopping carts: How real-time feedback influences spending. Journal of Marketing, 77(6), 21–36. https://doi.org/10.1509/jm.12.0060

Van Zolingen, S.J. and Klaassen, C.A. (2003). Selection Processes in a Delphi Study about Key Qualifications in Senior Secondary Vocational Education. Technological Forecasting and Social Change, 70: 317-340.

Von der Gracht, Heiko (2012). Consensus measurement in Delphi studies Re-opinion and implications for future quality assurance, Technological Forecasting & Social Change 79 1525–1536.

Wang T.C., Y.H. Chen, Applying consistent fuzzy preference relations to partnership selection. Omega: the International Journal of Management Science 35, 2007, pp.384-388.

Zadeh, L.A., Fuzzy sets, Information and Control 8, 1965, pp.338–353.

Zadeh, L.A., Quantitative fuzzy semantics. Information Sciences, Vol. 3, No. 2, April 1971, pp. 159-176.

CHANGES IN THE SUBJECTIVE ASSESSMENT OF QUALITY OF LIFE IN LATVIA AND THE EUROPEAN UNION: RESULTS OF EUROPEAN QUALITY OF LIFE SURVEY 2016

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Abstract. Assessment of quality of life covers a variety of areas - economic conditions, housing, local environment, employment, education, household structure and family relations, work-life balance, health and healthcare, subjective well-being, quality of society. The assessment of quality of life does not always coincide with the macroeconomic indicators of the country, e.g. GDP. It includes a number of subjective indicators, which frequently show a different situation and trends than the macroenomic indicators. The European Quality of Life Survey (EQLS) is a tested tool of monitoring and analysing the quality of life in the EU and is seeing its fourth issue in 2016.

The purpose of this article is to inspect changes in individual subjective well-being indicators among the Latvian society, as presented in the EQLS 2016 in the context of the EU countries, comparing to the EQLS results for 2011-2012.

The following **tasks** were set to achieve that goal*:*

1) provide an insight into the current understanding of and problems relevant to the concept of quality of life and subjective well-being,
2) analyse the data resulting from the EQLS 2016, as opposed to the data of the EQLS 2011-2012, in Latvia and in the EU countries in general.

Methods of descriptive and inferential statistical analysis used in the study. The sources of information used are the European Foundation for the Improvement of Living and Working Conditions databases for 2011-2012 and 2016, available from the UK Data Archive.

Conclusions from the statistical analysis:

Comparison between the indicators for Latvia and the average for the EU in both 2016 and 2011 revealed a lower self-assessment of well-being, on a scale of 10, among the residents of Latvia than among those of the EU in general. In the EU, seven out of eight of the selected subjective well-being elements retained the same assessment level as in 2011. In Latvia, the assessment dropped in 6 indicators. Only one indicator increased both in the EU and Latvia, and that is the satisfaction with the present state of the economy in country. On the subjective well-being ratings of the EU, Latvia places 21st (Satisfaction with education, Satisfaction with job and Satisfaction with the present state of the economy in country) to 28th (Satisfaction with accommodation). The EQLS data shows that the economic growth, social and economic reforms, social security efficiency in the surveyed five years of post-crisis in the EU have not significantly contributed to their personal assessment of quality of life.

Key words: *Quality of life, subjective well-being, life satisfaction*

JEL code: D69, J28, Q10

Introduction

In its essence, the human drive for a better life, higher quality of life is a priority to every person and therefore to the entire community. This is confirmed by the government documents developed over the past ten years in Latvia, e.g.

Latvija 2030 (LR Saeima, 2010). The necessity for quality of life indicators encompassing not only the traditional economic indicators, like the GDP, is currently recognized in economics, sociology and other fields. The European society is changing rapidly. Some of the reasons for this change are globalization, aging, and transfer to the knowledge economics. These changes can cause people's view of life to become pessimistic and increase dissatisfaction even when economic factors indicate growth and general improvement (European Foundation for the Improvement of Living and Working Conditions, 2010).

Theoretical aspects of quality of life

Quality living means a person can, as far as possible, achieve their personal goals and choose their preferred lifestyle. The concept of quality of life is broader than access to living conditions, which focuses on the material resources available to individuals.

Even though interests and value priorities, ideas of a good and happy life, differ between people, are subjective and deeply personal and prone to change throughout one's life, the most important desires for any person focus generally on the vital factors of well-being, security, sustainability. These are the main factors forming quality of life and consist of various closely related aspects. Quality of life is a complex social, economic, political concept including a vast range of living conditions of a country's inhabitants. Quality of life includes both objective and subjective indicators and the body of their mutual interaction, which is reflected in a certain level of well-being depending on the individual's resources and knowledge. When objective and subjective living conditions are considered together, it is possible to evaluate quality of life better. Assessment of quality of life covers many areas, such as economic conditions, housing, local environment, employment, education and skills, household structure and family relations, work-life balance, health and healthcare, subjective well-being, quality of society.

Quality of life allows for both broad and narrow definitions. For instance, the survey of 2005 defined quality of life in Latvia as people's satisfaction with their life, security of their future and ability to take action to improve their living conditions and achieve their goals. The concept of quality of life can be narrowed down to a handful of basic values and symbols surrounding an individual's life: material well-being (symbolized by money), choice, creative activity (Tīsenkopfs, 2006). Characteristics of quality of life more frequently represent a listing of objective indicators and assessment – living and material conditions, income, living environment, education, health, employment - and address the people's own subjective assessment of quality of life to a lesser extent. Measurement of quality of life includes as an important factor the subjective well-being and its components, i.e. satisfaction with life and its various aspects, success, feelings of happiness. Historically, these components have formed into the inductive category of subjective well-being (SWB) - a complex construct of a great variety of aspects.

The subjective well-being is a multifactor concept including emotional and cognitive components (Diener, Suh, Lucas & Smith, 1999). It reflects an individual's rational and emotional assessment of their own feelings of happiness at a given moment. The subjective well-being component include: positive and negative emotions experienced by the individual and their general conclusion on their satisfaction with life (Diener & Seligman, 2004). Satisfaction with life reflects an individual's cognitive process and general assessment of quality of life (Pavot, W., & Diener, E., 2008). Other authors note that satisfaction with life can reflect an individual's assessment of specific areas of life, i.e. family, environment, friends, oneself (Suldo & Huebner, 2006). The assessment of satisfaction of life is influenced by many other processes. For example, the quality of an individual's relationships with their social contacts and partners, professional success, general physical health, positive mental health etc. (Pavot & Diener, 2008).

However, scientists are yet to come to agreement on a universal definition for the concept of quality of life, and even now there are several theoretical models that differ in their evaluation of the importance of the objective indicators (including objective conditions) and subjective indicators (including satisfaction) (Koroļova, 2011).

The options for measuring quality of life are multidimensional and, according to scientists, pose more than one methodological problem, e.g. the objective and subjective quality of life indicators can produce contradicting results; tackling this issue requires defining a benchmark of subjective comparison of quality of life in time and space (Grīnfelde, 2010).

Research results and discussion

The European Quality of Life Survey (EQLS) is a tested tool of monitoring and analysing the quality of life in the EU. The EQLS of 2003, 2007, beginning of 2011 and end of 2012, and 2016 document the living conditions and social situation of the people of Europe. The surveys include subjective and objective assessment: attitude and choice, resources and experience. The Eurofound approach is based on the idea that the concept of "quality of life" is a broad and characterizes both personal well-being and the quality of social services and society (European Foundation for the Improvement of Living and Working Conditions, 2018, a). The surveys provide an overview across multiple dimensions: subjective well-being, living standards and deprivation aspects, responsibilities of care, work-life balance; healthcare, long-term care, childcare and other social services; social insecurity, social exclusion and tensions, trust and engagement in society and community (European Foundation for the Improvement of Living and Working Conditions, 2014, a; European Foundation for the Improvement of Living and Working Conditions, 2018, a).

The EQLSs include the EU member and candidate states at the time of the survey. The fourth EQLS in last quarter of 2016 surveyed almost 37 thousand people in 33 European countries (28 EU member countries and 5 candidate countries). The EQLS 2016 consists in a total of 104 questions and 262 units. The previous survey questionnaire was reviewed in consultation with the interested politicians and experts in the field of survey research. An approximate 66% of the EQLS 2011 questionnaire remained in the form of questions addressing trends, while 51% of the EQLS 2016 questionnaire retains similarity to the previous questionnaires (European Foundation for the Improvement of Living and Working Conditions, 2018, c; European Foundation for the Improvement of Living and Working Conditions, 2014, a, European Foundation for the Improvement of Living and Working Conditions, 2014, b). A part of the questions require a response in the form of a rating on a scale of 1 to 10, where 1 means very dissatisfied and 10 - very satisfied, while in others the rating is on a scale of 1 to 5, where 1 means strongly agree and 5 - strongly disagree (European Foundation for the Improvement of Living and Working Conditions, 2018, b).

The EQLS 2016 surveyed 1000 respondents from Latvia, of which 33.1 % indicated their household size as 1, whereas household size 2 was indicated by 38%, household size 3 – 15.8 %, household size 4 and more – 13.1% (the respective results in the EU countries were -21.8%, 33.4%, 18.6% un 26.2%) ; male respondents 36%, female – 64% (in the EU, 43% and 57% respectively); aged up to 30 - 13%, 31-50 years - 25%, 51-62 years - 22%, 63 or older - 40% (in the EU, 18,%, 35%,20%, 27% respectively); 47% of the respondents were employed, 40% - retired (in the EU, 47% and 29% respectively), the rest – in a different category. The authors of the current article review only a small part of the subjective well-being aspects from the 2016 and 2011/2012 surveys in comparison with the common EU indicators.

The third EQLS (2011/2012) coincided with the global crisis and the beginnings of recovery. In the following years, the EU in total saw fairly rapid economic growth: for instance, the GDP per person grew in all EU member states by an average of 14.4% in 2016, compared to 2011/2012, and as a macroeconomic indicator it implies an improvement of the quality of life.

When comparing the subjective well-being indicators in Latvia against the EU average (table 1), it leads to conclude that on the 10 point scale in the subjective well-being questions Latvians rated their well-being lower than the EU countries in total both in 2016 and 2011. Seven out of eight of the selected subjective well-being elements retained their rating on the EU level equal to that of 2011 or slightly lower (by tenths or hundredths).

Table 1

Subjective well-being indicators in Latvia and the EU

Question of satisfaction (1 very dissatisfied, 10 very satisfied)	2016		2011	
	Latvia	EU total	Latvia	EU total
1. Life satisfaction	5.95	6.95	6.15	7.06
2. Taking all things together, how happy would you say you are?	6.57	7.31	6.54	7.33
3. Satisfaction with education	6.85	7.10	7.13	7.20
4. Satisfaction with job	7.12	7.38	7.23	7.50
5. Satisfaction with standard of living	5.77	6.79	5.78	6.83
6. Satisfaction with accommodation	6.44	7.60	6.62	7.73
7. Satisfaction with family life	6.96	7.86	7.16	7.95
8. Satisfaction with the present state of the economy in country	3.90	4.85	2.89	4.06

Source: author's calculations based on EQLS, 2016;EQLS, 2011-2012.Data Files UK Data Archive, European Foundation for the Improvement of Living and Working Conditions, 2018, d

In Latvia, the rating decreased in 6 indicators and grew by hundredths in *How happy would you say you are*. Only the satisfaction with the present state of the economy in country increased in both the EU and Latvia.

Life satisfaction in 2016 decreased from 2011 in both the EU and Latvia. Of the 28 countries, 22 showed a decrease in life satisfaction, and the difference was greatest (-0.5 to - 0.2 points, from 2016 to 2011) in Bulgaria, Croatia, Portugal, Cyprus, Romania, Poland, Latvia, which are essentially the countries that have taken the lower places of various social and economic process assessment ratings over the past ten years. Life satisfaction assessment in turn increased from 0.03 to 0.14 in the Czech Republic, the United Kingdom, Hungary, Ireland, Malta, Estonia. Latvia had the third lowest life satisfaction rating in 2016; it was lower only in Hungary and Bulgaria. It was the highest in Denmark (8.4), Sweden and Finland (8.1).

Taking all things together, how happy would you say you are: this indicator remained unchanged at 7.3 in the EU. It grew in Latvia, but is still the second lowest among the EU countries in 2016, with Bulgaria taking the last place. Assessment of How happy would you say you are decreased between the subject periods in 12 countries, where five of the most radical decreases were in Croatia (-0.38 points), Spain, Portugal, Bulgaria, Lithuania. The change in the feelings of happiness showed a positive increase in 12 countries, including Latvia (+0.03 points), with the greatest increase in Estonia (+0.16 points), Greece (+0.26 point) and Malta (+0.37 points). The ratings of happiness were highest in Sweden (8.0 points), Finland and Denmark (8.2 points). In theory, life satisfaction reflects the cognitive process of individuals (feelings, perception, attention, memory, thinking and language) and their general assessment of quality of life as a whole, which is often indicative of the individual's assessment of specific aspects of their life. The survey calculated Spearman's rank correlation coefficients of the surveyed characteristics, which provide an insight into the significance of various quality of life aspects in the life satisfaction assessment. In the EU in total, the correlation coefficient for life satisfaction and How happy would you say you are is 0.682 (p=0.000); in Latvia, the same correlation coefficient is 0.648 (p=0.000),

which leads to conclude that the feeling of happiness of the people of Latvia represents 42% of the life satisfaction, as opposed to the 47% in the EU in total.

A significant subjective well-being indicator is satisfaction with education, since a higher level of education enables greater opportunities on the employment market and in satisfying individual personal interests and desires. At the same time, people with a higher level of education tend to be more critical of the current processes in society and of their own ability. Both in the EU and Latvia, the assessment of satisfaction with education has decreased. It may be due to the ever growing presence of digital economics in people's daily lives, where certain age groups are faced with their current skills and future possibilities in the context of making full use of the digital environment. Satisfaction with education has fallen in 20 countries, and it was most obvious in Lithuania, Romania, Cyprus, Spain (-0.42 points), Austria (-0.41 points), Portugal (-0.34 points), Belgium, Croatia (-0.3 points). Meanwhile satisfaction with education grew (from +0.01 to +0.33 points) in Slovakia, Poland, Malta, Luxembourg, Netherlands, France and Italy. In terms of satisfaction with education, Latvia places at the eighth lowest rating, leaving behind seven countries, i.e. Hungary, Slovenia, Lithuania, Croatia, Bulgaria, Poland, Greece (6.28 points). The highest satisfaction with education was in Finland (7.6 points) and Denmark (8.0 points). In Latvia, satisfaction with education decreased by -0.28 points between the subject periods, possibly due to the aging population and certain categories of people not being able to keep up with the ongoing digital processes and globalization. The correlation coefficient for satisfaction with education and life satisfaction in the EU is 0.310, which implies that approximately 10% of the EU people's life satisfaction can be explained with their satisfaction with education. In Latvia, the coefficient is 0.227 ($p=0.000$), implying that only 5% of Latvians' life satisfaction is due to their satisfaction with education. This could be related to the fact that the respondents from Latvia had a greater proportion of people aged 60 or older, which makes other subjective well-being elements more important and relevant to them in terms of satisfaction with life than education.

Satisfaction with job as a subjective well-being assessment decreased in both Latvia and the EU in total by -0.1 points to 7.1 in Latvia and 7.4 in the EU. The decrease was greatest (from -0.44 to -0.2 points) in Cyprus, Romania, Austria, Czech Republic, Denmark, Croatia, Netherlands, whereas Malta, Sweden and Greece saw an increase, however minor, from +0.03 to 0.09 points). Among the EU countries, Latvia ranked 21st in terms of satisfaction with job, leaving behind Italy, Hungary, Portugal, Croatia, Poland, Greece and Bulgaria (6.69 points). The assessment was highest in Sweden (7.87), Finland (8.02) and Denmark (8.23). The correlation coefficient for satisfaction with job and life satisfaction was 0.329 ($p=0.000$) in Latvia and 0.431 ($p=0.000$) in the EU. The results indicate that satisfaction with job has a lower impact on Latvians' life satisfaction (11%) than that of the EU residents in total (19%). The decrease in satisfaction with job in the EU countries and Latvia, as shown by the responses to other questions of the survey, could be related to the long working hours, which people from almost all of the countries would like to see reduced, thus mitigating the conflict between working hours and family or social responsibilities outside work. Adding to the work-life balance conflict, another significant factor that might have affected satisfaction with job is the mental and physiological state of people at the end of the working day. In 2016, an average of 57% of the EU-15, 64% of the EU-13 respondents came home from work too tired to do any house work at least several times per month; in addition, this aspect has seen the most radical change in the EU since 2011, i.e. +31 percentage points. In Latvia, 2016, such a situation was common for 66% respondents, as opposed to the 37% in 2011. These results indicate that the intensity and complexity of jobs is growing and people are failing to keep up. 40% of the EU respondents said that they had trouble performing their family responsibilities several times a month due to the time they spent at work, and this aspect has seen an increase of 20 percentage points in the EU over five years. The situation is worse in Latvia: such situations were noted by 47%, i.e. twice as many as in 2011.

Both in Latvia and the EU on average, the assessment of satisfaction with standard of living remained unchanged in the subject period. In 16 countries, the satisfaction with standard of living among the respondents decreased, for example Cyprus (-0.46 points), Austria (-0.29), Portugal (-0.21), Slovakia (-0.19), while in 12 countries it increased, for example Greece (+0.22 points) and Malta (+0.32 points). The assessment in Latvia (5.8) is still in the 27th place, only ahead of Bulgaria (4.6 points). The lower end of the ratings table, below 6 points, includes also Lithuania, Croatia, Hungary, which joined the EU as of 2004. The first nine places on the ratings table are populated by the EU-15 countries, and two of them exceeded 8 points on the satisfaction with standard of living - Sweden (8.04) and Denmark (8.38). This shows that the countries that joined the EU after 2004 have still a long way to go to the average EU living standards. The correlation coefficient for satisfaction with standard of living and life satisfaction in Latvia is r = 0.660 (p=0.000), and in the EU it is r = 0.627 (p=0.000), which signifies that life satisfaction of Latvians is explained to 44% by their satisfaction with standard of living, whereas in the EU it is a little lower – 39%.

Satisfaction with accommodation decreased in 2016 from 2011 both in Latvia and the EU in total. It is possible that the economic crisis is still keeping the people of both Latvia and the EU from improving their home conditions, and people are also more careful with regard to taking loans. Over the past decade, smart devices and systems have entered the daily home maintenance, which has increased people's desire for home improvements, but the practical possibilities are limited. In only seven countries satisfaction with accommodation has grown, i.e. Germany, Belgium, Malta, Luxembourg, Czech Republic, Sweden and Greece, and the increase varies from 0.02 to 0.13 points, while in the rest of the countries the indicator decreased, most of all in Croatia (-0.58 points) and Cyprus (-0.66 points). In terms of satisfaction with accommodation, Latvia placed last in the 2016 ratings, exchanging places with Bulgaria. The correlation coefficient for satisfaction with accommodation and life satisfaction for the Latvian respondents is r = 0.375 (p=0.000), in the EU it is r = 0.437 (p=0.000), which shows that satisfaction with accommodation explains only 14% of life satisfaction, as opposed to 19% in the EU.

Satisfaction with family life decreased in the subject period in Latvia (-0.2 points) and in the EU. The most rapid decrease of 18 countries belongs to Cyprus (-0.57 points), followed by Croatia (-0.46 points), Austria (-0.35 points), Ireland (-0.29 points) etc. There was a positive change in only 10 of the countries, ranging from Malta (0.03 points) to the Czech Republic (0.19 points). In Latvia, satisfaction with family life was 27th in 2016, just ahead of Bulgaria (6.7 points), and the rating was highest in Denmark (8.7 points). The correlation coefficient for satisfaction with family life in Latvia is 0.316 (p=0.000), in the EU it is r = 0.446 (p=0.000), which shows that satisfaction with family life explains 10% of life satisfaction in Latvia, as opposed to 20% in the EU.

Satisfaction with the present state of the economy in country increased in 2016 from 2011 both in Latvia and the EU. Two countries saw a decreased satisfaction with the present state of the economy in country from 2016 to 2011 - Finland (-0.7 points) and Italy (-0.1 points). For the rest of the EU countries, satisfaction with the present state of the economy in country grew: by more than 1.0 points in countries such as Romania, Portugal, Poland, the United Kingdom, the Czech Republic;by more than 2 points in Hungary, Malta, Ireland. Latvia ranked 21st in satisfaction with the present state of the economy in country in 2016, leaving behind Slovenia, Cyprus, Italy, Spain, Croatia, Bulgaria, Greece (2.4 points); the rating was highest in Luxembourg (7.2 points). The correlation coefficient for satisfaction with the present state of the economy in country and life satisfaction in Latvia is 0.398 (p=0.000), as opposed to 0.310 (p=0.000) in the EU, indicating that satisfaction with the present state of the economy in country explains 16% of Latvians' life satisfaction and 10% of that of the EU countries. The decreased satisfaction in this aspect among the EU respondents could be related to the generous EU-15 social security systems, which practically do not deteriorate their residents' satisfaction with life during an economic recession or crises and respectively does not make the residents reconsider the country's economic achievements or their impact on each individual's quality of life.

In light of the comparison of changes in the above subjective well-being aspects between Latvia and the EU in total (table 2), it can be concluded that only two of the subject characteristics show a statistically significant change from 2011 to 2016 in both Latvia and the EU countries: satisfaction with job (p=0.048 in Latvia and p=0.041 in the EU countries) and satisfaction with the present state of the economy in country (p=0.000 in Latvia and p=0.005 in the EU countries).

Table 2

Comparison of changes in the subjective well-being aspects in 2016 and 2011 between Latvia and the EU

Satisfaction	**Latvia**			**EU total**		
(1 very dissatisfied, 10 very satisfied	Mean differences	Z	Sig.	Mean differences	t test	Sig
1.Life satisfaction	-0,2	-0,241	0,810	-0,11	-3,658	0,506
2.Taking all things together how happy would you say you are?	0,03	-1,894	0,058	-0,02	-0,221	0,956
3.Satisfaction with education	-0,28	-0,522	0,601	-0,1	-10,613	0,128
4.Satisfaction with job	-0,11	-1,979	***0,048***	-0,12	-6,373	***0,041***
5.Satisfaction with standard of living	-0,01	-1,664	0,096	-0,04	-0,95	0,887
6.Satisfaction with accommodation	-0,18	-0,14	0,889	-0,13	-3,652	0,292
7.Satisfaction with family life	-0,2	-0,774	0,439	-0,09	-2,884	0,357
8.Satisfaction with the present state of the economy in country	1,01	-11,174	***0,000***	0,79	-5,889	***0,005***

Source: author's calculations based on EQLS, 2016;EQLS, 2011-2012.Data FileS UK Data Archive, European Foundation for the Improvement of Living and Working Conditions, 2014,c; European Foundation for the Improvement of Living and Working Conditions, 2018, d

The changes of satisfaction with other aspects were not statistically significant between 2016 and 2011 and are influenced by random factors since, as is well known, the subjective well-being includes the positive and negative emotions of the moment, as experienced by the individual in both short and long term, adding to their general judgement of an element of satisfaction with life. When comparing the shifts in 2016 and 2011 assessment comparison, they are mathematically rather insignificant. It should be noted that statistically significant differences even with the same results is determined by the number of respondents, which may vary across the subjective well-being aspects included in the survey. Correspondingly, from the point of view of statistical analysis, it can be said that the reviewed subjective well-being aspects assessment ratings of 2016 and 2011 can be considered, with the exception of satisfaction with job and satisfaction with the present state of the economy in country, to be similar, with no significant rating changes over five years in Latvia or the EU in total.

Conclusions, proposals, recommendations

1. The residents of Latvia assessed their well-being lower than the EU in total in both 2016 and 2011. Seven out of eight of the selected subjective well-being elements retained their rating on the EU level equal to that of 2011 or slightly lower (by tenths or hundredths). Latvia saw a decrease in the ratings of six indicators, but an increase by hundredths in the rating of feelings of happiness. Only one of the indicators grew in both the EU and Latvia: satisfaction with the present state of the economy in country.

2. Satisfaction with life in the EU averaged to 6.9 points (on a scale of 1–10) in 2016. Satisfaction with life improved from 2011 to 2016 in six member states - the Czech Republic, the United Kingdom, Hungary, Ireland, Malta and Estonia - and decreased in the rest, including Latvia. Latvia ranked 26th on the life satisfaction ratings table, leaving behind Hungary and Bulgaria.

3. The indicator of how happy would you say you are remained unchanged in the EU in total at 7.3 points, as opposed to 6.6 in Latvia, which places Latvia 27th on the ratings table (last being Bulgaria).

4. Although education is assessed on the whole highly, satisfaction with education decreased in both the EU (7.1 points) and Latvia (6.85 points). It may be influenced by the ever growing presence of the digital economy in people's daily lives and the increasing gap between the education content received by various generations as the population ages. People of a certain age may grow dissatisfied with education in light of their current skills and future possibilities for enhancing their education. The level of satisfaction with education decreased in 20 countries, most radically in Lithuania, Romania, Cyprus. Satisfaction with education slightly decreased between the subject periods in Latvia as well. Latvia ranked 21st in satisfaction with education among the EU countries, and it is one of the most highly assessed subjective well-being elements among the Latvian respondents. The respondents of France and Italy were the least satisfied with their education.

5. Satisfaction with job as a subjective well-being aspect decreased among both Latvian (7.1 points) and the EU (7.4 points) respondents. The greatest decrease was in Cyprus, Romania, Austria,while it increased in Malta, Sweden and Greece. Among the EU countries, Latvia ranked 21st in satisfaction with job. The decrease in satisfaction with job in the EU and Latvia, as indicated by responses to other questions of the survey, could be due to the long working hours, which residents of nearly all countries wish to reduce.

6. Both in Latvia (5.8 points) and the EU (6.8 points) retain unchanged average satisfaction with standard of living in the subject period. In terms of this indicator, Latvia ranks 27th, ahead of Bulgaria. The first nine places on the ratings table are populated by the EU-15 countries. This shows that the countries that joined the EU after 2004 have still a long way to go to the average EU living standards. In addition, satisfaction with standard of living is one of the lowest-rated subjective well-being elements among the respondents from Latvia.

7. Satisfaction with accommodation decreased in 2016 from 2011 both in Latvia and the EU in total, to 6.4 points in Latvia and 7.6 points in the EU respectively. This indicator grew in only seven of the EU countries: Germany, Belgium, Malta, Luxembourg, the Czech Republic, Sweden and Greece. Latvia ranked last in satisfaction with accommodation in 2016, indicating significant problems with housing quality in our country and, in a way, an inability to fundamentally solve these problems.

8. Satisfaction with family life vērtējums pētāmajā periodā decreased in both the EU and Latvia, to an average of 7.0 in Latvia and 7.2 points in the EU. The most radical decrease of 18 countries is in Cyprus and Croatia. Latvia ranked second to last (Bulgaria) in satisfaction with family life in 2016, and while this is one of the highest-rated subjective well-being indicators (after satisfaction with job), other EU countries assessed this aspect a lot higher.

9. Satisfaction with the present state of the economy in country in 2016 increased from 2011 both in Latvia and the EU, but the 2016 rating is lower than that of 2011 for Finland and Italy. Satisfaction with the present state of the economy in country is one of the most dynamically assessed indicators. Latvia ranked 21st in satisfaction with the present state of the economy in country in 2016, showing an improvement on 2011 by 1 point.

10. In terms of the correlation of life satisfaction and the other subjective well-being indicators, which can in a way be viewed as factors determining life satisfaction, 42% to 47% of life satisfaction are explained by people's feelings of happiness, 39% to 44% are explained by satisfaction with job and satisfaction with standard of living. The rest of the subjective well-being factors show a lesser influence on life satisfaction, i.e. 10% to 20%: Satisfaction with job,

Satisfaction with accommodation, Satisfaction with family life, and Satisfaction with the present state of the economy in country. The smallest role in life satisfaction both in Latvia and the EU belongs to education, which can be explained by the sufficiently high general education level in the EU, as well as the fact that education, as a subjective element of satisfaction with life, remains outshadowed, is not changed fast enough, and possibly remains outside the chain of causality affecting one's personal life.

11. While many countries mark 2011-2012 as the end of the economic crisis, coinciding with the third EQLS, the EQLS results indicate a significant change in only two of the subjective well-being aspects: Satisfaction with job, which indicates a decrease in its assessment, and Satisfaction with the present state of the economy in country, which indicates positive changes in this aspect's assessment. The rest of the subjective well-being indicators analysed show that the economic growth, social and economic reforms, social security efficiency over five years do not significantly contribute to the way people view their personal quality of life.

Bibliography

Diener, E. & Seligman, M., 2004. Beyond money: Toward an economy of well-being. Psychological Science in the Public Interest 5, 2–31.

Diener, E., Suh, E. M., Lucas, R. E., & Smith, H. L., 1999. Subjective well-being: three decades of progress. Psychological bulletin 125 (2), 276-302.

European Foundation for the Improvement of Living and Working Conditions, 2010. Second European Quality of Life Survey. Subjective well-being in Europe. Luxembourg: Office for Official Publications of the European Communities, 2010. ISBN 978-92-897-0862-3. Available at: https://www.esri.ie/pubs/BKMNEXT159.pdf. [Accessed 19 July 2018].

European Foundation for the Improvement of Living and Working Conditions, 2014, a. European Quality of Life Survey 2012. Available at:

https://www.eurofound.europa.eu/surveys/european-quality-of-life-surveys/european-quality-of-life-survey-2012. [Accessed 24 July 2018].

European Foundation for the Improvement of Living and Working Conditions, 2014, b. EQLS 2012 – Questionnaire. Available at:

https://www.eurofound.europa.eu/surveys/european-quality-of-life-surveys/european-quality-of-life-survey-2012/eqls-2012-questionnaire. [Accessed 06 July 2018].

European Foundation for the Improvement of Living and Working Conditions, 2014,c. European Quality of Life Survey 2012. EQLS, 2011-2012 Data File UK Data Archive. SN: 7348 European Quality of Life Survey Integradet Data File, 2003-2016 usage number 125185, usage title : Changes in the quality of life in Latvia and EU countries.[Accessed 04 April 2018].

European Foundation for the Improvement of Living and Working Conditions, 2018, a. European Quality of Life Survey 2016. Available at:

https://www.eurofound.europa.eu/surveys/european-quality-of-life-surveys/european-quality-of-life-survey-2016. [Accessed 22 July 2018].

European Foundation for the Improvement of Living and Working Conditions, 2018, b. EQLS 2016 – Questionnaire. Available at:

https://www.eurofound.europa.eu/surveys/european-quality-of-life-surveys/european-quality-of-life-survey-2016/questionnaire. [Accessed 23 July 2018].

European Foundation for the Improvement of Living and Working Conditions, 2018, c. EQLS 2016 – Methodology. Available at:

https://www.eurofound.europa.eu/surveys/european-quality-of-life-surveys/european-quality-of-life-survey-2016/eqls-2016-methodology. [Accessed 10 July 2018].

European Foundation for the Improvement of Living and Working Conditions, 2018, d. European Quality of Life Survey 2016 - Data visualisation. Available at:

https://www.eurofound.europa.eu/data/european-quality-of-life-survey. [Accessed 11 July 2018].

European Foundation for the Improvement of Living and Working Conditions, 2018, e. European Quality of Life Survey 2016. EQLS, 2016 Data File. UK Data Archive. SN: 7348 European Quality of Life Survey Integradet Data File, 2003-2016 usage number 125185, usage title : Changes in the quality of life in Latvia and EU countries.[Accessed 04 April 2018].

Grīnfelde A., 2010. The quality of life of pensioners in the regions of Latvia. Doctoral Thesis. Jelgava: LLU, 2010, 190.

Koroļova I., 2011. *Subjective well-being: assessment of satisfaction and achievement in the transition of young people to adult status.* Doctoral Thesis. Rīga : LU, 233.

Parliament of the Republic of Latvia, Latvia 2030. Sustainable Development Strategy till 2030. Available at: https://www.pkc.gov.lv/sites/default/files/inlinefiles/Latvija_2030_7.pdf [Accessed 23 July 2018].

Pavot, W. & Diener, E., 2008. *The satisfaction with life scale and the emerging construct of life satisfaction.* The journal of positive psychology 3 (2), 137-152.

Suldo, S. M. & Huebner, E. S., 2006. *Is extremely high life satisfaction during adolescence advantageous?* Social indicators research 78, 179-203.

Tīsenkopfs T., 2006. *What does a good life mean in today's Latvia?* In: quality of life Latvijā. Stratēģiskās analīzes komisija. Rīga: Sience, 13-37.

HEALTHY AND ACTIVE PRE-RETIREMENT AND RETIREMENT AGES: ELDERLY INEQUALITY IN LATVIA

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Abstract. Pre-retirement and senior population groups are more affected by activity limitations, unemployment and bad perceived health than population in active ages. Data for Latvia and other EU countries demonstrate a warning situation – socio-economic inequalities among elderly are not diminishing as fast as was expected. The aim of the paper is to analyse healthy and active life in pre-retirement and retirement ages to detect changes and inequalities complying with active ageing and public health. Analysis is based on Population Census and SILC data on national, regional and smaller territorial level. Regression models are used to study causal links and relations between the underlying social and economic circumstances and the selected measures of inequality. Ethnic and professional background is considered among explanatory factors. A framework for the better understanding of elderly inequalities includes not only traditional demographic and socio-economic factors, but also regional determinants.

Key words: *active ageing, healthy life years, elderly inequality, mortality*

JEL code: J11, J18, I38, R11.

Introduction

Population ageing is a widely discussed demographic issue among scholars and policy makers, including different aspects of people's health, life expectancy and activity in retirement ages (Nurmela et al., 2014; Sanderson and Scherbov, 2016; CSB, 2017, European Commission, 2018). Understanding a role and scope of inequalities among elderly groups, among people in active retirement ages and coming generations in pre-retirement ages in different contexts, has important implications for the assessment of changes in social inclusion, and implementation of national development policies and programmes (Becker et al., 2018). In response to this, various new approaches to thinking about and measuring population aging have been proposed (see Sanderson W., Scherbov S., 2016).

Income inequality in working ages are principally explained through the labour market processes, influenced by the overall socio-economic conditions in country or region. Pre-retirement and senior population groups are more affected by activity limitations, unemployment and bad perceived health than population in active ages. Data for Latvia and many other EU countries demonstrate a warning situation – social and economic inequalities among elderly are not diminishing as fast as was expected. The aim of paper is to analyse inequalities in healthy and active life during pre-retirement and retirement ages to detect changes complying with active ageing. Data and methodology for detecting absolute and relative inequalities and their determinants are used for several variables (e.g. income, self-assessed well-being, life quality etc.). Spatial analysis is used as well.

We use Population Census, Household survey and SILC data on the elderly population groups residing in statistical regions and in some occasions in smaller territorial units of Latvia. We employ a set of regression models in order to

study the causal links and relations between the underlying social and economic circumstances and the selected measures of inequality. Ethnic and professional background are also considered as determinant factors. We attempt to identify homogenous and heterogeneous groups among senior population, and to find out main causes of divergence among them.

The existence of low-income groups and poor levels of self-assessed health and well-being among senior population in pre-retirement and retirement ages suggests that overall inequality among elderly poses a significant policy challenge in Latvia. Using the model estimation results, we propose a framework for the better understanding of elderly inequalities and their determinants, which include not only traditional demographic and socio-economic factors, but also spatial determinants.

Research results and discussion

This paper includes several research dimensions: statistical and spatial analysis of the available data and econometric modelling.

In the first part we address health status and healthy life expectancy issues. Then we proceed with the review of available statistical and spatial data for Latvian municipalities, while paying specific attention to the divergent trends among pre-retirement and retirement age group. For this purpose, we utilise 2011 Population and Housing census data, 2016 Population survey results and official statistics on social and economic conditions. We conclude this paper with a model-based analysis which helps us to determine primary factors influencing the regional inequalities among senior population in Latvia.

1. Health in pre-retirement and retirement ages

In general, it is presumed that successive generations are living longer (World Bank, 2015; Lutz et al., 2018). SILC data for Latvia confirm widely accepted regularity that, with an approaching retirement age, individuals in their lives are facing more chronic illness conditions, activity limitations and unmet need for medical care, compared with younger ages (Table 1).

Table 1

Chronic (long-standing) illness condition, activity limitations for at least 6 months, and selected reasons for unmet need for medical care by sex and age group in Latvia (%), based on SILC 2017

	Men					Women				
Age group:	***Total***	***16–24***	***25–49***	***50–64***	***65+***	***Total***	***16–24***	***25–49***	***50–64***	***65+***
Chronic illness condition										
Yes	36.9	12.8	20.7	49.8	74.5	47.4	12.7	23.1	55.0	81.9
No	63.1	87.2	79.3	50.2	25.5	52.6	87.3	76.9	45.0	18.1
Reported activity limitations										
Severe restrictions	8.8	2.0	3.7	9.7	24.7	11.8	1.2	2.8	9.9	27.8
Some restrictions	27.3	10.1	17.4	39.7	46.0	33.7	10.4	21.0	41.0	50.5
No restrictions	63.9	87.9	78.9	50.6	29.3	54.5	88.5	76.2	49.1	21.7
Reasons for unmet need for medical care										
Could not afford	37.6	41.3	32.2	42.2	39.2	47.3	42.9	43.8	55.1	44.7
Could not take time	10.7	4.9	16.5	10.1	1.7	10.0	…	23.0	10.2	0.8
Too far to travel/no means of transportation	3.1	…	0.9	1.9	10.6	5.2	…	0.7	5.0	9.2

**Estimated values may not sum up to the total of 100% due to rounding. Source: authors' construction based on CSB of Latvia database*

Based on SILC 2017 data, overall proportion of chronic illness conditions and restrictions in reported activity limitations for women exceeded proportion for men by 10.5 and by 3.0 to 6.4 percent points respectively. A bigger sex differences in reported health evaluations appear at the age 50 and older, when women start perceiving their state of health much more critically than men. Significant reason that prevented from examination or medical treatment for both sexes was financial problems, particularly in ages 50 years and older. Approximately 40-55 per cent of old men and women could not afford those problems. That proportion was higher for women than for men in all age groups.

But how observed age gradients are changing in time? Is the self-perceived health status "Bad and very bad" becoming less widespread in pre-retirement and retirement ages, and are the health inequalities growing or diminishing among men and women? Answers to those questions we can get from the Table 2.

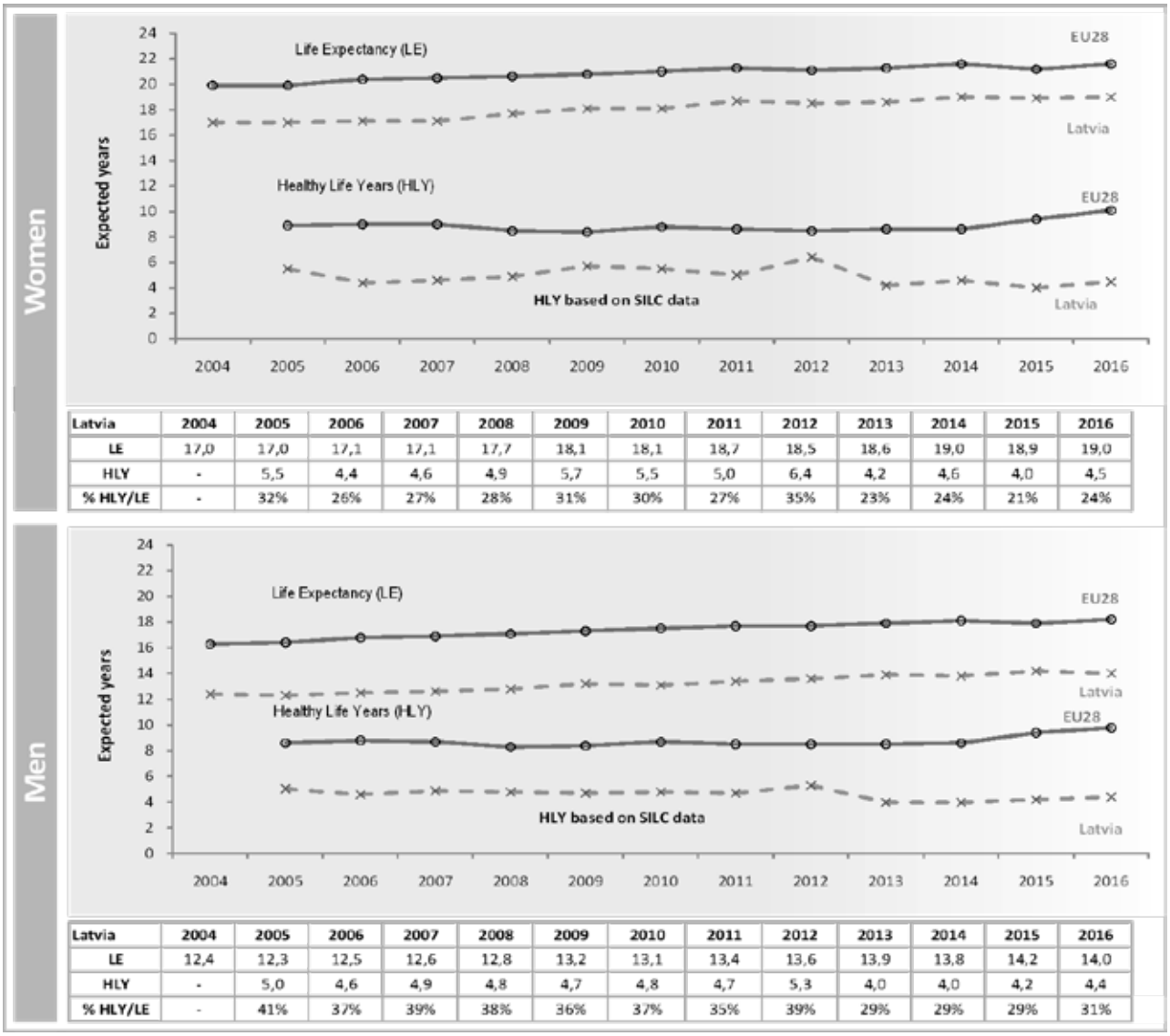
Table 2

Self-perceived health status "Bad and very bad" by sex and age group in Latvia (% compared to all answers in respective year and age group) 2005-2018, based on SILC

	Year													
Age group	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Women														
55-64	35	30	28	28	25	27	24	20	22	21	20	18	19	17
65-74	52	49	47	41	39	35	38	34	36	34	34	31	33	29
Men														
55-64	31	24	26	28	26	23	23	20	18	19	16	17	22	19
65-74	43	43	35	34	34	37	32	31	32	30	32	30	30	27

Source: authors' construction based on CSB of Latvia database, Table VPG040

Except few years, women in the pre-retirement and retirement ages show higher proportion of self-assessed bad and very bad health compared to men. That fit to results of other health surveys (CSB, 2016). Based on SILC data, self-perceived bad and very bad health differs significantly between age groups 55-64 and 65-74., but the gap between them has declined during the years 2005-2018 from 17 to 12 percent points for women and from 12 to 8 percent point for men. There is clear evidence that share of men and women with self-assessed bad and very bad health status is declining in Latvia in pre-retirement and retirement age groups and that decline is more significant for women compared to men.



Latvia	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
LE	17,0	17,0	17,1	17,1	17,7	18,1	18,1	18,7	18,5	18,6	19,0	18,9	19,0
HLY	-	5,5	4,4	4,6	4,9	5,7	5,5	5,0	6,4	4,2	4,6	4,0	4,5
% HLY/LE	-	32%	26%	27%	28%	31%	30%	27%	35%	23%	24%	21%	24%

Latvia	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
LE	12,4	12,3	12,5	12,6	12,8	13,2	13,1	13,4	13,6	13,9	13,8	14,2	14,0
HLY	-	5,0	4,6	4,9	4,8	4,7	4,8	4,7	5,3	4,0	4,0	4,2	4,4
% HLY/LE	-	41%	37%	39%	38%	36%	37%	35%	39%	29%	29%	29%	31%

Source: authors' construction based on Eurostat, 2018a. Life Expectancy at Age 65, by Sex;. Eurostat, 2018b. Healthy Life Expectancy at Age 65 by Sex. Retrieved from http://ec.europa.eu/eurostat/data/database/

Fig. 1. **Life expectancy and Healthy life years at age 65 for Latvia and the EU, 2004-2016, based on SILC data**

Life expectancy without long term activity limitation or "Healthy life years", based on the disability question, was selected in 2004 among the structural indicators for assessing the EU strategic goals (Lisbon strategy). In time of population ageing it is worth to understand no only quantitative outcomes (increase in numbers and proportions of older population groups, and growing life expectancies), but also qualitative changes in active and healthy lives, and how those indicators are exhibited across age, sex and population sub-groups. Changes in life expectancy and healthy life years at age 65 are given in Figure 1.

Life expectancy at age 65 in Latvia since 2005 has increased almost parallel to EU 28 average. In 2016 Latvia lagged behind the EU 28 average by 4.2 years for men and by 2.6 years for women, compared to respectively 4.1 and 2.9 years in 2005. But healthy life years at age 65 in Latvia increased slower than in EU 28 and slower than increase of total life expectancy at age 65. Such trends led to decline in the share of healthy life years in life expectancy: for women by 8 per cent points and for men by 10 per cent points. That raise the questions about effectiveness of national health policy (Cabinet of Ministers, 2014; CSCC, 2018) and cast doubt to fulfil public health strategic goals.

The active ageing strategy for a longer and better working life in Latvia has been approved for the period 2017-2022 by the Government (Cabinet of Ministers, 2016). The target group of the Strategy is the elderly population aged 50 and over, especially before reaching retirement age, who face significant barriers to labour market integration. To achieve

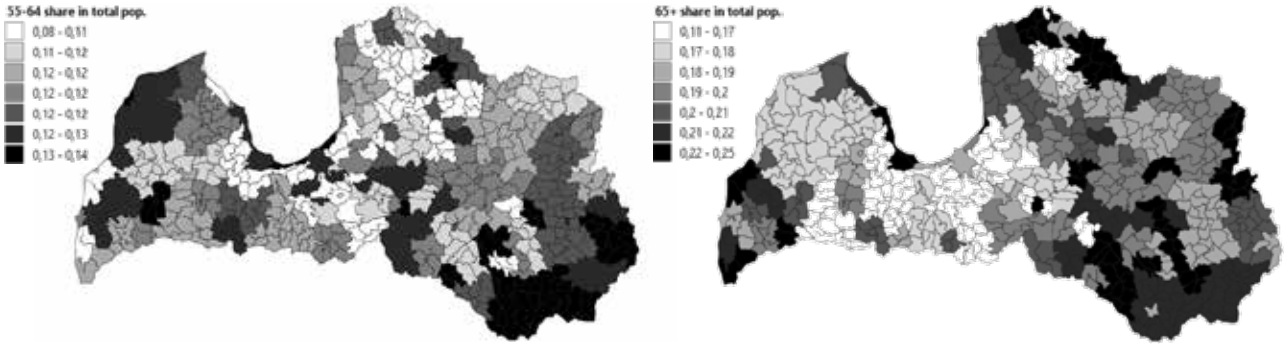
strategic goals, measures for employment, education, social protection, and well-being and active lifestyles have been developed (Population Europe, 2018a).

2. Structural and regional inequalities among senior population in Latvia

Population censuses provide detailed and comprehensive data on residents, families and households at the smallest territorial units. It was year of 2011, when the latest population census has been conducted in Latvia by the Central Statistical Bureau of the Republic of Latvia (CSB). Results of the 2011 Population census show that pre-retirement and retirement age groups in Latvia constituted a significant share of the total population:

- 12.2% in pre-retirement ages (55-64);
- 18.4% in retirement ages (65 and older).

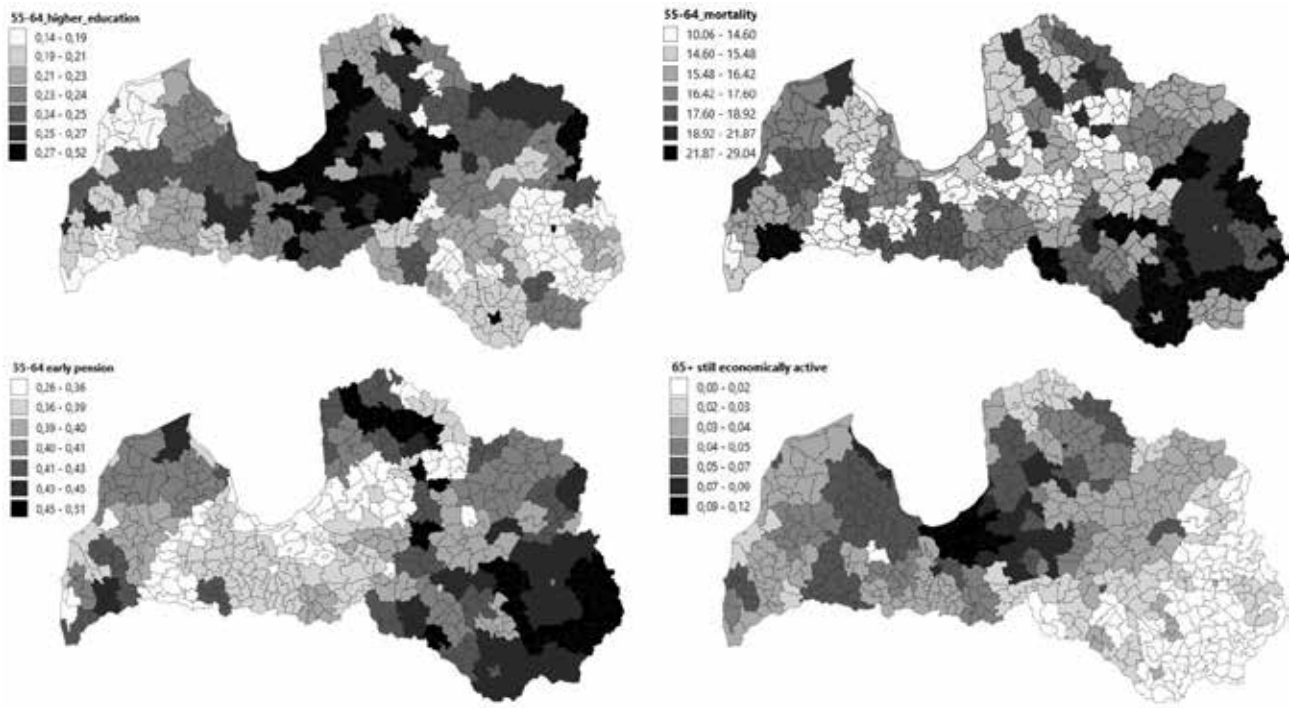
On the regional level these two age groups demonstrate significant spatial inconsistency between the local municipalities (Fig. 2). Age group 65 and older in this respect is characterised by visible core-periphery divide. Pre-retirement age group is less spatially homogenous.



Source: authors' construction based on 2011 Population and Housing Census data.

Fig. 2. **Share of population in pre-retirement (55-64) and retirement (65 and older+) ages in Latvian municipalities, 2011.**

Spatial variance in these two age groups is substantial: only 6% difference between highest and lowest observations for pre-retirees, and 14% for 65 and older population. This raises questions about causes and effects of such differences and inequalities within these age groups. The obvious variables in this sense are the ones describing income, economic activity, health and demographic conditions (i.e. marital status and education) of the age groups in question. Figure 3 shows spatial distribution of some of the most interesting parameters for both groups.



Source: authors' construction based on 2011 Population and Housing Census data.

Fig. 3. **Education, mortality and economic activity of populations in pre-retirement (55-64) and retirement (65+) age in Latvian municipalities in 2011**

Looking at the mortality figures, it is important to note that on the regional level mortality differences within the pre-retirement age group are quite significant – ranging from 10 up to 25 ‰ (six-year average estimates were used to reduce possible errors caused by small sample sizes in some municipalities).

Even the superficial review of the available statistical data shows, that ethnical background plays a significant role in determining differences and inequalities among senior population. Latvia has one of the most ethnically diverse structure of population in Europe – 62% of the total population are Latvians and the rest 38% (731.6 thousands) are ethnic minorities, out of which the largest ethnic groups are Russians, Belarusians, Ukrainian, Poles, etc. (CSB, 2018a). Therefore, it is important to investigate also if there are ethnic disparities (differences) among persons of pre-retirement (55-64) and retirement (65+) ages, in order to facilitate coherent active aging among different ethnic groups.

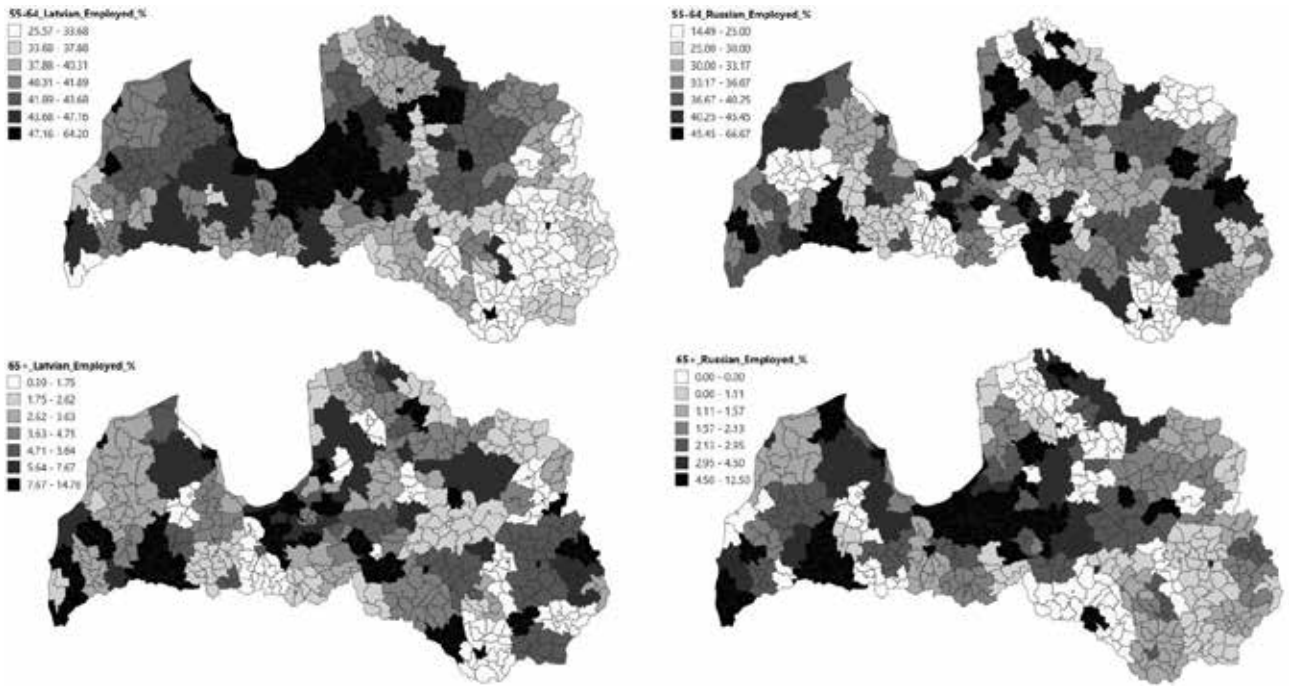
As of ethnic structure of persons in the pre-retirement and retirement ages, it comprises 53.2% of Latvians, 32.0% – Russians and 14.8% – representatives of other ethnicities (CSB, 2018a). According to the data of the Population and Housing Census 2011, the more rapid ageing was observed among ethnic minorities groups:

- 9.90% of Latvians were in the pre-retirement ages and 17.63% in the retirement ages;
- 15.77% of Russians were in the pre-retirement ages and 18.14% in the retirement ages;
- 16.70% of other ethnicities were in the pre-retirement ages and 23.17% in the retirement ages.

Population Census data demonstrates also that two numerically largest ethnic groups – Latvian and Russian – in the pre-retirement and retirement ages prefer to live in the largest Latvian cities (republican cities), specifically in capital city Riga. Interestingly that almost half of all Russians in the both age groups ("55-64" – 47.2%; "65+" – 47.8%) and only fifth of Latvians ("55-64" – 21.7%; "65+" – 23.6%) preferred to reside in Riga.

When we analyse Population Census data on the employment activity in Latvia, where status such as employees, employers (owners), self-employed persons and persons doing unpaid work for a family business are considered, the results show that employment rates are lower among Russian ethnic group than among ethnic Latvians – in the pre-retirement ages 48.6% of Latvians and 44.8% of Russians while in the retirement ages – 7.8% of Latvians and 5.1% of

Russians were still employed in 2011. At the same time, more evident ethnic differences were observed at the municipal level – Latvians are more actively involved in the labour market, specifically in the age group of 55-64. This group is also less spatially homogenous – high share of employed Latvians in 55-64 ages is concentrated in Riga and municipalities of Pieriga region (47%-64%) and it is less active in the municipalities of Latgale region (25%-37%), with exception of Daugavpils city. We see also specifically low activity for 65 and older Russian ethnic group, in the fifths out of all municipalities they are out of employment market (see Figure 4).



Source: authors' construction based on data of the Population and Housing Census 2011

Fig. 4. **Share of employed pre-retirement and retirement age persons by ethnicity in Latvian municipalities in 2011 (% of the total ethnic group in the given age).**

In general, the lower employment activity of Russian ethnicity population in the pre-retirement and retirement age groups can be associated with the fact that citizens of Russian Federation (RF) living in Latvia can benefit from lower-age retirement provided by RF: females can acquire for the pensioner status at the age of 55 and males – at 60, whereas retirement period in Latvia only starts from the age of 63.6 (2019). Since 2011, this benefit of comparatively earlier retirement age is also applicable to non-citizens of Latvia (VSAA, 2017a). Overall, in 2018, among pre-retirement aged persons 76.5% were Latvian citizens, 7.3% – Latvian non-citizens, 5.6% Russian citizens and 0.6% citizens of other countries (CSB, 2018b). As specifically for Riga city, there is an additional benefit for unemployed pensioners with Russian citizenship. They can use public transport services in Riga free of charge from age 55, while unemployed pensioners Latvian citizens and non-citizens – starting from the age of 63 (BNN, 2018) (VSAA, 2017b). In addition, previous study on the active aging in Latvia (World Bank, 2015) revealed that ethnic minorities without Latvian citizenship have worse labour market indicators compared to both ethnic Latvians and minorities with Latvian citizenship.

Another aspect that plays an important role in the lower involvement of Russian ethnicity, specifically for non-citizens, into labour market – lack of Latvian language skills among elderly persons that creates an obstacle to finding appropriate job (Krasnopjorovs, 2018; World Bank, 2015).

Table 3

Employment rates (%) of senior population aged 65-74 by age groups, ethnicity and education in Latvia in 2011

Ethnicity	*Education*			
	Less than secondary	Secondary	Tertiary	**Total**
Age group 65-69				
Latvians	5.8	15.0	34.8	16.0
Russians	4.5	11.8	23.3	12.8
Other	5.8	13.1	26.1	12.9
Total	5.6	14.0	30.6	14.8
Age group 70-74				
Latvians	2.7	7.7	22.7	8.6
Russians	1.9	4.8	11.6	5.5
Other	2.6	5.7	14.4	6.1
Total	2.5	6.6	17.7	7.3

Source: authors' calculation based on 2011 Population and Housing Census data

Table 3 shows the actual differences that education attainment level and ethnic background have on the employment of the retirement age population in Latvia. Among the 65-69-year olds, Latvians with tertiary education have by far the highest employment rate (34.8%), while Russians with education below secondary show the lowest result (4.5%). This comprises an impressive total difference of over 30%, which can be explained by education and ethnicity alone. In the older sub-group of 70-74, this gap is reduced to 20%, but is still highly significant in terms of both education and ethnicity. This presents new challenge for the studies concerning relations between education attainment and population developmentin Latvia (e.g. see Krumins & Leduskrasta, 2006)

Additionally, reviewing the 2016 Migration and Population Policy Survey carried out in Latvia within the framework of "ECOSOC-LV" project, one can notice slight differences in the perceptions of pre-retirees and retirees about the current demographic problems in the country and the contributors to solving them. For example, Table 4 shows that respondents within age groups 55-64 and 65+ have slightly higher expectations regarding the role of government in addressing demographic issues. Also, retirement age respondents have attributed much less importance to the Attitude in the working place, which is surprising, considering the aforementioned employment challenges and inequalities that they encounter.

Table 4

Major contributors to solving demographic problems in Latvia (n=2049, up to three answers were provided by each respondent)

Contributors	*Age groups*			
	18-54	55-64	65+	**Total**
Family / Household	54.3	49.0	53.9	53.4
Government	50.6	55.9	55.0	52.0
Self comes first	48.1	52.5	54.6	49.7
Municipality	31.3	32.1	27.5	30.9
Attitude in working place	26.2	24.2	18.9*	24.8
Parliament	21.8	23.2	22.4	22.1
Political parties	9.9	7.1	6.8	9.0
NGOs	7.9	5.9	4.3	7.1

Significance codes: * p<0.05; ** p<0.01; *** p<0.001 (Exact Sig, 1-tailed. Binomial test. Test proportion from all population)

Source: Migration and Population Policy Survey – 2016.

3. Model-based assessment

After establishing the heterogeneity of the indicators describing both groups, we proceed with the model-based analysis in order to determine key factors impacting the inequalities within the pre-retirement and retirement age

population. Considering the spatial data presented above, we propose the following dependant variables for the model-based assessment:

- Mortality rate within the particular age group - deaths per year per 1000 inhabitants in the same age group;
- Economic activity - share of population in within the age group, who are either employed or searching for job;
- Prevalence of early retirement (only relevant for 55-64 group) – share of population in pre-retirement age, who chose to retire before reaching the retirement age.

After the review of available statistical data and model calibration, we selected these indicators as possible explanatory variables:

- Share of population in the group with secondary or tertiary education;
- Share of population in the group with family status indicated as "married";
- Share of Russian ethnic population within the age group;
- Average collected Income tax per capita in the municipality;
- Municipal social support policy spending per capita.

For the estimations of mortality, we also added the aforementioned economic activity indicator as an additional exogenous parameter.

Table 5 demonstrates some of the model estimation results, obtained using the Spatial Lag Model, which accounts for the possible spatial spillovers of the indicators under study across the municipal borders and, therefore, is more feasible for use in case of countries with geographically small territorial units (Dahs A., 2016). It should be noted that limited number of exogenous parameters did not have a determinantal impact on the model robustness.

Table 5

Model-based analysis of factors determining mortality and economic activity of senior population groups on the municipal level in Latvia in 2011 (Spatial Lag Model)

Indicator		Mortality rate within age group	Economic activity (employed or searching for job)	Early retirement (55-64 only)
Pre-retirement age group (55-64)	*Secondary or tertiary education*	-10.065	0.212 **	-0.070
	"Married" family status	-0.979	0.172 *	-0.246 **
	Russian ethnic population	5.877 *	-0.014*	0.064 *
	Collected income tax per capita	-0.006 `	0.001 ***	-0.001 ***
	Municipal social support policy spending per capita	0.029	0.001 *	-0.001
	Economic activity (employed or searching for job)	-17.465 ***	n/a	n/a
	ρ (spatially lagged dependant variable)	0.163	0.163	0.473 ***
Retirement age group (65+)	*Secondary or tertiary education*	-28.597 ***	0.023*	
	"Married" family status	-70.196 ***	0.064 **	
	Russian ethnic population	16.144 **	-0.015*	
	Collected income tax per capita	0.010	0.001 ***	
	Municipal social support policy spending per capita	-0.065 `	0.001	
	Economic activity (employed or searching for job)	-143.834 ***	n/a	
	ρ (spatially lagged dependant variable)	0.162	0.297 ***	

Significance codes: ‘ p<0.1; * p<0.05; ** p<0.01; *** p<0.001

Source: authors' elaboration based on 2011 Population and Housing Census data.

For the pre-retirement group, model estimation results show that continuous economic activity (employment or search for one) in the pre-retirement and retirement years is the most significant factor reducing the mortality within the respective age group. The connection between economic activity and mortality should be considered as a two mutually correlated processes: keeping an economically and socially active lifestyle, as well as having additional sources of income

may undoubtedly have determinantal effect on the one's physical and psychological well-being, while on the other hand, pre-retirees and retirees in good mental and physical health tend to be more economically active in the first place. In addition to the economic activity, such factors secondary or tertiary education and marital status also have shown significant constraining influence on mortality rate in the retirement age groups.

Having the Russian ethnic background increases the mortality risk in both age groups under study. This result confirms our findings presented above in this paper, as well as previous studies indicating inherently higher mortality rates for this ethnic group in Latvia. (Krumins and Ponomarjova, 2016).

Considering the established importance of economic activity for both age groups, we look at the factors motivating pre-retirees and retirees to stay at the job market. Model has shown that having secondary or tertiary education is a significant motivating factor for pre-retirees and somewhat significant for retirees. This is an important observation, indicating that having better education makes senior inhabitants more adaptive to the demands of the job market. This finding corelates with the 2015 World Bank Report indicating major differences in employment rates between the highest- and lowest-educated subgroups of the senior population in Latvia. The differences in employment by education level among senior population are larger than in countries with similar education profiles (World Bank, 2015).

The weight of this issue was raised in the 2016 OECD Reviews of Labour Market and Social Policies, which has shown that older Latvians (prior to retirement) account for a large share of Latvia's working age population and remain significantly overrepresented in the lowest income group – accounting for 28% of the entire population, but as many as 35% of the poorest 10%. These patterns indicate that many of them found it difficult to adapt their skills to those demanded by the evolving market economy, and that realising the productive potential of older workers remains an important challenge (OECD, 2016).

Model has also indicated the significance of "married' family status for the retiree group. Being married is a moderately motivating factor for the 55-64 age group as well. It is important to note here that issues of loneliness and depression at older ages have received increasing attention in recent years. This has important policy implications and calls for better welfare support at older ages, better support for family members involved in the provision of eldercare, and an encouragement for active ageing to break social isolation (Population Europe, 2018b).

As expected, both groups have shown strong positive response to the financial stimuli – i.e., municipalities with higher average income levels per capita (as shown by the collected income tax amounts per capita), present a much higher shares of economically active pre-retirees and retirees. Viewed together with the model estimations for mortality, this proves that economic activity may serve as a connecting link between income inequality and mortality in pre-retirement and retirement ages.

Furthermore, we look at the causes of choosing an early retirement in the 55-64 age group. Unsurprisingly, model shows average income level as the most important factor in determining early retirement. Higher income possibilities clearly withhold pre-retirees from leaving the job market for an early pension. Being married also appears to be a discouraging factor for the premature retirement. Additionally, in many municipalities it can be observed that Russian ethnic population tend to leave the job market at an earlier age, even ignoring the better income opportunities. Model estimations confirm this observation, by showing a significant negative impact of a Russian ethnic background on early retirement choice and overall economic activity.

Finally, place of residence (spatial location of a specific municipality within the country, as indicated by the spatially lagged dependant variable) was shown to be an important factor in economic activity of the retirement age group and choice of early retirement among the pre-retirees. This can be explained by the clear core-periphery inequality of the income level within the country, as well as the unique advantages or disadvantages presented by each territory, e.g. –

unique part-time employment opportunities for the elderly, or lack of available jobs for the pre-retirees. Specifics of the migration behaviour should also be considered (Hazans, 2016).

Conclusions

1. Population groups in pre-retirement and retirement ages are facing more socio-economic problems compared to younger ages. Population ageing and increase of the length of life only partially is followed by improvements in people's health in older ages. Healthy life years at age 65 in Latvia since 2005 has increased slower than in the EU 28 and slower than increase of total life expectancy at age 65, which caused decline in the share of healthy life years in life expectancy. Such trend gives a message to policy makers to evaluate effectiveness of public health measures and to set up revised public health strategic goals for next National development plan.
2. Male-female inequality in self-perceived bad and very bad health status in pre-retirement and retirement ages has remained. Women more critically than men are assessing their health status and health problems than men. Possibly that determines more significant improvements in self-perceived health since 2005 for women in Latvia are compared to men.
3. Among the main reasons that prevented from examination or medical treatment of persons 50 years old and older are financial problems. Approximately 40-55 per cent of old men and women could not afford to cover these expenses. Reforms in health care and increase of health care funding have to reduce observed health inequalities and to improve quality of life, including faster prolongation of healthy life years.
4. Pre-retirement and retirement age groups in Latvia constitute a significant share of the total population. On the regional level these two age groups demonstrate significant spatial inconsistency between the local municipalities.
5. Education attainment and ethnical background plays a significant role in determining differences and inequalities among senior population.
6. In general, the lower employment activity of Russian ethnicity population in the pre-retirement and retirement age groups can be associated with several factors, including foreign citizenship and lack of language skills. It was observed that in many municipalities Russian ethnic population also tend to leave the job market at an earlier age, even ignoring the better income opportunities.
7. Having secondary or tertiary education has been found to be a significant motivating factor for pre-retirees and retirees to stay economically active. This is an important observation, indicating that having better education makes senior inhabitants more adaptive to the demands of the job market.
8. Retirement age respondents attribute much less importance to the Attitude in the working place in solving the national demographic problems, which is surprising, considering the employment challenges and inequalities that they encounter at the job market.
9. Continuous economic activity (employment or search for one) in the pre-retirement and retirement years is the most significant factor reducing mortality within the respective age groups.
10. Both age groups under study have shown strong positive response to the financial stimuli, presenting significantly higher economic activity rates in the municipalities with higher average income.
11. Income level is also found to be the most important factor in determining early retirement. Higher income possibilities clearly dissuade pre-retirees from leaving the job market for an early pension. Being married also appears to be a discouraging factor for the premature retirement.
12. Place of residence (spatial location of a specific municipality within the country) is an important factor in economic activity of the retirement age group and choice of early retirement among the pre-retirees. This can be explained

by the clear core-periphery inequality of the income level within the country, as well as the unique advantages or disadvantages presented by each territory.

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Bibliography

Baltic News Network (BNN), 2018. NP: Riga's public transport services more beneficial to Russian, not Latvian pensioners. Retrieved from: https://bnn-news.com/np-riga-s-public-transport-services-more-beneficial-to-russian-not-latvian-pensioners-179361

Becker P., Schütz J., Zimmermann A. (Eds.), 2018. Ageing Workforce, Social Cohesion and Sustainable Development. Political Challeneges within the Baltic Sea Region. Population Europe Discussion Papers No. 9.

Cabinet of Ministers, 2014. Order Nr. 589. Population Health Guidelines 2014.–2020. (Only in Latvian).

Cabinet of Ministers, 2016. Solution for improving the situation of active aging. Active aging strategy for a longer and better working life in Latvia (only in Latvian). Order Nr. 507, September 7, 2016.

Central Statistical Bureau of Latvia (CSB), 2016. Health survey results in Latvia (only in Latvian). Retrieved from: https://www.csb.gov.lv/sites/default/files/publication/2017-08/Nr%2022%20Iedzivotaju%20veselibas%20apsekojuma%20rezultati%20Latvija%20%2816_00%29%20LV.pdf

Central Statistical Bureau of Latvia (CSB), 2017. Elderly population of Latvia (only in Latvian). Retrieved from https://www.csb.gov.lv/sites/default/files/publication/2017-09/Nr%2013%20Vecaka%20gadagajuma%20iedzivotaji%20Latvija%20%2817_00%29%20LV.pdf

Central Statistical Bureau of Latvia (CSB), 2018a. Demography 2018: Collection of Statistics, Riga: CSP, p.29

Central Statistical Bureau of Latvia (CSB), 2018b. Pirmspensijas vecuma iedzīvotāji Latvijā: Informatīvais pārskats, Riga

Cross-Sectoral Coordination Centre (CSCC), 2018. Report: *Informatīvais ziņojums par priekšlikumu par Nacionālā attīstības plāna 2021.-2027. gadam mērķiem, prioritātēm un rīcības virzieniem, kā arī tā turpmāko izstrādes un sabiedriskās apspriešanas procesu* (Only in Latvian). Retrieved from: http://polsis.mk.gov.lv/documents/6356

Dahs A., 2016. Demographic implications of 2007–13 regional and cohesion policy actions in Latvia. In EU Cohesion Policy (Open Access), Routledge, pp. 125-138.

European Commission, 2018. The 2018 Ageing Report. Economic and Budgetary Projections for the 28 EU Member States (2016-2070). Institutional Papers 079. Luxembourg: Publication Office of the European Union. Retrieved from https://ec.europa.eu/info/sites/info/files/economy-finance/ip079_en.pdf

Eurostat, 2018a. Life Expectancy at Age 65, by Sex. Retrieved from http://ec.europa.eu/eurostat/data/database/

Eurostat, 2018b. Healthy Life Expectancy at Age 65 by Sex. Retrieved from http://ec.europa.eu/eurostat/data/database/

Hazans M., 2016. Migration Experience of the Baltic Countries in the Context of Economic Crisis in Labor Migration, EU Enlargement, and the Great Recession, 297–344.

Krasnopjorovs, O., 2018. Cik efektīvi izmantojam darbaspēka resursu? Retrieved from: https://www.makroekonomika.lv/cik-efektivi-izmantojam-darbaspeka-resursu

Krumins J., Leduskrasta Z., 2006. Role of Education in the Demographic and Human Development in Latvia. In: Demographic Situation: Present and Future. Commission of Strategic Analysis. Research Papers 2 (8). Riga: Zinātne. pp.13-32.

Krumins, J., Ponomarjova, D., 2016. Ethnic Differentiation of Mortality, Life Expectancy and Health in Latvia at the Beginning of 21st Century, *Conference Proceedings – New Challenges of Economic and Business Development – 2016: Society, Innovations and Collaborative Economy*, Riga: University of Latvia.

Lutz W. et al. (Eds.), 2018. Demographic and Human Capital Scenarios for the 21st Century. 2018 Assessment for 201 Countries. European Commission. Joint Research Centre. Publications Office of the European Union. Luxembourg. Retrieved from https://ec.europa.eu/jrc/sites/jrcsh/files/lutz_et_al_2018_demographic_and_human_capital.pdf

Nurmela K. et al., 2014. A comparative Analysis of the Active Ageing Policies in the Baltic Countries. Praxis Center for Policy Studies. Retrieved from http://www.praxis.ee/wp-content/uploads/2015/10/Active-aging-policies-in-the-Baltic-countries.pdf

OECD, 2016. OECD Reviews of Labour Market and Social Policies: Latvia 2016. Paris: OECD Publishing. Retrieved from: http://dx.doi.org/10.1787/9789264250505-en

Population Europe (2018a). Ageing Workforce, Social Cohesion and Sustainable Development. Political Challenges within the Baltic Sea Region. Discussion Paper No. 9. Retrieved from https://www.population-europe.eu/discussion-paper/discussion-paper-no-9-ageing-workforce-social-cohesion-and-sustainable-development

Population Europe, 2018b. Gender (In)Equality over the Life Course. Evidence from the Generations & Gender Programme. Discussion Paper No. 10. Retrieved from: https://www.population-europe.eu/discussion-paper/gender-inequality-over-life-course

Sanderson W., Scherbov S., 2016. Unifying framework for the study of population ageing. Vienna Yearbook of Population Research. Special issue on "Population ageing". Vol. 14, pp. 7-39. Retrieved from http://austriaca.at/0xc1aa500e_0x0036e626.pdf

State Social Insurance Agency of Latvia (VSAA), 2017a. Implementation of the Agreement between the Republic of Latvia and the Russian Federation. Retrieved from: https://www.vsaa.gov.lv/en/services/intergovernmental-agreements/implementation-of-the-agreement-between-the-republic-of-latvia-and-the-russian-federation/

State Social Insurance Agency of Latvia (VSAA), 2017b. Pensijas vecuma paaugstināšana no 62 līdz 65 gadu vecumam. Retrieved from: https://www.vsaa.gov.lv/pakalpojumi/pensionariemsenioriem/vecuma-pensija/pensijas-vecuma-paaugstinasana-no-62-lidz-65-gadu-vecumam/

World Bank, 2015. Active Aging Challenge for Longer Working Lives in Latvia. Retrieved from: http://pubdocs.worldbank.org/en/205791443642635843/WB-Latvia-Active-Aging-Report.pdf

THE DEMAND OF PUBLIC ADMINISTRATION MANAGEMENT'S STAFF COMPETENCES IN THE FUTURE

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Abstract. The development of the competences of the staff of the Latvian Public Administration has been drawing more and more attention. The aim of the development of the human resources is a professional, motivated, advanced and honest staff of the Public Administration. It means that it is necessary to evaluate the competences of the staff in order to upgrade them and understand what is in demand nowadays. Improved personal and professional competences are regularly needed to improve the quality, efficiency, development of creative thinking, knowledge and adaptation to the trends and demands of the 21 st century. It is therefore important to understand whether employees are in line with a specialised profession in order to improve and maintain the skills of employees, who have played an important role in the work process as a result of the rapid development of technology today. It is therefore important to find out what competencies will become an integral part of human work.

The aim of the research is to understand, what kind of competences in the future are going to be in demand for Public Administration staff.

The methods used in the research work are going to be the analysis of the documents and data analysis.

The results of the research are going to be used in practice by evaluating and upgrading the competences of the Public Administration staff.

Key words: *competence, development, staff*

JEL code: M59, O15, J24

Introduction

Increasing attention is being paid to the appropriate competence of public administration employees, to acquired education and to self-motivation to develop on a regular basis. Professional skills would be performed by experienced, knowledgeable specialist, who would achieve the objectives and tasks of the institution in an efficient and professional capacity. In view of the role of specialist, it is necessary to define strictly what competencies are and will be needed for each specialist in the future, how they will be developed and evaluated. The competence of national government personnel should be regularly taken to avoid a lack of qualifications and a reduction in productivity in the workplace in a timely manner.

As a result of the future skills required, public administration staff will be flexible in adapting to any innovation, prepared and open to additional responsibilities, acquiring experience not only in their professional fields, as well as self-motivation to pursue personal qualifications. Determining the need to develop the expertise of each specialist will make it more effective to define the direction of learning development.

Competence of employees of the Public Administration

In order to work in the professional field, to develop knowledge, to take responsibility, to plan and to pursue development, there must be a competence (Perrenoud, 2004). It is therefore very important to determine what powers will be required in the performance of the post. Professional competence shall be acquired with qualifications in a particular speciality and the acquired knowledge shall be applied in practice. In the 90 s, competence was described as being acquired in the educational process, based on acquired knowledge and attitudes (Stabins, 1998). People's competence can be discussed if a person is able to safely and successfully realise his or her intentions when a person has the knowledge and skills to deal with problems and challenges, and if a person is able to plan his or her activities in different situations (Tilla, 2005). This means that, when working in public administration, education acquired must be closely linked to a speciality and, at the same time, a person is interested in his profession. When a person likes what he is doing, then the productivity of work is improving, the person tends to constantly learn something new, to develop knowledge, to gain satisfaction from the work he has done. Competence can only be gained in action by learning or working (Melton, 1997).

Scientist F. Orthey (Orthey, 2002) considers the concept of competence as a means of achieving better and better quality work and, in order to achieve personal objectives. Given that the work of public administration involves people – team work, customers and colleagues – there needs to be good communication and cooperation skills. The person must be open, the ability to adapt to the other person, the ability to listen and listen to other opinions, and to express his or her thoughts. The working relationship depends on human attitudes and behaviour and the quality of the workplace (Kalleberg, Reskin, Hudson, 2000). Building a relationship and tackling conflict is a social competence where a man is focused on creating and strengthening social interaction (Barblett & Maloney, 2011). Working with people is not connected with silence and avoidance of any communication. Someone needs to overcome the fear or discomfort of creating communication with colleagues and clients. If the fear arises to talk about the phone, they must be overcome. The more often things will be done that don't like, the more likely these fears or dislikes will fade. Because the man will have forced himself to improve by developing his own self-confidence and skills. Competence takes the form of human action, attitudes and thinking, with long-term effects or determination of behaviour (Vintisa, 2004). The Spencer Competencies were defined as the basic characterization of the individual associated with the highest achievement in the working situation (Spencer, Spencer, 1993). Because appropriate competences have the potential to achieve goals and growth opportunities. The main competences of the national administration are: the competence of interpersonal effectiveness, tasks and processes management, personal effectiveness competencies, managerial competence, organisation understanding and value-acceptance competencies and thinking and problem-solving competencies (Competencies dictionary, 2011). These competencies are highly focused on the performance assessment, recruitment of employees.

However, the European list of basic principles on key competences for lifelong learning includes the following key competences: literacy, language competence, science, technological, engineering and mathematical competence, digital competence, personal, social and learning competence, civil competence, business competence and cultural awareness and expression competences (European Commission, 2018). The important factor for the development of human competence is human interests and priorities, if a person likes and interests in his or her specialty, then he will be developed. But if a person works only to get a salary or to have a job, then such a person is not motivated to improve himself. Today, a flexible, versatile, self-motivated and inquisitive person is allowed to experience and succeed in career growth. Because such a person is open to innovation and is in a continuous rhythm of capacity development. These days, it is very important that the way human thinking goes with today's spotlights.

Development of competence

The development of the competence of employees shall be determined after the performance of the work of employees of the annual Public Administration, specifying which competencies are needed to be improved. The relevant courses or seminars financed by the public administration are identified for the development of competence. But there is a limit for a course visit, depending on the budget resources of the institution that are invested in the training of employees. But today, public administrations are interested in learning something new and expanding knowledge and expertise. Employees' attitudes to attending courses, acquiring knowledge and using at work are equally important. If a person goes to courses with great interest, it is probable that the employee will be actively involved in the training process and will be interested in attending and listening to the course until the end. The public administration is interested in investing financial resources to achieve good job results, regularly improving the knowledge of employees. If a worker visits training visits as an obligation to obtain a certificate and without getting anything new and interesting, attending such training shall be detrimental to the institution.

The development of competence may not only be determined on the basis of an assessment of the performance of each employee's work, but on the one hand, each member of staff shall determine what professional or personal competencies are necessary to improve. To do this, each person must be critical to himself, be familiar with his weaknesses and strengths, and develop what interferes with the work process. In order to develop the necessary competences, it must be self-motivated to work with yourself and inspire regular improvements in knowledge. Improving competence will give more opportunities for career growth, which is also, of course, a very important motivation factor for working regularly on self-empowerment. For someone to achieve something in career growth and improve the work process, he has to work with himself and his specialty needs to be heart-wrenching. Then it will also be easier to force yourself to learn something new and regularly develop knowledge, expertise.

Acquiring new knowledge and improving competences is one of the tools for creating a strong culture of specialist and public administration. The majority of employees acquire knowledge and skills development through working experience, other information is obtained from customers, colleagues providing continuous feedback. But there is something that we have not yet learned in the course of the training process to meet new acquaintances, from which we can again find useful information and advice that would be useful at work. Because the workshops are attended or studied in an educational institution that wants to get something new, or share their knowledge, experience, skills, ideas and advice. And of course, learning at an educational establishment or attending seminars receives a certificate that is important for raising qualifications. In order to keep employees at a continuous stage of skills and knowledge development, it is necessary to constantly motivate and offer training offers from different courses and educational establishments. The scientist, F.Orthey, has listed eight competencies to be a future human (Orthey, 1999):

1. plurality competence: capacity to cope with complex, unsafe and minor situations, creating sufficient security in these circumstances to carry out further action;

2. transversality competence: capacity to provide ever-increasing transitory pathways so that a reasonable conclusion can be made to a previous stage of life and to see how it can be coupled with acquiring new experience;

3. watching competence: observe themselves and others, understanding differing views and seeing preconditions that affect the development of the situation;

4. reflection competence: the ability to discern meaning and cope productively with troublesome factors;

5. socially communicable competence: capacity to analyse, shape and manage social situations;

6. the competence of the methods: the ability to model new activities and situations;

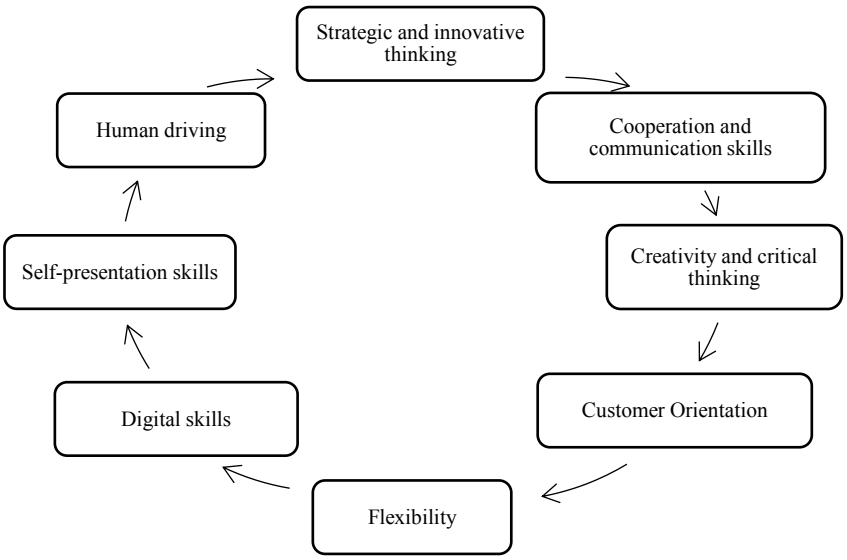
7. aesthetic competence: the ability to understand the importance of the environmental aesthetic on a daily basis;

8. self-competence - the ability to link self-observation to the dynamic processes of the environment while maintaining balance and building the future (Orthey, 1999,190).

For each person, competence forms in an environment in which they live and stay, it is family, friends, interests, but whether or not a person wants to develop something depends on each individual. People focused on careers work more with self-development – knowledge, skills and qualifications.

Future Requests for Competencies

How the most demanding competencies of the future are mentioned: strategic and innovative thinking, collaboration, creativity and critical thinking, flexibility, self-presentation skills, lifelong learning, human driving, digital skills, emotional intelligence, client orientation, skills to make decisions and address problems, communication skills, the ability to listen to different opinions, leaving on the other hand, formal enforcement, which fulfils their obligations on the basis of the rules and the performance of the work process cannot go outside the borders (see page Figure 1). "Spitzberg (2000), Spitzberg (2015a, 2015b) and Spitzberg and Cupach (2002) estimate that between 7–25% of people in the general population probably experience significant constraints in their communication competence and, ultimately, a study carried out by PayScale.com (2016) showed that recent college graduates are lacking in several areas closely related to communication" (Lopez, Souto, Noblejas, 2019). The office's work is increasingly moving away from huge piles of paper, strident execution, work after working time. Someone needs to become flexible and find their own approach to each situation. Employees must have the skills to adapt to work requirements (Ahmad, Karim, Din & Albakari, 2013; Carnevale & Smith, 2013). In order to adapt to the skills required by future professions, care must be taken in good time to develop themselves and develop human resources within the institution. Digital skills play an important role in meeting the skills and skills required by the 21 st century (Laar, Deursen, Dijk, Haan, 2017). Rapid technological development is an instrument that makes everyday access, access to information, ease work and reduce workload, work is done qualitatively. Self-made cars, drons, virtual help delivery, software translations, training by robots will replace people who are now doing these jobs: already switching tellers to supermarkets (Sousa, Rocha, 2019). Therefore, digital skills play an important role in the 21 st century, the skills of working and adapting to new technologies in order to be able to work productively and enrich the knowledge of workers with technology capabilities (Ahmad et al., 2013). Digital competences covered information management, cooperation, communication, sharing, knowledge, ethics and responsibility, assessment and problem management, technical operations (Ferrari, 2012). Digital skills are something more than an ability to use digital sources effectively (Eshet-Alkalai, 2004). The Internet as a resource is currently unlimited, its quality has improved, its ability to work remotely is a great data availability. The field of information technology is increasingly facilitating people's work by learning and exploiting the new technology capabilities, but it is distancing people from interfacing, which is a very important factor that should not be forgotten in public administration. Because people need to be able to work not only with information technology, but also with people.



Source:*prepared by the author, on the basis of the acquired survey data.*

Fig.1. **Future Competencies**

"The majority of Latvian residents, or 86%, believe that they live in a digitally developed environment and modern technologies play an important role in improving the quality of life of each person" (TNS, 2018). Human resources development is therefore becoming more and more important today. The development of human resources by public administration provides a variety of training, mentoring, career growth programmes, motivating staff – not only financial bonuses, but also inspiring and assembling teams. In the LDDK survey, 96% of respondents pointed out that increasing the qualifications and continuing training of employees are very important (Latvian Employer's Confederation, 2016). As of 2016, the State Chancellery implemented the European Social Fund project "The High Level Leaders Development Programme", aimed at developing the competences of senior leaders and strengthening leadership skills. National regulatory authorities are interested in developing the skills of employees, which is an essential condition for quality performance. But in order to objectively assess the competencies of employees, it is necessary to invest heavily because each employee should be assessed individually, where the competencies are linked to the duties of office. There are approximately 3300 thousand people working in ministries (Public administration needs to change – fewer employees will not yet improve their effectiveness, 2018). The development of human resources must reach each employee individually, setting out the necessary skills training. Individual´s innovative competence, includes:

- questioning,
- observing,
- networking,
- experimenting and
- associational thinking (Yams, 2018).

Knowledge is of great importance today, as are personal and professional competencies (Alvesson, 2004). In order to ensure the development of competence, financial resources are needed to ensure that institutions provide employees with training courses or seminars to increase their qualifications. The management of the Authority should be interested in working with qualified and knowledgeable professional. The human resources management of each institution shall be responsible for the development of the competence of the employees of the Ministries, who took care of the satisfaction of the employees, the raising of qualifications, the development of competence. In order to ensure that the employees of the institution are satisfied and successful in achieving the targets and tasks assigned by the Authority, individual

employees should be required to determine on an individual basis the attendance of the measures for the Every year, each ministry summarises in public reports the information regarding the staff of the institution: changes, working age, education, qualifications. According to available public reports of the Ministries of the Republic of Latvia (Ministry of Environment and Regional Development, Ministry of Agriculture, Ministry of Welfare, Ministry of Economy, Ministry of Culture, Ministry of Transport, Ministry of Justice, Ministry of Health, Ministry of Interior, Ministry of Finance, Ministry of Education and Science, Ministry of Foreign Affairs and Ministry of Defence), it is possible to issue the Ministry. To conclude that ministries are focused on improving the capacity of the staff of the institution. Every year, employees actively attend a variety of seminars related to their positions. In recent years, there has been no statistically aggregated information on how much and what courses/seminars are attended by ministry staff (see page Table 1). Only, some ministries in public reports have mentioned the number of visits during the year.

Table 1

Training visit

Ministries	Exchange of experience, training, etc. (number of visits) in 2017
Ministry of Finance	126
Ministry of Foreign Affairs	158
Ministry of Regional Development for Environmental Protection	454
Ministry of Agriculture	239
Ministry of Culture	112

Source:*prepared by the author, on the basis of the acquired survey data.*

For example, in 2017 the Ministry of Environmental Protection and Regional Development provided employees with qualifications and professional expertise to participate in a total of 105 training topics and 454 visits. On the other hand, the Ministry of Finance developed a training for the development of personnel management competencies in order to achieve the objectives pursued, to develop competencies, critical and analytical thinking. But improving driver's skills, driving and motivating people to achieve high results, looking for and finding solutions for leaders to manage themselves, self-motivation to develop as a driver, created a more in-depth understanding of the role of performance management in achieving their intended goals and high results, how to motivate employees by providing regular and effective feedback. In order to achieve higher personal efficiency, middle-level leaders learned new knowledge in personal management to find more effective ways of dealing with problematic situations, persuasion of employees and non-standard decision-making. But the employees learned the knowledge of personality and the building of mutual understanding in collective, mutual relations (Ministry of Finance, 2017). In 2017, the most current training of employees of the Ministry of Foreign Affairs was the acquisition of a foreign language by 92 employees, while 27 employees participated in training abroad. In general, the need for the development of employees of the Public Administration is determined by the assessment of the performance of the work of employees, where it is necessary to develop the competences. The dependency of employees does not solely depend on the expectations and support of the institution. But every person needs to be aware of what needs to be developed in order to improve the quality and skills of work. Development opportunities can be visited both in Latvia and abroad.

In 2018, a survey was conducted at the public administration where 31 correct questionnaire replies were received from the 50 planned questionnaires, two senior executives, seven lower level managers and officials. The purpose of the questionnaire was to find out what competencies are required for a public administration employee and how the development of competence is assessed. In view of the increasing focus on compliance, 79% of employees think that there is a regular staff assessment competence in the workplace, while 11% consider it to be in the recruitment process,

recruitment or promotion, while 6% are planning training. 1% in terms of determining and changing the amount of remuneration, but 1% is not informed (see page Table 2).

Table 2

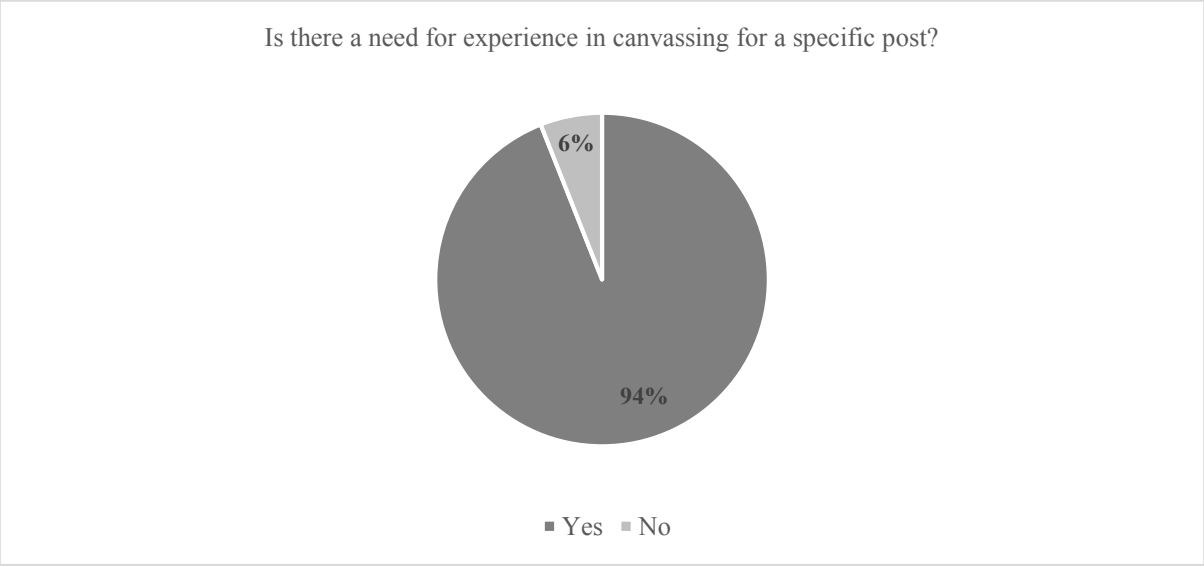
Determination of competence at work

In which personnel management processes will your competence at work be determined/evaluated?	Result %
Recruitment: recruitment or recruitment	11%
Regular staff assessment is carried out at the workplace	82%
Planning worker training	6%
Changing the size of the rewards	1%
I don't know, I'm not aware of personnel management processes	0%

Source:*prepared by the author, on the basis of the acquired survey data.*

The assessment of competence shall take place in any process, including the annual evaluation of the performance of the work of employees, which shall assess whether employees need to develop knowledge and what competencies need to be improved. Today, more and more people are seeking to use new technologies to reduce administrative burdens, so there is an increasing need for knowledge, new competences and development orientation. Similarly, the experience of human employment plays an important role in recruiting a worker, not only demands for work experience, skills, but also acquired education. When determining whether a job experience is required in the candidature, 94% replied that it was necessary, but only 6% believed it was not necessary. Work experience always has value for every employee, and the institution must be proud not to lose such people who are experts in their position. These people should therefore, in particular, be working to improve them regularly and to encourage innovation. But, at the same time, it must be understood that young people today are more focused on the use of new technologies, testing, adapting successfully to any changes, and it is likely that 6% think, because an unqualified worker with rich working experience will want to accept the changes made in the institution's development process, which will result in new skills and knowledge being acquired.

Table 3



Source:*prepared by the author, on the basis of the acquired survey data.*

In the process of testing, I found that knowledge, acquired education and experience played an important role in the work of public administration, as 74% pointed out that it was important in public administration to have a master's degree. 23% think it's enough to have a bachelor's degree and 3% doctoral education. The importance of education, knowledge and skills, work is important because it does not only improve human personality, but professional growth, development and becoming a professional specialist in the field of work. At the same time, all antiquated think it is necessary to learn and learn the new skills and technologies on a regular basis. During the anketation, I found out the five key competences that need to be improved:

1. communication and cooperation skills;
2. management skills;
3. creative thinking;
4. digital skills;
5. flexibility.

Communication and cooperation skills are the first to show that young people still have important interpersonal relations in the working process. Then, of course, leadership, creative thinking and digital skills are playing an important role. This means that we are gradually moving towards the need to develop digital skills to match today's trends. But the fifth place ranks the skill of being flexible, adapting to any situation. In the 21 st century, it is important that a person is in continuous development, learning the new technology opportunities that would facilitate the work process, such as digital skills (Zhou, Bi, Liu, Fang, Hua, 2018), as an assistant to each employee's major responsibilities, and which is one of the most demanding skills of the 21 st century. But developing skills is important not to forget that we cannot focus on building one's skills but carefully developing other competencies. Which will not only improve the work process but improve the individual state of intelligence. The biggest problem in determining competence is that it is not possible to identify exactly what competencies will be required after five, ten years. Because the need for competence is influenced by the development of rapid technology. Consequently, the role of the competence of employees has played a major role in the work process, the relevance of which is also assessed in determining what competencies are needed to be improved in a given position. But there is a risk that as a result of the development of new technologies, an employee may lose significant competencies, such as communication skills and encounters. Employees work remotely, communicating in a virtual environment, knowing by name and surname colleagues, but in reality this person is not recognized and treated like strangers, although working together for years. It is therefore important to both restore and improve the competences so that they do not disappear, but to increase, developed competences that have not yet been acquired, such as visiting conferences, training institutes and going through exchange programmes.

Conclusions, proposals

On the basis of the literature analysis and the study carried out, it is concluded that:

1. Educational institutions which provide training for employees of a State institution shall be familiar with the objectives of the activities of these institutions and the necessary competencies of the employees for the purposes of the development system. It would then be easier to offer development training programmes to employees.

2. Human competence is formed in the family, in the environment in which people live, affects friends or acquaintances, personal interests, educational and life objectives acquired. Skills needs to be developed throughout their lives by restoring and improving new skills, knowledge and skills in their profession, so 74% have indicated that there is an important degree in public administration, while 94% have indicated that work experience is important.

3. The rapid technological developments of the 21 st century play a key role in the development of digital skills, which enhances the quality of work and facilitates the execution of complex works. But the work process places emphasis not only on digital skills, but on communication skills, leadership skills, creative thinking and flexibility, thus adapting to today's demand for future skills.

During the working period, the following proposals were put forward:

1. High attention must be paid to the self-motivation of drivers and to the need to learn new knowledge and to regularly take care of skills and inspire those who have succumbed to the development of skills and professional development. Not only to visit educational establishments and conferences for the development of competence, but to take advantage of the opportunity to learn in the digital environment.

2. It is important for the staff responsible of the institutions to regularly compile data and carry out an analysis to identify the usefulness of the learning process and to identify what is needed to improve the training process and to motivate workers to improve their competencies.

3. In terms of today's global development, it should not be forgotten that the employee should regularly develop all the skills needed for work, rather than focusing solely on the need for the most advanced and popular skills of today, work with all personal and professional skills, so it is important to assess what training will be useful for the needs of work. There is also an important attitude towards new technologies and a desire to acquire new skills.

Bibliography

Alvesson, M., (2004). Knowlwdge Work and Knowledge – Intensive Firms. Oxford university press – Oxford.

Ahmad, M., Karim, A. A., Din, R., & Albakri, I. S. M. A. (2013). Assessing ICT competencies among postgraduate students based on the 21st century ICT competency model. Asian Social Science, 9(16), 32e39.

Barblett L., & Maloney C., (2011). Complexities of Assessing Social and Emotional Competence and Wellbeing in Young Children. Australian Journal of Early Childhooh, 35 (2), pp.12-18.

Carnevale, A. P., & Smith, N., (2013). Workplace basics: The skills employees need and employers want. Human Resource Development International, 16(5), 491e501. http://dx.doi.org/10.1080/13678868.2013.821267.

Eshet-Alkalai Y., (2004). Digital literacy: A conceptual framework for survival skills in the digital era. Journal of Educational Multimedia & Hypermedia, 13(1), 93e107.

European Commission (2018). COMMISSION STAFF WORKING DOCUMENT Accompanying the document. Proposal for a COUNCIL RECOMMENDATION on Key Competences for LifeLong Learning {COM(2018) 24 final}. Brussels, 17.1.2018, SWD (2018) 14 final. Retrieved from: https://ec.europa.eu/education/sites/education/files/swd-recommendation-key-competences-lifelong-learning.pdf.

Ferrari A., (2012). Digital competence in practice: An analysis of frameworks. Seville: Joint Research Centre, Institute for Prospective Technological Studies. http:// dx.doi.org/10.2791/82116.

Kalleberg A. L., Reskin B. F., Hudson K., (2000). Bad jobs in America: Standard and nonstandard employment relations and job quality in the United States. American Sociological Review, 65(2), pp.256-278.

Competencies dictionary (2011). Retrieved from: https://www.mk.gov.lv/sites/default/files/editor/kompetencu_vardnica.pdf_1.pdf.

Laar E., Deursen A J.A.M., Dijk J. A.G.M., Haan J., (2017). The relation between 21st-century skills and skills: A systematic literature review. Computers in Human Behavior 72 (2017) 577-588. https://www.sciencedirect.com/science/article/pii/S0747563217301590.

Latvian Employer's Confederation, (2016). *LDDK survey: lack of good employees, upgrading of qualifications is important*. Retrieved from:http://www.lddk.lv/notikums/lddk-aptauja-labu-darbinieku-trukst-svariga-ir-kvalifikacijas-celsana/ .

Ministry of Finance, (2017). *Public overview*. Retrieved from:http://www.fm.gov.lv/files/finansuministrija/publiskaisparskats/FM_pub_parskats_2017.pdf.

Lopez A.R., Souto J. E., Noblejas M.L.A. (2019). *Improving teaching capacity to increase student achievement: The key role of communication competences in Higher Education.* Studies in Educational Evaluation 60 (2019) 205-213. https://www.sciencedirect.com/science/article/pii/S0191491X18300956.

Melton R., (1997). *Objectives, Competences and Learning Outcomes*. London: Kogan Page Limited.

Orthey F.M., (2002). *Der trend zur Kompetenz*. Begriffsent – wichlung und Perspektiven, in Supervision, 1/2002 7., pp.14.

Orthey F.M., (1999). *Zeit der Modernisierung*. Zugange einer Modernisierungstheorieberuflicher Bildung. Sttutgart.

Perrenoud P.H., (2004). *L'universite entre transmission de saviors et developpement de competences*. Geneve: Universitate de Geneve.

Spencer L.M., Spencer S.M., (1993). *Competence at work: models for superior performance*. Wiley, pp.372.

Sousa M.J., Rocha A., (2019). Digital learning: Developing skills for digital transformation of organizations. Future Generation Computer Systems 91 (2019) 327-334.
https://www.sciencedirect.com/science/article/pii/S0167739X18311191.

Stabins J., (1998). *Vispārīgā pedagoģija. 1.daļa*. Izdevniecība: RaKa, Riga, page 130.

TNS, (2018). *Latvian residents believe they live in a digitally developed environment*. *http://www.boot.lv/tag/tns/*

Tilla I., (2005). Sociālkultūras mācīšanās organizācijas sistēma. Riga: RaKa, page 296.

Public administration needs to change – fewer employees will not yet improve their effectiveness, (2018). Retrieved from: https://lvportals.lv/viedokli/292216-valsts-parvaldei-jamainas-mazaks-darbinieku-skaits-efektivitati-vel-necels-2017.

Vintisa K., (2004). *Valsts pārvaldes aktuālās problēmas. Valsts pārvaldes cilvēkresursu attīstība*. Presentation during the conference. Riga.

Zhou J., Bi G., Liu H., Fang Y., Hua Z., (2018). *Understanding emlpoyee competence, operational IS alignment, and organizational agility – An ambidexterity perspective*. Information&Managament 55 (2018) 695-708. https://www.sciencedirect.com/science/article/abs/pii/S0378720618301162.

Yams N.B., (2018). *The impact of contemporary dance methods on innovative competence development.* Journal of Business Research 85 (2018) 494–503. https://www.sciencedirect.com/science/article/abs/pii/S0148296317304083.

INDICATORS FOR MEASURING TRANSFORMATIONAL AND TRANSACTIONAL LEADERSHIP

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Abstract. Leadership has become a vital research field in management science. Research shows that leadership is a complex phenomenon which has led to a substantial amount of studies in the past to improve the understanding of this research field. Literature and empirical studies addressing leadership reveal that research is still fragmented and studies are not conducted in a uniform framework. This leads to the fact that research results are partly comparable due to different definitions and interpretations. In recent years, transformational and transactional leadership gained attention by several scholars. In brief, transformational leadership stimulates and enhances the performance of the followers. In this respect, the leader transforms and motives the subordinates to achieve higher organizational goals by embodying a role model. In addition, the leader becomes a mentor by considering the individual needs and wants. Consequently, this fosters creativity and individuals consider their work as essential. In contrast, transactional leadership conveys clear goals and structures which are based on an exchange model. Therefore, the employees are obliged to follow the instructions to achieve the company goals. Moreover, the subordinates do not have the allowance to make own decisions. In case of deviations, the superior takes corrective measures. The aim of this paper is to identify indicators for measuring transformational and transactional leadership in order to offer a uniform research framework. The author performs content analyses to evaluate the current state of science to identify indicators for measuring transformational and transactional leadership. To gain a holistic view, the author uses scientific books and databases such as Emerald, Springer Link, EBSCO, ScienceDirect, Sage Journals, JSTOR and Taylor and Francis. The preliminary research results show that numerous indicators describe transformational and transactional leadership which contribute to the theoretical and practical implications in leadership research.

Key words: *Transformational leadership, transactional leadership, content analysis, indicators*

JEL code: O30, O15

Introduction

Leadership has long been a subject of research (O'Sullivan, 2009). Research on leadership is still limited and fragmented lacking on a uniform body of knowledge (Vlok, 2012). Thus, leadership can be described as a complex phenomenon consisting of three essential elements namely the leader, the follower as well as the surrounding situation (Wren, 1995). However, in recent years, transformational and transactional leadership have gained substantial interest in management science (Andriopoulos and Dawson, 2009) and represent a return to the trait approach in the early 20th century (Jex/Britt, 2014). The trait approach underlies the assumption that leaders possess certain traits and qualities which make them natural leaders. Considering these developments in leadership research, Northouse (2013) highlights that further research on the trait approach is still essential to improve the understanding of leadership theory. To illustrate the high interest of leadership research, Lowe/Gardner (2000) found that one third of the publications were about transformational or charismatic leadership (Northouse, 2016) (Lowe and Gardner, 2000).

The aim of this paper is to identify indicators for measuring transformational and transactional leadership. In order to achieve the research results, the author conducted an extensive literature review. Based on that, content analyses were

executed to identify indicators for measuring transformational and transactional leadership. In particular, databases such Emerald, Springer Link, EBSCO, ScienceDirect, Sage Journals, JSTOR, Taylor and Francis and scientific books were used for content analyses. The research results contribute to the academic discipline of leadership theories and broadens the understanding for transformational and transactional leadership.

Theoretical background of transformational and transactional leadership

One of the most popular leadership approaches that gained attention by numerous scholars since the early 1980s can be found in transformational leadership (Northouse, 2016). Numerous theories of transformational leadership were proposed but the theoretical developments formulated by Bass significantly affected leadership research (Yukl, 2013).

According to Bass (1990), transformational leadership occurs when superiors evaluate the individual interests of their employees to develop awareness and acceptance for the purpose of their actions. For Yukl (2013), leaders induce followers to transcend their own self-interests for the sake of the company. Moreover, leaders offer support and encouragement to generate enthusiasm and effort to reach the company targets. Following that, employees develop a high degree of trust in the leader, are highly motivated and increase their working performance.

To achieve these results, Bass (1990) and Northouse (2016) highlight that transformational leadership is a process which often includes charismatic and visionary leadership. Charisma is a certain quality that distinguishes leaders from ordinary individuals and cannot be learned (Weber, 1947) and origins from a Greek word (Yukl, 2013) (Conger and Kanungo, 1987) which means a divine gift of grace (Goethals, Sorenson and Burns, 2004). Bass (1990) describes charisma as vital characteristic for being a transformational leader as followers want to identify with their superiors. Beside trust and charisma, Yukl (2013) further argues that admiration, loyalty and respect between leaders and followers are essential elements for the development of transformational leadership.

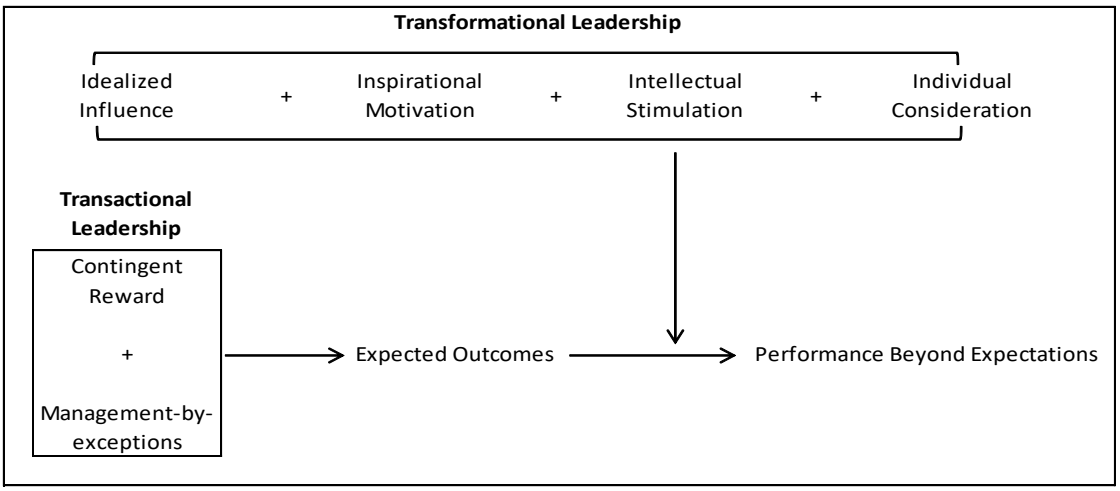
In contrast, transactional leadership refers to a leadership model that is based on exchange processes to occur between leaders and subordinates (Northouse, 2016). For Avolio and Bass (2002) this exchange is focused on what is required to execute the tasks as well as the concrete conditions. Yukl (2013) further stresses that transactional leadership will not be likely to generate enthusiasm and commitment to task objectives. Research by Lowe, Kroeck and Sivasubramaniam (1996) revealed that transformational leaders tend to be more effective at work than transactional leaders. However, it is argued that effective leaders need to display both transactional and transformational leadership to a certain degree (Antonakis and House, 2013).

In particular, transformational and transactional leadership behaviours can be separated in two main broad-meta categories of behaviour. The original formulation of transformational leadership theory included three types of behaviours (Yukl, 2013). Idealized influence occurs when followers strongly identify with the superior showing a high degree of trust, commitment and motivation (Sosik and Jung, 2010). Besides, this contains risk sharing with employees and is consistent rather than arbitrary (Bass and Avolio, 1994). Intellectual stimulation describes the ability of leaders to show staff members new ways of looking at old problems, to teach them ways how problems can be solved and to emphasize rational solutions (Bass, 1990). In this respect, creativity is fostered to address problems to be solved (Bass and Avolio, 1994). Individualized consideration includes dedicating special attention to employees for achievement and growth by acting as a mentor. Following that, followers and colleagues generate higher levels of potential. Individual differences regarding needs and wants are perceived and considered by leaders. To achieve this, the communication is based on personal interactions in which the superior listens effectively. Furthermore, the leader delegates tasks to improve the skills of employees (Bass and Avolio, 1994). Further revisions by Bass and Avolio added another transformational behaviour namely inspirational motivation (Yukl, 2013) which encompasses challenging subordinates with high standards and

expectations, communicating enthusiasm about the company targets, and providing meaning for the job to be carried out (Bacha and Walker, 2013). Furthermore, leaders use symbols and emotional appeals to reach staff members' efforts to increase their work performance which additionally boosts team spirit (Northouse, 2016) (Dubinsky et al., 1995).

In contrast, transactional leadership theory originally included two types of behaviours (Yukl, 2013). Contingent reward is described as an exchange process between leaders and subordinates in which efforts by employees are clearly defined. Thus, the leader tries to gain agreement from subordinates on what must be carried out at work (Northouse, 2016). Moreover, management by exception is applied by superiors actively or passively. In case of active management by exception, the leader supervises the employee performance and intervenes if mistakes occur. If passive management by exception is applied, superiors wait for mistakes and deviations to occur before corrective measures are initiated (Bass, 1997). Newer versions also include laissez-faire leadership (Yukl, 2013) which describes the absence of leadership by superiors. In particular, the leader gives no feedback, delays decisions and offers minimum support for employees (Northouse, 2016).

In essence, transformational leaders generate higher effects compared to transactional leaders. Transactional leaders focus on expected outcomes whereas transformational leaders achieve employee performances beyond what is expected (Northouse, 2016). The following figure 1 illustrates and summarizes the effects of transformational and transactional leadership.



Source: Northouse, 2016 based on Bass/Avolio, 1990

Fig. 1. **The Additive Effect of Transformational Leadership**

Methodology

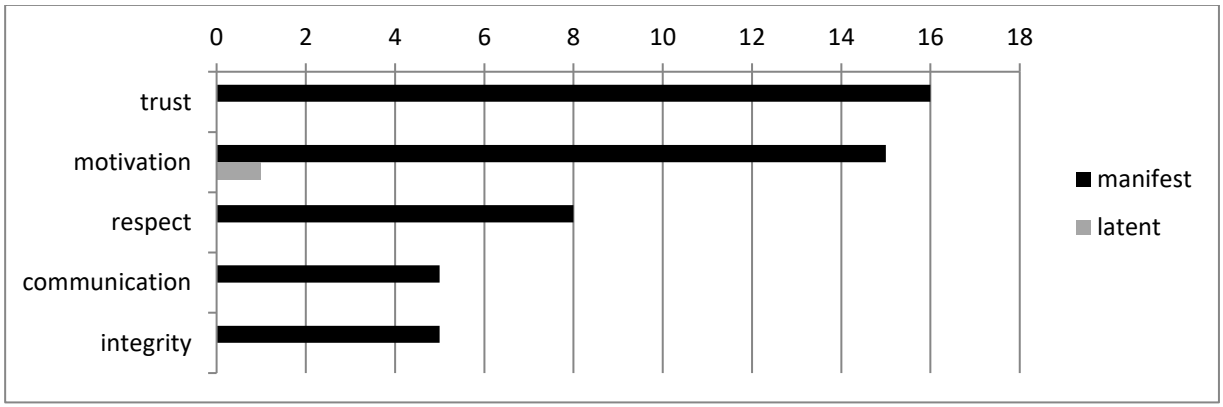
In order to develop indicators, the author must first identify leadership traits of transformational and transactional leadership. In this respect, Yukl (2013) considers content analyses as fundamental research method for identifying leadership traits. For Bortz and Döring (2006), quantitative content analyses determine single characteristics from text content by categorising text parts for operationalization. The frequency of each category allows the author to gain insights about the characteristics of the analysed text. To do this, the author uses different scientific sources which include databases such as Emerald, Springer Link, EBSCO, ScienceDirect, Sage Journals, JSTOR, Taylor and Francis as well as academic books.

In general, content analyses can be based on two major approaches. First of all, manifest coding focuses on counting the frequency of keywords or phrases within the text. In contrast, latent coding is based on an interpretative reading of

underlying meanings of text-based data (Silverman and Patterson, 2015). To achieve a more holistic view, the author uses both manifest and latent content analyses. In particular, the author read only papers and academic books with the following wordings in the headline and/or in the abstract:

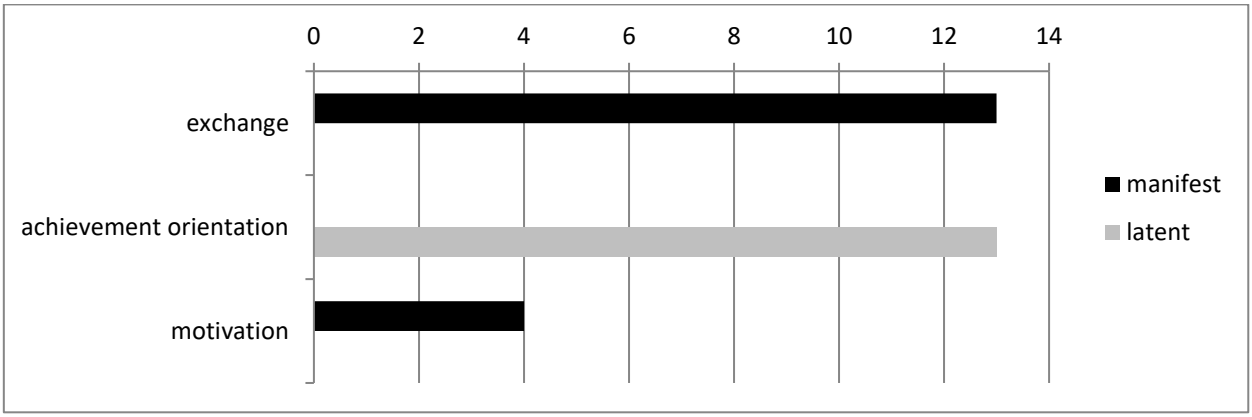
- Transformational leadership
- Transactional leadership
- Leader
- Characteristic
- Leadership trait
- Leadership behaviour

For transformational leadership, the author identified 31 suitable scientific sources for content analyses from which 25 are based on journals and 6 are grounded on scientific books. Moreover, approximately half of the sources used a literature review and the other half applied empirical research methods. Considering transactional leadership 14 sources could be identified. In particular, 10 sources can be traced back to journals whereas 4 are based on scientific books. Again here, half of the sources are from empirical research and the other half from literature review. After having analysed the above-mentioned sources, the author found that results became redundant. Therefore, the author considers 45 sources in total for transformational and transactional leadership as sufficient**.** The following figure 2 illustrates the constructs of transformational leadership and figure 3 for transactional leadership.



Source: authors compilation based on content analyses

Fig. 2. **Content Analyses of transformational leadership**



Source: authors compilation based on content analyses

Fig. 3. **Content Analyses of transactional leadership**

Research results and indicators for measuring transformational and transactional leadership

To begin with transformational leadership, the most frequently mentioned leadership trait was trust. Studies that research trust between leaders and followers can be traced back to the early 1970s (Bligh, 2017). Shelton (2012) describes trust as complex and deeply integrated phenomenon which significantly affects organizational performance. Zand (1997) defines trust from a more psychological view and describes the term as willingness to raise the vulnerability to another person whose behaviour cannot be controlled in a situation in which the benefits are much less than the personal loss if the other party abuses vulnerability. Similarly, Bligh (2017) describes trust as expectation that one can rely on another individual's actions and words and is most significant in circumstances where employees might face risky situations. Derived from that trust is essential between followers and leaders.

Cooper (2003) states that trust embodies the highest form of motivation and requires the willingness to work towards a trustworthy atmosphere. Trust in leaders causes a stronger effort to complete the tasks punctually (Zhu, Newman, Miao and Hooke, 2013) (Burke, Sims, Lazzara and Salas, 2007). Moreover, Organ, Podsakoff and MacKenzie (2006) found that trust from leaders positively affects job satisfaction, sportsmanship, courtesy and altruism. Further research by Zaharia and Hutu (2016) shows that trust is based on leader's correctness, competence, creating a sense of security as well as the daily relationship at work. Mishra and Mishra (2013) highlight that trust fosters productivity, creativity, innovation and engagement. Regarding the type of trust, empirical research by Zhu, Newman, Miao and Hooke (2013) revealed that affective trust, which is based on a mutual exchange between leader and follower, positively affects work results for organizations whereas cognitive trust negatively mediates the relationship between transformational leadership and job performance.

A further leadership trait which was emphasized by numerous authors was motivation. Research of leadership and motivation were carried out independently during the beginning of the twentieth century. In particular, the connection between these research areas has been gaining substantial interest among scholars until now (Porter and Bigley, 2003). Defining the term motivation from an organizational point of view, "*work motivation is a set of energetic forces that originate both within as well as beyond an individual's being, to initiate work-related behaviour, and to determine its form, direction, intensity and duration*" (Pinder, 2008). Bronkhorst, Steijn and Vermeeren (2015) researched that transformational leadership leads to higher work motivation. This is argued that transformational leaders have the ability to energize their subordinates which leads to a higher work effort. For Bass (1997), inspirational motivation of leaders is crucial for increasing the optimism and enthusiasm of its subordinates.

Moreover, regarding the type of motivation, research revealed that transformational leadership fosters intrinsic work motivation which affects creative behaviour too (Kim and Lee, 2011). According to Gilbert and Kelloway (2014), intrinsic motivation occurs when employees consider their tasks as enjoyable and satisfying. Intrinsically motivated staff members perceive their behaviour as their own reward. For Gill (2006), leadership is not the only factor that affects motivation. In this respect, Gill (2006) highlights that employees might seem to be motivation to avoid unpleasant situations. In addition, motivation might also arise to satisfy lower order needs such as money. Gill (2006) further emphasizes that employee motivation requires an individual consideration and refers to Bass's transformational leadership theory. It is further executed that studies on motivation and leadership suffer under inconsistent findings which cause difficulties in better understanding motivation at work.

Next, the content analysis further revealed that respectful interactions form transformational leadership. For Rogers and Ashforth (2014) respect has long had a tacit presence in different research areas. Therefore, no commonly used definition exists. It is worth pointing out that respect is often mixed-up with similar sounding constructs such as trust, interactional justice, civility, status and dignity. Van Quaquebeke and Eckloff (2009) define respect „*as a person's attitude*

towards other people, in whom he/she sees a reason that, in itself, justifies a degree of attention and a type of behaviour which in return engenders in the target a feeling of being appreciated in importance and worth as a person". Grover (2013) distinguishes between two types of respect namely appraisal respect and recognition respect. Appraisal effect can be described as appreciation of work performance whereas recognition respect focuses on interpersonal relationships. In particular, referring respect to organizational matters, appraisal respect takes the form of praise or recognition by leaders. Grover (2013) further states that appraisal respect fosters explicit self-esteem and professional identity as this type of respect is referred to work accomplishments.

Recognition respect is a unique construct which is affiliated with implicit self-esteem and is presumed to be automatic, nonverbal, rapid, effortless and tricky for individuals to perceive cognitively (Buhrmester et al., 2011) (Grover, 2013). With reference to the work context, recognition respect is fostered by polite treatment. In contrast, mistreatment reduces self-worth and implicit self-esteem (Grover, 2013). Derived from that it can be stated that interpersonal respect between leaders and superiors is highly relevant for productive employment relationship (Van Quaquebeke and Eckloff, 2009) (Boezeman and Ellemers, 2014). In practice, however, leaders might find it difficult to gain concrete insights how to change the behaviour to boost working performance (Van Quaquebeke and Eckloff, 2009).

A further key trait in transformational leadership is communication. Communication can be described as „*ability to effectively exchange information through active or passive means*" (Van Wart, 2005). Luthra and Dahiya (2015) define leadership communication as meaningful sharing of information between individuals or a group. According to Hackman and Johnson (2013), transformational leaders dispose over excellent communication skills which allow them to articulate clear ideas and visions to employees. Transformational leaders use a variety of communication instruments such as images, metaphors, and models. In order to communicate effectively with superiors it is necessary to be aware of the individual needs and motivations of subordinates. In general, Van Wart (2005) distinguishes between four types of communication namely oral communication, written communication, listening and nonverbal communication. Communication is essential for a successful leadership of employees (Marquis and Huston, 2009). In particular, leadership communication includes three major aspects namely core, managerial and corporate. The core aspects approach consists of individualized skills such as writing and speaking. In addition, listening patiently, team management, team meetings, offering training facilities and mentoring are managerial aspects of leadership communication. Finally, corporate aspects are skills that are essential at a higher level of leadership. This includes communications with external partners, communication in crises as well as with the media. Following that, Luthra and Dahiya (2015) highlight that organizations with highly skilled leaders allow a responsible communication policy in order to encourage employees to gain trust and acceptance (Luthra and Dahiya, 2015).

Finally, content analysis of transformational leadership revealed integrity as essential trait. Palanski and Yammarino (2009) state that integrity is often highlighted as essential leadership trait but the precise nature between leadership and integrity remains highly discussed in the literature. For Simons (1999) behavioural integrity „*is the perceived degree of congruence between the values expressed by words and those expresses through action*". Becker (1998) and Parry and Proctor-Thomson (2002) stress that the interpretation of the term integrity is used interchangeably with honesty and conscientiousness. Thus, this leads to the fact that individuals use the same term when meaning different traits (Becker, 1998) (Parry and Proctor-Thomson, 2002). After having reviewed over thirty articles, Palanski and Yammarino (2009) could identify five main categories of integrity namely integrity as wholeness, integrity as consistency between words and actions, integrity as consistency in adversity, integrity as being true to oneself and integrity as morality (Palanski and Yammarino, 2009). Parry and Proctor-Thomson (2002) emphasize that several connections between transformational leadership and integrity exist and are in line with Gottlieb and Sanzgiri (1996) that leaders who dispose over integrity foster an open and honest communication particularly in discussions where decisions have to be made (Gottlieb and

Sanzgiri, 1996) (Parry and Proctor-Thomson, 2002). This set of values is consistent with transformational leadership theory by Bass (Bacha and Walker, 2013).

Based on the content analyses of transactional leadership, the most frequently used term was exchange. For Sergiovanni (2005), transactional leaders exchange needs and services to accomplish individual targets. Sergiovanni (2005) stresses that this theory can also be viewed as a form of leadership by bartering and positive reinforcement as well as extra pay is for example given for outstanding work, excellent performance or promotion for increased persistence. Studies by Graen, Liden and Hoel (1982) showed that the quality of the exchange process between leaders and followers is crucial in several ways. In particular, employees with a high-quality exchange processes were less likely to quit the job than those staff members with leaders who only satisfy contractual obligations (low-quality exchange). Low-quality exchange processes occur when leaders do not talk to employees effectively. Additionally, it is reported in the study that leaders who do not support staff members in challenging situations and tell employees to cope with the problems by themselves are also described as superiors with a low-quality exchange. In contrast, leaders who frequently talk to employees about their tasks, personal and work issues as well as about methods how to improve effectiveness were considered as leaders with high-quality exchange processes (Graen, Liden and Hoel, 1982) (Kuhnert and Lewis, 1987). Derived from that motivation is central in transactional leadership. In particular, Barbuto (2005) considers instrumental motivation as necessary in transformational leadership as it can be traced back to tangible external rewards.

Based on the leadership traits and characteristics of transformational and transactional leadership the author uses empirically proven indicators to measure these leadership styles scientifically.

For the measurement of trust the author uses the scale developed by Tzafrir and Dolan (2004) comprising of a sample size of 405 participants. The scale consists of ability, harmony, concern and reliability for measuring trust with an overall Cronbach Alpha of .92 for all 16 indicators. Thus, all items have a high internal consistency and exceed the minimum value of .70 (Morgan et al., 2011). The indicators are based on a 5 point Likert scale and are modified as follows (Tzafrir and Dolan, 2004):

1. My needs and desires are very important to my leader.
2. I can count on my leader to help me if I have difficulties with my job.
3. My leader would not knowingly do anything to hurt the organization.
4. My leader is open and up front with me.
5. My leader will keep the promises he/she makes.
6. My leader really looks out for what is important to the me.
7. My leader has a lot of knowledge about the work that needs to be done.
8. My leader is known to be successful in the things he/she attempts to accomplish.
9. If I make a mistake, my leader is willing to “forgive and forget.”
10. My leader takes actions that are consistent with their words.
11. There is a lot of warmth in the relationships between the leader and employees in this organization.
12. My leader would make personal sacrifices for our group.
13. My leader expresses true feelings about important issues.

Referring to motivation of employees, Tremblay et al. (2009) developed a scale for measuring extrinsic and intrinsic work motivation. The subscale of intrinsic motivation shows a Cronbach Alpha of .80 and consists of three items (Tremblay et al., 2009):

1. I do my job because I derive much pleasure from learning new things.
2. I do my job for the satisfaction I experience from taking on interesting challenges.
3. I do my job for the satisfaction I experience when I am successful at doing difficult tasks.

Regarding respect, van Quaquebeke and Brodbeck (2008) developed a scale for measuring respect for leaders. The scale consists of 6 items with a sample nice of $N = 104$. Again, here all items show a high internal consistency with a Cronbach Alpha ranging from .89 to .93 and are based on a 5 point Likert scale (Morgan et al., 2011) (van Quaquebeke and Brodbeck, 2008):

1. My leader represents a positive role model at the workplace.
2. I trust the judgement of my leader in work issues.
3. In a lot of matters regarding work I seek the advice from my leader.
4. At work I enjoy being able to learn from my leader.
5. Due to the influence of my leader I feel very constricted in my professional development.
6. I owe respect to the way my leader accomplishes professional tasks.

For the communication between leaders and followers the author uses the modified scale from Wieland and Wallenburg (2013) consisting of 4 indicators with a Cronbach Alpha of .83 and a composite reliability of .83 (Wieland and Wallenburg, 2013):

1. My leader and I provide each other with any information that might help us.
2. My leader and I frequently exchange information in a timely manner.
3. My leader and I keep each other informed about events or changes that may affect the other party.
4. My leader and I give each other feedback about our performance.

Seok et al. (2015) developed a scale which also includes the measurement of integrity. In total, the sample size amounts to $N = 818$. The 13 indicators show a high Cronbach Alpha of .965 and were performed on a 5 point Likert scale. The indicators were modified and are as follows (Morgan et al., 2011) (Seok et al., 2015):

1. My leader is very sincere in performing tasks and in making decisions for the department.
2. My leader is a discipline person in task performance and administration.
3. I like the ethic values of my leader.
4. My leader generates significant output.
5. My leader has high integrity.
6. My leader always shows a good example to his/her employees.
7. My leader is professional in his/her management.
8. My leader is a person with high principles.
9. My leader always gives constructive opinion in organizational decision making.
10. The management of my leader is honest and truthful.
11. My leader respects his/her employees.
12. My leader always strives to ensure that the organizational goals are achieved.
13. My leader is a dedicated person.

To measure the achievement orientation between leaders and followers the modified scale developed by Atuahene-Gima and Li is used offering 4 indicators with a Cronbach Alpha of .89, composite reliability of .90, average variance extracted .70 on a 5 point Likert scale (Atuahene-Gima and Li, 2002):

1. My leader shows that he/she has confidence in my ability to meet most objectives.
2. My leader lets me know he/she expects me to perform at my highest level.
3. My leader consistently sets challenging goals for me to attain.
4. My leader encourages continual improvement in my performance.

Conclusions

1. Research on leadership is highly fragmented, complex and frequently limited to a concrete research field. Considering transformational and transactional leadership substantial research has been conducted to improve the understanding but concrete leadership traits were missing. Thus, the results of this paper offer further insights into the constructs of both transformational and transactional leadership theory.
2. Content Analyses with a total number of 45 sources from scientific literature were performed to identify leadership traits or characteristics. For transformational leadership trust, motivation, respect, communication and integrity were determined. In contrast, transactional leadership mainly consists of two traits and characteristics namely exchange and motivation.
3. Based on these findings, the author used validated indicators for measuring transformational and transactional leadership. Moreover, measured values such as Cronbach Alpha, Composite Reliability, Average Extracted Variance were, if mentioned, indicated.
4. Finally, this paper highlights the importance for the trait approach as transformational and transactional leadership theory emphasize that leaders possess certain traits. Although the trait theory was the first approach in leadership research, transformational and transactional leadership caused a reconsideration in management science.

Bibliography

Andriopoulos, C., Dawson, P., 2009. *Managing Change, Creativity and Innovation*. California: Sage Publication.

Antonakis, J., House, R. J., 2013. *The full-range of leadership theory: The way ahead*. In: Avolio, B. J.,Yammarino F. J., (Eds.). *Transformational and charismatic leadership: The road ahead*. Second Edition, United Kingdom, Emerald Group Publishing, pp. 3-34.

Atuahene-Gima, K., Li, H., 2002. *When Does Trust Matter? Antecedents and Contingent Effects of Supervisee Trust on Performance in Selling New Products in China and the United States*. Journal of Marketing, Vol. 66, Issue 3, pp. 61-81, https://www.jstor.org/stable/3203455.

Avolio, B. J., Bass, B. M., 2002. *Developing Potential Across a Full Range of Leadership. Cases on Transactional and Transformational Leadership*. New Jersey: Lawrence Erlbaum Associates.

Bacha, E., Walker, S., 2013. *The Relationship Between Transformational Leadership and Followers' Perceptions of Fairness*. Journal of Business Ethics, Vol. 116, Issue 3, pp. 667-680, https://www.jstor.org/stable/42001949.

Barbuto, J. E. jr., 2005. *Motivation and Transactional, Charismatic, and Transformational Leadership: A Test of Antecedents.* Journal of Leadership & Organizational Studies, Vol. 11, Issue 4, pp. 26-40, DOI: https://doi.org/10.1177/107179190501100403.

Bass, B. M., 1990. *From Transactional to Transformational Leadership: Learning to Share the Vision.* Organizational Dynamics, Vol. 18, Issue 3, pp. 19-31, DOI: https://doi.org/10.1016/0090-2616(90)90061-S.

Bass, B. M., Avolio, B. J., 1990. *The implications of transactional and transformational leadership for individual, team, and organizational development*. Research in Organizational Change and Development, Vol. 4, pp. 231-272.

Bass, B. M., 1997. *Personal Selling and Transactional/Transformational Leadership*. The Journal of Personal Selling and Sales Management. Vol. 17, Issue 3, pp. 19-28, http://www.jstor.org/stable/20832520.

Bass, B. M., Avolio, B. J., 1994. *Improving Organizational Effectiveness through Transformational Leadership.* California: Sage Publications.

Becker, T., 1998. *Integrity in Organizations: Beyond Honesty and Conscientiousness*. Academy of Management Review, Vol. 23, Issue 1, pp. 154-161.

Bligh, M. C., 2017. *Leadership and Trust*. In: Marques, J., Dhiman, S., (Eds.). *Leadership Today. Practices for Personal and Professional Performance*. Switzerland, Springer, pp. 21-42.

Boezeman, E. J., Ellemers, N., 2014. *Volunteer leadership*: *The role of pride and respect in organizational identification and leadership satisfaction*. Leadership. Vol. 10, Issue 2, pp. 160-173.

Bortz, J., Döring, N., 2006. *Forschungsmethoden und Evaluation*. 4. Auflage, Heidelberg: Springer Verlag.

Bronkhorst, B., Steijn, B., Vermeeren, B., 2015. *Transformational Leadership, Goal Setting, and Work Motivation: The Case of a Dutch Municipalty*. Review of Public Personnel Administration, Vol. 35, Issue 2 pp. 124-145, DOI: https://doi.org/10.1177/0734371X13515486.

Buhrmester, M. D., Blanton, H., Swann, W. B. Jr., 2011. *Implicit Self-Esteem: Nature, Measurement, and a New Way Forward*. American Psychological Association, Vol. 11, Issue 2, pp. 365-385, DOI: 10.1037/a0021341.

Burke, S. C., Sims, D. E., Lazzara, E. H., Salas, E., 2007. *Trust in leadership: A multi-level review and integration.*The Leadership Quarterly, Vol. 18, Issue 6, pp. 606-632, DOI: https://doi.org/10.1016/j.leaqua.2007.09.006.

Conger, J. A., Kanungo, R. N., 1987. *Toward a Behavioral Theory of Charismatic Leadership in Organizational Settings*. The Academy of Management Review, Vol. 12, Issue 4, pp. 637-647, http://www.jstor.org/stable/258069.

Cooper, D. J., 2003. *Leadership for follower commitment*. Oxford: Butterworth-Heinemann.

Dubinsky, A. T., Yammarino, F. T., Jolson, M. A., Spangler, W. D., 1995. *Transformational Leadership: An Initial Investigation in Sales Management*. The Journal of Personal Selling and Sales Management. Vol. 15, Issue 2, pp. 17-31, https://www.jstor.org/stable/40471576.

Gilbert, S. L., Kelloway, K. E., 2014. *Leadership*. In: Gagné Marylène (Eds): *The Oxford Handbook of Work Engagement, Motivation, and Self-Determination Theory*. New York, Oxford University Press, pp. 181-198.

Gill, R., 2006. *Theory and Practice of Leadership*. London: Sage Publication.

Goethals, G. R., Sorenson, G. J., McGregor B. J., 2004. *Encyclopedia of Leadership*. Volume 1, California: Sage Publications.

Gottlieb, J. Z., Sanzgiri, J., 1996. *Towards an Ethical Dimension of Decision Making in Organizations.* Journal of Business Ethics, Vol. 15, Issue 12, pp. 1275-1285, https://www.jstor.org/stable/25072851.

Graen, G. B., Liden, R. C., Hoel, W., 1982. *Role of Leadership in the Employee Withdrawal Process. Journal of Applied Psychology*, Vol. 67, Issue 6, pp. 868-872.

Grover, S. L., 2013.*Unraveling respect in organizational studies*. Human Relations, Vol. 67, Issue 1, pp. 27-51, DOI: https://doi.org/10.1177/0018726713484944.

Hackman, M. Z., Johnson, C. E., 2013. *Leadership. A Communication Perspective*. Sixth Edition, Illinois: Waveland Press.

Jex, S. M., Britt, T. W., 2014. *Organizational Psychology. A scientist-practioner approach*. Third Edition, New Jersey: Wiley & Sons.

Kim, J.-G., Lee, S-Y., 2011. *Effects of transformational and transactional leadership on employees' creative behaviour: mediating effects of work motivation and job satisfaction*. Asian Journal of Technology Innovation, Vol. 19, Issue 2, pp. 233-247, DOI: https://doi.org/10.1080/19761597.2011.632590.

Kuhnert, K. W., Lewis, P., 1987. *Transactional and Transformational Leadership: A Constructive/Developmental Analysis*. Academy of Management Review, Vol. 12, Issue 4, pp. 648-657.

Lowe, K. B., Gardner, W. L., 2000. *Ten years of the leadership quarterly: Contributions and challenges for the future*. The Leadership Quarterly, Vol. 11, Issue 4, pp. 459-514, DOI: https://doi.org/10.1016/S1048-9843(00)00059-X.

Lowe, K. B., Kroeck, K. G., Sivasubramaniam, N., 1996. *Effectiveness correlates of transformational and transactional leadership: A meta-analytic review of the MQL literature*. Leadership Quarterly. Vol. 7, Issue 3, pp. 385-425, DOI: https://doi.org/10.1016/S1048-9843(96)90027-2.

Luthra, A., Dahiya, R., 2015. *Effective Leadership is all About Communicating Effectively: Connecting Leadership and Communication*. International Journal of Management & Business Studies, Vol. 5, Issue 3, pp. 43-48.

Marquis, B. L., Huston, C. J., 2006. *Leadership Roles and Management Functions in Nursing*. Theory and Application. 6th Edition, Philadelphia: Wolters Kluwer Lippincott Williams & Wilkins.

Mishra, A. K., Mishra, K. E., 2013. *Becoming a trustworthy leader. Psychology and Practice*. New York and London: Routledge Taylor & Francis Group.

Morgan, G. A., Leech, N. L., Gloeckner, G. W., Barrett, K. C., 2011. *IBM SPSS for Introductory Statistics. Use and Interpretation*. Fourth Edition, New York and London: Routledge Taylor & Francis.

Northouse, P. G., 2016. *Leadership. Theory and Practice.* Seventh Edition, California: Sage Publications.

Northouse, P. G., 2013. *Leadership. Theory and Practice.* Sixth Edition, California: Sage Publications.

O'Sullivan, J., 2009. *Leadership skills in the early years. Making a difference!*. New York: Continuum International Publishing Group.

Organ, D. W., Podsakoff, P. M., MacKenzie, S. B., 2006. *Organizational Citizenship Behaviour. Its Nature, Antecedents, and Consequences*. California: Sage Publications.

Palanski, M. E., Yammarino, F. J., 2009. *Integrity and leadership: A multi-level conceptual framework*. The Leadership Quarterly, Vol. 20, Issue 3, pp. 405-420, DOI: https://doi.org/10.1016/j.leaqua.2009.03.008.

Parry, K. W., Proctor-Thomson, S. B., 2002. *Perceived Integrity of Transformational Leaders in Organisational Settings*. Journal of Business Ethics, Vol. 35, Issue 2, pp. 75-96, https://www.jstor.org/stable/25074659.

Pinder, C. C., 2008. *Work Motivation in Organizational Behaviour*. Second Edition, New York and Hove: Psychology Press Taylor & Francis Group.

Porter, L. W., Bigley, G. A., 2003. *Motivation and Transformational Leadership: Some Organizational Context Issues*. In: Porter, Layman W./Angle, Harold L./Allen, Robert W. (Eds.). Organizational Influence Processes. Second Edition, New York, M.E.Sharpe, pp. 263-274.

Rogers, K. M., Ashforth, B. E., 2014. *Respect in Organizations: Feeling Valued as "We" and "Me"*. Journal of Management. Vol. 43, Issue 5, pp. 1578-1608, DOI: 10.1177/0149206314557159.

Seok, C. B., Cosmas, G., Mutang, J. A., Hashmi, S. I., 2015. *Development and Validation of Employee Trust Scale: Factor Structure, Reliability and Validity*. International Journal of Economics and Management Engineering, Vol. 9, Issue 8, pp. 2916-2921, DOI: doi.org/10.5281/zenodo.1109527.

Sergiovanni, T. J., 2005. *Strengthening the Heartbeat. Leading and Learning Together in Schools*. California: Jossey-Bass.

Shelton, E. J., 2012. *Transformational Leadership: Trust, Motivation and Engagement*. USA: Trafford Publishing.

Silverman, R. M., Patterson, K. L., 2015. *Qualitative Research Methods for Community Development*. New York: Routhledge Taylor & Francis.

Simons, T. L., 1999. *Behavioral integrity as a critical ingredient for transformational leadership*. Journal of Organizational Change Management. Vol. 12, Issue 2, pp. 89-104, DOI: https://doi.org/10.1108/09534819910263640.

Sosik, J. J., Jung, D. I., 2010. *Full Range Leadership Development. Pathways for People, Profit, and Planet.* New York: Routhledge Taylor & Francis Group.

Tremblay, M. A., Blanchard, C. M., Villeneuve, M., Taylor, S., Pelletier, L. G., 2009. *Work Extrinsic and Intrinsic Motivation Scale: Its Value for Organizational Psychology Research*. Canadian Journal of Behavioural Science, Vol. 41, Issue 4, pp. 213-226, DOI: 10.1037/a0015167.

Tzafrir, S. S., Dolan, S. L., 2004. *Trust Me: A Scale for Measuring Manager-Employee Trust.* Journal of the Iberoamerican Academy of Management.Vol. 2, Issue 2, pp. 115-132, DOI: https://doi.org/10.1108/15365430480000505.

Van Quaquebeke, N., Brodbeck, F. C., 2008. *Entwicklung und erste Validierung zweier Instrumente zur Erfassung von Führungskräfte-Kategorisierung im deutschsprachigen Raum*. Zeitschrift für Arbeits- und Organisationspsychologie, Vol. 52, Issue 2, pp. 70-80, DOI: https://doi.org/10.1026/0932-4089.52.2.70.

Van Quaquebeke, N., Eckloff, T., 2009. *Defining respectful leadership. What it is, how it can be measured, and another glimpse at what it is related to*. Journal of Business Ethics, Vol. 91, Issue 3, pp. 1-34, http://hdl.handle.net/1765/15942.

Van Wart, M., 2005. *Dynamics of Leadership in Public Service*. Theory and Practice. New York: M.E.Sharpe.

Vlok, A. 2012. *A leadership competency profile for innovation leaders in a science-based research and innovation organization in South Africa*. Procedia – Social and Behavioural Sciences, Vol. 41, pp. 209-226, DOI: https://doi.org/10.1016/j.sbspro.2012.04.025.

Weber, M., 1947. *The theory of social and economic organizations*. Translated by A.M Henderson and Talcott Parsons, The Free Press.

Wieland, A., Wallenburg, C. M., 2013. *The influence of relational competencies on supply chain resilience: a relational view*. International Journal of Physical Distribution & Logistics Management, Vol. 43, Issue 4, pp. 300-320, DOI: https://doi.org/10.1108/IJPDLM-08-2012-0243.

Wren, T. J., 1995. *The Leader's Companion. Insights on leadership through the ages.* New York: The Free Press.

Yukl, G., 2013. *Leadership in Organizations*. Eights Edition, England: Pearson.

Zaharia, A., Hutu, C. A., 2016. *Transformational leadership and trust. A case study*. CBU International Conference on Innovations in Science and Education, pp. 14-20, DOI: http://dx.doi.org/10.12955/cbup.v4.738.

Zand, D. E., 1997. *The Leadership Triad. Knowledge, Trust, and Power*. New York: Oxford University Press.

Zhu, W., Newmann, A., Miao, Q., Hooke, A., 2013. *Revisiting the mediating role of trust in transformational leadership effects: Do different types of trust make a difference*?. The Leadership Quarterly, Vol. 24, Issue 1, pp. 94-105, DOI: http://dx.doi.org/10.1016/j.leaqua.2012.08.004.

ECONOMIC ACTIVITY CHANGES DUE TO SOCIO-DEMOGRAPHIC FACTORS

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Abstract. Background: Due to the preparation for the Population Census of 2021, the Central Statistical Bureau of Latvia is publishing economic activity status statistics annually, dividing the population into two categories – economically active or inactive individuals. When comparing the economic activity status on the individual level from the Population Census in 2011 and the beginning of 2017, it was observed that economic activity status changes are not distributed evenly within the population. Due to socio-demographic factors, some groups of the population are more vulnerable to economic inactivity.

The aim of the study was to determine the relevance of socio-demographic factors for economic activity on the individual level and identify the groups that are more vulnerable to economic inactivity. The following socio-demographic factors are analysed in the study: age, education level, profession, marital status, birth of children and place of residence.

Data and methodology: The study uses data from the Population Register of the Office of Citizenship and Migration Affairs, Population Census 2011, Ministry of Education and Science, and others on the individual level. The study analyses economic activity changes between the Population Census 2011 and January 1st, 2017, of individuals who were 15 to 59 years old at the time of the Population Census 2011 reference date.

Results: It is concluded that economic activity status changes vary among different age groups. Individuals who were 15 to 24 years old at the Census 2011 are completing their studies and some of them are beginning to work, while part of people who were 55-59 years old at the Population Census are retired. Therefore, the age group 25 - 54 years old, as a group less affected by age, has been studied in more detail. The study shows that most vulnerable to economic inactivity are people with a primary education and individuals who lived in rural areas during the census. Regarding the profession during the census, more vulnerable groups are agricultural, forestry, fishery workers, craftsmen as well as simple labourers. Regarding the marital status, the most vulnerable group is single men. However, a birth of a child during the period of observation (2011-2017) is related to an active status of economic activity at the beginning and end of the reference period.

Key words: *children, economic activity, education, marital status*

JEL code: O15 (Human Resources • Human Development • Income Distribution • Migration)

Introduction

Economic activity is an important indicator of any country's economic development as well as of the well-being of an individual in this country. This indicator determines a person's economic vulnerability as well as socio-economic inclusion.

As defined by Regulation (2017) laying down rules for the application of Regulation (2008), 'current activity status' is the current relationship of a person to economic activity, based on a reference period. The 'currently economically active population' comprises all individuals who fulfil the requirements for inclusion among the employed or the unemployed.

Due to the preparation for the Population Census of 2021, Central Statistical Bureau (CSB) of Latvia is publishing economic activity status statistics annually, dividing the population into two categories - individuals who are economically active and individuals who are economically inactive. To determine the status of the current activity and occupation, the Latvian CSB experts have combined data from the State Revenue Service and the State Employment Agency.

When comparing the economic activity status on the individual level from the Population Census in 2011 and the beginning of 2017, it was observed that economic activity status changes are not distributed evenly within the population. Due to socio-demographic factors, some groups of the population are more vulnerable to economic inactivity than others.

The aim of the study is to determine the relevance of socio-demographic factors for economic activity on an individual level and identify groups who are more vulnerable to economic inactivity. The following socio-demographic factors are analysed in the study: age, education level, profession, marital status, birth of children and place of residence.

Similar studies have been carried out also in Lithuania and Finland. An article by Maslauskaite et al. (2015) explores the correlation between unemployment and the risk of divorce in Lithuania. The authors conclude that being out of the labour market destabilizes marriage and significantly increases the risk of divorce for both urban and rural males. In turn, unemployment is associated with higher divorce probabilities only among rural females; it is not observed in cities. Although this study explores how unemployment affects divorce, authors acknowledge that existence of a reverse association between these two variables is also very likely; i.e. divorce could lead to lower socio-economic status. A similar conclusion is made by Jalovaara (2001), pointing out that at the end of the marriage, the individual is less interested in the accumulation of joint resources, thus increasing the risk of economic inactivity.

Data and methods

The research analyses economic activity changes of 789 044 individuals (377 770 males and 411 274 females) who were 25 to 54 years old at the reference date of the Population Census 2011 and who had their actual place of residence in Latvia on 01.01.2017, according to the estimation of the population (CSB, 2018). All results shown in the figures 2, 4, 5 and 6 refer to this cohort. The study does not include 56 306 individuals (6.5 %) who have emigrated, and 22 028 individuals (2.5 %) who have passed away after the Population Census in 2011.

The data used in the analysis of the study are summarized in Table 1. All calculations of the study were carried out in the statistics program IBM SPSS Statistics.

Table 1

Indicators used in the study

Data source	Indicators	Reference time
Population Census 2011	Person's age	01.03.2011
	Person's sex	01.03.2011
	Person's level of educational attainment	01.03.2011
	Person's legal marital status	01.03.2011
	Person's place of residence	01.03.2011
	Person's profession	01.03.2011
Office's of Citizenship and Migration Affairs database	Person's place of residence	01.01.2017
	Person's legal marital status	01.01.2017
	Number of children born to the respective person	01.03.2011 – 31.12.2016
	Death record	01.03.2011 – 31.12.2016

Data source	Indicators	Reference time
State Revenue Service's database	Report on the mandatory social insurance contributions from employee, on personal income tax and the State duty of business risk in the reference month	2016
	Microenterprise tax declaration	2016
	Report on the state social security contributions of a self-employed person or domestic employee working for a foreign employer, or foreign employee working for a foreign employer	2016
	Income gained abroad by residents – D2 form	2016
	Income from business activities if the taxpayer keeps accounting records in double-entry accounting – D3 form	2016
	Business activity income statement for taxpayer paying fixed income tax - D5 form	2016
	Announcement on amount paid for residents	2016
State Employment Agency's database	Unemployment, parental leave, long-term illness	2016

To carry out the research, the following variables were set:

1. person's economic activity status at the time of Population Census 2011;
2. person's economic activity status at the 01.01.2017.

Individuals examined in the study are divided into four categories depending on their economic activity status changes in the period between 01.03.2011 and 01.01.2017 (Table 2).

Table 2

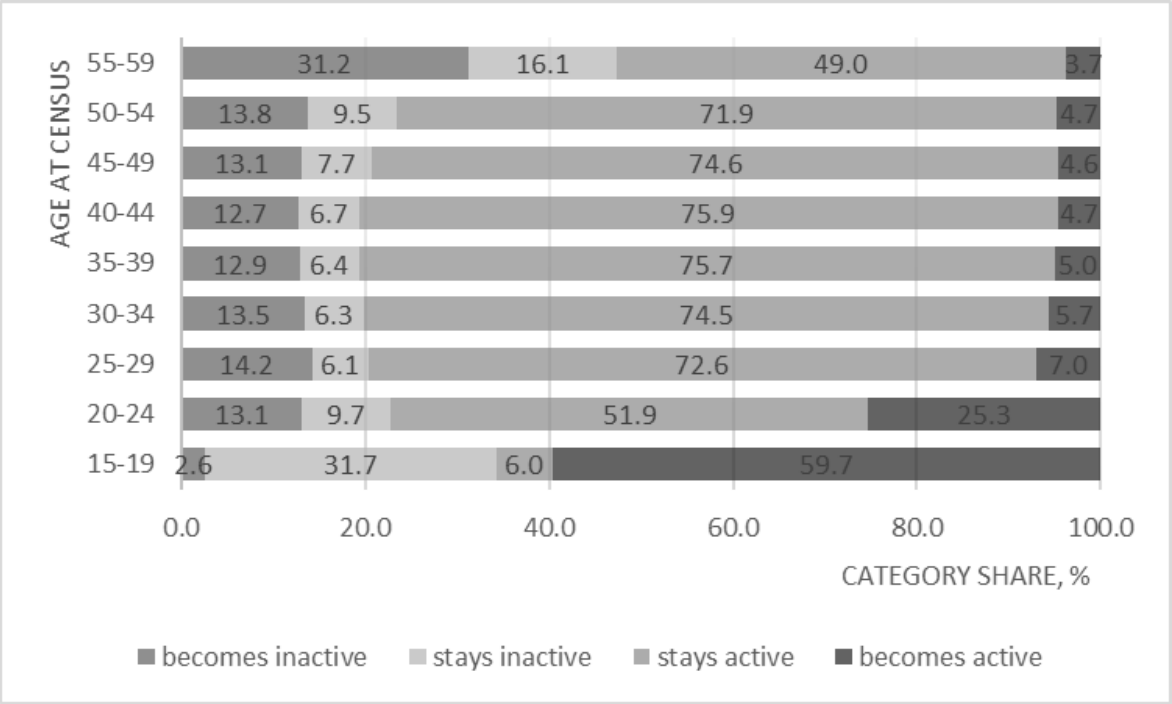
Categories depending activity status changes

category	census 2011	01.01.2017
becomes inactive	active	inactive
stays inactive	inactive	inactive
stays active	active	active
becomes active	inactive	active

Research results and discussion

1. Correlation between economic activity changes and age

According to the calculations, economic activity status changes vary among different age groups (see Figure 1). Individuals who were 15 to 24 years old at the Census 2011 have completed their studies and some of them have started to work, while some of those who were 55-59 years old at the Population Census reference time have retired.



Source: Author's calculations based on Office of Citizenship and Migration databases, Population Census 2011 data, and State Revenue Service 2016 data

Fig. 1. **Economic activity changes and age group (n = 1 151 317)**

However, the age group of age 25 – 54 is not strongly affected by age and thus was studied in more detail.

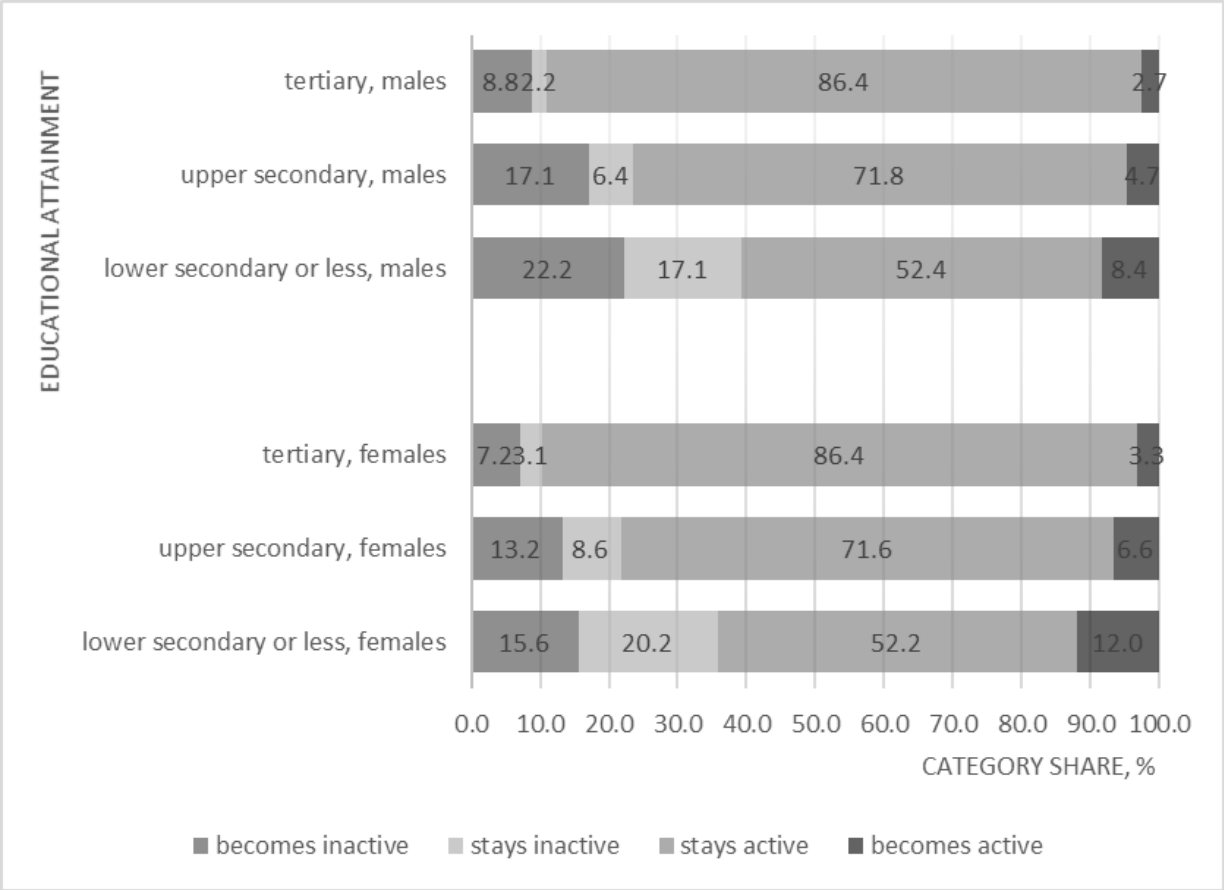
377 770 males and 411 274 females who were 25 to 54 years old at the Census 2011 and had their place of residence registered in Latvia on 01.01.2017 have been observed.

In this age group, the average division of categories is the following: 13.4 % became inactive, 7.2 % stayed inactive, 74.2 % stayed active, and 5.3 % became economically active.

2. Correlation between economic activity changes and educational attainment

The level of educational attainment was fixed in Population Census 2011. In 2011, education level among those who were examined in the study was distributed as follows: 31.3 % have tertiary education, 58.0% - upper secondary education, 10.9 % - lower secondary or lower education.

Calculations show that individuals with lower secondary education or lower are the most vulnerable to economic inactivity on 01.01.2017. Moreover, this effect is more observed among males. Contrary, among those with tertiary education, the indicators of economic activity do not differ significantly between males and females (see Figure 2).



Source: Author's calculations based on Office of Citizenship and Migration databases, Population Census 2011 data, and State Revenue Service 2016 data

Fig. 2. **Economic activity changes and educational attainment of person (n = 789 044)**

3. Correlation between economic activity changes and profession

According to the International Standard Classification of Occupations used by Census, professions are divided into 10 groups:

1. Managers
2. Professional
3. Technicians and associate professionals
4. Clerical support workers
5. Service and sales workers
6. Skilled agricultural, forestry and fishery workers
7. Craft and related trades workers
8. Plant and machine operators, and assemblers
9. Elementary occupations
10. Armed forces occupations

321 432 males and 347 757 females who were 25 to 54 years old and economically active at the Census 2011 and had their place of residence registered in Latvia on 01.01.2017 have been observed. The study does not include 98 163 individuals (12.4 %) who were economically inactive during the census 2011, and 21 692 economically active individuals (2.8 %) with an unknown profession. On average, 14.3% of economically active individuals became inactive.

Regarding the profession during the census, more vulnerable groups are elementary occupations (22.8 %), craft and related trades workers (22.0 %) and skilled agricultural, forestry and fishery workers (20.2 %). Least vulnerable groups against job loss are professional (7.2 %), armed forces occupations (7.9 %), and managers (9.8 %) (see Figure 3).

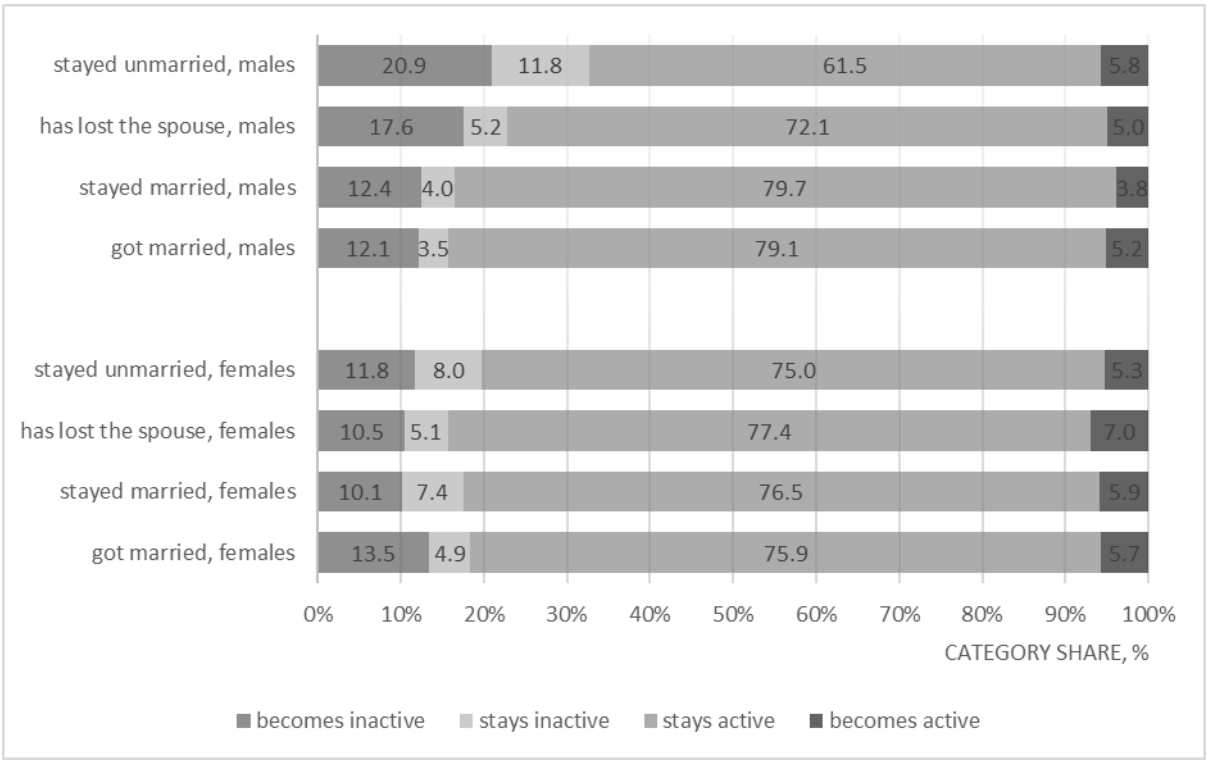
Source: Author's calculations based on Office of Citizenship and Migration databases, Population Census 2011 data, and State Revenue Service 2016 data

Fig 3. **Vulnerability to became inactive and profession of person (n = 669 189)**

4. Correlation between economic activity changes and changes of marital status

Marital status changes for the respective person in the Population Census in 2011 and on 01.01.2017 were compared. Even though results of the Census 2011 showed that significant part of individuals lived in unregistered relationships, unfortunately, there are no data about unregistered relationships for 01.01.2017, therefore only legal marital status of a person is used in this study. According to the census division, a person's legal marital status can be single, married, divorced or widowed. In this study, three groups are combined into one, thus creating two categories - unmarried (including single, divorced, and widowed) and married. According to these two indicators, marital status changes were divided into 4 categories: (1) got married, (2) stayed married, (3) has lost the spouse and (4) stayed unmarried. For this indicator, males and females were studied separately. In the time period between the census in 2011 and 01.01.2017, 8.3% of men and 6.9% of women got married, 47.7% of men and 47.4% of women remained married, while 5.7% of men and 7.2% of women lost their spouse and 38.4% of men and 38.5% of women remained unmarried.

The correlation between changes in marital status and changes in a person's economic activity has been studied. Regarding the marital status, the most vulnerable group is unmarried males - 20.9% of them became economically inactive during the period from census to 01.01.2017 (on average, 15.9% of males have become economically inactive). As for the females' group, a lesser correlation between changes of marital status and changes of economic activity is seen (Figure 4).



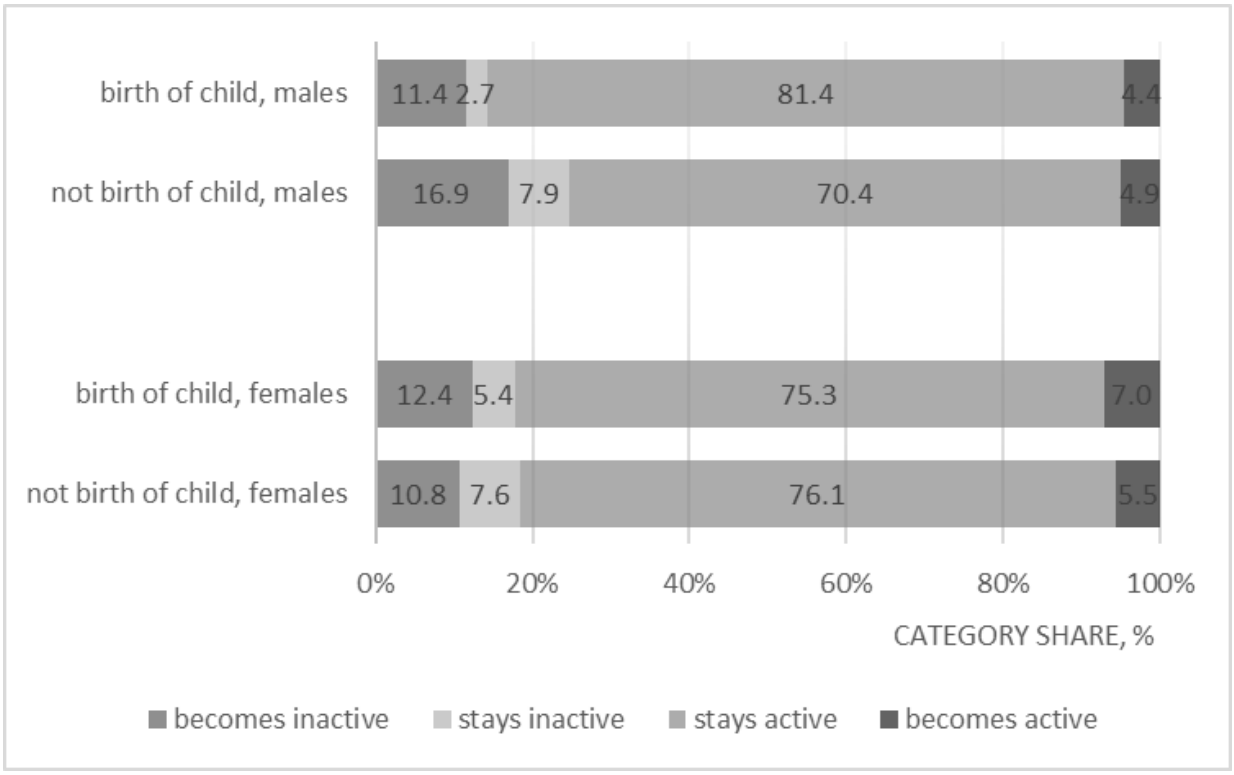
Source: Author's calculations based on Office of Citizenship and Migration databases, Population Census 2011 data, and State Revenue Service 2016 data

Fig. 4. **Economic activity status and changes of marital status of person (n = 789 044)**

5. Correlation between economic activity changes and birth of child

64 005 males (16.9%) and 57 994 females (14.1%) had one or more new-borns during the period under review. The difference in these figures is explained by the fact that the study considers the age group of 25-54, while some of the new-borns have one parent under the age of 25.

Similarly, to changes in the marital status, child's entry into the family has a greater impact on the economic activity of males than of females. 81.4% of males who had at least a one new-born during the period under review have been economically active for the whole period. In contrast, in the group of males who have not had a new-born, only 70.4% remained economically active for the whole period (see Figure 5).



Source: Author's calculations based on Office of Citizenship and Migration databases, Population Census 2011 data, and State Revenue Service 2016 data

Fig. 5. **Economic activity status and birth of child (n = 789 044)**

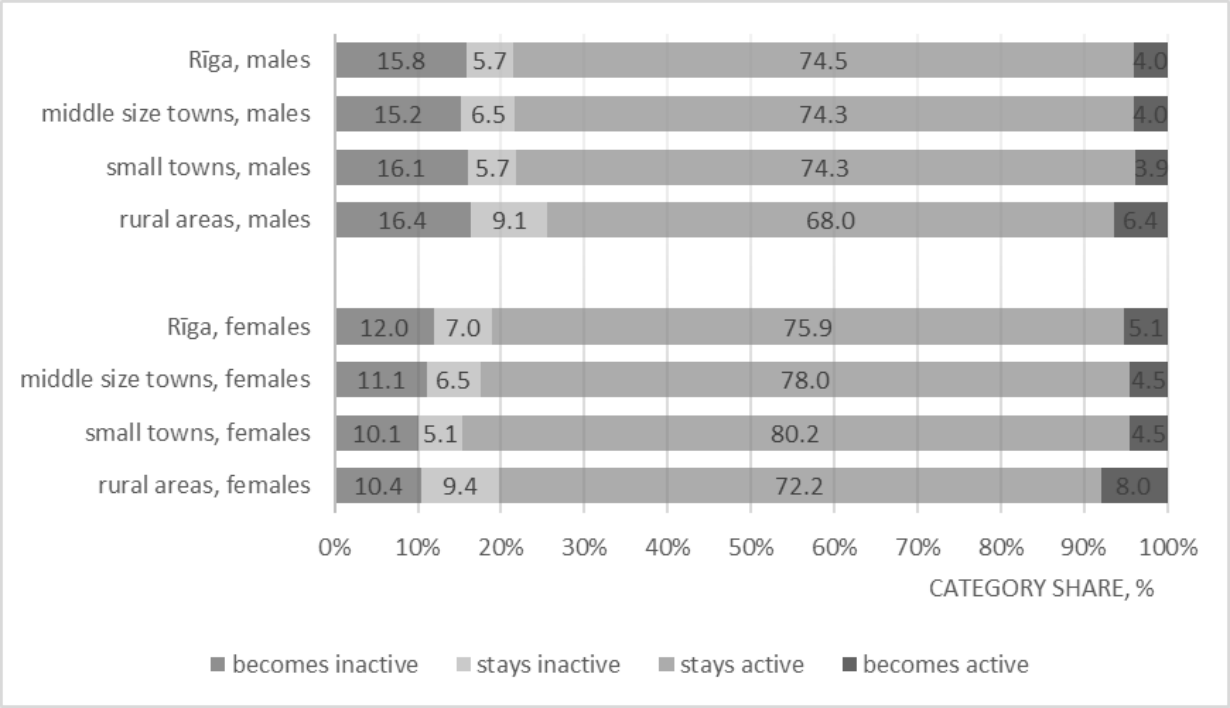
6. Correlation between economic activity changes and place of residence

According to the territorial classification, territories of Latvia in Census 2011 are divided into 4 groups by population size:

- Riga (659 thousand);
- middle-sized towns (25 - 93 thousand);
- small towns (1 - 24 thousand);
- rural areas.

During the census, 33.2 % of residents lived in Riga, 18.9 % in middle size towns, 16.3 % in small towns and 31.6 % in rural areas.

Calculations show that most vulnerable to economic inactivity are the individuals who lived in rural areas during the census; however, there are no significant differences among cities. Moreover, there is a larger share of females who stayed economically active for the all period under review in small towns than in middle-sized towns or the capital city (see Figure 6).



Source: Author's calculations based on Office of Citizenship and Migration databases, Population Census 2011 data, and State Revenue Service 2016 data

Fig. 6. **Economic activity status and place of residence of a person (n = 789 044)**

Conclusions, proposals, recommendations

1. Individuals with primary education and individuals who lived in rural areas during the census are the most vulnerable to economic inactivity.
2. Regarding marital status, single men are more vulnerable to economic inactivity than females (married or unmarried) or married males.
3. Birth of a child during the period of observation (2011-2016) increases the active status of economic activity at the beginning and end of the reference period.
4. Regarding the profession during the census, those working in agriculture, forestry, fishery workers, craftsmen as well as simple labourers are more vulnerable to economic inactivity than any other professions.

Bibliography

Jalovaara, M. (2001) Socio-economic status and divorce in first marriages in Finland 1991−93. Population Studies 55(2): 119−133. DOI:10.1080/00324720127685

Maslauskaite, A. et al. (2015) Socio-economic determinants of divorce in Lithuania: Evidence from register-based census-linked data. DOI:10.4054/DemRes.2015.33.30

CSB (2018) Method used to produce population statistics, https://www.csb.gov.lv/sites/default/files/data/EN/demstat_metodologija_eng.pdf

Regulation (2017) Commission Implementing Regulation (EU) 2017/543 of 22 March 2017

Regulation (2008) Regulation (EC) No 763/2008 of the European Parliament and of the Council on population and housing censuses as regards the technical specifications of the topics and of their breakdowns

THE IMPORTANCE OF BRAND FOR INFLUENCING CONSUMER BEHAVIOUR IN SOCIAL NETWORK PLATFORMS

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Abstract. Nowadays, many companies have understood the potential of social media, thus more and more of these channels are being used as an essential part of branding as communication platform. Social media have given access to the broad information flow; the way consumers get, share, evaluate and process information in buying process. In this article authors have analysed the brands impact on social media in comparison with traditional media channels. **The goal of the research is** to determine the brand's impact on consumer buying behaviour on social media, compared to traditional communication channels, as well as to determine whether brand interaction in social media facilitates the purchase of a product at different point of sales. Research is based on 32 structured interviews about Latvian food producers branding activities in different media channels.

Results of this research allow evaluating brand's impact on consumer behaviour in social sites by determining that a good quality content of social sites are crucial for boosting recognisability of brand's image, however, in comparison to social media the brand plays less significant role in the point of sale, because consumer behaviour is influenced by other factors too, while shopping in points of sale.

Keywords: *brand, branding, consumer behaviour, social network, marketing*

JEL code: M31

Introduction

The power of social networking is such that the number of worldwide users is expected to reach some 3.02 billion monthly active social media users by 2021, around a third of Earth's entire population. Social network penetration worldwide is ever-increasing. In 2017, 71 percent of internet users were social network users and these figures are expected to grow. Social networking is one of the most popular online activities with high user engagement rates and expanding mobile possibilities. With over 1.86 billion monthly active users, social network Facebook is currently the market leader in terms of reach and scope **(**Gordon K., 2019). As social media have become a part of normal daily routine, companies increasingly try to find efficient marketing communication strategies to enhance brand recognisability and promote increase of sales volumes. Nevertheless, it is not clear if social media platforms boost sales results, and opinions in this regard vary. Some believe that social media increase sales volumes, whereas, others think that it is hard to measure and determine the impact of social sites on sales volumes, therefore, an enhanced brand recognisability and website visiting turn out to be most immediate effects. Therefore, it is important to find out if social networks affect consumer behaviour in conventional sales channels, on the moment of decision-making, and to examine it in context of brand perception. Are brand communication strategies visible not only in social media, but also build up in consumer's consciousness and urge to buy a product on the moment of decision-making in conventional sales channels?

Goal of the research is to determine the impact of a brand on consumer behaviour and decision-making at time of decision-making in social media, in comparison to traditional communication and sales channels, to determine whether brand interaction in social sites enhance buying of product in points of sale.

In the field is a lot of researches about social media and it impact on different fields, but there is only a view studies that try to analyses social media results outside social media are and prove its impact beyond communication to drive sales and brand awareness. In Latvia authors have not found similar study so this research is unique and tries to point on social media impact in stores, that is hard to measure with technologies that exists at the moment in Latvia food store chains.

In order to constrain the field of research, Latvian food producers with brands such as Dobeles Dzirnavnieks, Herkuless and Valdo, were selected, taking into consideration that this category is widely represented in all points of sale. Another essential aspect for this choice is existence of active social accounts and communication. Structured interviews and content analysis were used in the course of the research to find out brand's impact zone and significance in points of sales and social networks.

In order to achieve the research goal, several **tasks** were put forth: 1) to analyse impact of social media on the brand, its recognisability and to identify brand's impact on consumer behaviour 2) to select 50 subjects for an interview, who follow to any of Facebook pages of a food producer at their choice and to interview them 3) to elaborate structured interview questions and to conduct interviews 4) to analyse results of the structured interview in order to identify and find out the impact of the brand on consumer behaviour and decision-making during a purchase process in social media, to compare it with traditional sales channels and determine interaction of said components; 5) to summarise conclusions and recommendations for basic conditions of impact on consumer behaviour in context of brand interaction in social media and traditional points of sale,

Research object – impact of brand on consumer behaviour and decision-making

Research subject: role of the brand in influencing consumer behaviour in social media.

Quantitative and qualitative research methods generally accepted in social sciences have been applied: abstracts analysis of literature, content analysis, structured interview and analysis of the result. On the basis of research performed, the article provides an outline of results of brand's role in social networks, its impact on consumer behaviour in conventional points of sale.

Theoretical Background

Radio, television, newspapers and magazines, direct post, outdoor advertising etc. are traditional platforms of marketing communication, however, the 21st century has given a momentum to a trend where companies organise communication with consumers outside traditional mass media channels, increasing consumer engagement. No doubt, internet, technologies and social media have changed the way of marketing communication. The new marketing system needs to create niche marketing communication rather than generate mass newsletters for a target audience; the first one is tailor-made for each particular consumer, and they can find what they are looking for and like. All the definations of the social media can be summarized by dividing the compound term “social media” into its two components, “social” and “media.” The “social” part refers to the activities carried out among people, whereas “media” refers to the internet-enabled tools and technologies used to carry out such activities. Several social media studies have focussed on understanding various social behavioural aspects, such as social influence, social interaction, social ties, and social identity (Ngai E.W., et al., 2015). The following properties of social media can be distinguished: building a communication with people and companies of any type and form of content; new opportunities to find information; wider possibilities to research market and consumer habits; new form and content of communication, a possibility to contact

the public in real-time; modified model of influence, which broadens the circle of traditional market experts, opinion leaders and innovators, who create platforms themselves to publish and view content; bilateral way of communication and consumer engagement (Miliopoulou G.Z., Cossiavelou V., 2016).

Social media have been researched in past years a lot and scientists have applied a lot of media and communication theories to social media researches, but authors for this study suggests that media theory and social exchange theory is most suitable for research purposes. Medium theory is most associated with social media. Today, medium theory scholars use the theory as a perspective to understand the emergence of new media, particularly social media. The Internet has transformed the election environment tremendously over the last decade. Communication via new media outlets such as the Internet challenges traditional communication theories, particularly in the areas of gatekeeper and audience roles. Facebook Pages, for example, provide a collaborative interface for participants from different geographical regions to communicate with one another. Facebook users have taken advantage of the platform to express either support or opposition for political candidates, forming political collectives online (Moody-Ramirez M., Church A.B., 2019). Given that all social media are dependent on users providing content, an understanding of the motives of why individuals participate appears fundamental. Social exchange theory was originated from sociology studies exploring exchange between individuals or small groups. The theory mainly uses cost-benefit framework and comparison of alternatives to explain how human beings communicate with each other, how they form relationships and bonds, and how communities are formed through communication exchanges. The theory states that individuals engage in behaviours they find rewarding and avoid behaviours that have too high a cost. In other words, all social behaviour is based on each actor's subjective assessment of the cost-benefit of contributing to a social exchange. They communicate or exchange with each other contingent on reciprocal actions from the other communicating party (Pan B., Crotts J., 2012).

Social media marketing is a form of internet marketing, which includes various social sites to achieve the goals of marketing communication and brand recognisability (Junghenn S., 2012). **Social media open more opportunities to companies in terms of marketing**, which are put very concisely: promote brand recognisability; help to study consumer behaviour; create ideas for new marketing strategies; increase number of website visits; promote recognisability of brand, its symbols and slogans, but influence is the core of building economically advantageous relationships. A company must be capable of influencing social media users and product consumers to make a purchase and influence other members of their group in favour of the brand and purchase (Rocha S., 2019). Authors know that a brand is means for differentiating product or service and it allows the consumers to differ one particular product or service from competing offers. Nowadays brands have become a part and parcel of our everyday life. Brand has not only a visual appearance, but also additional values that it provides to the consumers. Additional value can be found in quality, originality, affiliation to certain social group. Due to the brand, companies can differentiate their product from the competing ones, create efficient communication strategy both in conventional communication channels and social networks. Marketing and environmental stimuli penetrate the consciousness of a consumer and a set of psychological processes combine with certain features characteristic to consumers to result in a decision to make a purchase. Task of marketing specialists is to understand what happens in the consciousness of a consumer between arrival of external marketing stimulus and final decision to buy. Psychological processes have major impact on consumer's reaction. Motivation, which is the basic concept in human behaviour and hence in consumer behaviour, is one of the main psychological factors. Motivation is the driving and pushing force urging a person to take a certain step. Understanding of brand problems and company's goals is the basic need required for further development of the brand and understanding of brand as such. Psychological processes forming the basis of brand building can be created in apperception of information processing continuity. Brand value in consumer's perception is another crucial aspect in brand management. Author Marieke de Mooij (De Mooji M., 2014) admits that existence of brand in minds of consumers and impact on purchase behaviour are the basis of brand

value. Consumer value is influenced by financial performance of the brand. Consumers' value elements are brand recognisability, brand associations, brand symbols, perceived quality and brand loyalty. Many of said elements are abstract (De Mooji M., 2014). As it was mentioned before, companies today choose social media as important aspect of marketing communication strategy. It is true that social media are used more to promote brand recognisability and increase consumer awareness of new products, especially in food product industry where it is important to inform consumers about new products and for this purpose one of most available communication channels is social networks (Kasavana M.L., Nusair K., Teodosic K., 2010).

Authors highlight that customer engagement is important as information is accessible and people tend to remember only that information that they have been engaged with. Linda Hollebeek (Hollebeek L. D., 2011) defines customer involvement as intellectual and emotional link, claiming that engagement has four classifications: engagement, interaction, intimacy and influence. Engagement between customers and brand leaves a positive impact on product quality and customer satisfaction. Also, interactive media improves credibility of news and emotional participation (Shojaee S., Azman A., 2013). Majority of companies use social media to attract followers and realise cooperation, however they forget that social media can be used to boost brand recognisability, too (Barwise P., Meehan S., 2010). Often companies build one-way communication in social media, forgetting that a two-way communication is needed, and users of social networks should be involved (Lim Y., Chung Y., Weaver P. A., 2012). Consumers are influenced by social media marketing more than ever before when they arrive at a decision in favour of a product or a service. Social networks can generate brand recognisability not only by building one-way communication strategy, but also engaging followers in this process. Each user who shares a post in any social site, involves also his or her friends or followers, for example, if he or she shares a post in Facebook, it will be seen by 35% of friends of that user on average (Bernstein M. S., et al., 2013). High brand recognisability may promote and directly influence market share, sales volumes, brand value as perceived by consumers and even loyalty. Some of positive aspects of social media are as follows (Jothi P.S., Neelamalar M., Shakthi P.R., 2011): 1. Promotion of brand, idea, product or service in target audience; 2. Communicating brand presence in the market to target audience; 3. Maintenance of healthy competition; 4. Bringing social benefit to the brand; 5. Engaging audience and keeping its interest in brand, promoting recognisability and awareness. When the brand recognisability and identity have been created, one must understand how the brand influences consumer behaviour and decision-making process. Strong brand management may explain product functionality and features, which may help the consumers to decide whether or not they need such a product, giving functional and psychological benefits. As the product is bestowed with 3D personality, the consumer finds it easier to strengthen and create an attitude and emotions towards the product. Products could not be differentiated without brand management. It is possible to identify two different types of consumer behaviour — individual consumer and corporate consumer. Individual consumer buys products for personal use, whereas corporate consumer includes profit and non-profit business, public authorities and institutions that need to buy products, equipment and service to maintain their business (Schiffman G.L., Kanuk L.L., 2010, Nirmala V., Devasenadhipathi U., 2013).

One also should not forget about brand value. Modern marketing and advertisement use values to differentiate and position brands as opposed to competing brands. In most cases values, with which the consumers grow, influence consumer behaviour and buying habits, however, managers of global brands often fail to consider country-specific customs and values. They often search for universal approach that is borrowed from other similar brands or within the framework of global brands, thus ignoring very important differences. Perception is selective, too; therefore, people tend to see what overlaps with our personal system of values. Most elements of consumer behaviour are related to culture, and so are the marketing strategies that marketing specialists develop. In order to build relationships between brands and consumers, the brands and brand communication must reflect human values, and it is especially true in case of

communication in social media where those values must be reflected that each culture finds essential, basing on culture differences (De Mooij M.,2014; Drossos D.A., Fouskas K.G., Kokkinaki F. Papakyriakopoulos D., 2011).. It is due to this aspect why brands must create personalised content in social media what based on authors experience as social media agency managing director is always used for communication. Brand work on uniqe content for their Facebook pages.

Research results and discussion

Structured interviews were taken to find out what impact a brand has on the consumer behaviour and decision-making while shopping, communicating in social networks, juxtaposing it to conventional communication and sales channels. As researchers stats sample sizes must be ascertained in qualitative studies like in quantitative studies but not by the same means. The prevailing concept for sample size in qualitative studies is "saturation." Saturation is closely tied to a specific methodology, and the term is inconsistently applied. Researchers suggest that the size of a sample with sufficient information power depends on (a) the aim of the study, (b) sample specificity, (c) use of established theory, (d) quality of dialogue, and (e) analysis strategy (Malterud K., Siersma V.D., Guassora A.D., 2016). Guest, Bunce, and Johnson propose that saturation often occurs around 12 participants in homogeneous groups. To ensure that you have saturation you have to go beyond the point of saturation to make sure no new major concepts emerge in the next few interviews or observations. Consequently, 15 as a minimum for most qualitative interview studies works very well when the participants are homogeneous (Marshall B., et al., 2013., Latham J., 2018).

Participants of the structured interviews were selected randomly by authors choosing 50 persons who follow one of three brand pages on Facebook. Afterwards these 50 persons were approached in Facebook. 32 subjects of the selected population agreed to an interview. Such selection criterion was chosen to make sure that the person was a follower of that particular page. As a result, the field of impact and significance of the brand in points of sale and social media were found out with a focus on cereal food product industry. 32 structured interviews were performed with the basic task to understand a paradigm existing between the brand impact and consumer behaviour in social media and conventional sales channels. The number fits two minimum suggested amounts for interviews and fit the research aim. Interviews where conducted in two round in face to face focus group meetings on November 2018 in Riga (Latvia). Respondents were given paper questionnaire to fill in the answers that where asked by the interviewer in the meeting. They had time to fill in answers, discuss and ask questions if needed. All the questioners where selected to combine and analyze data. Structured interviews where selected to easy combine and compare the answers from the participants.

The respondents were asked several questions regarding the social media use, brand's impact on consumer buying behaviour on social media and particular food brands. Here are only some question examples: a) What social networks do you use every day? b) Which of the food brands do you recognize? c) What actions on your daily life are impacted by brand? d) According to what criteria do you choose to purchase a particular brand of products in traditional trading channels and how important this criterion is? e) On what criteria do you evaluate which brand you will follow on social networks? f) When purchasing a product, how important is the seen content on social networks? g) What daily activities have you done under the influence of social networks? The researcher asked follow-on questions during the conversation to clarify key points and fill in any gaps needed.

According to the gender ratio of the respondents interviewed, the majority, i.e. 69% were women, whereas 31% were men. Observations show that most frequently products of food category are purchased by consumers aged 26-45, besides mainly women. Age ratio of the respondents interviewed looks as follows: 19% are aged between 18 and 25. The largest group represented, i.e. 60%, is aged between 26 and 23, followed by group aged between 36 and 45 and group aged between 46 and 55 making 9%, whilst the least represented group or 3% consists of persons above 55 years of age, due to a reason that this group has minor presence in social media. According to data obtained from TNS, 86% or 1.4 million

of Latvian inhabitants aged 15 to 74 on average use internet, but it is done most intensively by persons between 15 and 39 years of age, however, age group between 18 and 34 are most present in social media in Latvia on a daily basis (TNS Latvia, 2018). Youth aged below 18 did not participate in the research, basing on an assumption, that youth in this age are not financially secured with permanent income and do not make final decisions concerning everyday food product purchases in shops.

In order to understand the common trend, it was important to look at all income level categories when choosing the respondents for an interview, as it was important to see if the income level affects price perception. According to the income level, it was determined amongst the respondents interviewed that 13% receive up to 346 EUR, which was the statutory minimum wage in Latvia in 2018. Majority of respondents, i.e. 68% received above the average salary, which was 676 EUR after taxes in Latvia in 2017, therefore the majority share of respondents represents averagely high or high income.

It must be emphasized that in the 21st century authors can see a sound trend to use social media frequently; it was found out in interviews that each respondent uses social sites regularly. The most popular social site identified during the structured interviews was Facebook.com, used regularly or at least once a day by almost 97% of respondents, followed by Instagram with 75%, Pinterest with 19% and draugiem.lv with 13%. It was observed during the structured interviews that draugiem.lv is named more often among elder generation. There is a direct link between the age of respondents and use of certain social networks. It must be noted that neither of respondents admitted not using any of social sites, which affirms that today the environment is strongly saturated with contemporary technologies and internet presence, and also outlined the specific nature of respondent selection. The results obtained in the interviews indicate at a similar trend as from those of the Central Statistical Bureau; a survey on use of information and communication technologies in households in 2018 showed the following tendency: 90.4% aged between 25 and 34 are using social networks, while 77.2% are using them in age group between 35-44 (Central Statistical Bureau of Latvia, 2019).

In order to narrow down the field of research, it was determined to use the brands operating in food industry, specifically — in cereal segment, having accounts in social media. Table 1 shows that each respondent recognised every brand, although elements from which it was recognised slightly differed. Authors can see that the respondents mainly recognise these brands from personal experience, 88% Dobeles Dzirnavnieks and 75% Herkuless. Women and men alike recognise the brands from their experience, but from the product range that was found in shops women tend to recognise the brands better. It can be explained with a fact that women are making purchases more frequently than men.

Table 1

Recognisability of food product brands

	From individual experience	From experience of friends/ acquaintances/ relatives/ colleagues	From information in mass media (newspapers, radio, TV, internet)	From information in social media	From product range found in shop shelves
Dobeles Dzirnavnieks	88%	41%	47%	28%	56%
Herkuless	75%	44%	50%	34%	59%
Valdo	75%	16%	25%	13%	56%

Source: author's table based on the structured interviews conducted in November - December 2018 (n 32)

Understanding the close link between frequency of product purchases and other factors, such as price assessment, noticed marketing communication in social media and other factors, it is possible to analyse, which of the mentioned brands are most popular among the consumers, whether it has a positive correlation to the noticed frequency of communication in social media. As already discussed in the theoretical part, social networks are one of ways to promote brand recognisability, and it can directly or indirectly affect sales volumes of the company and brand value in consumers' consciousness. Table 2 shows that every consumer has bought one product from each brand. Products of Dobeles

Dzirnavnieks and Herkuless are most popular: 66% of respondents bought products of Dobeles Dzirnavnieks at least once in 3 months or more often, while 71% bought products of Herkuless brand.

Table 2

Frequency of buying brand products

	1 time per week or more often	1 time in 2 weeks	1 time per month	1 time in 3 months	1 time in 6 months	1 time in year	Do not buy
Dobeles Dzirnavnieks	3%	13%	25%	25%	16%	13%	6%
Herkuless	3%	19%	31%	28%	16%	3%	0%
Valdo	0%	0%	44%	19%	22%	6%	9%

Source: author's table based on the structured interviews conducted in November - December 2018 (n 32)

As mentioned earlier, assessment of price level must be viewed in context of average income level of the respondents; since the income level of 68% of respondents was high, averagely high or very high the purchasing power of these respondents should be higher. It was observed that respondents with higher income thought that prices are cheap or it was hard to say, however, respondents with lower income thought the prices to be expensive.

In order to find out why respondents purchased products of these brands, one needs to understand the criteria behind consumer's decision-making while shopping for cereal products in conventional trade channels, so that authors can understand stimuli of consumer behaviour impact in cereal product category. Based on the outlined theory, authors look only at individual consumers who buy products for personal use. Authors see that the price is one of prevailing factors, indicating that the consumer in this food category is not loyal to the brand and is rather price-sensitive and buys the product with the most advantageous offer. 78% of respondents find price to be important or very important, whereas 22% think that the price is insignificant. Even though this product group is a commodity product that can be bought at relatively low prices and is available to everyone, the product quality is very important for 66% and important for 34%. Important to say that while a respondent is at a shop, immediate impulses created there are essential; it is confirmed also by factors such as price, availability, quality, available information about product in the point of sale. In the opposite case, only 16% of consumers, while being in a shop, find communication in social media important, whereas another situation appears where a consumer notices communication in social media where other factors characteristic in shops and affecting decision-making are not present; there the social media has larger influence on the consumer. As authors say in Table 3, brand recognisability in points of sale is important or very important for 78%, brand values — for 47% of respondents and created associations — for 50% of respondents. In product production industry where products are similar to each other, for example, oat flakes, the consumer focuses more on price rather than the brand itself or its recognisability. It is difficult to speak of loyalty, because it almost does not exist in this category.

Table 3

Criteria according to which respondents choose to buy brand products in conventional sales channels

	not important	insignificant	hard to say	important	very important
Price	0%	22%	0%	53%	25%
Place of buying	6%	19%	6%	47%	22%
Quality	0%	0%	0%	34%	66%
Communication in social media	22%	47%	16%	16%	0%
Advertisement/marketing activities	6%	44%	19%	28%	3%
Available information in point of sale	19%	19%	6%	50%	6%
Brand, its recognisability	3%	9%	9%	72%	6%
Brand values	3%	22%	28%	41%	6%
Associations created by the brand	3%	19%	28%	44%	6%
Package design	0%	22%	19%	44%	16%
Previous experience	0%	3%	6%	38%	53%
Availability	0%	9%	0%	44%	47%

Source: author's table based on the structured interviews conducted in November - December 2018 (n 32)

It was established during the structured interview that facebook.com is the most frequently used platform, which is also one of communication channels used by cereal food brands. Looking at data of business pages of these brands, it was established that in Facebook.com Dobeles Dzirnavnieks has approximately 12,200 followers, Herkuless has around 8,250 followers while Valdo has 4,500 followers. Given this question, the respondents were asked to name several brands that they follow, and authors saw a tendency that 10% of respondents follow several brands. 8% find it difficult to say, explaining that sometimes it is hard to remember which pages and brands they follow in social sites, because sometimes following is motivated by additional factors such as participation in competitions urging to follow the page. Since algorithms of social sites nowadays become increasingly sophisticated, filtering the content that the follower sees, it is not sufficient to determine only whether the potential buyer follows the brand's business page; instead authors need to know also how often the brand's content is noticed to understand if the brand is noticeable enough to influence consumer behaviour and whether it has a decisive role. According to research results, communication of all brands are noticed periodically, however in case of Valdo brand more than a half or 66% of respondents do not visit or do not notice social accounts of the brand, therefore communication of this brand in social media has less impact on consumer behaviour in traditional sales channels and thus the closeness of interaction should be viewed more in context of Dobeles Dzirnavnieks and Herkuless brands.

Table 4 evaluates criteria according to which respondents choose to follow the brands in social media to understand consumer motivation and psychological processes in the very fundamental outsets. Interestingly, 34% of respondents have chosen brand recognisability as important criterion, while 9% or respondents selected it as very important criterion, however a good quality, versatile content and pleasant style of communication and content are important or very important for 69% respondents. It shows that the created content in social sites is more important than the fact whether the brand is recognisable, even though it must be emphasized that both these indicators are important for the followers. This question reflects that the content generated by the brand in social networks is important; nowadays consumers have become more demanding and wish the content be personalised, tailor-made for a certain band (it is important for 50% of respondents and very important for 16% of respondents), as well as is of a good quality, versatile and positive; from here one can see that the followers evaluate what to follow to in terms of content quality and meeting their expectations. It echoes back to an idea discussed in the theory that one cannot forget about values reflected in the communication that are important in consumers' value system. Once more it shows a trend where the followers find good quality, interesting and personalised content more important than regular and monotonous communication.

Table 4

Criteria according to which the respondents choose to follow the brands in social media

	not important	insignificant	hard to say	important	very important
Brand recognisability	9%	25%	22%	34%	9%
I use brand production	3%	13%	9%	63%	13%
I like communication style and content	6%	6%	19%	44%	25%
Positive image of the brand	3%	16%	19%	47%	16%
Competitions	25%	28%	16%	16%	16%
Information about discounts and lotteries	3%	28%	13%	41%	16%
Useful information, updates, advices	6%	9%	13%	50%	22%
Friends suggested to follow	19%	31%	25%	19%	6%
Regular communication	22%	28%	16%	28%	6%
Good quality, versatile content	16%	9%	6%	53%	16%
Personalised content, tailor-made for certain brand	13%	6%	16%	50%	16%

Source: author's table based on the structured interviews conducted in November - December 2018 (n 32)

Brand's image in social media is not important in 22% of cases and insignificant in 41% of cases when shopping; 9%

find it difficult to say how important this criterion is, while 28% of respondents find brand's image to be important or very important (Table 5). By absorbing the data and information obtained during the structured interviews, one can conclude that the consumers are influenced by brand's image in a moment of decision-making in the food products category by 28%. It can also be observed that the persons interviewed have not really defined their opinion about impact of social media on their purchases, because majority of respondents admit that, while being in a shop, they do not think of any link to what they have seen in social media; however a completely different picture emerges, if the communication has been noticed in social network where no common side impulses inherent in points of sale are observed, meaning that in case of a complex marketing strategy also social site can be an impulse for a shopping decision. Only 22% of respondents admit that an opinion expressed publicly by famous persons is an important factor when buying food brands, and other respondents find it difficult to say if the opinion of opinion leaders is important or insignificant. Cereal products as such are very similar to each other and most commonly the product differs only in package, place of production and other unnoticed nuances. For example, oat flakes as a sub-category of cereal products do not differ in their taste; most apparent changes lie only in physical properties, such as thickness of flakes, therefore impact of opinion leaders should be viewed more in terms of category than brands, having more influence on whether or not the consumer consumes oat flakes on a daily basis.

Table 6

Importance of content seen in social media when purchasing the product

	not important	insignificant	hard to say	important	very important
Brand's image in social media	22%	41%	9%	19%	9%
Opinion expressed by famous persons in social sites regarding this product	22%	38%	19%	22%	%
Industry's achievements	6%	38%	6%	44%	6%
Competitions	31%	38%	13%	13%	6%
Topical and up-to-date information	9%	22%	31%	31%	6%
Corporate social responsibility	6%	22%	31%	38%	3%
Recipes	9%	41%	9%	34%	6%

Source: author's table based on the structured interviews conducted in November - December 2018 (n 32)

This is a subjective opinion of respondents therefore it is possible that the respondents are not aware of the impact the opinion leaders have on them. The strongest criteria, which influences consumer while buying the product, is industry achievements - 44% of respondents find them to be important, 6% think them to be very important, as well as corporate social responsibility, found to be important by 38% and very important by 3%. Aggregately, it can be concluded that factors related to psychological and brand values rather than competitions that only promote following and involvement of followers, are most important on the moment of making a purchase decision.

Table 6

Activities taken by respondents under influence of social media

	do not correspond at all	do not correspond	hard to say	correspond	correspond very much
Considered buying the product	6%	13%	6%	53%	22%
Went to a shop to explore the product	9%	13%	16%	59%	3%
Purchased the product	6%	3%	16%	66%	9%
Recommended the product to friends	19%	6%	16%	56%	3%
Shared content of this brand in own social accounts	25%	25%	%	38%	13%
Changed his/her mind about the brand	22%	19%	25%	34%	%

Source: author's table based on the structured interviews conducted in November - December 2018 (n 32)

As authors explain in Table 6, in terms of social media impact, most of respondents have performed some activity described in Table 9. 75% of respondents admit that due to influence of social media they went to buy products, 62% of respondents went to the shop to look at the product, while 75% of them have bought the product. It shows that social sites can influence consumer and boost sales volumes. However, it is not entirely clear whether the very brand in social media directly affects consumer behaviour and decision-making in conventional channels.

Table 7

Assessment of impact of respondent's brand on daily routines

	Does not influence	Influences sometimes	Influences	Influences frequently	Influences always
Wish to explore the product	16%	19%	41%	22%	3%
Wish to buy the product	16%	25%	31%	25%	3%
Buying of the product	13%	16%	41%	31%	%
Repeated buying of the product	6%	22%	38%	28%	6%
Recommending the product to friends	25%	25%	19%	22%	9%

Source: author's table based on the structured interviews conducted in November - December 2018 (n 32)

Data reflected in the Table 7 prove that the brand has very strong influence on consumers in general, urging them to make a purchase, while according to Table 4, it is less important in social media. Only 16% of respondents admit that the brand does not affect their wish to explore or buy the product, and other respondents say that the brand has influence on them — some more frequently, some less often, nevertheless they feel the impact of the brand. Also, majority of respondents in the structured interview admitted that the brand influences both buying of product in 87% of cases, and repeated buying in 94% of cases. Accordingly, the brand has less impact in social media than in other channels, nevertheless, viewing it from the perspective of users of social media, younger people tend to use social sites for interaction more intensively. Entry of this group in circles of active buyers lays firmer grounds for the impact of social media on brand's development and recognisability.

Based on results, authors propose for companies:

1. To focus on Facebook.com in marketing communication in social media, considering more frequent use of this platform by the users as well as possibilities of communication and advertisement.
2. To build a good quality content, aimed at creating brand's image and delivering information about the price, because it is important factor in points of sale and increase advertisement budget in Facebook to gain wider reach.
3. Content seen in social media but not recommendation from famous persons regarding cereal brands in Latvia may motivate buying of the product, therefore in this industry one should not invest in the influencer marketing, because it will not have significant effect on sales indexes.
4. A full mix of media must be used to achieve maximum brand recognisability, because social media and trade channels together cannot create permanent associations with the brand and create its image, capable of influencing purchasing decision to a sufficient degree, so that the consumer would choose the product of a particular brand.
5. One should make a similar study in other category to find out whether the results of this research are attributable to the situation in general or only to cereal product sellers.

Conclusions

Results of the research highlight several important aspects, which allow the companies to look at the brand's impact in context of consumer behaviour in social media and points of sale. At the end authors have concluded that social media is important to drive brand awareness, but not to directly drive sales at point of sales as price remains the most important factor in this industry for Latvian population.

1. Social media is powerful communication channel where one can promote brand recognisability and provide impulses motivating potential consumers to buy the product, to explore it in a greater detail or to recommend to friends under a condition that the content of social networks is of good quality and personalised for the very brand.
2. One of the most important factors according to which the consumer makes his or her decision when buying the cereal products in conventional sales channels, is price. It shows that in cereal product category a consumer is not loyal to the brand and is rather price-sensitive and buys the product with the most advantageous offer.
3. When making a decision on buying the product, only 16% of consumers find brands' communication in social media to be important, therefore this is one of indications showing that communication in social media is not among the driving forces behind routine shopping decisions taken into account when arriving at the shop.
4. Given that 75% of respondents have considered to buy the products under influence of social media and then went to a shop to buy it, it cannot be denied that an efficient communication strategy can be built through social media thus promoting higher sales volumes.
5. Successful recognisability strategies for brand's social accounts may have an implicit impact on a consumer, because recognisability of the brand in points of sale is important or very important for 78% of respondents, showing that the consumers, on the moment of decision-making, most probably choose the product with a recognisable brand.
6. Followers find the content generated by the brand in social media important, because nowadays consumers have become more demanding and wish the content be personalised, tailor-made for certain band (it is important for 50% of respondents and very important for 16% of respondents), as well as is of a good quality, versatile and positive, accordingly the followers evaluate what to follow to in terms of content quality and meeting their expectations.
7. Brand's image in social sites is not important or is insignificant in 22% and 41% of cases respectively when shopping; 9% of respondents find it difficult to say how important this criterion is, while 28% respondents find brand's image to be important or very important. The strongest criteria, which influences consumer while buying the process, in the opinion of respondents is industry achievements — 44% of respondents find them to be important, 6% think them to be very important, as well as corporate social responsibility, found to be important by 38% and very important by 3%. 75% of respondents admit that they went to buy products due to influence of social media, 62% of respondents went to the shop to explore the product, while 75% of them have bought the product.
8. Brand is a powerful influencing factor in social networks. Only 16% of respondents admit that the brand does not affect their wish to explore or buy the product, if the information seen in social media have brought their interest and other respondents say that brand has influence on them. Also, majority of respondents in the structured interview admitted that the brand influences both buying of product in 87% of cases, and repeated buying in 94% of cases.
9. Brand has more attention in the social sites than in the conventional trade channels - merely 13% do not pay attention to the brand, while 25% of respondents in shop admit that the brand does not matter. However, it was found out during the structured interviews that brand's impact can be mostly observed in the points of sale in context of such powerful factors as price.

Bibliography

Barwise, P., Meehan, S., 2010. The One Thing You Must Get Right When Building a Brand. *Harvard Business Review*, 88(12), 80–84.

Bernstein, M. S., Bakshy, E., Burke, M., & Karrer, B., 2013, Quantifying the Invisible Audience in Social Networks. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems - CHI 13*, 21–30

Central Statistical Bureau of Latvia, 2019. *The Habits of Using the Internet of the Population* [online]. Available at: <https://www.csb.gov.lv/lv/statistika/statistikas-temas/zinatne-ikt/datori-internets/meklet-tema/2410-iedzivotaju-interneta-lietosanas-paradumi> [Accessed 1 January 2019].

De Mooij M., 2014. *Global Marketing and Advertising :Understanding Cultural Paradoxes.* 4th edition. Los Angeles: SA GE Publications

Drossos, D.A., Fouskas, K.G., Kokkinaki, F. Papakyriakopoulos, D., 2011. Advertising on the Internet: Perceptions of Advertising Agencies and Marketing Managers. *International Journal of Internet Marketing and Advertising*, 6(3), p.244.

Gordon, K., 2019. *Number of Social Media Users Worldwide 2010-2021*. [online] Statista. Available at: <https://www.statista.com/statistics/278414/number-of-worldwide-social-network-users/> [Accessed 28 January 2019].

Hollebeek, L. D., 2011. Demystifying Customer Brand Engagement: Exploring the Loyalty Nexus. *Journal of Marketing Management*, 27(7-8), pp.785–807.

Jothi,P.S., Neelamalar, M. Shakthi, P.R., 2011.Analysis of Social Networking Sites: A Study on Effective Communication Strategy in Developing Brand Communication. *Journal of Media and Communication Studies*. 3(7), 234-242.

Kasavana, M. L., Nusair, K., & Teodosic, K., 2010. Online Social Networking: Redefining the Human Web. *Journal of Hospitality and Tourism Technology*, 1(1), 68–82.

Latham, J., 2018. *Qualitative Sample Size - How Many Participants is Enough?* [online]. Available at: <https://www.drjohnlatham.com/many-participants-enough/> [Accessed 28 January 2019].

Lim, Y., Chung, Y., & Weaver, P. A., 2012. The Impact of Social Media on Destination Branding Consumer-Generated Videos Versus Destination Marketer-Generated Videos. *Journal of Vacation Marketing*, 18(3), 197–206.

Malterud, K., Siersma, V.D., Guassora, A.D., 2016. Sample Size in Qualitative Interview Studies: Guided by Information Power. *Qualitative Health Research*, 26(13), 1753–1760.

Marshall, B., Cardon, P., Poddar, A. Fontenot, R., 2013. Does Sample Size Matter in Qualitative Research?: A Review of Qualitative Interviews in is Research. *Journal of Computer Information Systems*, 54(1),11–22.

Miliopoulou, G.Z. and Cossiavelou, V., 2016. Brands and Media Gatekeeping in the Social Media. *International Journal of Interdisciplinary Telecommunications and Networking*, 8(4),51–64.

Moody-Ramirez, M., Church, A.B., 2019. Analysis of Facebook Meme Groups Used During the 2016 US Presidential Election. *Social Media Society*, 5(1), 1-11.

Nirmala, V., Devasenadhipathi, U., 2013. Globalization and Consumer Behavior. *Global Consumer Behavior*, 195–218.

Ngai, E.W., Moon, K.L.K., Lam, S., Chin, E.S.K., Tao, S.S., 2015. Social Media Models, Technologies, and Applications. *Industrial Management & Data Systems*, 115(5), 769–802.

Pan, B., Crotts, J., 2012. Theoretical Models of Social Media with Marketing Implications and Future research Directions. *Social Media in Travel, Tourism and Hospitality: Theory, Practice and Cases* (1), 73-86

Rocha, S., 2019. Talking with Teens and Families About Digital Media Use. *The Brown University Child and Adolescent Behavior Letter*, 35(3),1–7.

Schiffman, G.L., Kanuk, L.L., 2010. *Consumer Behavior.* 10th edition. Boston, United States of America: Pearson/Prentice Hall.

Shojaee, S., Azman, A., 2013. *An Evaluation of Factors Affecting Brand Awareness in the Context of Social Media in Malaysia*. Faculty of Computer Science and Information Technology, Asian Social Science, 9(17), 72-73.

TNS Latvia, 2018. *The Number of Internet Users is Growing to 1.4 million*. [Online]. Available at: http://www.kantartns.lv/interneta-lietotaju-skaits-pieaug-lidz-14-miljoniem/ [Accessed 1 January 2019].

MEASUREMENT OF ORGANIZATIONAL INNOVATION – IN SEARCH FOR THEORETICAL FRAMEWORK

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Abstract. In an increasingly globalised economy organizational innovations are considered to be highly important factor for the company to develop and be competitive. Organizational innovations take place in companies in different fields and parts of the world but to perform organizational innovations in the company it is necessary to identify the right indicators. Accordingly a number of recent papers in the literature for managers and scientists it is a challenge to search the perfect metric as organizational innovation measurement is a very difficult task to perform and they have different forms what is the main problem in recent studies. Recent studies have pointed out several points necessary for the analysis – data usable not only for analysis itself but for the policy making as well; and measurement framework to capture the organizational innovations.

This paper combines different definitions of organizational innovations applicable with the system approach, looking at different metrics, coming to the conclusion that for development of effective innovation measurement it is needed to develop a conceptual framework for the statistical measurement. The purpose of this paper is to illustrate information that would help to understand the concept of organizational innovation and how it can be measured in different ways, in case different metrics are developed. This paper assesses developments in currently performed studies looking at measurement of organizational innovation based on recent issue of *Oslo manual* and studies in Europe to create theoretical framework for further studies. Results can be used for measuring organizational innovation more effectively as well as implementation of organizational innovations.

Key words: *organizational innovation, measurement of organizational innovation, theoretical framework, organizational innovation definitions*

JEL code: 03

Introduction

The introduction of a new management style or technique, strategy or strategic orientation, organizational structure into the company through a defined business model, is termed as, organizational innovation (*Oslo Manual*, 2005). The term organizational innovation helps to encircle all around the innovation within the business model. The purpose of any innovation is to create business value, but it is possible only in case if innovations work out effectively, to help company to stay and to expand in the rapidly changing market as the business shows us examples of different effective innovation companies that showed much better result in comparison with those who did not innovate at all.

Such definition shows that the process of innovation is complex itself, but to find and look at the measurable elements of innovation process (e.g., spending on R&D, the staff education and partner oriented activities) is even more difficult task. Process of organizational innovation is non linear at the national level and at the firm level, more often it is iterative process where results from previous activities become the necessary elements for further activities that makes it even more difficult to be measured. Finally it is necessary to mention that innovation process is not limited within one company.

Based on everything discussed above it could be understood that measuring of organizational innovation is complex and multidisciplinary activity that could not be measured using one element, a composite measure is needed that will as it is possible transparently show innovativeness of organization. One of the most problematic questions in this case is to define the most important elements of the measurement of organizational innovations and those which may be omitted.

It is important to find a method to measure organizational innovation as it shows the company effectiveness of the work performed. Recently developed models have showed results that still have some drawbacks, in this case the purpose of the paper is to look at main theoretical models already developed by scholars and define the main elements needed to be looked at when measuring organizational innovations. The main aim of the paper is to find the theoretical framework for the further study; to compare, analyze and find out main elements for the development of further model trying to avoid drawback of previously performed studies; main source of information of the paper was previous studies and researches, *Oslo Manual*, 2005; author has reviewed related literature and key science theories. Tasks of the paper include (1) having insight of theoretical background of organizational innovation measurement; (2) analysis of existing measurement models; (3) defining weakest points and drawbacks of the existing models; (4) propose elements that need to be included in the further developed model to measure organizational innovations.

Research results and discussion

According to a definition of *Oslo Manual* by OECD, 2005, an organizational innovation is the implementation of a new organizational method in the firm's business practices, workplace organization or external relations (OECD/Eurostat 2005: para. 177). This definition is based on the fact that innovation process is a complex and multidimensional activity that is impossible to measure directly or with a single indicator, it shows the need of complex measure.

That kind of measure must reflect the organization innovative capability for the purpose of benchmarking, diagnoses, and supporting building up innovation culture and practices in different firms around the world (Gamal, 2011). Theoretical background brings research back to Downs and Mohr, in their critical evaluation of research on organizational innovation, it is stated that extreme variances have occurred regularly among the findings of the empirical studies of organizational innovation. They added that the variation of results in the field is beyond interpretation, and despite there being many studies, findings have not been cumulative (Down, Mohr, 1976). Though most scholars found results of Downs and Mohr not totally precise and even discussed wider idea of organizational innovation, including different types of innovations pertaining to all parts of organizations and all aspects of their operation (Daft, 1982; Damanpour & Evan, 1984; Zaltman, Duncan, & Holbek, 1973).

Most past metrics are proved not to be insightful or holistic. For example, the numbers of patents or the amount of money spent on R&D have not shown any causality with organizations' ability to be innovative (Sidhu at al, 2016). While the effects of product and service innovations can be directly measured by monetary indicators (share of sales), the effects of organization innovations are not directly visible in shares of sales and are therefore more difficult to measure (Kirner, E., at al, 2008). When we are talking about organizational innovation it becomes even harder to evaluate the contribution and level of adoption of organizational innovation in the company.

In order to characterize the innovation performance of a firm, a broad range of metrics have been (and still are) used, such as the number of patents, labor productivity, R&D spending, and revenues due to products launched in the last 3 years. However, these measures lack precision and do not take into account the cause and consequences. Moreover, many studies have produced results showing that there is no significant relation between R&D expenses and profits, and therefore, they have not accounted for innovation (Jaffe, 1986). Some metrics look on spending to R&D as correlating

factor of the company to be innovative, but spending does not always mean a great organizational innovation, it works backwards as well, as great organizational innovation not necessarily require a major spending.

A wide range of consulting-based approaches have also been developed to analyze a company's strategy or to assess its performance. For example, from a top-down financial strategy perspective, the BCG matrix has traditionally been used to compare different business units within companies according to their expected market growth of market share. At the other end of the spectrum, even product level design-thinking oriented strategies have emerged and been adopted by traditional firms (cf. McKinsey recently bought Lunar, a large design consulting company). Overall, the existing variables for innovation analysis mostly use a quantitative approach inherited from financing methods (Srinivasan, 2014).

Empirical evidence suggests that R&D spending has no significant relationship with nearly all measures of business success, based on an analysis of the top 1,000 global innovation spenders (Fredriksson, 2015). Gittleman (2008) also strongly argues that the value of using spending in general as indictor of innovation is very limited at the micro level. The other trend on innovation measurement has look on macro level. For example, *Oslo Manual* (2005), European Community Innovation Survey (CIS-4), and the European Innovation Scoreboard (EIS 2007) has been developed by European Union to measure and identify country innovation index using different economic data.

For quiet long time scholars were looking on organizational innovations as on linear process, performing researches on that base, but more recently progress has been made here and measurement system has been developed according to multiplicity and non-linearity of organizational innovation process.

To look on development of indicators of organizational innovations measurement- categorization of four development stages in measurement system is provided (Gamal, 2011):

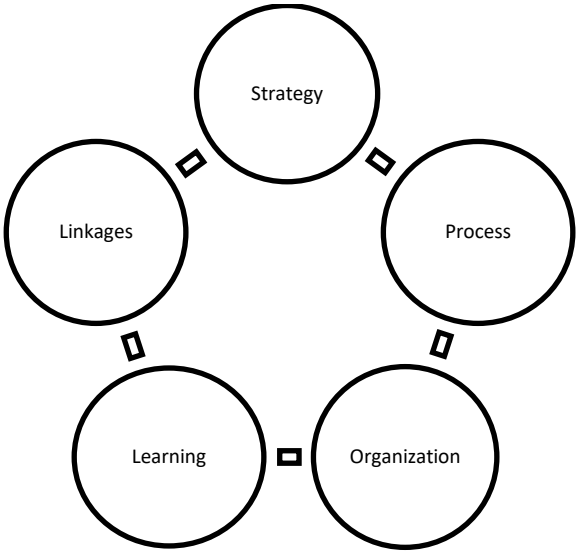
- 1st stage: (1)R & D expenditures; (2) Capital; (3)Tech intensity.
- 2nd stage: (1) Patents; (2) Publications; (3) Products; (4) Quality change.
- 3rd stage: (1) Innovation surveys; (2) Indexing; (3) Bench marking; (4) Innovation capacity.
- 4th stage: (1) Knowledge; (2) Intangibles; (3) Networks; (4) Demand; (5) Clusters.

Existing innovation measurement frameworks are multi dimensional nowadays, developed by different scholars and have different measurement systems, but it is necessary to look at them

1. Innovation Measurement Framework

In the past different measurement frameworks/ models were developed, they show the foundation on which measurement instruments are developed that is topic of further study. As was mentioned above scholars proved that one element cannot properly evaluate organizational innovations, so frameworks mentioned below consist of several dimensions looking at organizational innovations through different prospective.

1. First frame for measuring organizational innovations looked at this article is the **Dominant Diamond Frame** that was proposed by Tidd, Bessant, and Pavitt (Tidd, J., Bessant, J., Pavitt, K., 2005) that is based on Porter's model named as Diamond Model (Porter, M., 1990). The measurement system of this model has 5 dimensions (Mehrizi & Packinat, 2008):



Source: author's construction based on Mehrizi, M., H., R., Pakneiat, M., 2008. Comparative Analysis Of Sectoral Innovation System And Diamond Model

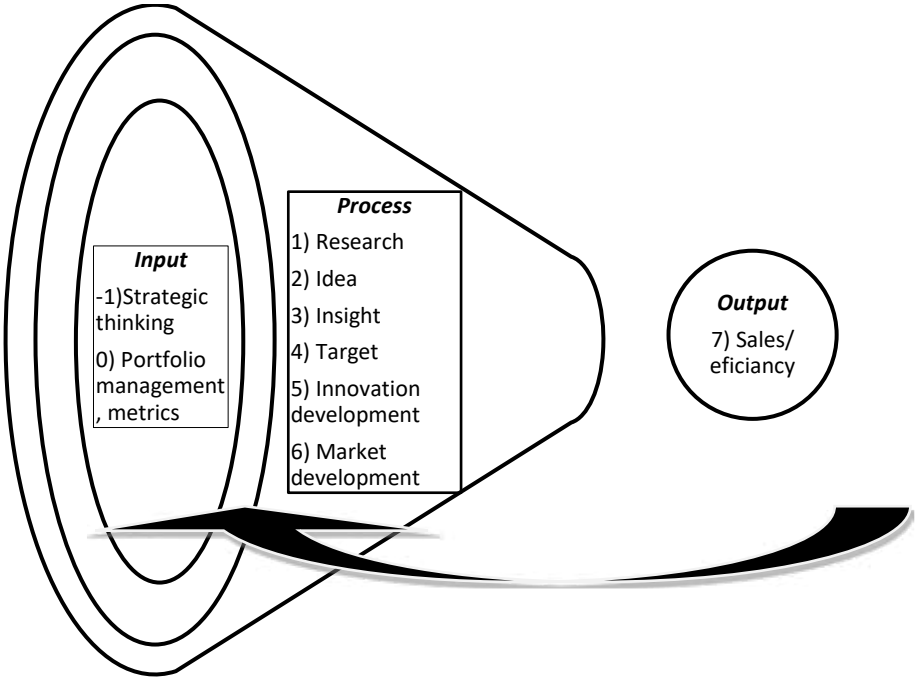
Fig. 1. **Five organizational innovation measurement dimensions of Dominant Diamond Frame**

This model is used in many researches and has potential to be developed at least with one more dimension involving quantity and cost factors (inputs) (e.g. human resources, science and technological infrastructure, that will help to see whole picture of organization innovations.

2. Second frame used in this research is called **Innovation funnel**, when lots of ideas come in the big end on the left, and a few finished ideas come out the narrow end on the right, ready to go to market, provide exceptional value, and earn substantial revenues and profits. It's a concept that certainly works in principle, but it does require considerable attention to what happens inside the funnel. (Morris, 2008).

Funnel is divided into 3 parts; (1) inputs define scope, context and character of innovation; (2) it is process of innovation that shows the way and answers the question how to innovate; (3) is a place where the whole innovation process gains economic value. An arrow shows the feedback for the organization, it is all information gained from the innovation process with succeeded and failed activities that company must learn of.

Scholars propose metrics of two quite different types. The "soft" metrics are qualitative, sometimes in the form of provocative questions that are intended to get people to think more deeply and effectively about the work they're doing. The "hard" metrics are quantitative, and amenable to statistical analysis (Gamal, 2011).



Source: author's construction based on Gamal, D., 2011. How To Measure Organization Innovativeness?

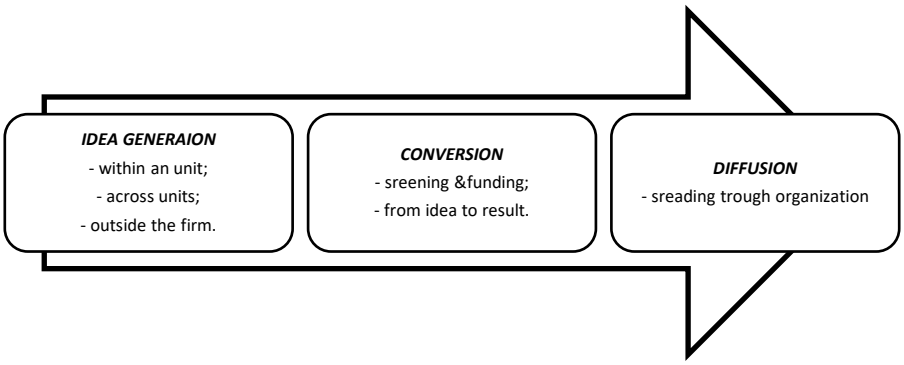
Fig. 2. **Organizational measurement framework of Innovation funnel**

Despite being one of the most common this measurement model has some limitations trying to measure outputs, but it is under the question if input had only the right ideas, metrics etc. What if the aim and scope were not right in the first place? In reality it is very difficult to suspend or terminate answers. Psychological, mental, and motivational factors affect decision-making and challenge objectivity. Sometimes researcher mistakes tunnel for funnel forgetting or ignoring, the fact that after the first gate there are also several other go/kill points. (Hakkarainen, Kari, Talonen, Tapani, 2014). Author came to conclusion that this model has more drawbacks in research performance and it would be a challenge to improve it so far to get rid of these limitations.

3. The innovation value chain comes from idea of generic value chain as proposed by Porter (1985), he defined an organization's value chain as a system of five linked primary activities and some support activities that lead to the creation of value for customers. Porter's (1985) idea was used as base for more expanded innovation value chain (Van Horne et al., 2006). They suggest six primary activities (need identification, applied research, innovation development, commercialization, diffusion, and adoption) and some support activities (competency management, infrastructure management, and knowledge management).

Models proposed by Roper et al. (2008) and Ganotakis and Love (2012) who research innovation from the knowledge perspective, refer to (1) knowledge sourcing, to be more precise they look at R&D, trying to find the knowledge shows the openness of the company; (2) knowledge transformation (knowledge transformed into outputs- organizational forms) and (3) knowledge exploitation (entering the market, innovations are transformed into productivity).

But first who talk about innovation value chain were Hansen and Birkinshaw (2007). The innovation value chain is derived from the findings of five large research projects on innovation. In the model by Hansen and Birkinshaw (2007) the innovation value chain is viewed as a sequential, three-phase process that involves idea generation, idea development, and the diffusion of developed concepts. Across all the phases, managers must perform six critical tasks—internal sourcing, cross-unit sourcing, external sourcing, selection, development, and companywide spread of the idea. As well there may be one or more activities that a company excels in—the firm's strongest links. Conversely, there may be one or more activities that a company struggles with—the firm's weakest links.

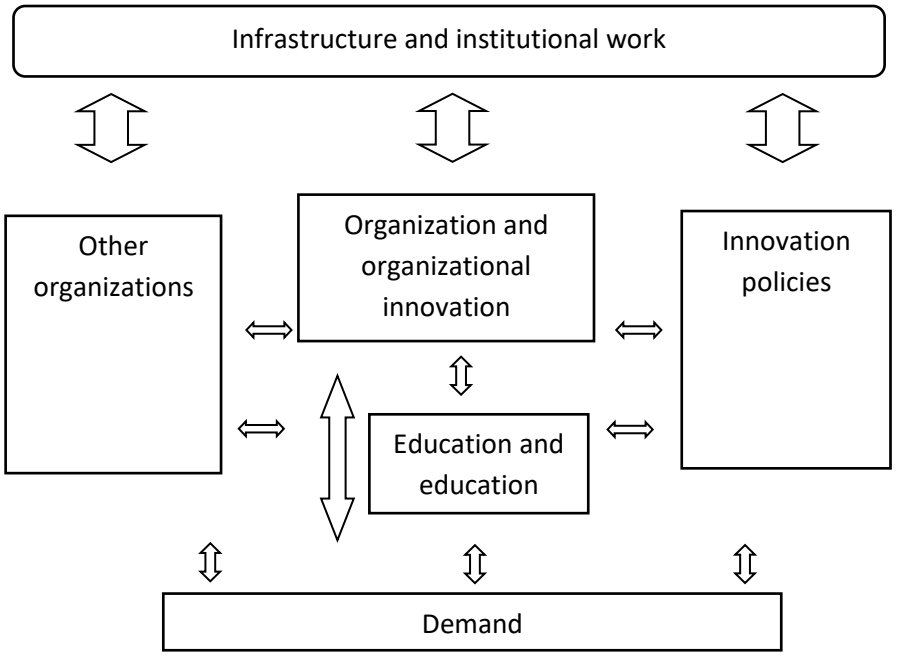


Source: author's construction based on Hansen, M. T., Birkinshaw, J., 2007. The Innovation Value Chain

Fig. 3. **Organizational innovation measurement framework of Innovation value chain**

Innovation value chain helps to understand where, which parts of organization are needed to look at, which of them need to be improved, which are not so important at the moment. The drawback of the model is that sometimes weakest link are neglected and organization managers do not evaluate them at all, thus minimizing the ability of the organization to innovate. One or argument against is that being big and having scale is not a key aspect to competitive advantage and profitability. Measuring the innovation value chain is less effective in social era as the measurement framework could miss some element that happen too fast in these conditions as there is lack of systematic information in organizational innovations.

4. *Oslo Manual* Innovation measurement framework is proposed by *Oslo Manual*. *Oslo Manual* proposes guidelines for collecting and interpreting innovation data that is developed by joint guidance of OECD and Eurostat. 3rd edition of *Oslo Manual* that gives insight in Organizational innovation measurement is result of work of OECD Party of National Experts on Science and Technology Indicators (NESTI) and ESTAT STI Working Group. Provided framework gives an insight based on different theories, using various approaches and views innovations as a system.



Source: author's construction based on OECD, OSLO Manual, The Measurement Of Scientific And Technological Activities, Proposed Guidelines For Collecting And Interpreting Technological Innovation Data

Fig. 4. **Organizational innovation measurement framework of *Oslo Manual***

The main objects on which *Oslo Manual* is based are innovation in the organization, in the case of this research organizational innovation. Linkages with other companies and with research institutions are measured in quantitave and qualitative way. Institutional framework in which firms operate that has many possibilities to give freedom of choices and improve the innovativeness of the company as well s may restrict it and not to give any opportunity to perform organizational innovations. The role of demand must be looked at as there is no necessity to implement innovation policy if does not positively affect productivity of the company.

Oslo Manual is criticized much less, but the question is – does not it happen because of respect to the OECD or because it has less downsides. But still it is important to mention that subject based approach for innovation based researches have drawbacks. First of all it has very low valid time period as the turnover of staff is fast; it is almost impossible to compare data sets as there are almost no data on the field of innovation; weak significance and representativeness of response rates as well as subjective point of view could be limitation for the using of this model.

2. Proposed elements for organizational innovation measurement model

Using previous studies elements it has been pointed out to take into account developing metrics for the measuring of organizational innovation. As organizational innovation is increasing in importance of firm strategy development but existing are not sufficiently adaptable to the changes in the innovative world due to it fast development and apparition of new variables. Everything mentioned above has been leading to development and creation of new metrics to increase accuracy of the findings that must include:

- Measurement of organizational innovation must consist of combination of implementation of innovation and contribution it gives to the company. Certain inputs must be used for organizational innovation to occur and an exact input depends on the wished contribution from implementation of the organizational innovation, in this case inputs must be pointed out and compared with the outputs.
- The outputs in organizational innovation are unpredictable; it must be taken into account during the research and development of metrics. The inputs to innovation are easy to characterize; they will always be resources and assets. The outputs, however, are difficult to characterize, especially before the process is complete.

  The outputs are unpredictable because innovation is complex, nonlinear, and risky; responds to opportunities; and inherently includes aspects of serendipity (Gamal, D., 2011). Thus it is not worthy to base research on outputs, but consider them only as side effect, especially taking into account idea that in organizational innovation output may be the input of the next stage of innovation.
- Organizational and culture analysis have to be shown as important factor for a company to perform as it is important to be considered innovative nowadays. One of the desired outputs of any innovative project (even if it failed) is that it improves the image or brand reputation of the company (Maniak, 2015). This is point at which research could see a result of organizational innovations, if the image or brand reputation of the company has been improved after the implementation of the organizational innovation.
- Measurable and non measurable organizational innovation must be included in research. Measurable innovation has a physical embodiment and cost (tools, technologies, materials, markets, and needs in the situation at hand). But non-measurable organizational innovation more often are considered with connection of knowledge. It is even said that knowledge could be a key factor in implementation and adoption of organizational innovation. Numbers of organizational innovation processes are connected with knowledge and money is invested in that.
- Possibility to make mistakes and to fail has made learning experience in high demand and has put high value to new management style as well is one of the points of knowledge dimension. Scholars show the examples of failures that

led to successful projects. Also, larger industrial firms have produced innovative results by reusing technology from previous projects to use it in different sectors (Chapel, 1997). It is called "multi-project lineage management" (Maniak et al, 2014). Researchers as well have managed to map the knowledge used in a project and its trajectory throughout time (the Concept-Knowledge theory, Hatchuel et al., 2002). It means that it is important to show in the study how many mistakes the company has made during its way to organizational innovation.

- Financial analysis must be performed as well. Real option theory, which gives an estimated value of a company, is based on the aggregated potential output value of its innovation projects according to several scenarios. Tools like the balanced scorecard (from portfolio analysis) are designed to help firms' management teams to improve multi-project management methods. This approach places emphasis on portfolio management tools that promotes idea sharing between units in the company and between different types of projects (Sidhu, I., at al, 2016). The drive for innovation must include consideration of the demand side which determines the rate of investment and diffusion (take-up) of organizational innovations.
- Outsourcing has become a trend in innovation (Chesbrough, 2003), as it shows the ability of a company to find, see the perspective and to implement innovation that was developed outside its perimeter. More often it is used by SME's as they do not have R&D facilities, for large companies outsourcing is more difficult as the question rises, why best organizational innovation idea comes not from their own R&D department, do they even need to have one. So it is necessary to include the possibility and evaluation of the firm to usage the outsourcing if it is possible with the result of this activity even if it is negative.
- The role of creativity in organization innovation field has begun to develop. More and more companies rely on creativity management to boost their "creativity capital". Methods like TRIZ or Six Thinking Hats help teams and individuals to be more creative and to use their new ideas for the benefit of the business. (Mann, 1998) Other methods can help to measure the creativity of a person, such as the Guilford Method, which is based on a person's divergent thinking ability (Guilford, 1967). These methods aim at triggering new forms of creativity and therefore, lead to a new need for measurement of creative capacities based on various factors, e.g. the number of ideas shared, their eccentricity level, or the social value of the ideas that is seen in Csikszentmihalyi's Systems Model (Csikszentmihalyi, M., 2014). It is necessary to mention that these ideas are not focused on the individuals' entrepreneurship skills and mindsets. But it would be important to look at creativity capital of the company and evaluate it using the developed metrics.

Talking about organizational innovation two main trends in research could be identified, one tries to measure implementation of organizational innovation, such as R&D intensity, the other is keener on results, such as patents and patent-related index. It is necessary to understand that the real link between this measures and organizational innovation is not proved and still very unclear. In the research author came to conclusion that models that are used in case of measuring organizational innovation exist, but have drawbacks, so propose for the next research paper is to develop new model using tools from existing models, but make it more precise in Latvian economic conditions.

Keeping in mind everything mentioned above author proposes to base the new measurement tool on *Oslo Manual* developed by OECD. Including five organizational innovation dimensions: (1) Innovation ability and strategy; (2) Innovation Management ability; (3) Linkages and accessing knowledge; (4) Organization and culture; (5) Innovation Outputs. The aim of this model is to develop a framework which can be used to compare levels of innovation capability between different companies in one/ different sectors to identify priorities for policy and strategy development as for companies as for government bodies.

Before the further development of new organizational innovation measurement tool author proposes to look at different government developed tools around the world, to have see the difference between research developed models and government used tool, so it would help to introduce better and more precise tool for measurement.

Conclusions, proposals, recommendations

Conclusions

1. Process of organizational innovation is non linear at the national level and at the firm level, it is iterative process where results from previous activities may become the necessary elements for further activity; innovation process is not limited within one company; Measuring of organizational innovation is complex and multidisciplinary activity that could not be measured using one element, a composite measure is needed that will transparently show innovativeness of organization.
2. Findings of the empirical studies of organizational innovation regularly differ extremely; the variations of results in the field are beyond interpretation and despite a lot of studies being performed findings have not been cumulative. Recent studies suggest that R&D spending has no significant relationship with success.
3. Effects of product and service innovations can be directly measured by monetary indicators, organization innovations are not directly visible in shares of sales and are therefore more difficult to measure.
4. For measuring innovation performance a broad range of metrics have been (and still are) used, these measures lack precision and do not take into account the iterative process.
5. For more precise metrics information below must be taken into account: (1) Combination of implementation of innovation and contribution it gives to the company; (2) Outputs in organizational innovation are unpredictable, and the process itself could be iterative; (3) Organizational innovation can be measurable and non measurable. Measurable innovation has a physical embodiment and cost. But non- measurable organizational innovation more often are considered with connection of knowledge. During the research both must be taken into account; (4) Before any implementation of organizational innovation, company/ researcher must understand and perform a research of the resources, tools, technologies, materials, markets, and needs, as well as financial analysis must be carried out as was mentioned before, innovation outputs are unpredictable, and without stated elements before innovation process, it would be impossible to perform any precise measurements. In case of research elements must be stated to make a comparison between different companies. From the side of the company any implementation of the not researched innovation could not be effective and just wasting of time and efforts. (5) Organizational and culture analysis must be performed; (6) Evaluation of learning experience, outsourcing and creativity capital is important elements.
6. Two main trends in research of organizationa; innovation could be identified, one tries to measure implementation of organizational innovation, such as R&D intensity, the other is keener on results, such as patents and patent-related index. It is necessary to understand that the real link between this measures and organizational innovation is not proved and still very unclear.
7. In this paper author looked at four the most common organizational innovation measurement frameworks: (1) Dominant Diamond Frame; (2) Innovation funnel; (3) The innovation value chain; (4) *Oslo Manual* Innovation measurement framework and decided to base future model on *Oslo Manual* with further development of the existing model.
8. Each of the frameworks has drawback that must be taken into account developing measurement tool for further studies: (1) DDF – at least one more dimension of inputs must be included; (2) IF – could give not a precise result which could be easily misunderstood because of wrong data of the input; (3) IVC – could miss some

information, overlook some important elements in innovative companies; (*Oslo*) – shows short time period of valid data and low significance of the results.

Proposals

1. It is concluded that models that are used in case of measuring organizational innovation exist, but have drawbacks, so propose for the next research paper is to develop new model using tools from existing models, but make it more precise in Latvian economic conditions.
2. It is proposed to base the new measurement tool on *Oslo Manual* developed by OECD. Including five organizational innovation dimensions: (1) Innovation ability and strategy; (2) Innovation Management ability; (3) Linkages and accessing knowledge; (4) Organization and culture; (5) Innovation Results. The aim of this model is to develop a framework which can be used to compare levels of innovation capability between different companies in one/ different sectors to identify priorities for policy and strategy development as for companies as for government bodies.
3. It is advised to look into dimensions mentioned above including elements that were stated important (1) combination of implementation of innovation and contribution it gives to the company; (2) it is not worthy to base research on outputs, but consider them only as side effect, especially taking into account idea that in organizational innovation output may be the input of the next stage of innovation; (3) organizational and culture analysis; (4) measurable and non measurable organizational innovation; (5) it is important to show in the study how many mistakes the company has made during its way to organizational innovation; (6) financial analysis; (7) possibility and evaluation of outsourcing; (8) creativity.
4. Before the further development of new organizational innovation measurement tool author proposes to look at different government developed tools around the world, to see the difference between developed models and government used tools, so it would help to introduce better and more precise tool for measurement.

Bibliography

Bakan, I., Doğan I. F., 2012. *Competitiveness Of The Industries Based On The Porter's Diamond Model: An Empirical Study.* ResearchGate, January 2012.

Chapel, V., 1997. *La croissance par l'innovation intensive: de la dynamique d'apprentissage à la revelation d'un modèle industriel – le cas Téfal*. Unpublished doctoral dissertation, Ecole des Mines de Paris, 1997.

Chesbrough, H. W., 2003. *Open Innovation: The New Imperative For Creating And Profiting From Technology*. Boston: Harvard Business School Press, 2003.

Christensen, Cl.M., Kaufman, St. P., Shih, W. C., 2008. *Innovation Killers: How Financial Tools Destroy Your Capacity to Do New Things.* Harvard Business Review, January 2008.

Csikszentmihalyi, M., 2014. *The Systems Model of Creativity*. Springer Netherlands, 2014, DOI 10.1007/978-94-017 9085-7, ISBN 9789401790857.

Daft, R. L., 1982. *Bureaucratic Versus Nonbureaucratic Structure And The Process Of Innovation And Change*. In S. B. Bacharach (Ed.), Research in the sociology of organizations, vol. 1: 129-166. Greenwich, CT: JAI Press.

Damanpour, F., & Evan, W. M., 1984. *Organizational Innovation And Performance: The Problem Of Organizational Lag*. Administrative Science Quarterly, 29: 392-409.

Downs, G. W., & Mohr, L. B., 1976. *Conceptual Issues In The Study Of Innovation*. Administrative Science Quarterly, 21, 700-714.

Four Ways to Measure Creativity [Online] Available at: http://www.senseandsensation.com/2012/03/assessingcreativity.html [Accessed 15 January 2019]

Fredriksson, N., Wikberg, J., 2015. *The Relationship Between R&D Spending And Firm Economic Performance A Regression Study Of Firms In The Industrial Equipment Manufacturing Industry*. Chalmers University Of Technology Gothenburg, Sweden 2015.

Gamal, D., 2011. *How To Measure Organization Innovativeness?* Innovation support department, 2011.

Ganotakis, P., Love, J. H., 2012.*The Innovation Value Chain In New Technology-Based Firms : Evidence From The U.K*. Journal of Product Innovation management, Vol. 29, No. 5, September 2012, p. 839-860.

Gault, F., 2016. *Defining and Measuring Innovation in all Sectors of the Economy: Policy Relevance*. OECD Blue Sky Forum III, Ghent, Belgium, September 19-21 2016.

Gittelman, M., 2008. *A Note on the Value of Patents as Indicators of Innovation: Implications for Management Research.* Academy of Management Perspectives Vol. 22, No. 3, August, 2008, pp. 21-27.

Guilford, J.P., 1967. *The Guilford Measures: Measuring A Person's Creativity.* [Online] Available at: http://www.senseandsensation.com/2012/03/assessing-creativity.html [Accessed 30 January 2019]

Hakkarainen, K. & Talonen, T., 2014. *The Innovation Funnel Fallacy*. International Journal of Innovation Science, 2014. 6. 63-72. 10.1260/1757-2223.6.2.63.

Hansen, M. T., Birkinshaw, J., 2007. *The Innovation Value Chain*. Harward Business Review, June, 2007.

Hatchuel, A.,Weil, B.,2002. *C-K Theory: Notions and Applications of a Unified Design Theory*. Proceedings of the Herbert Simon International Conference on "Design Sciences", 2002.

Jaffe, A. B., 1986. *Technological Opportunity And Spillovers Of R&D: Evidence From Firms' Patents, Profits And Market Value*. National Bureau of Economic Research, 1986.

Kirner, E. at al, 2008. *Measuring organisational innovation – concepts, indicators and outcomes*. Fraunhofer Institute for Systems and Innovation Research (ISI) 6 CP Workshop Non-Technical Innovations – Definitions, Measurement and Policy Implications Karlsruhe, October 16-17, 2008.

Mann, D.L., 1998. *Case Studies in TRIZ: A Comfortable Bicycle Seat*. The TRIZ Journal, December 1998.

Mann, D.L., 2001.*The Space Between Many Generic Solutions and My Specific Solution*. The TRIZ Journal, June 2001.

Mehrizi, M., H., R., Pakneiat, M., 2008. *Comparative Analysis Of Sectoral Innovation System And Diamond Model (The Case Of Telecom Sector Of Iran)*, Journal Of Technology Management & Innovation, Volume 3, Issue 3, March, 2008, p. 13.

Merchant, N., 2012. *Why Porter's Model No Longer Works*. Harward Business Review , February 29, 2012

Morris, L., 2008. *Innovation Metrics, The Innovation Process and How to Measure It*, An InnovationLabs White Paper, InnovationLabs LLC, November 2008, p. 21.

OECD, *OSLO Manual, The Measurement Of Scientific And Technological Activities, Proposed Guidelines For Collecting And Interpreting Technological Innovation Data*, 2005. [Online] Available at: http://www.oecd.org/science/inno/2367614.pdf [Accessed 29 January 2019]

Porter, M. E., 1985. *The Competitive Advantage: Creating and Sustaining Superior Performance*. NY: Free Press, 1985, (Republished 1998).

Porter, M., 1990. *The Competitive Advantage Of Nations*. Harward Business Review, March/ April, 1990, p. 21.

Remi, M., Midler, Ch., Lenfle, S., and Le Pellec-Dairon, M., 2014. *Value Management for Exploration Projects*. Project Management Journal 45 (4),55–66, 2014.

Roper, S. at al, 2006. *Modelling The Innovation Value Chain*. Research Policy 37, 2006, p. 961–977.

Sidhu, I. at al, 2016. *Berkeley Innovation Index*: An Approach for Measuring and Diagnosing Individuals' and Organizations' Innovation Capabilities.* Sutardja Center for Entrepreneurship & Technology Technical Report, 2016.

Srinivasan, R., 2014. *The management consulting industry: Growth of consulting services in India: Panel discussion*. IIMB Management Review, Volume 26, Issue 4, December 2014, p. 257-270.

Tidd, J., Bessant, J., Pavitt, K., 2005. *Managing Innovation Integrating Technological, Market and Organizational Change,* John Wiley & Sons, LTD, Third edition, 2005, p. 602.

Van Horne, C. at al, 2006. *A Value Based Innovation Model*. [Online] Available at: https://www.researchgate.net/publication/267717765_A_value_based_innovation_model [Accessed 25 January 2019]

Zaltman, G., Duncan, R., & Holbek, J. 1973. *Innovations And Organizations*. New York: Wiley, 1973.

SOURCES OF FINANCE IN THE IGAMING INDUSTRY: THE CASE OF MALTA

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Abstract. Direct gross value added generated by the iGaming Industry in Malta amounted to 12% Gross Domestic Product. Generating €700 million and employing 9,000 people. A growth rate of 11.9% over the activity registered during the same period in 2015.

Notwithstanding this growth rate and the importance of this activity for Malta, the industry has limited sources of finance. Most local based banks do not grant loans to this industry and this has made it difficult for them to raise funds. Therefore, in this paper, we lay out the analyses and discussions on the lack of appetite by local Banks for this exposure. In doing this, we analyse and discuss the risk perception of local Banks on RGs and seek to determine the current and possible appetite for sources of finance available to and required by RG companies residing locally. We will also, evaluate and recommend changes in the RG company structure, processes or other to promote more comfort for local banks. This by analysing data collected through self-administered semi-structured interviews with 32 personnel working in RG companies 28 personnel working in 27 locally licenced credit institutions.

Finding show that (1) RG companies are cash rich, due to their operations and therefore additional support of financing in the form of bank borrowings is only required for aggressive growth, (2) the lack of risk-appetite is due to reputation with corresponding banks, who do not have an appetite for transacting with RG companies, (3) there is a lack of communication between the two industries.

Key words: *Remote Gaming Companies; Credit Institutions; Sources of Finance; Regulatory Requirements, Malta*

JEL code: G30, O16

1 Introduction

Gambling has been a practice that has been around in some form or another for thousands of years. The introduction and advancement in technology and new communication systems has created a new way of gambling referred to as remote gaming (RG) Farrugia (2011), which Zammit et.al. (2016), Grima et, al. (2017), define as any form of gaming by means of distance communications.

The first online betting site in Malta was launched in the year 2000, under the "Operation of Betting Offices Regulations (S.L. 70.04)", which at the time regulated offshore betting offices. Consequently, the Lotteries and Gaming Authority (LGA) was set up as a single, independent and authoritative regulatory body (De Marco, 2011). This authority was rebranded as the "Malta Gaming Authority (MGA)" in 2015.

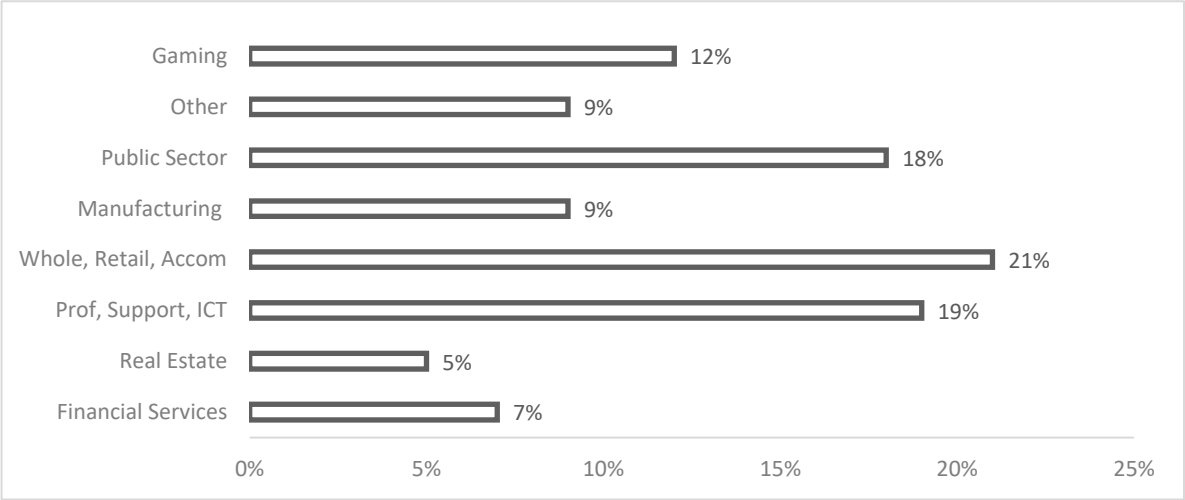
The MGA, Interim financial report for January to June 2016, indicates that the direct gross value added generated by this Industry amounted to 12% Gross Domestic Product. Generating €700 million and employing 9,000 people. As at June 2017, 275 Remote Gaming Companies (RG) companies, including giants Betsson, Tipico, Betfair, now call Malta home. A growth rate of 11.9% over the activity registered during the same period in 2015 (Chetcuti Cauchi, 2016) (NSO, 2017).

Notwithstanding this growth rate and the importance of this activity for Malta, the gaming industry faces unique challenges that impact established entities and those contemplating entry in the market. The industry has limited sources of finance. Most local based banks do not grant loans to this industry and this has made it difficult for them to raise funds.

As a result, in late 2016 a Luxembourg-based bank Catella Bank S.A., formerly known as Banque Invik S.A., launched their operations at the Westin Dragonara Resort in Malta. The bank's aim in Malta is to bridge the gap in the market between the iGaming businesses and other credit institutions (MaltaProfile, 2016).

Therefore, in this paper, we lay out the analyses and discussions on the lack of appetite by local Banks for this exposure. In doing this, we analyse and discuss the risk perception of local Banks on RGs and seek to determine the current and possible sources of finance available to RG companies residing locally and for which they have an appetite for. We also, evaluate and recommend changes in the RG company structure, processes or other to promote more comfort for local banks.

Although, RG in Malta has been the focus of many authors, such as Briffa (2009) who evaluated the tax implications, Bartolo (2010), who carried out a review of the auditing implications and Farrugia, (2013) who studied the accounting techniques, as far as we are aware no studies have addressed the issue of financing of RG companies in a small European state.



Source: Adapted from The National Statistics Office, Malta (NSO), 2017

Figure 1 **The Economic Value Added (January - June 2016)**

2 Literature

Malta's gaming industry benefits from low official fees and gaming taxes. The Maltese legislation together with the attractive, ingenious and unique Income Tax Act specifically for international companies aids in making Malta a very popular destination for RG companies. In addition, unlike several other small European Union Member (EU) island states, Malta has strong and diverse political parties, a centralized system of government and a rigid system of legal checks and balances (Pirotta, 2001). Various prominent researchers like Briguglio (1995), Bezzina et al., (2014) and King (1993) used islands of a small scale as case studies and laboratories for more complex politics of larger countries.

Despite the rapid growth of online gambling in the last few years and the direct contribution, it has had on the European economy, a clear definition of what constitutes "online gambling" is still lacking. Due to this absence, the definition of "online gambling" remains vague and broad, and therefore it can be said that it encompasses any type of gaming offered by means of distance communication (Chetcuti Cauchi, 2014).

2.1 Gaming in Malta: The regulatory framework implanted within the gaming sector in the Maltese island provides for several innovative incentives. Cuschieri (2014) stated that the advantage of Malta as the jurisdiction of choice for gaming establishment is undisputed due to the legislation and the attractive, ingenious and unique Income Tax Act specifically for international companies. Foreign companies operating locally are subjected to a flat income tax rate of 35% on the contributed profits. Although this is relatively high, shareholders are entitled to claim back part or the whole of the tax paid by the Maltese company (Anchor Corporate Services, 2015).

Gaming in Malta is mainly regulated by virtue of the remote gaming regulation (RGR), issued in terms of the Lotteries and Other Games Act, 2001. The LGA is the single, independent and authoritative regulatory body responsible for all gaming activities conducted in or from Malta (De Marco, 2011. As noted above, in 2015 the LGA has undergone a complete rebranding, including a brand new logo and the intuitive name MGA.

The First Schedule of the RGR outlines four classes of licenses, each subjected to a minimum share capital requirement. The latter depends on the type of license applied for to commensurate the underlying gaming risk of the operation. The minimum capital requirement is the share capital that must be deposited by shareholders before starting business operations, and as a general rule, this sum is not repayable. The latter refers to the nominal value of the share capital (Elliot, 2010) and its primary legislative purpose is for identification and capital maintenance. Once the business operations initiates, each section of the business arranges its activities to maximise its contribution towards the achievement of the corporate goals (Pike and Neale, 2006).

2.2 Sources of Finance: To achieve the objectives of the company one needs financing, which Torteska, (2012) defines as an efficient and effective management of the company finances. Bates and Hally (1982), highlight that businesses require finance on four occasions. Initially, for the start-up capital, secondly to finance expansions, thirdly is when "venture capital" is needed or/and also to alter the existing business' financial structure.

A company can fund its development through two sources: internal sources and external sources. Cash flows engendered by every day working operations and existing assets of the company pertaining to internal financial sources (Damodaran, 2010). The theory of capital structure describes the phrase of external financing as the funds that firms obtain from outside of the firm. In addition, external financial sources are further subdivided into debt financing and equity securities. Debt financing, include, amongst others, bank loans, corporate bonds and leasing.

According to different authors, retained profits, loans and leasing, are the most used sources to finance both current and investment activities (Donosa et al., 1999).A prudent corporate finance practice involves using more than one option, applying a mix of debt financing and equity securities. However, the type of finance chosen depends on a number of factors: the type of business, available sources of financing, the level of required finances, and other.

There are several useful conditional theories of the debt-equity choice. Baumol et al. (1970) established that externally raised finance was associated with higher returns than internally raised finance. However, in some research findings, it is documented that firms exhibit a clear desire for internal funds, such as retained earnings, over external sources of financing (Brealey & Myers, 1996; James & Wier, 1988; Pinegar & Wilbricht, 1989). The above evidence is consistent with the pecking order theory (Myers & Majluf, 1984). This theory concludes that the primary sources of financing are the internal, subsequently the debt sources as external, and lastly the equity sources are external (Eckbo, 2008, p. 151).

A number of explanations have been proposed for this preference for internal funding, including the fact that such funds provide managers with greater flexibility. The latter is due to the fact that managers can finance more quickly since there are fewer restrictions in choosing development projects and also they can raise funds externally in the future (Park, 2000, p. 1). On the other hand, firms incur flotation costs when raising external funds (Smith, 1977). The third reason for this preference is asymmetric information between managers and investors, whereby the market possess the tendency of undervaluing the firm's new shares (Myers & Majluf, 1984).

2.2.1 Debt or equity decision: The finance department is the corporate function, which deals the phase of funding (Rossi, 2014), choosing between issuing debt or equity (Jay, 2003). The capital structure decision refers to the choice between debt and equity financing (Brealey, Myers & Allen, 2010). According to the European Central Bank (2009, p. 30) debt financing is considered to be more dominant in relation to equity financing. The latter is consistent with the pecking order theory, (Myers & Majluf, 1984) whereby it is argued that equity is a less preferred means to raise capital. Brealey et.al., (2001) argued that the choice between equity and debt financing has no factual effects on the value of the firm or on the availability or cost of capital.

2.2.2 Debt Financing: Debt financing occurs when the corporation acquires a loan and as an exchange promises the other party to repay the loan over time, with interest. Prior to the decision regarding which type of debt the company should choose, Brealey et.al., (2001), argue that a company is to make the decision depending on the needs and purposes of financing.

2.2.3 Bank loans: The term loan is nothing more than a contract between borrower and lender covering promissory note/s where maturity (or maturities) covers several years (Walker & Baughn, 1961).

All companies have to raise short-term finance periodically and in most cases, this is usually provided by banks (Casu et al., 2006, p. 64). For corporate sectors in most economies, bank loans are considered the primary source of financing, since these are generally a quick and straightforward way to secure the required funding. Given that bank loans entail complex procedures and the fact that start-up companies are usually founded by young people, most of these companies seek to avoid bank loans (Calopa et. al. 2014). In addition, such companies face difficulty in obtaining bank loans as these are issued based on the company's or individual's credit history and property (Calopa et al., 2014).

Loans are approved by banks on the bases of management projects and forecasts for the forthcoming business. The bank's decision is based on internally collected information. Thus if the firm does not have a well-established reputation and is not yet well known, it would be difficult for the bank to grant the loan.

2.2.4 Corporate bonds: A bond is a debt obligation whereby the issuer of the security promises to pay a specified amount of money at specified future dates (Fabozzi & Mann, 2005) while it gives the lender prior claim if the firm is in financial distress (Baker & Martin, 2011). These are instruments whereby the company has the ability to borrow money directly from the public (Bodies et al., 2009) by selling them to investors.

The advantage of using bonds to raise finance include the fact that with bonds the existing shareholders do not have their value diluted and also more cash is retained within the business. The latter is because the company allots the terms of the bond, such as the setting, the redemption date several years after the issue date.

2.2.5 Leasing: Leasing is a contract between two parties, whereby the lessor provides the lessee with an asset for usage and for a specified time, in return for specified payments (Fletcher et al., 2005).

This activity allows access to the use of capital equipment by those borrowers that have limited track record or credit histories. This is also often the case where these borrowers would not qualify for traditional commercial bank lending (Gallardo, 1997; Berger and Udell, 2005). Krishnan and Moyer (1994) consider leasing as "the last financing resort".

2.2.6 Equity Financing: Equity pertains to the net amount of funds invested in a business by its owners, plus any retained earnings. This concept also refers to the various types of securities available that can provide an ownership interest in a corporation to raise funds for business purposes.

The most important forms of equity financing are the issue of common and preferred stocks, initial public offering, business angels and venture capital. Common Stock and preferred stock, are the two main types of stocks that are sold by companies and freely traded amongst investors on one or more exchange stocks.

Common stock, alias equity securities or equities, grant the right to its owner to vote on any matter of corporate governance during the corporation's annual general meeting (Bodie et al., 2009). Common stockholders can be either individual investors or financial institutions (Torteska, 2012).

Two of the most important characteristics of common stock as an investment are its residual claim and limited liability features. As per definition, the residual claim is the right of a shareholder to the profit of a company after all prior obligations have been paid to all the claimants, such as tax authorities, bondholders, and other creditors (Watson & Head, 2007, p. 95). Limited liability means that the shareholders are not responsible for their personal assets for the company obligations.

Two major benefits of issuing common stock are debt reduction and liquidity. Whereby, liquidity refers to the fact that if company management believes that the business requires immediate cash, issuing common stock is one potential solution for the needed cash (Bragg, 2012).

Preferred stock, has evolved into complex security with several optional properties (Bonnevier and Borke, 2014). It is legally treated as equity, but as a financial instrument, it has more in common with debt (Berk et al., 2011). Preferred shareholders, have a senior claim on assets in the event of liquidation, and hence preferred stock is junior to debt, but senior to common equity in the capital structure (Berk et al., 2011).

To a company, a preferred stock issue has a wide range of advantages compared to the issuing of corporate bonds. A most important advantage of preferred stock is that stockholders cannot force the company into bankruptcy and do not share in unusually high profits of the company (Karmazin and Bondar, 2014).

An Initial public offering can be defined as the first selling of a company's stock to outside investors and then letting the stock trade in public markets (Bringham and Ehrhardt, 2005).

Going public is an attractive alternative for most companies because of the many advantages it confers. It enables a company to have better access to capital, to diversify its investments and increase its reputation.

Moreover, it increases market value for the company, because the illiquidity discount applicable to private company stock would be eliminated (Allison, 2008). However, it is often an expensive process, which increases the exposure of private information to the shareholders, thus reducing the level of control (Georgieva, 2011).

2.2.7 Non- Institutional Finance: Since businesses, especially start-ups, may not be eligible for direct support from a financial institution, therefore they might opt for non-institutional finance, which includes personal resources, supplier financing, seller financing, business incubators, franchising, joint ventures, crowdfunding and co-branding.

Business Angels and Venture Capitalists:- Fiti et al., (1999, p. 144) argues that angel investors are individuals who have available financial means and are ready to invest in entrepreneurship ideas.

Today's banks are even more reluctant and conservative than in the past to fund firms that are perceived as risky and lack collateral. However, angel investors pool funds to fill this funding gap (OECD, 2011).

Venture Capitalists (VCs), usually choose to invest in businesses, which are typically privately owned, their shares are not listed on the stock exchange and also carry restrictions regarding their transfers (Gladstone, 1989).

Bottazzi et al., (2008) show that VCs help to recruit managers and directors, help raise funds, and interact frequently with their portfolio companies. Both business angels and VCs have a high concentration of their total investment in seed and early-stage ventures, whereby the risks associated with innovation are the highest (Folta, 2016). In contrast, a short and insightful comparison between angels and VCs are given by Hill and Power (2002), who note that "Angels invest their own money; VCs invest other people's money".

Crowdfunding: is defined by Raymond Michaels (2015), in an article in the International Banker, "how crowdfunding is challenging the banking sector",as "an effort by various parties based around the world to pool their resources together in order to collectively support a project, initiated by an individual or an organization. He shows how the explosive growth

in the number of crowdfunding platforms appear to be filling a gap for small businesses deemed to be too risky to obtain financing through traditional banking methods Michaels (2015).

2.3 Regulatory Requirements:

Three important and influential regulatory requirements in the financial sector and funding are anti-money laundering procedures (AML), customer due diligence (CDD) and know your client (KYC).

2.3.1 Money Laundering: is the process by which a large amount of illegally obtained money is given the appearance of having originated from the legitimate source (Kumar, 2012). This type of fraud often involves a complex series of transactions that are usually difficult to separate. However, money laundering is usually considered as a three-stage process (Schroeder, 2001): placement, layering and integration.

Law enforcement identified a number of business sectors where investigations have highlighted money-laundering vulnerability. Casinos, including remote casinos, fall within the list of non-financial businesses subject to anti-money laundering legislation (MHA, 2009). On the other hand, Mangion (2010) argues that the argument that online gambling is more susceptible to money laundering is just a myth. Online gambling is unlikely to be used for money laundering because there are no anonymous cash transactions.

2.3.2 The EU Forth Anti Money Laundering (AML) Directive: The implementation of the EU Fourth AML directive within the iGaming industry brought with it significant changes to the AML regime of gambling providers (KPMG, 2016). Companies are now required to demonstrate that they have taken appropriate steps to identify, assess, understand, and mitigate AML risk. In addition, to comply with the Bank Secrecy Act and Patriot Act regulations, financial institutions must assign an AML risk rating to each customer.

The Fourth EU AML directive requires subject persons to have a thorough knowledge of their customers and thus requires designing a customer due diligence (CDD) processes. These policies require that financial institutions identify and verify the identity of customers based on the information obtained from reliable sources (McLaughlin & Pavelka, 2013).

CDD guidelines require that covered institutions collect identifying data on account holders or the beneficiary (i.e., beneficial owner) on whose behalf the holder is acting, proof of the customer's identity and information concerning their circumstances (Levy & Reuter, 2006, p. 297). The Fourth Directive expands on the circumstances in which CDD should be carried out, and includes a maximum retention period of five years for CDD documentation.

Know Your Customer (KYC), is a principle under which CDD policies and procedures are implemented. This program involves taking reasonable efforts to determine the identity and beneficial ownership of accounts. Ultimately, the program leads to the filing of reports about suspicious activities; these reports are generally referred to as "suspicious activity reports" or SARS (McLaughlin & Pavelka, 2013).

2.4 B2B and B2C Remote Gaming Operators

One of the most important projects of the MGA for 2016 was the introduction of The Lotteries and Gaming Act, 2016. This new regime will have a joint B2B and B2C licensing system rather than being split into multiple classes.

Business to business (B2B) applies to those companies who want to market their goods or services exclusively to other business and not to consumers. Howbeit business to customer (B2C) applies to those businesses that want to market their goods or services to consumers (Kumar & Raheja, 2012).

In terms of perceived risks, a B2B activity is commonly viewed to possess higher perceived risks compared to B2C activities due to the value of each transaction (Anon, 2017). Harris (2012) contends that in the Swedish legislation there is no distinction in the legal framework that separates B2B and B2C operators. Meanwhile, the Maltese law creates a distinction between the law applicable to B2B and B2C.

2.5 RG Industry and Banking Industry

As already explained above, iGaming operators, in Malta, experience problems to raise funds as banks seek to diversify their portfolios and decrease exposure to the gaming industry (MaltaProfile, 2017). MaltaProfile (2017) highlights that this may be due to lack of communication about the local remote gaming industry with the Banking Industry, to better illustrate how related risks, including due diligence and anti-money laundering matters, are being managed. This is of great importance to instill greater confidence on both the regulatory and banking services fronts.

3 Methodology

Since the subject of this research was seen to be quite sensitive, interviews were considered the best way of collecting the required information. Two sets of self-administered semi-structured interview schedules were used with two different data subjects. Initially, we interviewed participants from the remote gaming companies and later participants from credit institutions.

In the first part of the interview, we collected five demographic data about the participant's company. Then we followed this with closed-ended questions categorized under two themes (1) sources of finance and (2) regulations, to guide the participants and then allowed them to elaborate further on their answer.

Although, we discussed all possible sources of finance, not all sources, were considered adequate by the participants, for the requirements of the Maltese RG companies. Therefore, in this article, we only considered those sources of finance for which the RG company stakeholders and prospective RG company stakeholders indicated that they have an appetite for and would use.

Alternative, non-institutional finance such as crowdfunding, although a successful source of finance for some European RG companies, was therefore not considered as one of the sources that current and prospective Maltese RG companies could seek for setting up in Malta, mainly since this type of finance has not yet taken off locally.

3.1 Sample

At the time of the study, the MGA's website listed 599 licensed operators. However, when contacted by e-mail to confirm that the list on the website is the updated version, they replied that since a licensee can hold various licenses, the actual number of active RG companies as at June 2017, stood at 275.

To achieve the second objective (interviews with participants from credit institutions) we contacted the Malta Financial Service Authority (MFSA) via email requesting the actual number of credit institutions that were licensed to operate in Malta at the time of the study. It was confirmed that as at end 2016, 27 entities held an MFSA license to operate as a credit institution in terms of the Banking Act.

Non-probability purposeful and snowballing sampling was used (Showkat, 2017), (King, 2005) to determine the sample of participants. After carrying out interviews with 32 personnel working in RG companies 28 personnel working in 27 locally licensed credit institutions we decided to stop collecting data since "saturation" had been reached (Guest et. al., 2006).

3.2 Data Analysis

Data emerging from the closed-ended questions were inputted into the SPSS application (Version 24) and it was subjected to the Kruskal-Wallis Test. For the data that included a Likert scale with five options, the mean values for statements considered were: values ranging from 1.00-1.79 as strongly disagree; from 1.80-2.59 disagree; 2.60-3.39 neutral; 3.40-4.19 agree and from 4.20-5 as strongly agree.

To analyse the open-ended answers, we carried out a thematic analysis of the transcripts of the open-ended questions of the interview (Braun and Clarke, 2006).

4 Research results and discussion

4.1 Interviewed Participant demographics

Table 1a: Size of RG companies

Start-up/Small Company	11.11%
Medium Sized Company	33.33%
Large Well Established Company	55.56%

Table 1b: Strategy of RG companies

B2B	11.11%
B2C	55.56%
Both	33.33%

Table 1c: Country of Domicile of RG companies

Malta	88.89%
Sweden	11.11%

The Table 1a, b and c, above show sizes of the RG companies, the strategies and the country of domicile respectively of were the interviewed participants work.

Table 1d: Size of Bank

Start-up/Small Company	25%
Medium Sized Company	25%
Large Well Established Company	50%

Table 1e: Strategy of Bank

Commercial Bank	38%
Retail Bank	63%

The Tables 2, e and d, above show the bank sizes and the strategies of were interviewed participants work. All participants interviewed were from a bank domiciled locally.

4.2 Sources of Finance

To determine the companies' sources of finance, participants were asked to select any of the following four types of internal sources of finance: Revenue, (2) Capital of Shareholders, (3) Internal loans and (4) Retained Earnings. They were allowed to make more than 1 choice. Figure 2, below displays the results.

As noted above, we only considered those sources of finance for which the RG company stakeholders and prospective RG company stakeholders indicated that they have an appetite for and would use.

Again as already noted above, alternative, non-institutional finance such as crowdfunding, although a successful source of finance for some European RG companies, was not considered as one of the sources that current and prospective Maltese RG companies could seek for setting up in Malta, mainly since this type of finance has not yet taken off locally.

Participants were also required to answer regarding the company's choice for external sources of finance. Here, 44% of the respondents noted that their company makes use of debt financings such as bank loans and the issuance of debt securities (bonds) (56% go for internal funding) and that 22% noted that their company makes use of equity securities (78% go for internal funding). Therefore, debt financing seems to be more prevailing than equity financing.

This is consistent with the pecking order theory, (Myers & Majluf, 1984) whereby it is argued that equity is a less preferred means to raise capital. This also commensurate with the literature on firms which exhibit a clear preference for internal funds, such as retained earnings over external sources of financing such as debt or issuing shares (Brealey & Myers, 1996; James & Wier, 1988; Pinegar & Wilbricht, 1989).

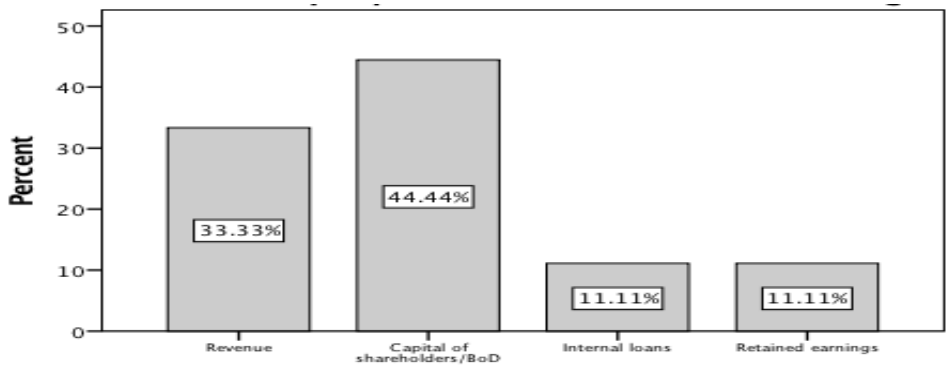


Figure 2. **What are the company's current internal sources of finance*?* (Source: Authors)**

RG participants strongly disagreed to the statement that, 'RG employees encounter difficulty when requesting personal bank loans'(M = 1.78), meaning that they feel that there are no issues for credit institutions to grant personal bank loans to employees that are working in the RG industry. This corroborates with the answers given by the bank participants wherein the majority (88%) noted that banks grant personal bank loans to personnel working in the RG industry. However, contrary to these findings, RG participants disagree to the statement that 'The local banks are supportive of the RG industry', (M = 1.89) and agreed to a statement on that their companies are experiencing difficulty in opening a basic bank account (M= 3.89). Nevertheless, one must note that the granting of a bank loan still requires a rigorous process prior to issuing it to ensure stability in the income and established employment.

Bank participants that noted instantly that their bank does not grant loans to RG companies (38%) explain that, this is the same as, in the case for not holding accounts, (that is since the entities and related employees are considered as high risk and fall out of the risk appetite of the bank (37%)). However, some also noted that their bank does not provide credit line facilities to any customer (25%). The latter shows that in Malta not all banks can or are issuing bank loans to remote gaming companies.

Although, as already highlighted above, bank loans are the primary source of financing for the corporate sector in most economies and convey a wide range of advantages to corporate customers, the majority (66.67%) of RG participants, answered 'no' to the question on whether their company requires support in the form of a bank loan. It was explained, however, that given that RG companies are quite cash rich, they do not necessarily require support in the form of bank loans. In fact, this corroborates to the fact that 63% of the bank participants highlight that RG companies have never requested a loan facility from their bank.

On the other hand, those that replied in the positive noted that they require bank loans in order to grow in an aggressive way, due to the increased competition in the industry. This support is required for mergers and acquisitions and not for operational use or in case of a substantial dividend payment. Interviewees that replied with a 'no' are those RG companies that sustain their operations through their regular inflow of money.

Notwithstanding that opening of RG company bank accounts, fall out of the banks' appetite since they feel that RG companies are considered as high-risk entities, 50% of bank participants noted that their bank holds accounts for RG companies. In addition, RG participants (67%) do not believe that their companies experience any problems to raise funds, even given the fact that banks seek to diversify their portfolios in line with their risk appetite framework, which is highly influenced by regulation. This may be since some RG companies do not even consider Maltese banks as an option, especially if they are using the US Dollar as their currency since the Maltese banks do not carry out a transaction in this currency with RG's. In addition, most of the RG companies have their parent company located abroad and thus they resort to foreign bank lending (78%). 67%, do not see the latter as a disadvantage since they have a good relationship with their foreign bankers. However, bank participants do not see this as a threat (M=1.75) (statement posed to bank participants ' foreign banks pose a threat to local banks for RG company accounts').

On the other hand, some small remote gaming companies mentioned that they encounter (resource and time) problems when resorting to foreign banks since this requires RG personnel to travel abroad for meetings with bank officials. Moreover, they also mentioned that the foreign banks charge higher interest rates on the loans.

44% of RG participants believe that it would be advantageous if their companies raised finance through bank borrowings, while the rest do not see any advantage (56%). The majority (75%) of the participants who believe that it would be advantageous (i.e.56%) are Large well-established RGs, while the other 44% are split as 20% Start-up/Small RGs, and Medium-Sized RGs and Large well established RGs 40% each.

Bank participants noted that their bank does not see 'B2B RG companies as less risky than B2C RG companies' (M=2.50). This does not corroborate with literature Anon's (2017) findings noted above.

The Kruskal-Wallis test results displayed revealed that the size of the company and the requirement for additional support through bank loans are not statistically significant with a p-value of ($\alpha = 0.766$). Therefore, it can be concluded that irrespective of the size (or stage of maturity) of an RG company, given the nature of RG companies' business, support in the form of a bank loan is not required.

4.3 Regulatory Requirements

The RG participants and bank participants as noted above by MaltaProfile (2017), agreed (M=3.44), (M=3.62) respectively, that the gaming industry and the banking industry lack communication with one another. Gaming companies, like banks, are subjected to stringent regulation both from local and foreign regulators, therefore, they should be able to relate more favourably especially about matters such as money laundering. RG participants noted also that better communication could give banks more comfort. Moreover, it was agreed by both participants that the MGA together with other relevant authorities should further strengthen the gaming industry in Malta through complimentary political and regulatory outreach initiatives (M=3.50) and (M=3.60) respectively (MaltaProfile, 2017).

However, RG and bank participants believe that because of the high volume of money these RG companies receive and since they operate online, the RG companies are more prone to be the target of money launderers (M=3.66) and (M=4.13) respectively. This corroborates with the findings that Casinos, including Remote Casinos, fall within the list of non-financial businesses subject to money laundering (MHA, 2009).

RG Participants agree (m=3.89) that 'the use of reputable payment service providers (PSPs) is considered as a measure to mitigate money laundering attempts'. Also, although as noted above, the EU Forth AML directive requires RG companies to demonstrate that they have taken appropriate steps to identify, assess, understand, and mitigate AML risk, only 78% of these participants assign AML risk rating on every customer, while the rest (22%) assign an AML risk rating only on some customers.

On the other hand bank participants are neutral with regards to this statement (M=3.00). This since the use of reputable PSPs by RG companies does not make the onboarding process safer and easier. However, bank participants agree that listed RG companies provide banks with more comfort as bank clients in relation to on boarding due diligence procedures (M=3.75). They highlight that this is since listed companies are subjected to more regulations, standards and have to provide more public information (EY, 2012).

In addition, bank participants feel that 'the implementation of the EU Forth AML directive within the iGaming industry implemented greater comfort within banks' (M=3.87) since the directive made the RG companies responsible 'subject persons' in terms of AML.

Conclusions

In conclusion the salient findings show that (1) RG companies are cash rich, due to their operations and therefore additional support of financing in the form of bank borrowings is only required for aggressive growth, (2) the lack of risk-appetite is due to RG company reputation with corresponding banks, who do not have an risk-appetite for transacting with them, (3) there is a lack of communication between the two industries.

Therefore, it is believed that in order to strengthen the iGaming industry in Malta one needs to start off with ensuring better communication to address the main findings of this study and any other new issues that may come out from these communications.

In addition, given that banks are reluctant to lend to RG companies, no-matter the size, and due to the tight regulatory requirements following the global recession, the Gaming regulators should seek to attract other non-traditional lending platforms such as Investment Crowdfunding Platforms, which although also face tight due diligence regulatory requirements, are more willing to invest in RG companies, independent of their size.

Bibliography

Allison, S. (2008). The Initial Public Offering Handbook. A Guide for Entrepreneurs,

Anchor Corporate Services (2015). Malta Company Taxation. Available at: http://www.anchor.com.mt/?corporate service=Company-tax-Malta [viewed 30/09/2017]

Anon (2017). What is B2B selling? Available at: https://slideplayer.com/slide/7064588/. [Viewed on 04/02/2018]

Baker, H.K., & Martin, G.S. (2011). Capital Structure and Corporate Financing Decisions: theory, evidence, and practice. Vol 15. John Wiley & Sons.

Bartolo, K., (2010). *Remote Gaming Companies in Malta: A Review of the Auditing Implications.* Bachelor of Accountancy (Honours), University of Malta.

Bates, J. and Hally, D. L.. (1982), *The Financing of Small Business, third edition*. Sweet and Maxwell, London.

Baumol, W.J., Heim, P., Malkiel, B.G. and Quandt, R.E., (1970), Earning Retenton, New Capital and the Growth of the Firm, *The Review of Economics and Statistics*. Vol 52, No 4, pp, 345-355

Berger, A. and Udell, G. (2005). *A More Complete Conceptual Framework for Financing of Small and Medium Enterprises*. World Bank Policy Research Working Paper No. 3795.

Berk, J.B., DeMarzo, P.M. & Haford, J. 2011, *Fundamentals of Corporate Finance*, 2 ed. edn, Prentice Hall, Boston, Mass.

Bezzina, F., Grima, S., Mamo, J., (2014) Emerald Group. Risk Management Practices Adopted by Financial Firms in Malta, Vol 40, No 6, pp. 587-612.

Bodie, Z., Kane, A., & Marcus, J., A. (2009). *Investments (8th ed.).* USA, New York: McGraw-Hill Education.

Bonnevier, J., & Borke, L.N., (2014) *A Preference for Preferred*. MSc. Stockholm School of Economics.

Bottazzi, L., Da Rin, M., andHellmann, T., (2008). *Who are the active investors? Evidence from venture capital.* Journal of Financial Economics 89, 488-512.

Bragg, S.M., (2012). Business Ratios and Formulas. New Jersey: John Wiley and Sons Inc.

Braun,V., & Clarke, V., (2006). Using thematic analysis in psychology, Vol 3 (2). pp. 77-101 [Online Version via Taylor & Francis Online] [viewed on 25/02/2018].

Brealey, R.A., Myres, S.C., & Allen, F. (2010). Principles of Corporate Finance. New York: McGraw-Hill, 10th edition.

Brealey, R., Myers, S., & Marcus, J.,A. (2001). *Fundaments of corporate finance* (3rd ed). New York: McGraw-Hill Education.

Brealey, R.A. & Myres, S.C. (1996). Principles of Corporate Finance. New York: McGraw-Hill, 5th edition.

Briffa, B. (2009): *Remote Gaming in Malta: An Evaluation of the Tax Implications Involved*. Bachelor of Accountancy (Honours), University of Malta.

Brigham, E., F., & Ehrhardt, M.,C. (2005). *Financial Management, theory and practice* (11th Ed). Ohio: Thomson, Southwestern.

Briguglio, L. (1995) *Small Island Developing States and Their Economic Vulnerabilities*. Vol 23, No 9, pp 1615-1632.

Calopa, M.K., Horvat, J., and Lalic, M., (2014) *Analysis of Financing Sources for Start-up Companies*. Vol 19, No 2, pp 19-44.

Casu, B. and Giardone, C, (2006) Bank Competition, Concentration and Efficiency in the Single European Market. *The Manchester School,* Vol 74, No 4, pp 441-468.

Chetcuti, Cauchi, (2014). Malta Remote Gaming & Betting Regulations. Available at: https://www.ccadvocates.com/gaminglaw/remote-licences-regulations [viewed on 30/09/2017]

Cuschieri, J. (2014). Scale Up for the Next Decade. Remote Gaming Update 2014, Vol 10, pp. 2-3.

Chetcuti, Cauchi, (2016). Malta Gaming Industry – Growth in 2016. Available at: https://www.ccmalta.com/publications/maltagaming-industry-growth-in-2016 [viewed 31/08/2017]

Damodaran, A. (2010). Applied corpo*rate finance* (3rd ed). New York: John Wiley & Sons Inc.

De Marco, J. (2011): *Supply Rules: The Future of Online Gaming in Malta. Unpublished* Bachelor of Accountancy (Honours) thesis, University of Malta.

Donosa, D., & Magazin, P., (1999) Agriculture finance and credit problems in the market economy. Ion Ionescu de la Brad, Agriculture, Vol 42 pp 147-149.

Eckbo, E., B. (2008). Handbook of corporate finance, *Empirical Corporate Finance, Volume 2.* Oxford: Elsevier.
Elliot, D.J. (2010). A Primer on Bank Capital. The Brookings Institution, pp. 2-26.

European Central Bank (2009). Annual Report 2009. [Online]. Available at: https://www.ecb.europa.eu/pub/pdf/annrep/ar2009en.pdf?6c5dd83f1781dc5cdc6d9426fc394c8d. [Accessed 05/01/2018]

Fabozzi, F.J. & Mann, S.V. (2005). The Handbook of Fixed Income Securities. McGraw-Hill.

Farrugia, C. (2013). A Glossary of Remote Gaming Regulation. Unpublished thesis. Master Degree in Translation, Terminology and Interpreting Studies. University of Malta. Available at: https://www.um.edu.mt/library/oar/handle/123456789/8800?show=full [Viewed, January, 2019].

Farrugia, R., (2011): *Prevention of Money Laundering and the Funding of Terrorism and Relevant Legislation: How Effective is it in Relation to the Gaming Industry?* Degree of Doctor of Laws LL.D, University of Malta.

Fiti, T., Markovsk, H.V. and Bateman, M., (1999) Pretpriemnishtvo (Entrepreneurship) 2nd edition, Faculty of Economics-Skopje.

Fletcher, M., Freeman, R., Sultanov, M. and Umarov, U., (2005). *Leasing in development*. Guidelines for emerging economies.

Folta, T.B. (2016). *A comparison of the effect of angles and venture capitalists on innovation and value creation*. University of Connecticut, School of Business.

Gallardo, J. (1997). Leading to support small businesses and microenterprises. In: The World Bank.

Georgieva, K., (2011) The issue of underpricing in Initial Public. University of Essex.

Gladstone, D. (1989). Venture capital investing. Englewood Cliffs, NJ: Prentice Hall.

Grima, S., Seychell, S., Bezzina, F., (2017). Investigating Factors Predicting Derivative Mishandling. A Sociological Perspective. European Research Studies Journal Volume XX, Issue 4A, 2017, pp 3-17.

Guest, G., Arwen, B. and Johnson (2006). How Many Interviews Are Enough? An Experiment with Data Saturation and Variability, Vol 18, No.1 [Online Version via Sage Publications] [viewed on 25/02/2018].

Harris, J., (2012). Gaming Law. London. European Lawyer Reference Series. Available at: http://www.ey.com/Publication/vwLUAssets/Comparing-global-stock-exchanges-Eng/$FILE/Comparing-global stock-exchanges-Eng.pdf [viewed on 07/02/2017].

Hill, B.E. and Power, D. (2002). Attracting Capital From Angels. New York: John Wiley and Sons.

James, C. and Wier, P., (1988) *Are Bank Loans Different?: Some Evidence From the Stock Market*. Journal of Applied Corporate Finance, Vol 1, No 2, pp.46-54.

Jay, S. (2003). Selecting sources of finance for business. Available at: https://www.accaglobal.com/content/dam/acca/global/PDFstudents/2012s/sept09_jayv2.pdf [Viewed, January, 2019].

Karmazin, V.A and Bondar, A. O., (2014). *The Advantages and Disadvantages of Financing with Preferred and Common Stock*. Vol 10 No 41.

King, R., (1993). The Development Process In Small Island States. London. Routledge. Pp 13-37.

KPMG (2016). AML in the Online Gaming Industry. [Online]. Available from: Available at: https://assets.kpmg/content/dam/kpmg/pdf/2016/07/mt-aml-in-the-online-gaming-industry.pdf. [Accessed 05/01/2018].

Krishnan V., & Moyer R., (1994): *Bankruptcy costs and the financial leasing decision*, Financial Management, Vol 23, pp 31-42.

Kumar, V.A. (2012) Money Laundering: Concept, Significance and its Impact. European Journal of Business and Management, Vol 4, No 2, pp 113-119.

Kumar, V., & Raheja, G. (2012). Business to Business (B2B) and Business to Consumer (B2C) Management. International Journal of Computers & Technology, Vol 3, No 3, pp. 447-451.

Levy, M. & Reuter, P (2006) Money Laundering. *Chicago Journals*, Vol 34, No 1, pp 289-375.
MaltaProfile, (2016). Malta Gaming Authority proposes major legislative reform. Available at: http://www.maltaprofile.info/article/malta-gaming-authority-proposes-major-legislative- reform [viewed on 04/08/2017].

MaltaProfile, (2017) Gaming operators need to promote good practices to give banks 'comfort'. http://www.maltaprofile.infor/article/gaming-operators-need-to-promote-good-practices-to-give-banks comfort [viewed on 08/08/2017].

Mangion, G. (2010). Perspective from Malta: Money Laundering and Its Relation to Online Gambling. Gaming Law Review and Economics, Vol 14, No 5, pp. 363.

Mclaughlin, J.S. and Pavelka, D., (2013). The Use Of Customer Due Diligence to Combat Money Laundering. Accountancy Business and Public Interest, pp. 57-84.

MHA (2009). The threat of money laundering and terrorist financing through the online gambling industry. Remote Gambling Association by MHA Consulting, pp. 1-48. Available at: http://www.eu-ssa.org/essa_wp/wp content/uploads/2013/08/Annex-12-MHA-Study-Money-Laundering.pdf [viewed on 09/09/2018].

Michaels, R. (2015). How crowdfunding is challenging the banking sector. The International Banker. Available at: Available at: https://internationalbanker.com/banking/how-crowdfunding-is-challenging-the banking sector/ [viewed on 09/09/2017]

Myres, S. and Majluf, N. (1984), Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have, *Journal of Financial Economics.* June, pp. 187-222.

NSO, (2017).New Release–Gross Domestic Product Q1/2017. Available at: https://nso.gov.mt/en/Pages/NSO-Home.aspx [viewed on 09/09/2017]

OECD, (2011). Financing High-Growth Firms. The Role of Angel Investors. France. OECD Publishing.

Park, W. C., (2000). Internal versus external equity funding sources and earnings response coefficients. Iowa, USA: The University of Iowa.

Pike, R. & Neale, B., (2006). Corporate Finance and Investment. Edinburgh. Pearson Education Limited.

Pinegar, J.M. and Wilbricht, L., (1989) Financial Management, Vol. 18, No. 4 (Winter, 1989), pp. 82-91. Wiley. Financial Management Association International. Available at: https://www.jstor.org/stable/3665800 (viewed January, 2019).

Pirotta, G.A. (2001). A new creation or an image and likeliness? The Maltese experience of establishing local government in a centralised micro-state. Public Organization Review: A Global Journal, Vol 1, no 2, pp. 245-260.

Schroeder, W.R. (2001) Money Laundering. FBI Law Enforcement Bulletin, pp 1-7.

Showkat, N., (2017) Communications Research. Non-Probability and Probability Sampling.

Smith, C., (1977). Substitute Methods for Raising Additional Capital: Rights Offerings versus Underwritten Issues. Journal of Financial Economics, pp. 273-307.

Torteska, E., (2012) External sources of financing for the corporate sector in Macedonia. Msc, University of Ljubljana.

Walker, E.W. and Baughn, W.H., (1961). Financial Planning and Policy (1st ed). Joanna Cotler Books.

Watson, D. & Head, A., (2007). *Corporate finance, principles and practice* (4th Ed). England: Pearson Education Limited.

Zammit,A.J., Vassallo, C. and Borg Stevens, M., (2016). Gaming in Malta:Overview. Thomson Reuters. Practical Law. 1st September 2016. Malta Available at: https://content.next.westlaw.com/4-634 9916?transitionType=Default&contextData=(sc.Default)&__lrTS=20190128193539155&firstPage=true&bhcp=1 [Viewed January 2019].

THE CONTROL OF TRANSACTIONS WITH DERIVATIVES IN THE NON-FINANCIAL ORGANIZATIONS IN THE REPUBLIC OF BELARUS

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Abstract. Nowadays derivatives as a risk management instruments can be the source of increased risk themselves. Non-financial institutions are more likely to use derivatives to hedge market risks rather than to engage in speculative strategies in order to profit from short-term changes in market variables, which priori implies an increased level of risk. Hedging with derivatives can be considered as a less risky activity than speculation, however we cannot say that it is absolutely risk-free. Unfair actions in the department of finance, errors in the development and implementation of the hedging strategy, counterparty defaults on derivatives – all these are potential losses for the company, which applies hedging. In order to eliminate or minimize the negative consequences, which may occur from the presence of derivatives in the portfolio of the organization, well-structured control procedures are necessary. The aim of the study is to develop such control procedures. For this purpose general scientific research methods were used: analysis, synthesis, generalization, induction, deduction, observation. Methods of theoretical research: idealization, formalization, method of logical analysis, classification.

According to the results of the study, the factors that increase the risk of applying derivatives in non-financial organizations were identified. They are the following: specificity of derivatives, the risk of unfair actions of employees and contractors, low creditworthiness of counterparties, difficulties in reflecting derivatives in financial statements, etc. Taking into account the identified factors controlling procedures on transactions with derivatives for non-financial organizations of the Republic of Belarus was proposed. Those techniques will provide non-financial organizations confidence that non-core risks, associated with derivatives, are under the control of both responsible managers and senior management, which will convince investors in the reliability of investments in such organizations.

Key words: *derivatives, control procedures, hedging*, *risk*

JEL code: G13, M19

Introduction

For non-financial organizations economic results should primarily reflect their core business risk and should not be exposed to large fluctuations caused by extraneous factors, such as changes in oil prices or interest rates. Prior to the advent of derivatives markets it was quite burdensome to manage risks. Ensuring that the actual level of risk meets the desired level required transactions with underlying assets, while derivatives solve these problems very effectively: they allow organizations to trade risk without trading the underlying asset itself (Wendy L., 2017). It means that derivatives provide an effective method of transferring risk from parties who do not want to be exposed to this risk to those market participants who are willing to take it upon themselves. They are hedge funds, professional traders and other speculators who are willing to take risks in order to profit from short-term changes in market variables (Pankov P., Masko L., 2018).

Thus, if the current (operational) activity of the company isn't aimed at profiting from changes in market variables (prices, interest rates, exchange rates, etc.), but the impact of these variables on the final results is significant, the

company's management may be interested in the development and implementation of a hedging strategy to get protection from market risks. The choice of specific hedging instruments depends on the knowledge and experience of specialists from financial department and will differ for every company due to the specifics of the industry, the availability of certain financial products, etc.; while the internal control system of any non-financial organization should provide management with confidence that derivatives won't cause huge losses and hedging strategy won't become a source of increased risk itself. As we can see from real practice, the reluctance of senior management to understand the complexities of derivatives, unfair actions or errors of employees from financial department, speculative operations under the pretext of hedging and a number of other factors can lead to the collapse or huge financial losses, which in most cases is caused by an inefficient system of internal control (Jacque L., 2015). Here we face with the question, how the control system should look like in order to make sure that derivatives, being a risk management tool, won't become a source of increased risk themselves.

The purpose of this work is to develop a control methodology, which will allow non-financial organization to eliminate or minimize the negative consequences that may occur in terms of the presence of derivatives in the portfolio of the organization. To do this, the following tasks will be solved:

- to analyze for what purpose non-financial organizations use derivatives in their activities;
- to identify and characterize the factors that increase risk of derivatives usage in non-financial organizations;
- to develop a control methodology of transactions with derivatives for Belarussian organizations.

Research results and discussion

Non-financial organization may consider the derivatives market as the source of additional income, if its current activity isn't exposed to changes in market variables (commodity prices, exchange rates, interest rates, etc.). Otherwise, the company may be interested in applying hedging with derivatives. Since the use of derivatives isn't widespread in the Republic of Belarus, we consider foreign studies related to the peculiarities of derivatives usage in non-financial organizations. In most of these studies attention is paid to the issues of hedging risks using derivatives: the objectives, volumes, types of hedging are studied. Special attention is given to the relationship between hedging and increase in firm's market value and its investment attractiveness. Here are some of these studies.

As noted by Stulz (2013) corporate managers, on the basis of their professional intuition, rather often assume that an effective risk management program helps to increase the shareholder value of the company and its investment attractiveness.

Corporate hedging may be considered as a source of increasing shareholder value due to the fact that corporations use hedging to minimize expected taxes, underinvestment and financial costs (Aretz and Bartram, 2010).

Also Smith and Stulz (1985) argue that hedging with derivatives can bring significant benefits in countries, where companies have a convex (non-linear) tax scale. Hedging reduces the volatility of taxable income, leading to lower expected tax liabilities, and these tax savings have the potential to increase the value of the firm. Hedging can also increase shareholder value by mitigation the costs of financial shocks, which include bankruptcy and legal expenses.

The Bodnar study (2011) provides information on the objectives of the risk management strategy. Thus, for 705 companies in the non-financial sector worldwide, the main objectives are to increase the expected future cash flows; avoid large losses from unpredictable price changes; increase the value of the company. Also it is noticed that 71% of reviewed companies in the extractive sector, 67% in the manufacturing sector and 46% in the services sector use derivatives in their risk management strategy to hedge market risks.

As noted by Erik P. Gilje (2017), hedging plays the central role in risk management. In addition, the benefits of

hedging are theoretically well researched. However, there is lack of empirical evidence, that clearly shows how hedging affects the value of a firm and its investment attractiveness. The main reason for the lack of such evidence is related to the endogenous nature of hedging strategy.

Also, researchers in this area have conducted a number of studies on the example of various industries, the results of which don't allow to say definitely, whether hedging has impact on shareholder value or not. Thus, Allayannis and Weston (2001) checked the relationship between hedging the risks of foreign currency activities and the Tobin Coefficient (Q) and concluded that hedging increases the value of the company. The benefits from hedging are also supported by Carter et al. (2006) on the example of the US airline sector.

On the other hand, Jin and Jorion (2006) note that hedging doesn't affect the value of the company in the field of oil and gas production and even negatively affects the value of the company in the gold mining sector (Jin and Jorion, 2007). Bartram et al. (2011) also note that the impact of hedging on firm value is likely to be insignificant and cannot be unambiguously estimated over a long period of time.

Phan et al.'s (2014) on the example of 94 companies specializing in the exploration and production of oil and gas for the period from 1998 to 2009 notes the significant negative relationship between hedging and shareholder value, i.e. losses from hedging. The authors point out that at the theoretical level hedging can increase the value of a firm by reducing the costs associated with underinvestment and financial instability; however, there is very little reason to expect that these costs will materialize, if oil and gas prices are more likely to increase. It means that hedging increases shareholder value only, if there is a risk of negative price movement, when risks become more significant.

Wang and Birkeland (2017) relatively to the inverse relationship between hedging and firm value note that the impact of hedging in the sector of oil and gas production depend on the price patterns and is sensitive to sharp falling of prices. The authors note that investors recognize the need for hedging in crisis periods, and, accordingly, are ready to invest in those companies, that actively use this method of risk management. At the same time, during a stable market situation, investors are not inclined to recognize the effect of hedging. This findings help to explain the variability of previous empirical research. For example, Jin and Jorion (2006) study showed no connection between hedging and firm value due to low volatility during the sample period. Concerning Phan et al.s (2014) it is noted, that hedge losses are generally associated with a steady increase in prices during the reviewed period.

R. Stulz (2013) also notes that quite often the losses on derivatives under the well-thought hedging strategy are considered as a failure in the risk management system. Although the company applies hedging because it cannot predict, what result in the future will be received from the asset, liability or future cash flow that is exposed to market risk. And in order to avoid this uncertainty organizations resort to hedging, while if the market movement is favorable for the company, then the hedging instrument (derivative) will bring an offsetting loss.

At the same time, in the study of derivatives usage at the corporate level, conducted by M. Bartram (2017), is noted that now the global (not only the companies from the United States) studies for both hedging and speculation are very limited. The author confirms the logical thesis that non-financial organizations are more likely to hedge against the risk of changes in exchange rates, interest rates or commodity prices than to attempt to take speculative positions in order to profit from short-term price fluctuations. Also it is noted that most companies resort to the use of derivatives from time to time, based on their vision of the market at a particular time.

Thus, non-financial organizations use derivatives mainly to hedge risks in order to ensure the predictability of cash flows and, as a consequence, increase the value of the company. Accordingly, speculative transactions with derivatives, conducted by financial department, should cause healthy mistrust from the side of control department and senior management as well. However, even if there are no speculative transactions, the use of derivatives solely for hedging

doesn't guarantee that significant unexpected losses won't be received. In this regard, we consider that it is necessary to investigate the factors that may increase the risk of unplanned losses on derivatives in non-financial organizations.

As noted by Jacque L. (2015), if the company plans or has already received speculative profits at derivatives market, it is necessary to change the attitude to financial department from senior management side. Because in normal circumstances financial department of the firm has two important tasks: providing financing at a minimum cost of capital (from short-term financing through accounts payable to medium-and long-term bank loans and borrowings in the debt market) and hedging risks by limiting currency and interest positions. Therefore the objective of the former is to minimize the cost of capital and the latter is to minimize risks. However, over the past 25 years, many companies have redefined the mission of financial departments and transformed them in profit centers without clearly defining of an acceptable risk/return profile. In such cases, the probability of receiving a loss on derivatives transactions, as well as the probability that losses will become a complete surprise to management and investors significantly increases.

Also Zeidan, R., & Müllner, J. (2015) based on the practice analysis note that the remuneration system of financial directors (CFO) with hedging orientation shouldn't create conditions for risky behavior in derivatives market.

Aabo, et al. (2012) think that the more non-financial departments involved in currency risk management, the more firm speculates both in terms of selective hedging and in terms of active speculation. At the same time, effective communication between departments creates a more integrated risk management system across the firm, as opposed to the more traditional isolated risk management system based only in financial department. In any case it should be noted that in the presence of speculative operations the control system should be more rigid, regardless of how many departments are involved in such operations.

Also, in order to identify the specific features of derivatives that increase the company's risks when using these instruments let's turn to audit practice. Thus, the Regulation on international audit practice 1012 "Audit of derivative financial instruments" (which provides practical guidance on the planning and implementation of audit procedures in respect of derivative financial instruments) highlights the following factors that increase risk on derivatives:

- minor or no outflows/inflows of funds, necessity in which appears with the onset of the execution time of the transaction;
- no minimum remaining amount or other fixed amount paid or received;
- potential risks or rewards can far exceed current costs in the long run;
- the value of an entity's assets or liabilities may exceed balance amount of recognized derivative instrument, if it's recognized, especially for entities that shouldn't reflect derivative financial instruments at fair market value in the financial statements.

As noted by Ph. Jorion (2007), one of the first steps of effective risk management is to evaluate assets and liabilities at fair value. For a long period derivatives were reflected in the accounting on off-balance accounts, hence didn't appear in the balance sheet and the statement of profit or loss. The growth of derivative markets and a number of financial shocks due to losses on derivatives contributed to the adoption in 1998 the standard SFAS 133 "Accounting for Derivative Instruments and Hedging Activities" in the United States (SFAS 133), and the international financial reporting standard IAS 39 "Financial Instruments: Recognition and Measurement". These standards established requirements for mandatory assessment and revaluation of the fair value of derivatives with the attribution the results to profit or loss. It should be noted that a similar accounting standard in the Republic of Belarus is planned to be adopted in the near future.

In the International financial reporting standards (IFRS) derivatives (derivative financial instruments) are included in the category of financial instruments, which are contracts that give rise to a financial asset of one entity and a financial

liability or equity instrument of another entity. This definition covers a wide range of financial instruments, from loans and deposits under simple terms to complex derivatives, structured products and certain commodity contracts.

Getting back to audit practice we can consider the International Auditing Practice Note (IAPN) 1000 "Special Considerations in Auditing Financial Instruments". Where is noted that financial instruments are used:

- for hedging purposes (to change an organization's existing risk structure), including:
  - forwards to buy or sell currency in order to fix the future exchange rate;
  - conversion future interest rates into fixed or floating rates using swaps;
  - purchase option contracts to protect the organization from a specific price change, including contracts that may contain embedded derivative financial instruments;
- for trading purposes (for example, to enable an organization to open a risk position to benefit from short-term market fluctuations);
- for investment purposes (for example, to enable an organization to obtain benefits in the form of long-term investment income).

The complexity inherent in some financial instruments can cause increased risk. Business risk and the risk of material distortion of financial statements are increased when management and persons responsible for corporate governance (according to IAPN 1000):

- aren't fully understand the risks associated with the use of financial instruments, and their skills and experience are not sufficient to manage these risks;
- don't have knowledge and experience to properly assess financial instruments in accordance with the applicable financial reporting concept;
- haven't implemented an effective system of control over operations with financial instruments in the organization;
- improperly hedge risks or conduct speculative operations.

Financial instruments, including derivatives, are characterized by the following types of risks.

a) Credit risk (the risk of failure on contractual obligations by the counterparty) – is the risk of default of one of the parties on its obligations arising from financial instrument, resulting in financial damage to the other party. Credit risk includes the risk of non-settlement, which arises if one party of the transaction has fulfilled its obligations and the payment from the client or counterparty hasn't been received.

b) Market risk – is the risk of fluctuations of fair value or future cash flows related to the financial instrument caused by changes in market prices. As an example, we may consider the classic case of the Metallgesellschaft on the North American market, which has already been considered by many authors, such as Edwards and Canter (1995), Saha, D. (2011), Evans, R. and Jacque L. (2004). At first glance stack-and-roll hedging strategy of Metallgesellschaft allowed it to eliminate the price risk via synthetic forward contract. In fact it created at least two other types of risk: cash flow risk at the moment of transfer futures positions and financing/liquidity risk in the case of large losses during such transfer. The present value of the gain/loss on a 10-year forward contract is significantly less than the present value of a 30-or 60-day futures contract. In other words, the barrel-per-barrel hedge was excessive and highly speculative, as it increased the firm's dependence on oil prices.

c) Liquidity risk – is the risk associated with the inability to timely buy or sell a financial instrument at the appropriate price due to the lack of market opportunities for sale this financial instrument.

d) Operational risk is related to the special processing order that is required for financial instruments. Operational risk may increase as the terms of a financial instrument become more complex. Inefficient management of operational risk can lead to increasing other types of risk. Operational risk includes:

i) the risk of insufficient control procedures in the form of confirmations and reconciliations that cause incomplete or inaccurate accounting of financial instruments;

ii) risk of inappropriate documentation and monitoring of transactions with financial instruments;

iii) the risk of incorrect accounting and processing of transactions and improper management of risks arising from operations with financial instruments, and therefore the risk of incorrect reflection of the economic aspects of trading operations as a whole;

iv) the risk that employees are overconfident in the accuracy of the assessment methods in the absence of the necessary verifications, resulting in an incorrect assessment of operations or an improper assessment of the associated risk;

v) risk of insufficient consideration of financial instruments in the organization's risk management policies and procedures;

vi) risk of losses due to insufficient or ineffective internal corporate processes and systems or the results of external factors, including the risk of unfair actions by both firm's employees and third parties;

vii) risk that the valuation methods used to measure financial instruments are used incorrectly or untimely;

viii) legal risk, which is associated with losses resulting from the actions of legislative bodies that invalidate the performance of obligations under the terms of the contract or related netting agreements.

Among other issues related to the risks arising from the use of derivative financial instruments it's possible to distinguish the following:

– the risk of unfair actions, which may increase if, for example, an employee who has the ability to commit fraud, understands financial instruments and how to reflect them in accounting better than management and persons responsible for corporate governance;

– risk that master netting agreements may not be properly reflected in the financial statements;

– risk that certain financial instruments can move from asset to liability during their term and the risk that this transition may occur quickly.

In many organizations the responsibility for determining, approving and monitoring of the implementation of the policy on the volume of transactions with financial instruments rests for corporate management, therefore the role of corporate governance is to manage the risks to which the organization is exposed due to presence of financial instruments and to monitor those risks. Management and, where appropriate, parties responsible for corporate governance are also have to develop and implement an internal control framework to ensure that the financial statements are prepared according to the applicable financial reporting concept. The organization's internal controls applied to financial instruments are likely to be effective if management and persons responsible for corporate governance (according to IAPN 1000):

a) have created an appropriate control environment, ensured the active participation of persons responsible for corporate governance in the implementation of control over the usage of financial instruments, built a well-thought organizational structure with a clear distribution of powers and responsibilities, as well as implemented appropriate procedures and policies in the field of personnel management;

b) have implemented the risk management process taking into account the size of the organization and the level of complexity of the financial instruments used by the organization (a separate risk management function can be created);

c) have implemented information system, through which persons responsible for corporate governance, can get a complete understanding of the nature of transactions with financial instruments and related risks, including adequate documentation of those transactions;

d) have developed, documented and implemented an internal control system.

Thus, on the basis of audit practice and business practices, we will identify the factors that increase the risks of using derivatives in non-financial organizations in figure 1. First of all we include here the lack of a clear division between hedging and speculative operations, resulting in the situation when financial department becomes a profit center without proper control procedures; also unwillingness to understand or misunderstanding of the essence and consequences of hedging operations from management side, the lack of revaluation of OTC (over the counter) derivatives, the risks of unfair actions and errors of employees, for example, when company opens too large loss-making positions, which require depositing additional security margin that excess currently available funds, as well as a number of other factors that are listed above. If these factors potentially can influence the effectiveness of the organization's performance indicators, appropriate response in the form of the development and implementation of control procedures in this area will be required from the senior management.

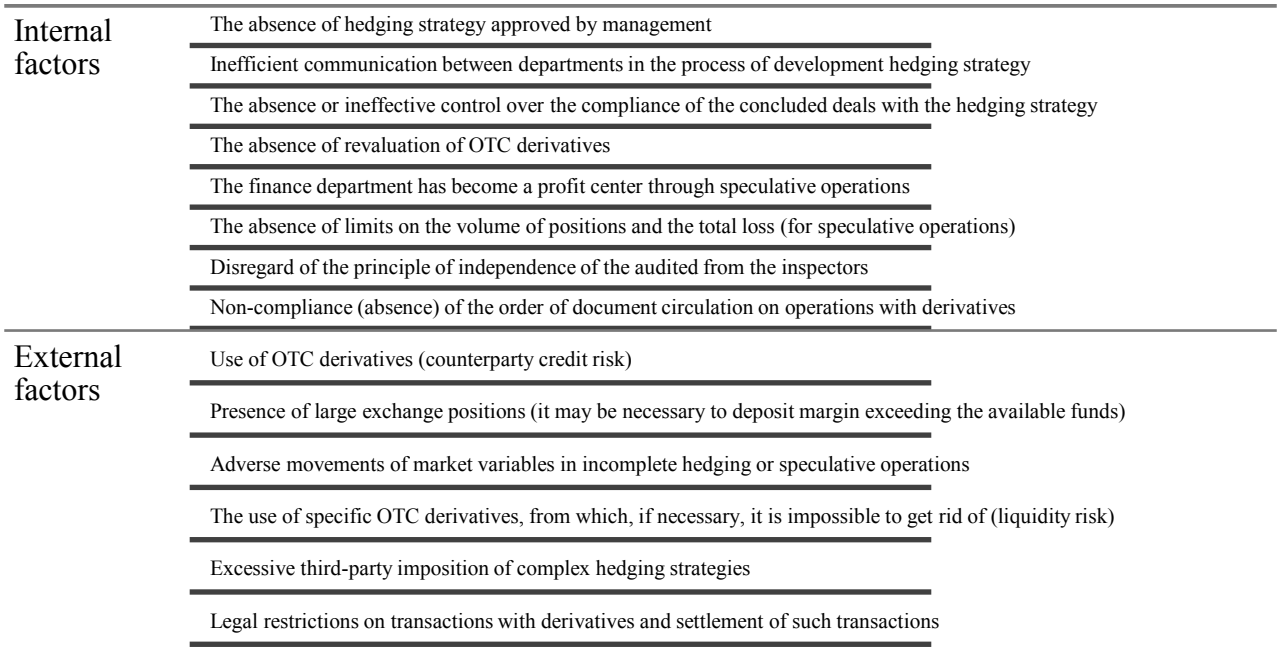

Fig. 1. **Factors that increase the risk of using derivatives in non-financial organizations**

Source: own elaboration on the basis of the literature and report on audit practice IAPN 1000

Lee et al. (2018) based on the results of audits of internal control systems for financial reporting (ICFR) in the US companies for the period from 2004 to 2015 note that the correct application of accounting rules for various types of derivative contracts, full and timely documentation of hedging effectiveness, and the corresponding estimates of derivatives quite often don't comply with article 404 of the Sarbanes-Oxley Act (SOX 2002) regarding the implementation of the provision of derivatives accounting under SFAS 133. The lack of technical knowledge and experience in the application of SFAS 133, as well as the lack of proper and periodic supervision of the application of SFAS 133 were the main reasons for the negative opinions on the internal control of reporting systems under SFAS 133, which resulted in costly adjustments for companies.

The key elements of risk management processes and internal control related to derivative financial instruments in the non-financial organization include the following:

– development of approach to determination the level of risk that the organization is ready to undertake on operations with derivatives (this willingness is sometimes called the "risk appetite"), including policies of investing in derivative financial instruments, as well as the principles of control applicable to activities connected with derivatives;

– implementation of processes for documenting and authorizing new types of transactions with derivative financial instruments that take into account the accounting, regulatory, financial and operational risks associated with such instruments;

– processing of transactions with derivative financial instruments, including confirmation and reconciliation of available funds and assets with data received from third parties, and settlement procedures;

– separation of responsibilities between persons investing in derivative financial instruments and those responsible for processing and evaluating derivatives as well as for confirmation of relevant information.

The implementation of the actions named above will reduce the risks of using derivatives in non-financial organizations, but the question still remains: to what aspects should be paid priority attention. In table 1 we propose a number of criteria with appropriate gradations of risk level in order to assess what specific factors of derivatives connected with increased risk. This system of criteria for assessing the risk of using derivatives can be used for individual transactions as well as for entire portfolio of derivatives.

Table 1

Proposed criteria for assessing the risk of transactions with derivatives in the non-financial organization

№	Risk assessment criteria	Value	Risk level
The risks of misrepresentation			
1	Reliability of counterparties (creditworthiness risk)	The execution of transactions is guaranteed by the exchange Large reliable banks Hedge funds, investment funds, small banks	Low Average High
2	Presence of an active market by types of used derivatives	Active market for all types of derivatives Unusual derivatives are used partially Non-traditional derivatives are widely used	Low Average High
3	The applied concept of reporting	IFRS or GAAP (hedge accounting not applied) IFRS or GAAP (with hedge accounting) Accounting rules of the Republic of Belarus	Low Average High
4	Presence of opened positions and their revaluation at the time of reporting	There is no opened positions Opened positions revalued at the reporting date No revaluation of the opened positions	Low Average High
5	Presence of risk management strategy and compliance of the actual use of derivatives with this strategy	Derivatives are used according to risk-management strategy There are operations that are not fixed in the strategy No risk management strategy	Low Average High
6	Purpose of derivatives usage	Only hedging for specific, assets, liabilities and cash flows Small number of speculative transactions A clear focus on making speculative income	Low Average High
7	Organization of work with derivatives in the company	Clear delineation of powers and responsibilities There are minor contradictions between departments Powers and responsibilities are not clearly defined	Low Average High
8	Automation of the accounting of derivatives	Fully automated accounting Partially automated accounting Manual accounting	Low Average High
Risks of the internal control system			
9	Participation of persons responsible for corporate governance in controlling the use of derivatives	Active participation Irregular, indirect participation Not carried out	Low Average High
10	The process of risk assessment on derivatives	Carried out by a separate structural unit Carried out in the department working with derivatives Not carried out	Low Average High
11	Compliance of accounting policy in the part of accounting for derivatives with the applicable accounting standards	Full compliance Partial compliance Apparent inconsistency	Low Average High

Ending of the table 1

12	Type of input data for fair value measurement of derivatives (in accordance with the IFRS 13 hierarchy)	Level 1 inputs Level 2 inputs Level 3 inputs	Low Average High
13	Internal control system for the use of derivatives	Complete Partial Absent	Low Average High
14	Reconciliation of the organization's accounting records with the accounting records of banks and depositories on derivatives	Carried out continuously Carried out irregularly Not carried out	Low Average High
15	Risk of dishonest actions from the side of management and employees (dependence of wages on the results of operations with derivatives)	Don't pose a threat to the organization Implicitly traced interest in distortion Evidently traced interest in distortion	Low Average High
	Risk of non-detection		
16	The presence of experience on derivatives from the specialists of the control department	More than 5 years of active work with derivatives From 1 to 5 years of active work with derivatives Less than 1 year or none	Low Average High
17	Competence and the necessary capacity in the control department to check the operations with derivatives	Provided by the qualification of own employees Provided by the involvement of experts Lack of competence and / or capacity	Low Average High
18	Openness of management and staff responsible for the use of derivatives and availability of information	Full Partial Absent	Low Average High
19	Methods for determining potential losses on derivatives	Potential losses are not estimated Applied methods of modeling the worst-case scenarios (stress testing and scenario analysis) Techniques of modeling worst-case scenarios combined with the assessment of value-at-risk*	Low Average High
20	Continuous or sample controlling and the sampling method	Total inspection Statistical approach to sampling Non-statistical approach to sampling	Low Average High

* to avoid self-deception risk assessment techniques should be based on stochastic rather than historical trends (Zeidan, R., & Müllner, J. (2015))

Source: author's development

Taking into account these criteria, control methodology of transactions with derivatives in non-financial organizations, in our opinion, involves the implementation of the following steps, which are shown in figure 2.

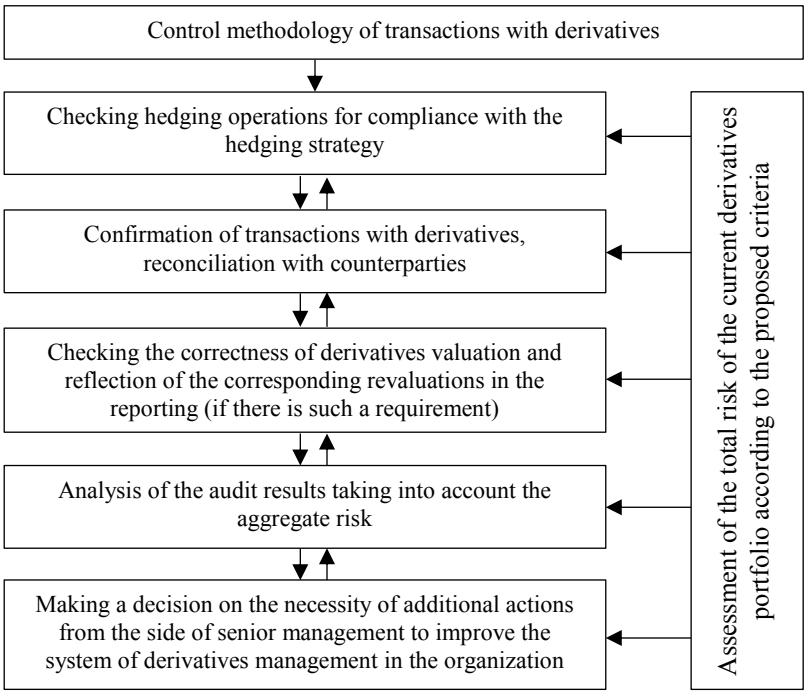

Fig. 2. **Control methodology of transactions with derivatives in non-financial organizations**

Source: author's development

The proposed methodology of control involves a consistent assessment of the compliance of the actual use of derivatives with the approved hedging strategy, verification of the reality of the conclusion and the adequacy of the assessment of positions on derivatives, analysis of the relevant results and the final decision on the effectiveness of hedging with derivatives. At the same time each step assumes the assessment of total risk of the current derivatives portfolio according to the proposed criteria that will allow company to understand the essence of actual transactions and most possible risks of existing operations. As a result, the consistent implementation of the proposed control procedures will allow identifying weaknesses in the derivatives management system in the organization and making a decision on the necessity for additional actions the side of senior management to bring the total level of risk on transactions with derivatives to an acceptable level.

Conclusions, proposals, recommendations

Thus, according to the results of the study, the following can be noted

1. For non-financial organizations the most acceptable usage of derivatives is the application them as a risk management instrument for hedging risks of changes in market variables, resulting in increasing the value of the company and its investment attractiveness. Obtaining speculative income from derivatives in such organizations indicates that the financial department becomes a profit center, which increases organization's risks and requires adequate management decisions.

2. The factors that increase risks of using derivatives in non-financial organizations are the lack of a clear separation between hedging and speculative operations, unwillingness to understand or misunderstanding the essence and consequences of hedging operations from the side of corporate management, the absence of revaluation on OTC derivatives, risks of unfair actions and errors of employees, as well as a number of other factors listed above. If these factors potentially can influence performance effectiveness of the organization, corresponding response in the form of the development and implementation of appropriate methods of control will be required from senior management.

3. The impact of the designated factors on specific transactions as well as on the portfolio of derivatives as a whole can be assessed using the proposed method of risk assessment of transactions with derivatives. It can help management to determine which aspects of work with derivatives should be undertaken firstly and what actions should be taken in response to identified risks. Also, the implementation of the proposed methodology of control over the transactions with derivatives in non-financial organizations will help to ensure that derivatives, as risk management tool themselves won't become a source of unplanned losses.

4. Control methodology, based on the proposed criteria, will allow the non-financial organization to improve the quality of control on derivatives transactions, to strengthen the confidence that non-core risks associated with derivatives are eliminated as much as possible. All it will help to attract investors and ensure the growth of reliability of investments in non-financial organizations.

Bibliography

Aabo, T., Andryeyeva Hansen, M., & Pantzalis, C. (2012). Corporate foreign exchange speculation and integrated risk management. Managerial Finance, 38(8), 729–751. doi:10.1108/03074351211239379

Allayannis, G., & Weston, J. P. (2001). The use of foreign currency derivatives and firm market value. Review of Financial Studies, 14(1), 243-276. DOI: https://doi.org/10.1093/rfs/14.1.243

Aretz, K., & Bartram, S. M. (2010). Corporate hedging and shareholder value. Journal of Financial Research, 33(4), 317-371. DOI: 10.1111/j.1475-6803.2010.01278.x

Bartram, Söhnke M., Corporate Hedging and Speculation with Derivatives (April 6, 2015). Warwick Business School - Department of Finance. DOI: http://dx.doi.org/10.2139/ssrn.891190

Bartram, Söhnke M. and Brown, Gregory W. and Conrad, Jennifer S., The Effects of Derivatives on Firm Risk and Value (February 10, 2010). Journal of Financial and Quantitative Analysis, Vol. 46, No.4, August 2011, pp. 967-999. Available at SSRN: <https://ssrn.com/abstract=1550942> [Accessed 14/01/2019]

Bodnar, Gordon M. and Giambona, Erasmo and Graham, John Robert and Harvey, Campbell R. and Marston, Richard C., Managing Risk Management (March 15, 2011). AFA 2012 Chicago Meetings Paper. http://dx.doi.org/10.2139/ssrn.1787144

Carter, D. A., Rogers, D. A., & Simkins, B. J. (2006). Does hedging affect firm value? Evidence from the US airline industry. Financial Management , 35(1), 53-86. DOI: 10.1111/j.1755-053X.2006.tb00131.x

Franklin R. Edwards & Michael S. Canter, 1995. "The Collapse Of Metallgesellschaft: Unhedgeable Risks, Poor Hedging Strategy, Or Just Bad Luck?," Journal of Applied Corporate Finance, Morgan Stanley, vol. 8(1), pages 86-105. Available at <https://ideas.repec.org/a/bla/jacrfn/v8y1995i1p86-105.html> [Accessed 14/01/2019]

Gilje, Erik and Taillard, Jérôme, Does Hedging Affect Firm Value? Evidence from a Natural Experiment (July 25, 2016). The Review of Financial Studies: Oxford university press, vol. 30 № 12, 2017. P. 4083-4132. http://dx.doi.org/10.2139/ssrn.2543096

International Auditing Practice Statement (IAPS) 1012 "Auditing derivative financial instruments". Available at <http://www.ifac.org/system/files/downloads/b008-2010-iaasb-handbook-iaps-1012.pdf> [Accessed 14/01/2019]

International Auditing Practice Note (IAPN) 1000 "Special Considerations in Auditing Financial Instruments". Available at <http://www.ifac.org/publications-resources/basis-conclusions-international-auditing-practice-note-iapn-1000-special-cons> [Accessed 14/01/2019]

Jacque Laurent Global derivatives debacles: from theory to malpractice / by Laurent Jacque. World Scientific Publishing Co. Pte. Ltd. Second edition, 2015. https://doi.org/10.1142/9789814663267_0002

Jin, Y., & Jorion, P. (2006). Firm value and hedging: Evidence from US oil and gas producers. The Journal of Finance, 61(2), 893-919. DOI: 10.1111/j.15406261.2006.00858.x

Jin, Y. & Jorion, P. (2007). Does hedging increase firm value ? Evidence from the gold mining industry. Working Paper. Northridge, CA: California State University. Availible at <https://pdfs.semanticscholar.org/50f3/c0019e67d32454b61dbd3bb7fae3ee62867b.pdf> [Accessed 14/01/2019]

Jorion, P. (2007) Value at Risk: The New Benchmark for Managing Financial Risk. McGraw Hill, 3rd edn. ISBN: 978-0-07-173692-3

Laurent L. Jacque, J. Avsen (2004). When a Hedge is a Gamble: An Empirical Investigation (1993-2002) of Metallgesellschaft's High Stakes Debacle / The Financier, Vol. 11/12, 2004-2005.

Lee, S. M., Park, K. J., Song, H., & Wang, L. (2018). Material Weaknesses in Internal Control in Relation to Derivatives and Hedge Accounting. Journal of Corporate Accounting & Finance, 29(3), 24–31. doi:10.1002/jcaf.22341

Pankov P., Masko L. (2018) Interdependence of investment attractiveness of the organization and hedging. Bulletin of Polotsk state University. Series D: Economic and legal Sciences. 2018. No. 5. p. 39-45. Available at <https://elibrary.ru/download/elibrary_35512555_61577737.pdf > [Accessed 14/01/2019]

Phan, D., Nguyen, H., & Faff, R. (2014). Uncovering the asymmetric linkage between financial derivatives and firm valueThe case of oil and gas exploration and production companies. Energy economics, 45, 340-352. DOI: http://dx.doi.org/10.1016/j.eneco.2014.07.018

Saha, D. (2011). The Collapse of Metallgesellschaft (MG): Hedging or Speculation. SSRN Electronic Journal. doi:10.2139/ssrn.2394915

Smith, C., & Stultz, R. (1985). The determinants of firms' hedging policies. The Journal of Financial and Quantitative Analysis, 20(4), 391-405. DOI: https://doi.org/10.2307/2330757

Stulz, Rene M., How Companies Can Use Hedging to Create Shareholder Value (Fall 2013). Journal of Applied Corporate Finance, Vol. 25, Issue 4, pp. 21-29, 2013. http://dx.doi.org/10.1111/jacf.12038

Wang, N. A, J. Birkeland. (2017). Study of Hedging at the Firm Level in U.S. Oil and Gas Exploration Firms. Master Thesis. Available at <https://brage.bibsys.no/xmlui/bitstream/handle/11250/2476917/1746389.pdf?sequence=1> [Accessed 14/01/2019]

Wendy L. Pirie Ed., (2017) Derivatives. Hoboken, New Jersey: John Wiley & Sons. ISBN: 978-1-119-38181-5. LCCN Permalink <https://lccn.loc.gov/2017005397>

Zeidan, R., & Müllner, J. (2015). Firm, market and top management antecedents of speculation: Lessons for corporate governance. Journal of Multinational Financial Management, 32-33, 42–58. doi:10.1016/j.mulfin.2015.08.001

FEATURES OF THE NETWORK MARKETS LEADING TO CROSS-INDUSTRY COOPERATION

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Abstract. Network market can be defined as a market where network structures and network effects are observed, and competition takes place mostly between networks and not individual actors. The success of a company on the network market is often not the result of the value of supplied goods and services, but the dynamics of the growth of a network created or used by this enterprise. The possibility of achieving this goal is determined by the ownership of critical network assets, like intellectual property rights, manufacturing abilities, the presence of complementary products or brand name and reputation. Collecting them all in one organisation is hard — moreover, the pursuit of maximising the value of the market forces to share knowledge and profits with others. In many cases, market leaders look for a compromise: smaller market share but compensated by the overall size of the market. Ultimately, all this leads to the formation of cross-industry cooperation structures.

This research paper aims to explain the concept of network goods and network markets and to point out specific features of those markets (network good, network assets and network position) which force their participants to cooperate and to look for partners in different industries. It is the synthesis study based on a qualitative systematic review (qualitative evidence synthesis), a method for integrating or comparing the findings from individual studies. The results from this study suggest that the source of cross-industry cooperation on network markets lies in the redefinition of the competitive fight on those markets. If the popularity (size) of a network is the primary goal and critical assets are scattered, striving for openness is an expected consequence. Those findings may be significant for the economic theory and business practice, justifying cooperation as a part of network feeding strategy, which is a form of competitive struggle.

Key words: *networks, network market, cooperation, consortium, strategic alliance*

JEL code: L14, L22, M21

Introduction

The term “network markets” is not very popular in the literature. The term “markets with network externalities” is much more widespread. This very phrase, in itself, can be considered to be the definition of the network market, as it indicates that some markets show a specific type of features characteristic for the network structures (network externalities). Many scientists, including Powell (1990), Thompson (2003, p. 28) or Knoke (2014), present networks, in the context of the markets, as one of the types of the coordinating mechanisms, and place them between markets and hierarchies (organisations). The term network market suggests that a specific, additional form of organisation, coordination or interaction of entities exists on a given market, i.e. the network.

The issue of coordinating activities between the market actors comes to the forefront in the concept of the two-sided (or multi-sided) markets. This kind of market is present, where the market interaction of two different groups of participants is carried out through one or more intermediaries (the so-called platforms) (Rayskin 2016; King 2013). This leads to a situation, in which the interaction is affected and determined not only by the purely market criteria but also by the method of intermediary's operation. The participants (on both sides) will believe the platform to be the more valuable,

the higher the number of entities on the other side (apart from the other features of the platform). Thence, this is the network effect in its pure form: the usefulness of a platform depends on its popularity (Economides 1996; Katz and Shapiro 1994). This also triggers the feedback effect: it is difficult to gain popularity if the participants do not believe it to be very useful. Therefore, the intermediary will focus on overcoming this vicious circle, aiming to confirm the benefits obtained through choosing the platform – by means of gaining popularity (Rohlfs (1974), the pioneer of the network effect studies, calls them "the start-up problem").

In this situation, a two-sided platform has the features of a network good, whose usefulness is modified by the network effect. In practice, this means more significant benefits from the consumption of the good, if others also participate in this consumption (which is called the interdependent demand (Rohlfs 1974)). In such an approach the emphasis is shifted from the coordination of relations between the participants (two-sided network) to the final effect of the existence of these relations (network good). However, when approaching this matter more universally, the network good can be described as a composite, whose component values derive from the existence of additional interactions on the market (apart from transactions). Therefore, it is not about the common goods produced in the process of market cooperation participated by the sub-suppliers (as is the case for most of the goods), but about the goods whose final value will ultimately depend on the existence of a particular ecosystem. This ecosystem will consist of other consumers, the method (and scale) of good's consumption, the presence of complementary goods, and the relationship with other sectors.

When looking at the network market from this perspective, it is easy to see that its characteristic features are various forms of coordination of activities (including cooperation). Several decades of studies on this subject have shown that the network effects not only determine the consumption patterns or market prices but first and foremost, the relations between the market participants. Due to the bonus that the network effect brings to the dominant entities, and thus the tendency to monopolize the market, the matter of cooperation (or its absence) between the competitors has already been the subject of analysis many times, but much less attention has been given so far to the subject of cooperation going beyond the boundaries of markets or sectors. It seems to be appropriate to address this issue, all the more so because the competition on the network markets usually takes the form of a fight between the whole systems (Katz and Shapiro 1994), the success of which often depends on the activities undertaken by the companies from different industries.

In connection with the above, the purpose of our study is to identify specific features of network markets which force their participants to cooperate and to look for partners in different industries.

Research results and discussion

The results of the synthesis study suggest that the source of cross-industry cooperation on network markets lies in the redefinition of the competitive fight on those markets. This can be explained in more details by looking at essential features network markets share: characteristic of the network (composite) good, crucial network assets actors use in a competitive fight and network position of each entity.

1. Composite goods

Looking for an answer to the question whether and how the features of the network markets affect the willingness to the cross-industry cooperation, let us start with analysing the nature of goods that are traded on the network markets. As has already been mentioned, the network good differs from the classic good in that its value largely depends on the ecosystem in which it exists. This is well illustrated by an example of the phone, more specifically by comparing a toy phone and the smartphone. In both situations, the phone is the good produced from components provided by different suppliers in cooperation with co-partners. For the toy, there is no network effect. The satisfaction brought to the child

from good consumption is not significantly related to the simultaneous good consumption by another child. For the smartphone, the relationship is apparent, as the telecommunications service is the more valuable, the higher the number of people it allows you to communicate with. However, the change in the situation does not only involve revealing of the network effect, as the usefulness of a current phone encompasses not only the ability to make phone calls but also the ability to take pictures, access the Internet, use various applications or play games. These components do not need to be provided by the phone manufacturer. It is sufficient that the manufacturer ensures the technical potential to increase the usefulness of the phone by installing the software or accessories (ensuring compatibility). An increase in good's usefulness is achieved through the loss of the overall impact on the final value. Insofar as for the toy phone, the manufacturer may directly affect its intended use and satisfaction from consumption, for the smartphone a lot will depend on the quality and wealth of the entire ecosystem in which such phone functions.

The above example shows that the borderline between the services and goods, and also between individual goods, can get blurred in the network market. Therefore, the multiple consumption of the network good can result in describing it as a composite (Hattori and Hsin 2014; Kim and Shin 2002) or a complement (Mason and Valletti 2001).

The cross-case analysis carried out by van de Kaa et al. (2015) demonstrates that the wealth of the ecosystem can be crucial to its victory over the competing systems. The more diverse the network of suppliers and customers and the more diverse the complementary goods available, the higher the chance of success.

By definition, the creation of the composite goods does not necessarily need to involve cooperation with external partners, but will probably be more comfortable if it takes such a form (say due to the specialisation). It can also be expected that in many cases, apart from stimulating the willingness to collaboration in general, the creation of the ecosystem will result in the cross-industry cooperation. The studies by Kim and Shin (2002) show that all types of a coalition between the entities supplying complementary components of the network good are better for the consumers than the independent actions of these entities. Moreover, the more companies in the coalition, the higher the value added for the consumers. A direction of increase in the consumers' surplus coincides with the direction of increase in the producers' surplus. However, the analysis by Hattori and Hsin (2014) casts a slightly different light on the subject. The authors demonstrate that there is a positive correlation between the cost-effectiveness of forming a full consortium and the number of components in a composite good. In addition, alliances including less than 80% of companies may not be cost-effective. Unfortunately, none of such alliances (even if complete) shows internal stability. This may explain why not in every network market and not in every situation the suppliers of complementary goods will be willing to establish formal collaboration.

However, it is noteworthy that the cooperation on the complementary components of the network good does not need to be the same thing as the cross-industry cooperation because the elements of the composite good do not need to be produced by different industries. In infrastructural networks, the individual components may be provided by the direct competitors who decide to cooperate in order to increase the usefulness for consumers. This is the case in the telecommunications or aviation market, which has been studied for the structure of alliances by Cobeña et al. (2017). These studies show that the network resource complementarity within the alliance influences better performance achievement at an operational level. In a nutshell, this means that the airline alliances expanding the network of air links through cooperation between the competitors offering greater complementarity (i.e. giving access to resources that the other companies do not have) perform better on the market than those for which this complementarity is smaller. This would confirm the observation that in the network market, the more the network good is expanded (in this case the network of air links), the higher is its usefulness for customers. A similar study on the complementarity of resources gained due

to cooperation in markets other than the airline market could help to assess to what extent the same processes take place at the interface between different industries.

2. Crucial network market assets

The phenomenon closely related to the concept of the composite good, and often observed in the network markets, is called the standards wars. This term has been popularized by Shapiro and Varian (1999). They define it as the "battle for market dominance between incompatible technologies". In this context, they do not use the concept of the network market, but unambiguously link the standards wars with the competition between the systems of the network goods. Even though they emphasise that this phenomenon is crucial for the modern economy, they also point out that it is not typical for the contemporary, information-age markets only, as it was present in the past as well.

Shapiro and Varian, analysing the strategies of the standards wars, paid attention to the cooperation from the very beginning. They point out that the standards wars occur either between two companies or two alliances. They also readily refer to the military analogy, stating: “Before you go to war, assemble allies.” According to them, cooperation is a natural consequence of the altered rules of competition, which they define, to put shortly, as the rivalry between systems. Insofar as the traditional competition strategies focus on competitors, suppliers and customers, in the network markets, the so-called helpers, i.e. creators of the additional system components (networks, services, complementary products), are also important. The allies in the standards wars may come from any of these groups.

Shapiro and Varian do not make the distinction between the intra- and cross-industry cooperation. However, they do declare that the absence of a clear front line makes it difficult to identify the potential partners (Shapiro and Varian 2000). On the one hand, this means that it is possible to cooperate with the selected competitors, and on the other hand, it may indicate that it is difficult to identify from which additional areas and industries the allies may come from.

An analysis of assets crucial for winning the standards wars, as identified by Shapiro and Varian, can shed more light on this issue. They list seven elements essential to gain an advantage in the network market: control of an installed base, intellectual property rights, ability to innovate, first-mover advantages, manufacturing abilities, presence in complementary products and brand name and reputation. The very number and diversity of items on the list suggest that it might be difficult for one organisation to gather all these assets. For that reason, the pursuit of competitive advantage in the network market urges for cooperation already at the source.

The aim of this study is, however, a more detailed explanation of the willingness for the cross-industry cooperation on the network markets. As we find out - using case studies and more detailed analyses - it has its source (to some extent) in the nature of the individual network assets.

The control of an installed base is connected with the role of the consumers in the standards wars. Since the network effect is linked to the scale of consumption, gaining dominance in the network market must go hand in hand with the popularity of the network good among the customers. The problem is that many consumers notice its usefulness only when it has gained in popularity. That being so, it is useful to have a significant market share with mechanisms to influence consumers, which can be used to promote (or block) new solutions. Interestingly enough, the control over users does not need to be exercised in the same market segment, in which we fight against the competition.

On the contrary, popularity in a given market may be used as a stronghold to fight for dominance in another area. This is definitely conducive to the cross-industry cooperation. A large market player may enter new markets using its user base as a bargaining chip in negotiations with potential partners that provide other assets (e.g. the necessary technology). Small (or merely new) players with innovative solutions may be based on the same principle, look for partners among large

players from other industries, hoping that the access to customers gained in this way will allow them to disseminate the new network good among those customers[1].

Intellectual property rights are a crucial element of the competitive strategy in the knowledge- and innovation-intensive markets. Controlling patents, copyrights and new technologies will definitely ensure a strong market position. The complexity of the new innovative solutions means that the modern network good often requires a large number of patents to be obtained[2]. At the same time, strong specialisation, growing R&D costs and trade in rights result in the dispersion of patents between various organisations. Sometimes they are competitive entities, but increasingly often entities operating in different markets. Research on patent applications carried out by Mahnken and Moehrle (2018) confirms that the number of patents filed by companies from various industries is growing. In the period 1973 – 2013, the authors identified three phases of the cross-industry cooperation on patents in the US market (for the purpose of the study, they looked for the patent applications filed together by at least three companies operating in different industries). In the period 1973 – 1986, the first patents of this type appeared. In the period 1987 – 1996, the number of patents continued to grow, reaching 25 in 1996. The last period (to 2013) witnessed rapid but highly variable growth (in the last year 100 multi-cross-industry innovation patents were identified, but in 2007-2008 there were only 50 patents per year).

Ability to innovate goes beyond the currently held intellectual property rights and refers to the capacity to develop innovations. Contrary to patents, which can be gathered in the alliance with other partners, it is difficult to imagine how cooperation with others could replace or supplement the missing ability to innovate. The lack of this asset deprives of arguments in negotiations, and largely eliminates the possibility of participating in the alliance. An exception may be a situation, when, for example, a company has had the ability to innovate in the past, and is still holding valuable patents. In that case, the absence of the current ability to innovate does not prevent its potential partners from inviting the company to cooperation. However, it should not be expected that such a company will significantly benefit from operating in a new market. The absence of the ability to innovate will rather effectively prevent it from proposing new solutions based on the standard to the popularisation of which it has contributed. The situation may be a little different if a company with a great ability to innovate is analysed. Organisations investing considerable financial resources in R&D quite often develop innovations that are distant or only slightly related to their principal area of activity. Such supplementary achievements may be additionally monetized, which depending on the strategy chosen by the company, may be conducive to cooperation with partners from other industries[3].

The first-mover advantage comes as a direct result of being a pioneer in a market. A company with the ability to innovate, which manages to be the first to launch an innovation-based product on the market, gains a distinct advantage over its competitors. This applies to both, winning the market share in the absence of direct competition in the first phase, and broader experience in the second phase when the followers have appeared in the market. Since such a situation would be somewhat rare without the ability to innovate and holding patents, it is doubtful that an organisation with such an advantage would be willing to seek cooperation partners without considering other options. It is likely that having these assets, the company may be induced to choose a strategy of self-dominance in the market or to impose its solutions as

[1] Both phenomena can be observed in the market of music streaming services. Apple, which, believing in the file sales model, missed the initial phase of streaming development, has quite easily overtaken its competitors entering the markets much later than they did. Its second position in the market (after Spotify), results from the effective control exercised over its own users through the integration of the Apple Music service with the software of phones and tablets (Sanchez 2018). Other examples include the struggle for domination won by Spotify, which places great emphasis on compatibility, and cooperation with the manufacturers of the music reproducing devices, and on the activities of Tidal that is readily willing to cooperate with the mobile operators in providing the streaming services as part of a broader telecommunications service.

[2] This is illustrated by the example of the USB standard, whose creation required the combination of patents from various segments of the telecommunications, IT and software markets (Mazurek 2018).

[3] An example of such a resultant innovation are, for example, the well-known Post-It notes developed by 3M. They were created during the works on strong adhesives. However, in this case, 3M launched the product by itself on the paper market.

standards in the market. Obviously, it is not clear whether such activity will be successful (after all, these are only three out of seven crucial elements), but the negotiating position of the company if the coalition is formed will be undoubtedly excellent.

It will rather not be possible to hold the position of a market leader without sufficient manufacturing abilities. This applies to both the ability to satisfy the growing demand (sometimes rapidly) along with the growing popularity of the network good, and the chance to gain the economies of scale, which provides the cost advantage over the competitors. The willingness to ensure the necessary production resources will in many situations force the cross-industry cooperation. A lot depends on the industry and the product character, but in the modern economy, long production chains and the multi-level supplier and subcontractor trees are a common practice. The formula of this cooperation can vary from vertical strategic alliances to simple market relations (O'Dwyer and Gilmore 2018, Doeringer and Terkla 1995). However, there are firm indications that the skilful involvement of subcontractors and suppliers in the process of creating and popularising new solutions may produce good results (Smals and Smits 2012, Williamsson and Schaad 2018, Chung and Kim 2003).

Access to complementary products is another essential aspect of the network market development. The creators of a new standard (or network good) aim to increase its usefulness for consumers. Such usefulness increases with popularity, and it is easier to win popularity if a good is beneficial. Therefore, reaching the size of the network allowing for its further self-propelling development requires ensuring a certain necessary level of usefulness before the system (standard, network) becomes popular. Lack of complementary products is often the barrier. The research carried out by Schilling (2002) has confirmed the strong positive correlation between the popularity of a system and availability of complementary goods and the greater likelihood of exclusion from the market when such goods are missing. Therefore, a company or consortium promoting a new solution must ensure that there is a market of complementary goods, which will increase the value of the promoted solution and show customers the positive consequences of the purchase. For that purpose, they can take various steps ranging from their investments in the sector of complementary goods, through financial support for specific projects, to facilitating market access by other entities[4]. Such steps belong a broader strategy of network feeding (Mazurek 2018) and are usually conducive to cross-industry cooperation (provided that the leader does not deliberately block access to the new technology, system or market).

The brand name and reputation are the last, but not least, of seven key network assets. Even though a well-known brand name is an advantage in every market, it may be of particular importance in the network market while fighting to gain dominance. The reputation makes it easier to reduce the uncertainty of potential customers and to convince them that this, and only this solution, has a chance to become the standard. The recognisable brand name and the success stories from the past can also help to form alliances around the promoted solution. However, a lot will depend on the strategy adopted by the company with a well-known brand name. The more advantage it will be willing to gain at the expense of other players (using its position in the reputation and other assets), the lesser coalition ability it will have. It is difficult to explicitly decide on the nature of the relationship between the reputation and the willingness to cooperate. In the case of duopoly or oligopoly (and this situation is quite characteristic of the network markets), it will be tough to start cooperation in the same market for entities with strong brand names, as they are likely to be the most significant competitors. It is much easier to imagine cooperation between strong brands from different industries, as they do not get directly in their way, they may be more willing to cooperate in sharing patents, innovating or mutually ensuring the complementary goods[5].

[4] For these reasons, Tesla is developing the network of the EV charging stations, Sony is financing the development of exclusive games for the Playstation console, and USB Implementers Forum gives the companies interested in the production of the USB accessories permission to use patents in return for relatively small license fees.

[5] A meaningful example of a competitive fight in the network market, which forces the competitors to look for reputable partners from other industries, is the clash between Google and Apple over the Android (Google Auto) and iOS (Apple CarPlay) operating

In conclusion to the above, the following can be stated:

a. A strong motivation for cross-industry cooperation can be expected when an organisation is looking for control of an installed base, gathering the portfolio of intellectual property rights and organising the market of complementary products.

b. The usual motivation for cross-industry cooperation can be expected when manufacturing abilities are organised.

c. The weak motivation for cross-industry cooperation can be expected when it comes to the ability to innovate, first-mover advantages, and brand name and reputation.

It should be kept in mind, however, that this is based on the assumption that an organisation is willing to cooperate, since there is a possibility that the company will gather on its own (which is not easy) several (if not all) of the assets mentioned above. If this happens, the organisation will not be particularly willing to form broad coalitions. This leads to another important conclusion that the more dispersed the network assets in the market, the higher the expected willingness to cooperate in this market.

3. Network position

All the considerations presented so far in this paper indicate the features and mechanisms of the network markets, which increase the likelihood of the cross-industry cooperation. Please keep in mind, however, that this a potential situation. Market actors have various tactics and strategies at their disposal to achieve their goals. They will not always be willing to choose cooperation strategies, and even if they do, the cooperation will not always go beyond the boundaries of the industry. In other words, the cooperation (including the cross-industry cooperation) even in the network markets, will be a matter of decisions taken in certain conditions. Therefore, it is useful to consider how the characteristics of the entities making these choices will affect the chance of cooperation with companies from other industries.

The concept of network position, proposed by Johanson and Mattsson (1992) may be helpful in these considerations. The network position of a market player is defined by the strength and relationships with other players, and the place of the player in the entire system (network). In other words, the network position corresponds to the role played by the actor in the network and determines how the actor is connected with the network. This viewpoint shifts the considerations from the level of the network structure to the level of individual network participants. The network becomes a natural business environment, and the network position becomes a resource at the disposal of the entity. The network position may impose limits on the entity, but at the same time, it may offer specific opportunities. This can be seen as power, i.e. access to and control of the critical network resources (through relationships with other entities). However, there is no doubt that different entities will have different network positions. Some of them may be the leaders with a substantial impact on the rest of the network, some others may be specialised providers of services or components of a network good, and others may be simply creators of new ideas. However, each of the companies in the market (not only the network market) will have its relationship portfolio (Turnbull et al. 1996; Turnbull and Zolkiewski 2002), including suppliers, customers, distributors, competitors, complementors, as well as other organizations such as government institutions, and managing them is far from being easy.

In this context, the strategic actions are attempts to change the network position, for example, to secure access to specific resources. This also applies to the decision on cooperation with other players, the range of such cooperation, its intensity and organisational formula. However, the network position does not entirely depend on the company that wants

systems, as the main software for the passenger car multimedia systems. Each of these competitors wants to cooperate with the broadest possible group of the most reputable automotive brands.

to shape it. It is the result of interactions in the network, and is, therefore, subject to changes in response to the actions of other entities. This may mean that in general, the individual actors have limited control over their network situation, and may not be able to predict the final consequences of their actions in such a dynamic structure.

Wilkinson and Young (2002) write: "Establishing a network of cooperators is difficult, as it depends on encountering other firms that are also willing to cooperate with others in a network. In business networks, this is affected by the nature of the tasks and technologies involved, the orientations of the parties involved and their experience in other relations. In other words, cooperative strategies are learned in action, via the experience of operating in relationships over time." Therefore, the inclination to cooperate in the network markets must be verified in practice by the willingness to cooperate declared by the other participants. It is not by chance that Shapiro and Varian (2000, 1999) in many places characterise the process of consortia formation during the standards wars as a political one, because it is not only about the objective factors encouraging cooperation, but also about convincing partners that it is worth it. This also voiced by van de Kaa et al. (2015) noting that the commitment of the actors to the success of the system is as important as the user base or the availability of complementary goods.

It is challenging to build generalised analytical frameworks based only on the analysis of individual tendency to some kind of behaviour. However, it is difficult not to see that, in the case of the network markets, omitting the endogenous factors affecting the interactions of entities will result in an excessive simplification of the situation. Already at the beginnings of the studies on the network externalities, the researchers noticed the impact of the players' expectations on the market situation. In many situations, the mechanisms of the self-fulfilling forecasts were observed and analysed. Taking all this into account, it cannot be excluded that the decisions on cooperation will originate from completely hypothetical, positive predictions about cooperation's effects, and/or a natural tendency to cooperate.

Interestingly enough, it may also be the case that the riskier the cooperation strategies (cross-industry cooperation can be considered to be risky due crossing the boundaries of the sector known to participants and reaching for support in new areas), the more difficult it is to explain it with other factors. Williamsson and Schaad (2018) point out that creating a model of good cross-industry cooperation may also be a challenge for experienced market players, and it is supported by mutual understanding, shared expectations and mutual trust. This line of reasoning is also supported by research Gassmann et al. (2010) showing that the cross-industry cooperation between completely different, mismatched entities from completely different markets is possible, provided that they share the belief in success (in this case, the possibility of creating a breakthrough innovation).

Conclusions

To sum up these considerations, let us conclude that the following phenomena observed in the network markets will be conducive to the cross-industry cooperation:

1. Due to the composite character of the network goods, their value is a derivative of the usefulness of the entire ecosystem in a given network market. This usefulness is the greater, the larger and more varied is the whole system (which is demonstrated, for example, by the availability and diversity of the complementary goods). The variety can be obtained through the cooperation of participants from various markets and industries.
2. The effect of the network's self-propelling development after reaching the critical mass encourages to look for ways allowing to propagate the new solution on the market quickly. One of such shortcuts is to use the control of an installed base exercised by an external entity, often operating in another market.
3. The modern network markets are very frequently knowledge-based with a considerable share of R&D investment, and an extensive portfolio of patents and copyrights. Also, they are often scattered across various

industries. Since the intellectual property rights are a valuable resource difficult to obtain quickly, the easiest and relatively fastest way to gain them may be by way of cooperation with their owners.

4. Apart from the control of an installed base, a guarantee of the intellectual property rights or availability of the complementary products, other elements help to achieve the success in the network market, such as the ability to innovate, manufacturing abilities, first-mover advantages, and reputation and brand name. Collecting them all in one organisation is hard — moreover, the pursuit of maximising the value of the market forces to share knowledge and profits with others. In many cases, market leaders look for a compromise: smaller market share but compensated by the overall size of the market.
5. The participants in the network market may treat relationships with other entities as resources. The desire to achieve strategic objectives may encourage them to establish and use network relations to have a stronger and channelled impact on the whole market.

The considerations presented in this paper, and the proposed conclusions, have been meant to be a theoretical starting point for the empirical verification in the future, whether and to what extent is the phenomenon of cross-industry cooperation observed in the network markets.

Bibliography

Chung, Seungwha; Kim, Gyeong Mook (2003): Performance effects of partnership between manufacturers and suppliers for new product development. The supplier's standpoint. In *Research Policy* 32 (4), pp. 587–603. DOI: 10.1016/S0048-7333(02)00047-1.

Cobeña, Mar; Gallego, Ángeles; Casanueva, Cristóbal (2017): Heterogeneity, diversity and complementarity in alliance portfolios. In *European Management Journal* 35 (4), pp. 464–476. DOI: 10.1016/j.emj.2016.12.005.

Doeringer, P. B.; Terkla, D. G. (1995): Business Strategy and Cross-Industry Clusters. Business Strategy and Cross-Industry Clusters. In *Economic Development Quarterly* 9 (3), pp. 225–237. DOI: 10.1177/089124249500900304.

Economides, N. (1996): The economics of networks. The economics of networks. In *International Journal of Industrial Organization* 14 (6), pp. 673–699. DOI: 10.1016/0167-7187(96)01015-6.

Gassmann, Oliver; Zeschky, Marco; Wolff, Timo; Stahl, Martin (2010): Crossing the Industry-Line. Breakthrough Innovation through Cross-Industry Alliances with 'Non-Suppliers'. In *Long Range Planning* 43 (5), pp. 639–654. DOI: 10.1016/j.lrp.2010.06.003.

Hattori, Keisuke; Hsin, Lin Ming (2014): Complementary Alliances in Composite Good Markets with Network Structure. In *Manchester School* 82 (1), pp. 33–51.

Johanson, J; Mattsson, L-G (1992): Network positions and strategic action — an analytical framework. In Björn Axelsson, Geoff Easton (Eds.): Industrial Networks: A New View of Reality. London: Routledge, pp. 205–214.

Katz, Michael L.; Shapiro, Carl (1994): Systems Competition and Network Effects. In *The Journal of Economic Perspectives* (2), p. 93.

Kim, Chongmin; Shin, Hyukseung (2002): Endogenous formation of coalitions with composite goods. In *International Journal of Industrial Organization* 20 (10), pp. 1491–1511. DOI: 10.1016/S0167-7187(02)00037-1.

King, Stephen P. (2013): Two-Sided Markets. In *Australian Economic Review* 46 (2), pp. 247–258.

Knoke, D. (2014): Economic Networks: Wiley (Economy and Society). Available online at https://books.google.pl/books?id=LC-pAgAAQBAJ.

Mahnken, Torben A.; Moehrle, Martin G. (2018): Multi-cross-industry innovation patents in the USA - A combination of PATSTAT and Orbis search. In *World Patent Information* 55, pp. 52–60. DOI: 10.1016/j.wpi.2018.10.003.

Mason, Robin; Valletti, Tommaso M. (2001): Competition in Communication Networks. Pricing and Regulation. In *Oxford Review of Economic Policy* 17 (3), pp. 389–415.

Mazurek, Szymon (2018): Feeding the Network as a Part of Competitive Strategy on the Network Markets. In Tomáš Löster, Tomáš Pavelka (Eds.): The 12th International Days of Statistics and Economics, Conference Proceedings. Prague: MELANDRIUM. Available online at https://msed.vse.cz/msed_2018/article/110-Mazurek-Szymon-paper.pdf, checked on 12/29/2018.

O'Dwyer, Michele; Gilmore, Audrey (2018): Value and alliance capability and the formation of strategic alliances in SMEs. The impact of customer orientation and resource optimisation. In *Journal of Business Research* 87, pp. 58–68. DOI: 10.1016/j.jbusres.2018.02.020.

Powell, Walter (1990): Neither Market nor Hierarchy. Network Forms of Organization. In *Research in Organizational Behavior* (12).

Rayskin, Victoria (2016): Dynamics of Two-Sided Markets. In *Review of Marketing Science* 14 (1), pp. 1–19. DOI: 10.1515/roms-2015-0001.

Rohlfs, Jeffrey (1974): A Theory of Interdependent Demand for a Communications Service. In *Bell Journal of Economics* 5 (1), pp. 16–37.

Sanchez, Daniel (2018): Apple Music Converts Paying Customers Nearly 3 Times Faster than Spotify. In *Digital Music News*, 9/26/2018. Available online at https://www.digitalmusicnews.com/2018/09/26/apple-music-spotify-pandora-conversion-rates/, checked on 12/29/2018.

Schilling, Melissa A. (2002): Technology Success and Failure in Winner-Take-All Markets. The Impact of Learning Orientation, Timing, and Network Externalities. In *The Academy of Management Journal* (2), p. 387.

Shapiro, Carl; Varian, Hal R. (1999): The Art of Standards Wars. In *California Management Review* (2), p. 8. DOI: 10.2307/41165984.

Shapiro, Carl; Varian, Hal R. (2000): Information rules. A strategic guide to the network economy: Boston, MA : Harvard Business School Press, 2000.

Smals, Raphaël G.M.; Smits, Armand A.J. (2012): Value for value—The dynamics of supplier value in collaborative new product development. In *Industrial Marketing Management* 41 (1), pp. 156–165. DOI: 10.1016/j.indmarman.2011.11.022.

Thompson, Grahame (2003): Between hierarchies and markets. The logic and limits of network forms of organization: Oxford : Oxford University Press, 2003.

Turnbull, Peter; Ford, David; Cunningham, Malcolm (1996): Interaction, relationships and networks in business markets. An evolving perspective. In *Journal of Business & Industrial Marketing* (3/4), p. 44. DOI: 10.1108/08858629610125469.

Turnbull, Peter; Zolkiewski, Judy (2002): Do relationship portfolios and networks provide the key to successful relationship management? In *Journal of Business & Industrial Marketing* 17 (7), pp. 575–597. DOI: 10.1108/08858620210451109.

van de Kaa, Geerten; Vries, Henk J. de; van den Ende, Jan (2015): Strategies in network industries. The importance of inter-organisational networks, complementary goods, and commitment. In *Technology Analysis & Strategic Management* 27 (1), pp. 73–86. DOI: 10.1080/09537325.2014.951320.

Wilkinson, Ian; Young, Louise (2002): On cooperating. Firms, relations and networks. In *Journal of Business Research* 55 (2), pp. 123–132. DOI: 10.1016/S0148-2963(00)00147-8.

Williamsson, Jon; Schaad, Gabriela (2018): Re-Combining Value Chains. Cross-Industry Cooperation for Business Model Innovation. In *Journal of Business Models* 6 (2), pp. 90–95.

TOURISM PRODUCT/ SERVICE ATTRIBUTE INFLUENCE ON OVERALL TOURIST SATISFACTION LEVEL IN RIGA

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Abstract. Tourist satisfaction is significant for successful destination marketing as it affects the choice of destination, consumption of tourism products and services as well as the decision to return to the destination and intentions to recommend the destination to other potential tourists. The mutual positive influence of customer satisfaction and loyalty is indisputably proven by empirical research studies carried out in different economic fields and industries, including tourism.

The aim of the research was to study the satisfaction level of foreign tourists as consumers with various tourism product attributes in Riga and its influence on overall satisfaction and further consumer behaviour of tourists.

The method used in this research is the Penalty/Reward factor analysis method, which was developed by Brandt and afterwards used by many researchers to investigate the influence of different service attributes on the overall satisfaction level.

The research is based on data of a tourist survey carried out in Riga in the summer of 2018. The data acquired in the survey allowed for conducting the Penalty/Reward analysis which represents an important instrument for establishing the trip elements or factors the absence or poor performance of which (low quality) causes customer dissatisfaction (decrease in the overall level of satisfaction) and the factors which cause increased customer satisfaction (rise in the overall level). Main results and findings are intended for a destination marketing organisation of Riga. The recommendations made by the authors will facilitate the improvement of the opportunities offered by Riga's tourism industry in accordance with the foreign tourist requirements, thus raising the satisfaction level of foreign tourists.

Key words: *tourist satisfaction, product/ service attributes, penalty factors, reward factors*

JEL code: M31, L83

Introduction

Tourist satisfaction is a significant factor for successful destination marketing as it affects the choice of destination, consumption of tourism products and services as well as the decision to return to the visited destination. An efficient tourism destination service improvement strategy can be achieved only on a base of an appropriate selection of service attributes to be improved. The identification of the determinants of overall customer satisfaction is a key issue for researchers and practitioners. This is an essential prerequisite for the management of service quality, since it is very important for service providers to know which service elements add value and increase satisfaction, which of them only meet minimum requirements and reduce frustration and which do both. Only then can service providers make better decisions on how resources should be allocated to different service attributes to improve quality and satisfaction.

The aim of the research was to study the satisfaction level of foreign tourists as consumers with various tourism product attributes in Riga and its influence on overall satisfaction and further consumer behaviour of tourists.

Theoretical discussion of the paper outlines importance of tourist satisfaction in destination marketing as well as tourist satisfaction research models applied in destination marketing.

The main research method applied in this paper is the Penalty/ Reward factor analysis method for which the initial concept was developed by Brandt (1987, 1988) and afterwards used by many researchers (Matzler & Sauerwein, 2002; Matzler, Pechlaner & Siller, 2001; Fuchs & Weiermair, 2004) and which, over time, was expanded with impact-asymmetry analysis (Mikulić & Prebežac 2008, 2011; Albayrak, Caber, 2013; Albayrak, 2018; Velikova, Slevitch, Mathe-Soulek, 2017 etc.) to investigate the influence of different service attributes on the overall satisfaction level.

Research on the satisfaction level of foreign tourists with various tourism product attributes has been conducted in Riga several times. The previous survey on tourist satisfaction with the tourism industry in Riga was conducted in the year 2014 and the afterwards one was organised in season of 2018.

The contribution of findings on the discipline of destination marketing are addressed for a destination marketing organisation that is responsible for tourism development in Riga – Live Riga. The recommendations made by the authors will facilitate the improvement of the Riga's tourism product in accordance with the foreign tourist requirements, thus raising the satisfaction level of foreign tourists.

Importance of tourist satisfaction in destination marketing

Historically, satisfaction with tourism products offered by destinations has been a part of studies by different scholars dating back to the late 19th century due to the economic and social importance and fast development of tourism industry (Loi, et.al., 2017). More specifically, in the last few decades, the issue of tourist satisfaction has been outlined in research papers of social psychology, marketing and customer behaviour (Cole, Scott 2004).

As a theoretical concept, satisfaction with travel destinations can be defined as the aggregate feelings that a tourist derives as a result of visiting a tourist attraction (Cole, Scott, 2004) or, more explicitly, as a manifestation of emotions in the form of a subjective assessment of the destination and its particular components (Vajčnerová, Žiaran, Ryglová & Andráško (2014). As a result of different research dimensions, a lot of definitions of the concept of satisfaction have been put forward based on evaluations made during purchase (Oliver & Swan, 1989), post-purchase (Fornell, 1992, Westbrook & Reilly, 1983, Churchill & Suprenant, 1982), during consumption (Oliver, 1992, 1997, Cadotte, Woodruff & Jenkins, 1987, Westbrook, 1987, Swan, Trawick & Carroll, 1982) or post-consumption (Tse & Wilton 1988, Swan, Trawick & Caroll, 1982) that express positive, neutral or negative attitude towards a particular product or service. Although there are a lot of particularities in perspective to the satisfaction concept, common agreement is that customer satisfaction shows the correspondence between the subjectively perceived and practically experienced satisfaction in correspondence with customer needs and desires.

Significant research has also been carried out to determine the influence of the level of customer satisfaction on future customer behaviour. Many scholars outline that the tourist satisfaction after the visit of destination is an important determinant of post-holiday behaviours, returned visits, loyalty and further recommendations (Arasli, Baradarani, 2014).

Customer satisfaction influence on loyalty comprises repeated purchases, additional purchases of the same supplier and recommendation of the product to other potential customers ("word of mouth" advertising). The mutual positive influence of customer satisfaction and loyalty is proven by empirical research studies which have been carried out in different economic fields and industries (Oliver, 1989, Woodruff, Cadotte & Jenkins, 1983 etc.) The specifics of customer

satisfaction influence on loyalty in the tourism industry can be seen in the research of Ottmar L. Braun (1993), Metin Kozak and Mike (2000). Tourists tend to return to places where the received services, or gathered impressions have given them a sense of satisfaction. Tourists repeatedly choose other products offered by the same tour operator if their previous tour was successful. Tourists, upon returning from a tour, often share their impressions with their relatives, friends and acquaintances – positive travel experience and satisfaction with services expressed very often serve as motivation to visit destinations about which one has heard positive travel reviews. Thereby, a satisfied tourism customer also becomes a loyal, free advertisement tool for travel destinations, as well as tourism service providers. Behavioural outcome gained from destination satisfaction can be in the form of multidimensional repeated destination visits (Arasli, Baradarani, 2014), recommendations made by tourists to other people, and general positive word of mouth communication.

Even though there are studies related to tourist satisfaction with destinations, scholars still indicate a huge gap in research between destination tourism product attributes and tourists' perceptions of experienced quality (Chen & Chen, 2010; Moon, Han, 2018).

Tourist satisfaction research models applied in destination marketing

Efficient tourism destination service improvement strategy can be achieved only on a base of an appropriate selection of service attributes to be improved. Research on the particular tourism product/service attributes and their influence on overall satisfaction can be carried out using Correlations, Performance/satisfaction relationship Kano model and Penalty/ Reward factor analysis.

Kano model (1984) gained increasing popularity in studies of service quality and customer satisfaction especially in the tourism research area over the past three decades (Mikulic, Prebezac, 2016). Kano (1984) developed a two-dimensional quality model to overcome disadvantages of other one-dimensional quality models for which the only measured indicator is customer satisfaction, showing a possibility that improvements in service quality may not always lead to higher customer satisfaction, thus showing a non-linear pattern in the relationship between a dimension's service quality and customer satisfaction (Go, Kim, 2018). Kano explained this non-linear pattern in the relationship between quality attributes in performance and overall customer satisfaction by categorising quality indicating attributes in five categories - basic, performance, excitement, indifference, and reverse (Pyo, 2012). The last two categories are not relevant to overall satisfaction analyses, therefore, in studying tourist satisfaction using the Kano model, frequent use is made of the three-factor module of consumer satisfaction, stating that consumer satisfaction/dissatisfaction develops from the interaction of various factors - minimal product requirement provision, excitement factors as well as desirable service factors. The first group contains the basic factors forming the minimal product/service requirement provision the lack of which causes dissatisfaction, however meeting of which does not create a higher level of satisfaction. These minimal product/service requirements can be described as basic features which are essential for all customers (Basfirinci, Mitra, 2015). A negative assessment of these factors has a bigger influence on the overall level of satisfaction than a positive assessment. The second factor group – the so-called excitement factors – can increase the customer satisfaction level if they belong to the product attributes, however, they do not decrease the satisfaction if they do not belong to the product attributes. These excitement factors, when fulfilled, can lead to higher levels of customer satisfaction, and not cause dissatisfaction when not fulfilled as expected by customers, who could be unaware of such tourism product features (Basfirinci, Mitra, 2015). The excitement factors surprise the customer and create joy.

The third factor group – the product/ service performance or desirable service factors create satisfaction if they are performed at a high quality and create dissatisfaction if performed at a low quality. Product/ service performance factors

are designed to meet consumers' needs, and the service provider must offer them in a competitive way (Alegre, Garau, 2011). The mutual relation between the performance quality and satisfaction is linear and symmetrical.

From a tourism destination perspective, as influence factor examples that are affecting the tourist's perception about the destination, the following tourism services could be outlined - lodging, restaurants, shopping, tourist attractions, transportation facilities, local cuisine and environment (Pyo, 2012; Arasli, Baradarani, 2014). It is noticeable that scholars usually develop various specific measures that correspond to the given destination indicating rather heterogeneous approach (Vajčnerová, Žiaran, Ryglová, Andráško, 2014) in outcome implications for destination management.

Literature provides two methods that can be applied further in the empirical research – Consumer satisfaction model by T.G.Vavra (1997) and Penalty/ Reward factor analysis method by Brandt (1987; 1988).

T.G.Vavra (1997) created a model of the three-factor structure of satisfaction that is based on consumer/customer satisfaction hygiene or basic service and excitement factor identification, comparing the explicit assessment of the importance of various service or tourism site attributes with the implicit or derived assessment.

The second is the so-called Penalty/ Reward factor analysis method, which was developed by Brandt (1987; 1988). Penalty/ Reward factor analysis method is adaptive to typical customer satisfaction data and is a method widely favoured by researchers for identifying the asymmetric influences of product/service attributes on overall customer satisfaction (Albayrak, Caber, 2013, Albayrak, 2018). The Penalty/ Reward factor analysis method is one of the multi-factor analysis methods and is based on the concept that the structure of a product/service is formed by two kinds of product/service attributes or factors: routine factors and exception factors. The "penalty" factors of a product/service are the elements/attributes that are badly performed (low quality performance) which causes customer dissatisfaction. The "reward" factors are the product/service elements which cause customer satisfaction to increase; however, the satisfaction does not decline if these factors are absent.

The main goal of the method is the identification of the "penalty" and "reward" factors. To apply the method, it is necessary to find out the overall level of satisfaction as well as satisfaction with specific product/service elements. The method is implemented by carrying out the regression analysis and using the so-called dummy variables, which replace the actual satisfaction assessments. The ratios gained as a result of the regression may also comprise several statistically insignificant ratios - the corresponding product/service factors which are excluded from further analysis (Matzler & Sauerwein, 2002, Matzler, Pechlaner & Siller, 2001, Fuchs & Weiermair, 2004).

Many scholars attempt to identify the most important tourism product attributes as well as the influence of these product attributes' performance on tourist satisfaction (Mittal, Katrichis, Kumar, 2001)

The same as Penalty/ Reward factor analysis, the Performance–satisfaction relationships might be asymmetric and non-linear rather than symmetric and linear, an increasing number of studies (Mittal, Ross, & Baldasare, 1998; Matzler & Renzl, 2007) have shown that the influence of attributes on overall customer satisfaction is quite possibly asymmetric.

The interpretation of the results of the research

The research is based on the analysis of data acquired from a foreign tourist survey made by the author in cooperation with the destination marketing organisation Live Riga. The foreign tourist survey was carried out in Riga in the summer of 2018, by using questionnaires in English and Russian languages. The questionnaire was designed to find the aspects of the experience of foreign tourists in Riga. 996 valid questionnaires have been gathered. The target group of the survey included foreign tourists from the high priority and priority tourism target markets of Riga – Estonia, Lithuania, Germany, Russia, Finland, Sweden, Norway, France, Italy, Netherlands, Ukraine.

Table 1

Respondent's profile

	Number of respondents		Number of respondents	%
All respondents	**996**	**Gender**		
Country		Male	513	51.5
Estonia	39	Female	483	48.5
Finland	68	**Age**		
Germany	174	16-25	197	19.8
Lithuania	38	26-35	319	32
Norway	48	36-45	159	16
Russia	116	46-55	149	15
Sweden	70	56-65	114	11.4
France	76	66+	56	5.6
Italy	61	Did not specify	2	0.2
The Netherlands	62	**Income level**		
Ukraine	30	Below average	106	10.6
Other countries	214	Average	489	49.1
		Above average	309	31
		High	40	4
		Did not specify	52	5.2

Source: author's calculations based on Riga tourist survey 2018

Firstly, respondents were asked to evaluate the fulfilment of their expectations regarding their visit to Riga. Slightly more than half (50.7%) of respondents admit that Riga's visit has been better than expected, 47.7% admit it as expected, but only 1.6% (16 respondents) are disappointed in in their visit to Riga, recognizing that that it was worse than expected. The total rating of satisfaction with overall experience in Riga by all respondents is 6.2 points on the scale from 1-very dissatisfied to 7-very satisfied.

Eight most important product/service attributes and activities of the visit to Riga were included in the questionnaires and the respondents could rate them on a 7-point Likert scale (Table 2).

Table 2

Satisfaction level with product/service attributes and activities done during the stay in Riga

	Average rating from 1 – 'very dissatisfied' to 7 – 'very satisfied'	Mode	Median
Day trip out of Riga	6.32	7	7
Visiting opera/ concert	6.20	7	7
City sightseeing	6.19	7	6
Restaurants, cafés (catering)	5.92	6	6
Guided tour	5.86	7	6
Night life and entertainment	5.85	7	6
Visiting museums	5.83	6	6
Shopping	5.70	6	6

Source: author's calculations based on Riga tourist survey 2018

To find out the willingness of Riga's visitors to recommend Riga as a travel destination for their relatives, friends and acquaintances, respondents were asked to rate it on a 10-point scale. Most respondents are ready to recommend Riga as

a travel destination to their friends and relatives, evaluating this intention with 8.7 points on the scale from '1 – not at all' to '10 – extremely likely' (median = 9, mode = 10).

An important indicator is the 'Net Promoter Score', which reflects the percentage of tourists who are willing to make a positive communication - to recommend the destination to their friends and relatives. The following formula is used to calculate this indicator:

$$\text{NPS (Net Promoter Score)} = \%\ \text{of Promoters} - \%\ \text{of Detractors}, \quad (1)$$

where 'Promoters' - tourists who rated the intentions to recommend the destination with 9 or 10, 'Detractors' - with 1 to 6 on the scale 1 - 'definitely no' to 10 - 'very likely'. Respondents who rated their intentions to recommend the destination with 7 or 8 are called 'Passives'.

Using the formula (1) mentioned above, the Net Promoter Score for all respondents is 54.5% (62.1% 'Promoters' - 7.6% 'Detractors'). In the previously carried out similar survey on tourist satisfaction with the tourism industry in Riga that was conducted in the year 2014 NPS was only 40% (Riga Tourist Survey, 2014).

To find out the satisfaction assessment of which activity has the strongest impact on total satisfaction with the visit to Riga and the intentions to recommend Riga as a travel destination, a correlation analysis was performed first. The results show that the most powerful impact on the overall level of satisfaction and intentions to recommend Riga as a destination is satisfaction with city sightseeing, as well as the offer of restaurants, cafes and other catering establishments.

Table 3

Correlation between the evaluation of activities done during the stay in Riga, total satisfaction and intentions of respondents to recommend Riga as place to visit

	Total satisfaction	Intentions to recommend
City sightseeing	**.552****	**.511****
Guided tour	.428**	.287**
Visiting museums	.459**	.391**
Visiting opera/ concert	.449**	0.086
Shopping	.329**	.266**
Night life and entertainment	**.496****	.378**
Restaurants, cafés (catering)	**.483****	**.419****
Day trip out of Riga	.440**	.289**
** Correlation is significant at the 0.01 level (2-tailed)		

Source: author's calculations based on Riga tourist survey 2018

The data acquired in the survey allowed for conducting the Penalty/ Reward analysis which represents an important instrument for establishing the trip elements or factors the absence or poor performance of which (low quality) causes customer dissatisfaction (decreases the overall level of satisfaction) and the factors which cause increased customer satisfaction (raise the overall satisfaction level). In order to conduct the analysis, attribute satisfaction ratings were recoded: one set of dummy variables is created and used to quantify excitement factors and another set is created to quantify basic factors. Ratings 1 – 3 on a 7-point Likert scale are defined as the 'low performance' and were used to form the dummy variables expressing basic factors; 6 and 7 are defined as the 'high performance' levels and were used to form dummy variables expressing excitement factors, regression analysis was performed.

If the value of the reward-index of an attribute is larger than its value of penalty-index, then this attribute is an excitement factor. On the other hand, if the value of reward-index of an attribute is smaller than its value of penalty-index, this attribute is a basic factor. If the value of reward-index of an attribute is approximately equal to its value of penalty-index, then this attribute is a performance factor. The results of the analysis shown in Figure 1 reveal that none of the

attributes of visiting Riga are applicable to the excitement factors, two attributes ('Guided tour' and 'Shopping') are performance factors and three attributes ('City sightseeing', 'Night life/ entertainment', 'Restaurants/ cafes') are basic factors. Three attributes shows atypical results because both indexes are either positive ('Visiting museums', 'Visiting opera/ concert') or negative ('Day trip out of Riga').

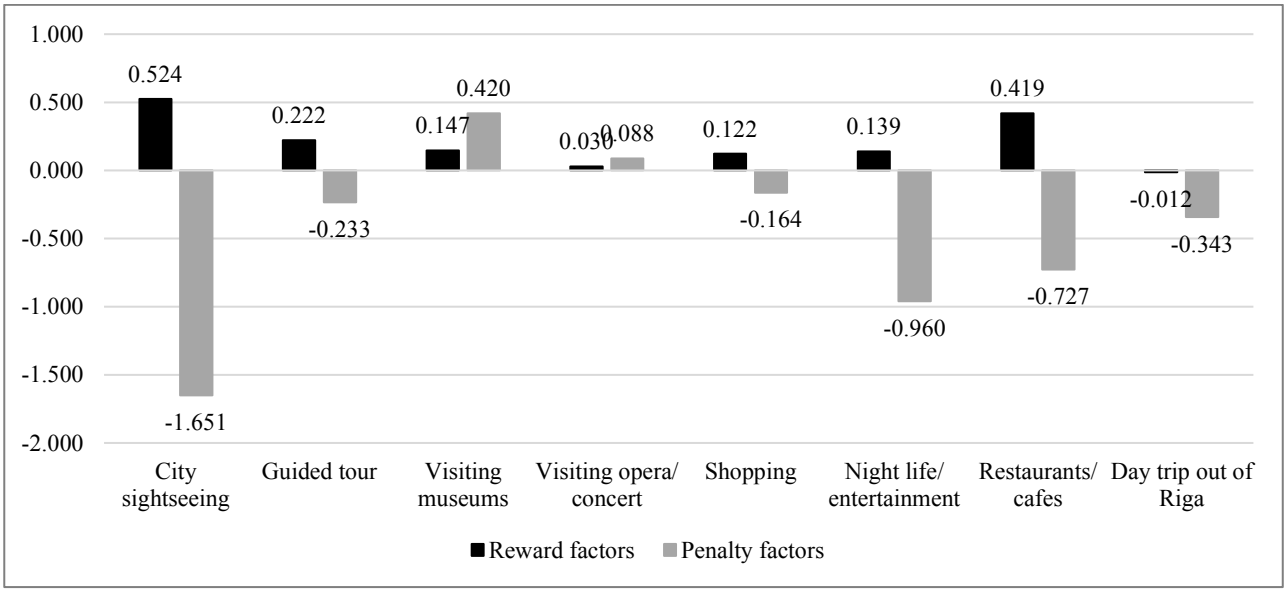

Fig. 1. **Penalty/ Reward contrast analysis of tourism service attributes in Riga**

Source: author's calculations based on Riga tourist survey 2018

Mikulić and Prebežac (2008) extended the Penalty/ Reward contrast analysis by calculating the scores in terms of an impact-asymmetry (IA). The IA index of an attribute is equal to satisfaction-generating potential (SGP) minus dissatisfaction-generating potential (DGP). The SGP is the ratio of reward-index over the range of impact on overall satisfaction (RIOS) and the DGP is the ratio of penalty-index over RIOS. The RIOS is the absolute sum of reward-index and penalty-index. Mikulić and Prebežac (2011) used IA-levels to classify different factor-categories as follows: frustrators ($IA \leq -0.6$), dissatisfiers ($-0.6 \leq IA \leq -0.2$), hybrids ($-0.2 < IA < 0.2$), satisfiers ($0.2 \leq IA \leq 0.6$), and delighters ($IA \geq 0.6$). This method provides richer levels of factor-categories compared with penalty-reward contrast analysis does, however, it involves a more complicated calculation. Table 4 shows the calculations of the impact-asymmetry analysis of tourism service attributes in Riga.

Values close to '0' ('Guided tour' -0.025; 'Shopping' -0.147) indicates that such attributes are a 'hybrid' – that is, the attribute has equal satisfaction- and dissatisfaction-generating potentials.

Values closer to '-1' ('Night life/entertainment' -0.747; 'City sightseeing' -0.518; 'Restaurants/ cafes (catering)' -0.269) indicates that these attributes are 'perfect dissatisfiers' or even 'frustrators' – that is, the attribute has only dissatisfaction-generating potential.

Table 4

Impact asymmetry analysis of tourism service attributes in Riga

Attribute	Reward Indexes	Penalty Indexes	RIOS	SGP	DGP	IA		Factor
City sightseeing	0.524	-1.651	2.175	0.241	0.759	-0.518	-0.6<IA<-0.2	Dissatisfier
Guided tour	0.222	-0.233	0.455	0.488	0.512	-0.025	-0.2<IA<0.2	Hybrid
Visiting museums	0.147	0.420	0.567	0.259	0.740	-0.481	-0.6<IA<-0.2	Dissatisfier*
Visiting opera/ concert	0.030	0.088	0.118	0.256	0.749	-0.493	-0.6<IA<-0.2	Dissatisfier*
Shopping	0.122	-0.164	0.286	0.427	0.575	-0.147	-0.2<IA<0.2	Hybrid
Night life and entertainment	0.139	-0.960	1.099	0.127	0.873	-0.747	IA<-0.6	Frustrator
Restaurants, cafés (catering)	0.419	-0.727	1.146	0.366	0.634	-0.269	-0.6<IA<-0.2	Dissatisfier
Day trip out of Riga	-0.012	-0.343	0.355	0.034	0.965	-0.931	IA<-0.6	Frustrator**
* This result is atypical because both indexes are positive ** This result is atypical because both indexes are negative								

Data source: Riga tourist survey 2018

These attributes require particular attention when setting improvement priorities because their impact on overall satisfaction level varies significantly with different levels of attribute-performance.

Conclusions, proposals, recommendations

Although there are many studies in the scientific literature that identify the features of services that affect the overall level of satisfaction, it was important to find out which features of services affect the average satisfaction of Riga visitors. It is known that positive travel experience and high overall satisfaction level affect the traveller's readiness to make a positive word-of-mouth communication about the destination they have visited with their relatives, friends and acquaintances.

The total rating of satisfaction with overall experience in Riga by all respondents visited Riga is high, slightly more than half of respondents admit that Riga's visit has been better than expected.

The results show that the most powerful impact on the overall level of satisfaction and intentions to recommend Riga as a destination is satisfaction with attribute 'city sightseeing', as well as the offer of 'restaurants, cafes and other catering establishments'.

An in-depth analysis of the research results showed that those travel items that require special attention from the destination marketing organization are a 'city sightseeing', 'restaurant and cafe offer', 'nightlife and entertainment', because these attributes are 'perfect dissatisfiers' or even 'frustrators' – that is, these features have a high dissatisfaction-generating potential.

Recommendations to destination marketing organisation of Riga:

1. In addition to traditional city sightseeing routes, prepare and offer thematic and specialized routes for different age and interest groups, creating traditional printed route pages as well as downloadable information materials and aps on smart devices;
2. Ensure tighter regulation and control of fair practices for nightclubs and gambling establishments;
3. Implement measures that would enhance the attractiveness and quality of the catering offer, for example, to promote a more active application of the quality label Q-Latvia, actively promote the top-chefs led restaurants;

4. Provide the regulation of city guide activities and quality assurance of their offer by licensing and strict control of guides.

The future studies should also include other product/ service attributes of the city visit presented by respondents on open questions about the negative aspects of the experience of visiting Riga: 'public transport', 'tourism information'.

Bibliography

Albayrak T., 2018. Classifying Daily Tour Service Attributes by Three-Factor Theory of Customer Satisfaction, *Journal of Quality Assurance in Hospitality & Tourism,* 19(1), 112–125.

Albayrak T., Caber M., 2013. Penalty–Reward-Contrast Analysis: a Review of its Application in Customer Satisfaction Research, *Total Quality Management & Business Excellence*, 24(11-12), 1288–1300.

Alegre J., Garau J., 2011. The Factor Structure of Tourist Satisfaction at Sun and Sand Destinations, *Journal of Travel Research*, 50(1), 78–86.

Arasli, H. and Baradarani, S., 2014. European Tourist Perspective on Destination Satisfaction in Jordan's Industries. *Procedia – Social and Behavioral Sciences*, 109, 1416–1425.

Basfirinci C., Mitra A., 2015. A Cross Cultural Investigation of Airlines Service Quality through Integration of Servqual and the Kano model, *Journal of Air Transport Management*, 42, 239–248.

Brandt, R.D., 1987. A Procedure for Identifying Value-Enhanced Service Components Using Customer Satisfaction Survey Data. Surprenant, C. (Ed.) *Add Value to Your Service*, American Marketing Association: Chicago, 61–65.

Brandt, R.D., 1988. How Service Marketers Can Identify Value-Enhanced Service Elements, *The Journal of Service Marketing*, 2(3), 35–41.

Braun, O. L., 1993. Reiseentscheidung. Hahn, H., Kagelmann, H. J. (Hrsg.) *Handbuch der Tourismus Psychologie und Soziologie*, München, 306 p.

Cadotte, E. R., Woodruff, R. B., Jenkins, R. L., 1987. Expectations and Norms in Models of Consumer Satisfaction, *Journal of Marketing Research*, 24, 305–314.

Chen C.F., Chen F.S., 2010. Experience Quality, Perceived Value, Satisfaction and Behavioral Intentions for Heritage Tourists, *Tourism Management*, 31(1), 29–35.

Churchill, G.A., Suprenant C.,1982. An Investigation into the Determinants of Customer Satisfaction, *Journal of Marketing Research*, 19, 491–504.

Cole S.T., Scott D., 2004. Examining the Mediating Role of Experience Quality in a Model of Tourist Experiences, *Journal of Travel & Tourism Marketing*, 16(1), 79–90.

Fornell, C., 1992. A National Customer Satisfaction Barometer: The Swedish Experience, *Journal of Marketing*, 56, 6–21.

Fuchs, M., Weiermair, K., 2004. Destination Benchmarking – An Indicator Systems Potential for Exploring Guest Satisfaction. *Journal of Travel Research*, 42(3), 212–225.

Go M., Kim I., 2018. In-flight NCCI Management by Combining the Kano Model with the Service Blueprint: A Comparison of Frequent and Infrequent Flyers, *Tourism Management*, 69, 471–486.

Kozak, M., Rimmington, M., 2000. Tourist Satisfaction with Mallorca (Spain) as an Off-season Holiday Destination, *Journal of Travel Research*. 38(3), 260–269.

Loi, LT.I., et al., 2017. Does the Quality of Tourist Shuttles Influence Revisit Intention through Destination Image and Satisfaction? The case of Macao, *Journal of Hospitality and Tourism Management*, 32, 115–123.

Matzler, K., & Renzl, B., 2007. Assessing Asymmetric Effects in the Formation of Employee Satisfaction, *Tourism Management*, 28, 1093–1103.

Matzler, K., & Sauerwein, E., 2002. The Factor Structure of Customer Satisfaction: An Empirical Test of the Importance-Grid and the Penalty-Reward-Contrast Analysis, *International Journal of Service Industry Management*, 13 (4), 314–32.

Matzler, K., Pechlaner, H. & Siller, H., 2001. Die Ermittlung von Basis-, Leistungs- und Begeisterungsfaktoren der Gästezufriedenheit, *Tourismus Journal*, 5(4), 445–69.

Mikulić, J., Prebežac, D., 2008. Prioritizing Improvement of Service Attributes using Impact Range-Performance Analysis and Impact-Asymmetry Analysis, *Managing Service Quality*, 18(6), 559–576.

Mikulić, J., Prebežac, D., 2011. Evaluating Hotel Animation Programs at Mediterranean Sun-and-Sea Resorts: An Impact-Asymmetry Analysis, *Tourism Management*, 32 (3), 688–696.

Mikulic J., Prebezac D., 2016. The Kano Model in Tourism Research: A Critical Note, *Annals of Tourism Research*, 61, 25–27.

Mittal, V., Katrichis, J.M., & Kumar, P., 2001. Attribute Performance and Customer Satisfaction over Time: Evidence from two Field Studies, *Journal of Services Marketing*, 15, 343–356.

Mittal, V., Ross, W.T.Jr., & Baldasare, M., 1998. The Asymmetric Impact of Negative and Positive Attribute-Level Performance on Overall Satisfaction and Repurchase Intentions, *Journal of Marketing*, 62, 33–47.

Moon H., Han H., 2018. Destination Attributes Influencing Chinese Travelers' Perceptions of Experience Quality and Intentions for Island Tourism: A Case of Jeju Island, *Tourism Management Perspectives*, 28, 71–82.

Oliver, R.L., 1989. Processing of the Satisfaction Response in Consumption: A Suggested Framework and Research Propositions, *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, 2, 1–16.

Oliver R. L., 1992. An Investigation of the Attribute Basis of Emotion and Related Affects in Consumption: Suggestions for a Stage-Specific Satisfaction Framework. Sherry, J.F. & Sternthal, B. (Eds.) Advances in Consumer Research, 19, Ann Arbor, MI: Association for Consumer Research, 237–244.

Oliver, R. L., 1997. *Satisfaction: A Behavioral Perspective on the Consumer*. New York: The McGraw-Hill Companies, Inc., 432 p.

Oliver, R. L., Swan J. E., 1989. Consumer Perceptions of Interpersonal Equity and Satisfaction in Transactions: A Field Survey Approach, *Journal of Marketing*, 53, 21–35.

Pyo S., 2012. Identifying and Prioritizing Destination Knowledge Needs, *Annals of Tourism Research*, 39(2), 1156–1175.

Swan, J.E., Trawick, I.F., Carroll, M.G., 1982. Satisfaction Related to Predictive, Desired Expectations: A Field Study. Hunt, H.K. & Day, R.L. (Eds.) *New Findings on Consumer Satisfaction and Complaining*. Bloomington, IN: Indiana University, 15–22.

Tse, D. K., Wilton, P.C., 1988. Models of Consumer Satisfaction Formation: An Extension, *Journal of Marketing Research*, 25, 204–212.

Vavra, T. G., 1997. *Improving Your Measurement of Customer Satisfaction: A Guide to Creating, Conducting, Analyzing and Reporting Customer Satisfaction Measurement Program*, Milwaukee, WI: ASQC Quality Press, 384 p.

Vajčnerová I., Žiaran P., Ryglová K., Andráško I., 2014. Quality Management of the Tourist Destination in the Context of Visitors' Satisfaction, *Procedia Economics and Finance*, 12, 718–724.

Velikova, N., Slevitch, L., Mathe-Soulek, K., 2017. Application of Kano Model to Identification of Wine Festival Satisfaction Drivers, *International Journal of Contemporary Hospitality Management,* 29(10), 2708–2726.

Woodruff, R. B., Cadotte, E. R., Jenkins, R.L., 1983. Modelling Consumer Satisfaction Processes Using Experience-Based Norms, *Journal of Marketing Research*, 20, 296–304.

IMPACT INVESTING – AN ACCEPTABLE NICHE EXISTENCE?

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Abstract. Sustainable and socially responsible investment (SRI) strategies face high growth rates worldwide. Although SRI strategies gained high amounts of assets under management over the last years, we do not recognize a significant shift towards sustainable business practices. The research aim of this paper is to give an answer to the question, why the high amount of assets managed sustainably does not lead to a significant transformation in business practices and how we could change the existing framework in order to achieve significant changes. Our methodological approach first leads us to a comparison of the existing seven sustainable investment strategies and a description of financial instruments, connected with those strategies. Second, we collect decision criteria and goals for supply side and demand side market participants. Finally, we use this preparatory work for the construction of a decision matrix, which allows us to interpret differences in goal fulfilments.

This analysis delivers insights into the connection between sustainable investment strategies, preferences of supply side and demand side institutions, and the low speed of transformation. Up to now, no research on the connection between sustainable investment strategies and the speed of transformation towards sustainability has been done. Our results focus cost disadvantages of impact investing compared to other sustainable investment strategies. A stronger standardisation of impact investing's private debt and private equity structures is needed. The legislator could favour impact investing to other investment strategies, as current law is based on less efficient investment strategies. A blockchain application could additionally drive down the costs and increase the flexibility of impact investing.

Key words*: sustainability; socially responsible investing; sustainable investing; ESG investing; negative / exclusionary screening*

JEL code: G11, D82, D64

1. Introduction

1.1. Motivation

Socially responsible investing (SRI) is a strong growing market segment. According to Global Sustainable Investment Alliance (2016), an amount of 22.9 trillion USD of investments under professional management is invested worldwide according to socially responsible principles. This subsection of the financial market showed a rapid increase over the last 10 years, stimulated by investors incorporating social and environmental aspects into their investment process. Considering social aspects in investing is not really new, as the idea has been integrated in ethical and religious thinking for several hundred years, i.e. by Quakers (Religious Society of Friends) and Methodism. With an increasing interest in the idea of Corporate Social Responsibility at the end of last century, with the starting discussion on climate change implications, with the upcoming of Principles for Responsible Investment (PRI) in 2005 and the Sustainable Development Goals (SDGs) set by the United Nations in 2015 (Staub-Bisang, 2012; Le Blanc, 2015; Bugg-Levine & Emerson, 2011), investors got more and more interested in a combination of financial and social return. At the same time, governments started activities to deploy the power of financial markets for supporting the intended transformation to a sustainable society (Weber, 2015).

There is no general consensus existing on what sustainable investing or socially responsible investing (SRI) means. According to a study based on approximately 5.000 investors criteria related to SRI comprise environmental and sustainability aspects in a more holistic consideration rather than using an exclusionary approach applied by many SRI funds (Berry & Junkus, 2013). ESG is used as an abbreviation for Environmental, Social and Corporate Governance characteristics of an investment and also expresses the meaning of SRI. Impact investing forms a subcategory of SRI/ESG and means that investors seek for a financial return while intentionally pursuing social and environmental goals as well (Jackson, 2013; Bugg-Levine & Emerson, 2011).

Most research on sustainable investing has been done on corporate financial performance and results confirm that the business case for SRI is sufficiently documented. The overwhelming majority of studies proved a positive and stable relationship between ESG and corporate financial performance (Friede, Busch & Bassen, 2015). The motivation for this paper is based on high governmental efforts worldwide to reduce implications of climate change and unequal economic development and the fight against poverty (source). This transformation can only be realized if financial markets support this societal movement. This paper's research aim is to identify the reasons why significant evidence for the transformation in business practices are missing (despite the high amount of assets managed according to sustainable investment strategies) and how this situation could be changed. To our understanding this is the first piece of research in this special topic.

The European Union as well as many countries worldwide continuously increased their engagement in all facets of sustainability and also recognized financial markets as a catalytic converter to realize their goals of a sustainable society. In this context, and only as one example out of several activities, the action plan "Financing a Sustainable Growth" has been developed. Another example is the development of an EU-Taxonomy, supporting the classification of sustainable finance and the definition of ESG criteria (Sakurai, 2019). Most of these activities are results driven by the High Level Expert Group (HLEG) on Sustainable Finance, which has been constituted by the European commission in December 2016. The following Table 1 delivers an overview on sustainable investments by institutional investors. Europe is the leading market, followed by the US and Canada. Given figures from 2016, 26.3% of professionally managed assets worldwide have been invested according to sustainable investment strategies (GSIA, 2016; Eurosif, 2018). These high investments are achieved through various sustainable investment strategies, which, however, differ extremely in their magnitude. This paper is dedicated to this phenomena, which has not been analysed before.

Table 1:

Worldwide Socially Responsible Investments, 2014-216 (in billion USD)

Region	2014	2016	Growth over period	Compound Annual Growth Rate
Europe	$ 10,775	$ 12,040	11.7%	5.7%
United States	$ 6,572	$ 8,723	32.7%	15.2%
Canada	$ 729	$ 1,086	49.0%	22.0%
Australia/New Zealand	$ 148	$ 516	247.5%	86.4%
Asia ex Japan	$ 45	$ 52	15.7%	7.6%
Japan	$ 7	$ 474	6689.6%	724.0%
Total	**$ 18,276**	**$ 22,890**	**25.2%**	**11.9%**

Source: GSIA (2016).

Note: Asset values by institutional investors.

The reminder of this paper is structured as follows: subsequently we explain the research questions and methodology used. Section 2 delivers a description of existing sustainable investment approaches, of fund purposes and financial instruments in use. Section 3 deals with the configuration of decision criteria for supply and demand of sustainable investments. Based on that, building a decision matrix provides insights into the reasons for highly preferred and less used sustainable investment strategies in section 4, which then also leads to propositions for specific investment strategies

how to achieve more importance. Section 5 contains a conclusion and a final answer to the research questions set in the introduction.

1.2. Research Question and Methodology

This paper quests for two major questions. First, we want to understand, for which reasons some sustainable investment strategies apparently show significantly higher assets under management (AuM) than others. Based on a fundamental analysis of the existing literature, this research question is then answered with a description of existing sustainable investment strategies followed by a review of financial products in use per investment strategy. Subsequently, we identify relevant decision criteria and goals for investing according to specific investment strategies and financial instrument connected with these strategies. Finally, we construct a decision matrix for supply (institutions issuing financial products as well as financial advisers) and demand (retail and institutional investors) side market participants, and measure goal fulfilments per decision criteria. As a result, we retrace for which reasons the financial market participants prefer specific investment strategies.

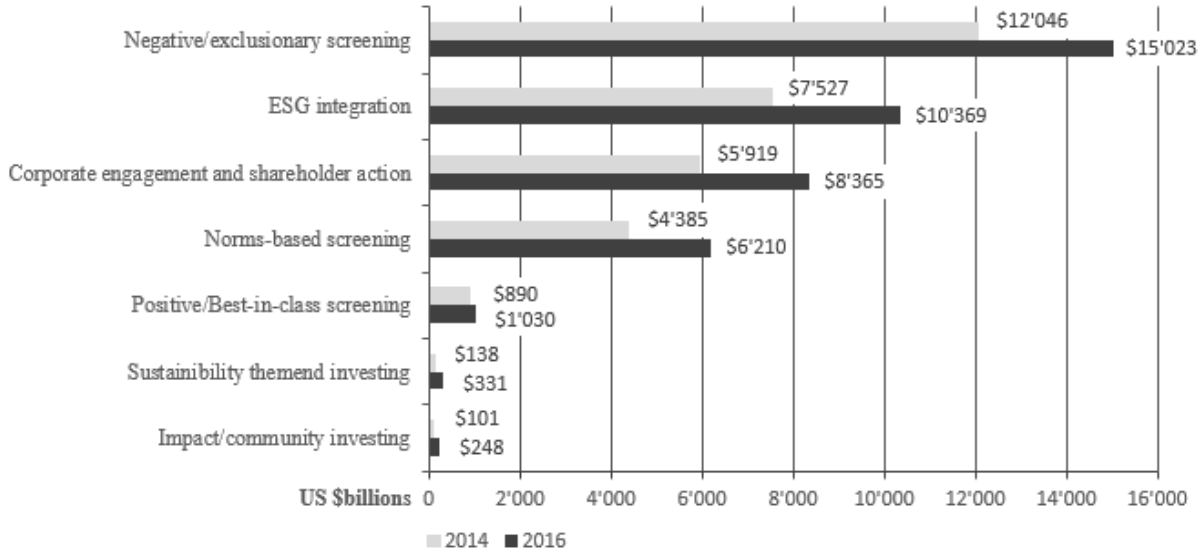
The second question asks for necessary changes in the existing framework in order to change the current imbalance of sustainable investment strategies. This will be answered by reviewing the results of the decision matrix and then consider what measure would be necessary to change the most critical results.

2. Sustainable Investment Strategies, Funding Purpose, and Financial Instruments in Use

2.1. Sustainable Investment Strategies

Over the last years, seven sustainable investment strategies emerged as the most important strategies, measured by assets under management (AuM) and regularly reported.

The following Figure 1 quotes those seven sustainable investment strategies based on a worldwide perspective. Based on the most current international data, “Negative/Exclusionary Screening” records a volume of over 15 trillion USD professionally managed assets worldwide. This is followed by “ESG Integration” (10.4 trillion USD) and “Corporate Engagement and Shareholder Action” (8.4 trillion USD), continued by “Norms-based Screening”, “Positive/Best-in-class Screening”, “Sustainability-themed Investing” and “Impact/Community Investing”.



Source: GSIA (2016).

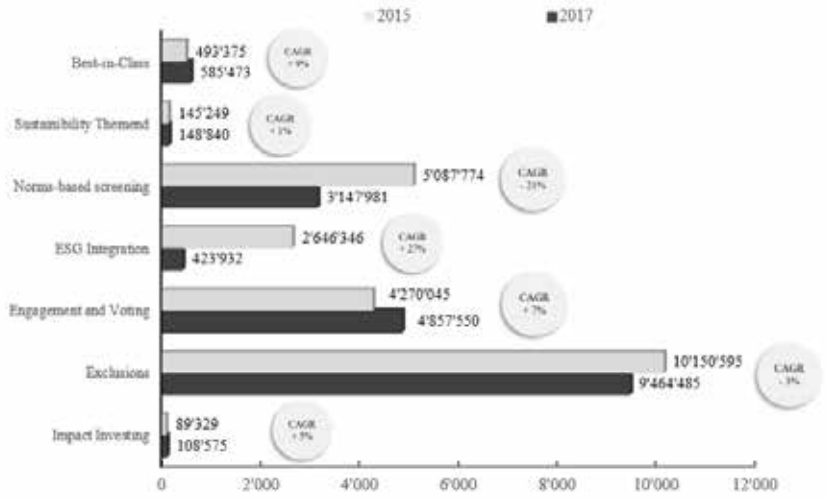
Figure 1: **Sustainable Investment Strategies Worldwide, 2014-2016 (in billion USD)**

If we reduce the observation to Europe, which is the biggest market for SRI investments worldwide, the order according to AuM is a bit different as shown in Figure 2. This figure shows that in Europe the most important group is "Exclusions", followed by "Engagement and Voting", "ESG Integration", "Norms-based Screening", "Best-in-class", "Sustainability-themed Investing" and "Impact Investing". Worldwide, "ESG Integration" is on the second position, in Europe "Engagement and Voting" is on the second position, followed by "ESG Integration" on position three.

"Exclusions" is the oldest SRI strategy in general and the most popular strategy in Europe. Historically, moral codes and human health, later sin-stocks from the production and sale of weapons, alcohol, tobacco, gambling and pornography led to an exclusion of companies, sectors or countries. A critical point discussed is that this sustainable strategy cannot be practiced alone, as it will not lead to changes. Thus, it should be connected with engagement and voting (Richardson, 2011; Eurosif, 2018). "Engagement and Voting", in Europe the second most popular strategy after exclusions, describes all activities of investors to actively talk to members of the firms' management team they are invested in. They could also express their votes on a shareholders meeting according to investors' sustainability objectives. As institutional investors face a responsibility for beneficiaries, a recommendation of the HLEG on Sustainable Finance is, that this responsibility is going to be codified in upcoming European Financial Services Directives.

"ESG integration" is an explicit admission of ESG risks and opportunities to traditional financial decision making. Especially "ESG Integration" is contested because the effectiveness primarily depends on the extent to which such a strategy is implemented. This needs a systematic process of integrating ESG research in financial decision making (Kaiser, 2018). ESG-ratings, produced by specialized rating agencies, are based on information on companies' practices in the fields of the three dimensions environmental, social and corporate governance. In general, it is believed that ESG ratings are beneficial for the society. On the other hand, ESG is not without controversy, as ESG ratings are mainly based on information released by the companies and the ratings with implications for its reliability. Additionally, ESG ratings imply additional costs (Busch, Bauer & Orlitzky, 2016; van Duuren, Plantinga & Scholtens, 2016).

"Norms-based screening" requires selecting companies according to their level of compliance with international norms and standards referring to human rights, labour standards, environmental protection, anti-corruption principles etc. A selection of resulting international guidelines are the "OECD Guideline for Multinational Enterprises", United Nations Global Compact and the Guiding Principles on Business and Human Rights. This strategy is used as standalone or combined with engagement or exclusion (Eurosif, 2018). "Best-in-class" strategy requests to pick companies with best sustainability scores in a specific sector. Investors decide on criteria, calculate final scores per criteria and weight them depending on the sector. Best-in-class portfolios include investments that meet financial as well as sustainable evaluations. Best-in-class portfolios are often quite similar to non-sustainable portfolios (Eurosif, 2018).



Source: Eurosif (2018).

Figure 2: **Sustainable Investment Strategies in Europe, 2015-2017 (in EUR)**

"Sustainability-themed Investing" anticipates the collocation of assets with positive impact on sustainability. This is often realized with the help of funds, either single- or multi-themed funds. Over the last years, funds with a focal point on mitigating climate change or improving access to clean water attracted a lot of interest.

"Impact Investing" is the last sustainable investment strategy in our research, defined by three aspects: intentionality, additionality and measurement. This approach presumes investor's intention to generate a measurable positive non-financial impact, this SRI performance is proved by a transparent accounting, additionally to a financial return. "Impact Investing" became increasingly aligned with SDGs, which will provide high growth rates in the future. Leading institutions for impact investing are fund managers, family offices, foundations, banks, development finance institutions, pension funds and insurance companies (Spiess-Knafl & Scheck, 2017; Eurosif, 2018).

2.2. Funding Purpose and Financial Instruments in Use

Questioning the efficiency of these investment strategies in terms of fulfilling environmental, social and governance goals, it is apparent that they deliver a wide variety of possible achievements. Each of the aforementioned sustainable investment strategies are quite specific. Obviously, their funding purpose is very different. A first group of strategies is investing in existing and conventional exchange traded companies. Thus, in the past constructed existing conventional portfolios do still prevail, they have been changed in part (by negative or positive screening, engagement and voting, norms-based screening) or position weights have been changed (i.e. by ESG integration), but the fundamental point here is that the funding purpose changed to a – restricted – socially responsible extent by focussing the sustainable behaviour of conventional companies, although the companies funded remain the old ones. Portfolios considering corporate social responsibility show neither a weakness nor a strength compared with conventional portfolios (Revelli & Viviani, 2015). In a meta study on ESG criteria and corporate financial performance, a positive relationship between ESG and corporate financial performance was confirmed (Friede, Busch & Bassen, 2015).

A second group of sustainable investment strategies follows a complete different funding purpose. Impact investing cannot be realized by investing in the entity of a big, conventional company, which is (in general) exchange traded. A solution in this case is provided, if that big, conventional company offers an investment opportunity for a very specific sustainable project, i.e. with an environmental background (investments in a reduction of carbon emissions). Such a specific project could be financed by the emission of a specific bond, whose funds are only used for this purpose. Such a

bond would then be called a "Green Bond". Besides that, "Impact Investing" is mainly funding a non-listed, small, young company, which is focused on socially responsible activities. Depending on the type of capital concerned, we would call this financing either private equity or private debt. In case of private debt, it is possible that the small company issues a bond, called Green Bond, in case environmental goals would be perceived. Another variation would be a profit-linked debt, which is also restricted on the specific project. Finally, we still have to discuss the fund purpose of "Sustainability-themed Investing". In that case, the goal is to invest in specific assets with a strong and measurable socially responsible impact. Fund purpose is the same as for "Impact Investing", and this cannot be realized by investing in the entity of a big, conventional company. Thus, this strategy also has the purpose to fund Green Bonds, private equity or private debt.

Having discussed the fund purpose in the last paragraph, we are now able to deduct the financial instruments in use. For the first group of sustainable investment strategies, the financial instruments in use are conventional stocks and bonds, predominantly listed and exchange-traded. These instruments can be characterised as legally clearly structured, tradable and exchangeable. The quantity of available and traded securities is in general very high, of course depending on the amount of equity and debt of the respective company. Thus, trading costs for these investment strategies are reduced to a minimum, as - in this case - we discuss a mass market with a strong competition. For their use within "ESG Integration", these bonds and stocks need an ESG rating by a specific rating agency. This rating will produce additional costs. The market for ESG ratings is situated in a severe consolidation process (Avetisyan & Hockerts, 2017). Although an ESG rating will lead to additional costs, the investment strategy is cheap enough to bear it.

For the second group of investment strategies, the story is different. Based on the fact that we identified private equity, private bonds, or bonds (Green Bonds) related to specific projects of listed conventional companies, the costs of the financial instruments in use are higher compared with the first group of investment strategies. Private equity and private bonds are in general based on a low amount of capital, thus the overall costs per security are significantly higher than for exchange-traded companies. Getting information on non-publicly-traded securities is more costly than for publicly-traded ones. Additionally, liquidity is in general not guaranteed, an exit strategy has to be harmonized with the other capital providers. To summarize, the costs of the structure, costs of existing restrictions and trading costs are much higher as for a listed and exchange-traded instrument.

Often, private equities and bonds are placed into a mutual fund, which is an indirect financial instrument. This offers the advantage of diversification and professional management, and the professionalism could help to reduce the costs of the structure, of restrictions and of trading. But mutual fund managers will ask for additional management fees, and the mutual fund as such will cause additional costs for establishing and administrating this financial instrument.

Table 2 delivers information on the type of capital used for "Impact Investing". As already mentioned above, the majority of funds is invested into private debt and private equity, public debt, equity-like debt and Green Bonds.

To summarize this section, we found an important differentiation into two different groups of sustainable investment strategies. The first group, consisting of "Exclusions", "Engagement and Voting", "ESG Integration", "Norms-based Screening" and "Best-in-Class", is based on exchange-traded stocks and bonds of conventional companies. These financial instruments are members in a mass market, which cause, measured by all eligible criteria, lowest costs. The second group, consisting of "Sustainability-themed Investing" and "Impact Investing", is mostly based on private equity or private debt, and debt instruments for specific projects of conventional companies. These instruments are very specific, not traded, not liquid, and thus request much higher costs. As the second group of investment strategies is – in terms of AuM – far behind the first group of investments strategies, we will check in the following sections, if the different funding purpose and the different financial instruments in use can explain this situation.

Table 2:

Impact Investing Asset Allocation, 2013-2017 (in million USD)

Instrument	2013	2017	CAGR
Public equity	326	1,962	57%
Private equity	7,222	14,351	19%
Private debt	12,338	23,379	17%
Deposits & cash equivalents	983	1,429	10%
Real assets	1,591	1,784	3%
Public debt	4,012	4,453	3%
Equity-like debt	2,673	2,203	-5%
Other	1,647	1,217	-7%
Total	30,790	50,777	13%

Source: GIIN (2018).
Note: "Other" includes Green Bonds.

3. Decision Criteria for Use of Financial Instruments for Supply and Demand Side

After having explored sustainable investment strategies, their funding purpose and financial instruments in use, we now carry together the decision criteria for their use. Busch, Bauer and Orlitzky (2016), as an example, focused their research primarily to the viewpoint of investors. In this paper, we simultaneously analyse the supply and demand side as two different sides of one and the same medal. With supply side we involve different categories of suppliers of financial instruments, in particular banks, asset managers, advisors and other sellers of financial products, as well as project developers (who also sell respective financial instruments). Our first research question investigates, why some investment strategies show significantly higher AuM than other strategies. According to results in section 2, this could be related to different financial instruments in use. Thus we check, if we can explain the situation referring to decision criteria for members on the supply and demand side for financial products.

Let us start with the supply side. The supply side is dominated by a variety of market participants as mentioned above. For this paper we identified important decision criteria based on more general statements according to Greenbaum, Thakor and Boot (2016) and Mishkin and Eakins (2016): S1) maximize non-interest fee income (high fees resulting from high turnover, based on high market volume and market share); S2) low total amount of salaries to produce and sell the financial product (self-explaining product, only low advise necessary); S3) growth perspective on fee income volume and its persistence; S4) low cost of the legal structure of the financial instrument; S5) regulatory compliance at low costs; S6) adequate financial returns and beneficial marketing message; S7) adequate non-financial returns and beneficial marketing message; S8) conformity with non-financial return preferences on demand side.

The demand side is represented by investors. According to Bollen (2007), Frydman et al. (2014), Nevins (2004), Trelstad (2016), the decision criteria are: D1) avoiding investments in irresponsible business practices, supporting sustainable practises (= non-financial return); D2) superior financial performance; D3) low overall costs of the instrument (= as costs lower the investment return); D4) low risk; D5) asset value growth; D6) liquidity of the investment and easy realizable exit option; D7) investing for fixed planning horizon; D8) avoiding a minimum investment required; D9) investment results should meet lifestyle expenses; D10) tax efficiency and advantages; D11) practical possibility in measurement and comparability of the social and environmental impact.

4. Investment Strategies and Goal Fulfilment on Supply and Demand Side

4.1. Decision Matrix

A decision matrix can be used to describe and solve a multi-criteria decision analysis. Such a matrix is assembled by establishing a set of criteria options which are scored and summed to gain a total score which could then lead to a ranking (Axelrod, 2009). Table 2 displays a simple non-numerical decision matrix, attempting to explain why some sustainable investment strategies dispose of a high amount of AuM, and at the same time other investment strategies disappear in a niche position. The decision matrix is applied for the supply side and at the same time for the sell side of sustainable financial investment instruments. In section 3 derived decision criteria for supply and demand side represent goals, having been posted in the outer left and outer right column of Table 2. These goals resp. decision criteria are applied to group 1 and group 2 sustainable investment strategies, which automatically represent specific financial instruments, as explained in section 3. Table 2 will be filled with signs "+" and "-", representing the level of goal fulfilment, which could express a positive or negative relationship between goal and group of strategies. These signs are derived on the assumption of representing the average decision maker on supply respective demand side, how we understand it to be in years 2018/19. These goal fulfilments are snapshots and the perceived degree of goal fulfilments could change if the social environment is changing. In this very simple model, a unitary weighting of decision criteria has been executed.

Table 3:

Decision Matrix on Supply and Demand Side for grouped Sustainable Investment Strategies

Supply Side			**Demand Side**		
	Sustainable Investment Strategies		Sustainable Investment Strategies		
Decision Criteria	Group 1	Group 2	Group 1	Group 2	Decision Criteria
S1)	++	+/-	+/-	++	D1)
S2)	++	--	+	+/-	D2)
S3)	+	+	++	-	D3)
S4)	++	-	++	+	D4)
S5)	+	-	++	+	D5)
S6)	++	+	++	-	D6)
S7)	+	++	+	-	D7)
S8)	+	++	++	-	D8)
			++	-	D9)
			+/-	++	D10)
			++	-	D11)
Result	+ (13) / - (0)	+ (7) / - (5)	+ (18) / - (2)	+ (7) / - (7)	Result

Source: Own contribution.

Note: Group 1 Investment Strategy is "Exclusions", "Engagement and Voting", "ESG Integration", "Norms-based Screening" and "Best-in-Class". Group 2 is "Sustainability-themed Investing" and "Impact Investing". "++" means very positive, "+" means positive, "+/-" means neither nor, "- " means negative, "- -" means very negative.

S1) for group 1 has been assessed with "++", as working with exchange-traded conventional companies leads to huge market volumes; for group 2 strategies this has been valued with "+/-", as the respective projects and companies only allow low volumes. S2) is judged for group 1 strategies with "++", as the financial instruments in use are traded on a mass market and only low personnel costs are needed; this is the opposite for group 2, as the financial instruments need a lot of explanation and support. S3) is quite difficult to estimate, we placed "+" for both groups of sustainable investment strategies. S4) for group 1 is assessed with "++", as the legal structure for these instruments imply very low costs, but the opposite for group 2. S5) is judged with "+" for group 1 strategies, as regulatory costs are low, but for group 2 strategies higher costs have to be taken as transparency is more difficult to establish. S6) is valued with "++" as adequate financial

returns and beneficial marketing message can be expected for group 1 strategies, and "+" for group 2 strategies. S7) is reviewed with "+" for group 1 as the majority of investors assume those strategies to be adequate sustainable, but group 2 is assessed with "++" as more advanced in terms of socially responsible. Finally, valuation of S8) is similar to S7), as for group 2 the conformity with non-financial return preferences on demand side is higher.

D1) for group 1 strategies is assessed with "+/-" as the majority of investors – when writing this paper – is evaluating this strategy group with respect to irresponsible business practices not negatively. For group 2 strategies the goal is fulfilled, thus this is valued "++". D2) is evalued with "+" because of appropriate financial performance, and with "+/-" as performance is probably lower because of higher costs for group 2 strategies. D3) is graded with "++" for low overall costs for group 1 strategies, but "-" for significant higher costs for group 2 strategies. D4) is valued positive for group 1 strategies with "++", but for group 2 strategies less good with "+" because of a lower diversification potential. D5) for group 1 strategies is judged with "++", but for group 2 strategies lower with "+". D6) for group 1 strategies is ideal, thus reviewed with "++", but nearly the opposite for group 2 strategies. D7) is for group 1 strategies possible to apply, thus "+", but the opposite for group 2 strategies. D8) is assessed with "++" for group 1 strategies as not required in this context, but existing for group 2 strategies and therefore evaluated with "-". D9) for group 1 strategies is judged with "++" because cash flows can be planned quite flexible, this flexibility is missing for group 2 strategies. D10) is estimated with "++" for group 2 strategies because of existing tax reliefs for specific group 2 strategies, but no advantages for group 1 strategies. D11) is valued with "++" for group 1 strategies if we concentrate "ESG Integration", but for group 2 strategies this has to be considered with "-" as measurement is difficult and comparability across different fields of impact is not given.

4.2. Results and Interpretation

The last row in Table 3 displays the results of that simple decision model. For the supply side institutions, we find a clear and strong preference for group 1 sustainable investment strategies. For institutions like in particular banks, asset managers and advisors, project developers, this result is not surprising, as the average supply side institutions wants to maximize long-term profits, given that regulatory requirements are fulfilled. Group 1 strategies are clearly evaluated superior by supply side institutions, although group 2 sustainable investments strategies would be much more beneficial for a sustainable transformation of societies.

For investors, group 1 sustainable investment strategies are also graded strongly superior to group 2 strategies, which is surprising. Decision makers with a clear knowledge on the different level of social impact provided by the two groups and the importance of impact for the transformation of societies, would have expected a different result. As we did work with average supply and demand side representatives with their restricted view on the transformation to a sustainable society, we received the results outlined in Table 3. These results express a snapshot. The results in general explain exactly the situation financial markets face in years 2018/19. Huge amounts of money are invested according to sustainable investment strategies, but the speed of transformation to a sustainable society is relatively low, which could now be explained by the preference of group 1 strategies by supply and demand side participants.

We are now able to give a final answer to research question 1. Based on the methodology used, group 1 sustainable investment strategies are clearly valued superior to group 2 strategies for both sides of the financial market. This explains the huge difference in AuM between group 1 sustainable investment strategies and group 2 strategies, although group 2 strategies should be preferred for sustainability and impact reasons.

4.3. Solutions to pull Impact Investing out of the Niche

The results for the first research unfolded the importance of the second research question. Above, we disclosed that group 1 strategies are preferred by both sides of the market, leading to a massive imbalance of AuM in favour of group 1 strategies. As group 2 strategies are more efficient for a transformation into a sustainable society, "Impact Investing" and "Sustainability-themed Investing" should be pulled out of their niche position, thus, the second research question is extremely important. In the following, we will answer to this question by reviewing the results of the decision matrix and then consider what measures would be necessary in order to change the most critical results.

If we look at the supply side evaluation of group 2 investment strategies, we find that evaluations for decision criteria S1), S2), S4) and S5) should be improved. The fee income on the seller side could be influenced by a market development. If the mindset of demand market participants would change towards a strong preference for group 2 investment strategies, the situation could change. At the moment, the majority of investors perceive for example ESG ratings as clearly comparable sustainability measures. In fact, this should be questioned, arguments have been collected by Busch, Bauer and Orlitzky (2016). With a stronger standardization for group 2 investment strategies, with advances in measurement of impact and their comparability across different investments, and with additional costs of group 2 strategies to be decreased, the current advantage for group 1 investment strategies would decline. Additionally, the legally claimed consideration of sustainable investments should be stronger tightened to impact investing. As an example, the European Union is currently promoting new rules on disclosure requirements related to sustainable investments and sustainability risks. These requirements evaluate group 1 and group 2 investment strategies equally. If group 2 investment strategies would receive a higher recognition by the legislator, "Impact Investing" and "Sustainability-themed Investing" could be directed out of their niche position.

Passing to the demand side evaluation, it is obvious that decision outcomes for D3), D6), D7), D8), D9) and D11) should be improved. This could be implemented by the same activities already mentioned in the last paragraph. Additionally, we want to underline the importance of educating the European investor. European investors, as well as the European citizen, do not know a lot about the importance of financial markets for the societal transformation towards sustainability. Thus, they also do not informed about the difference of group 1 and group 2 investment strategies. A broad information campaign is needed to make people aware of the importance of this difference. With improving the financial literacy of the European investor, the investor would better understand the funding purposes and the concrete efficiency of the investment strategies concerning their influence on societal transformation towards sustainability. We assume, this would increase the demand on group 2 investment strategies. The missing liquidity and transparency problem could eventually be managed in the future by combining impact investing with blockchain technology (Fanning & Centers, 2016; Heuberger & Puhl, 2018).

5. Conclusion

Motivation for this paper was the fact, that practical importance of sustainable investment strategies is unequally distributed. "Impact Investing" and "Sustainability-themed Investing" experienced high growth rates, but they remained invisible. Our first research question tried to find the reasons behind this situation. The methodology used is a decision matrix model, analysing different sustainable investment strategies from the viewpoint of supply and demand side market participants. We found that existing sustainable investment strategies can be grouped according to the funding purpose. Group 1 is formed by "Exclusions", "Engagement and Voting", "ESG Integration", "Norms-based Screening" and "Best-in-Class". Group 2 is formed by the remaining strategies, "Sustainability-themed Investing" and "Impact Investing". We

also found that the funding purpose has implications on the financial instrument in use. Group 2 strategies are predominantly connected with private equity and private debt. As the funding purpose of group 1 investment strategies is investing in conventional companies, this form of investment is much easier, more liquid and preparatory work for project development is not necessary. Such a product can be easily explained to customers. Thus, total costs for group 1 investment strategies will be significantly lower. This makes group 2 investment strategies less attractive.

With our second research question we wanted to indicate solutions to improve the situation for less developed investment strategies. Analysing the results of the decision matrix for supply and demand side, we deduct necessary changes in the cost disadvantage of group 2 investment strategies. A stronger standardisation of private equity and debt transactions probably uncover the biggest potential. Besides that, the legislator could formulate new disclosure rules on sustainable investing in a way preferring impact investing and sustainability-themed investments, stronger supporting the transformation towards sustainability. Finally, digital evolutions like the blockchain technology could also improve the situation. The niche position of impact and sustainability-themed investing is currently a fact, but it should not be accepted, as the reasons have been clearly carved out and treatment propositions have been developed.

The main achievement and contribution of this paper can be seen in the explanation of the significant imbalance in the use of sustainable investment strategies. Suggestions for further research are related to the methodology, which could be refined. This refers to the decision criteria as well as to the (goal fulfilment) scores of the decision matrix.

Bibliography

Avetisyan, E. & Hockerts, K., 2017. The consolidation of the ESG rating industry as an enactment of institutional retrogression. *Business Strategy and the Environment, 26*(3), pp. 316-330.

Axelrod, A., 2009. *The Decision Matrix*. New York: Sterling Publishing.

Berry, T. C. & Junkus, J. C., 2013. Socially responsible investing: An investor perspective. *Journal of Business Ethics, 112*(4), pp. 707-720.

Bollen, N. P., 2007. Mutual fund attributes and investor behavior. *Journal of Financial and Quantitative Analysis, 42*(3), pp. 683-708.

Bugg-Levine, A. & Emerson, J., 2011. Impact investing: Transforming how we make money while making a difference. *Innovations: Technology, Governance, Globalization,* 6(3), pp. 9-18.

Busch, T., Bauer, R. & Orlitzky, M., 2016. Sustainable development and financial markets: Old paths and new avenues. *Business & Society, 55*(3), pp. 303-329.

Eurosif, 2018. *European SRI Study 2018*. Brussels: Eurosif A.I.S.B.L.

Fanning, K. & Centers, D. P., 2016. Blockchain and its coming impact on financial services. *Journal of Corporate Accounting & Finance, 27*(5), pp. 53-57.

Friede, G., Busch, T. & Bassen, A., 2015. ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment, 5*(4), pp. 210-233.

Frydman, C., Barberis, N., Camerer, C., Bossaerts, P. & Rangel, A., 2014. Using neural data to test a theory of investor behavior: An application to realization utility. *The Journal of Finance, 69*(2), pp. 907-946

GIIN (Global Impact Investment Network), 2018. *Annual Impact Investor Survey 2018* (8th ed.). June 2018. New York: Global Impact Investing Network.

GSIA (Global Sustainable Investment Alliance), 2016. *Global Sustainable Investment Review*. Washington, DC: Global Sustainable Investment Alliance.

Greenbaum, S.I., Thakor, A.V. & Boot, A.W.A., 2016. *Contemporary Financial Intermediation* (3rd ed.). Amsterdam: Elsevier.

Heuberger, R. & Puhl, I. (September 20, 2018). 5 ways blockchain can transform the world of impact investing. Sustainable Development Impact Summit. Available at: https://www.weforum.org/agenda/2018/09/5-ways-blockchain-can-transform-the-world-of-impact-investing/

Jackson, E.T., 2013. Interrogating the theory of change: evaluating impact investing where it matters most. *Journal of Sustainable Finance & Investment, 3* (2), pp. 95-110.

Kaiser, L., 2018. *ESG Integration: Value, Growth and Momentum*. SSRN Working Paper 2993843 (July 18, 2018).

Le Blanc, D., 2015. Towards integration at last? The sustainable development goals as a network of targets. *Sustainable Development, 23*(3), pp. 176-187.

Mishkin, F.S. & Eakins, S.G., 2016. *Financial Markets and Institutions* (8th ed.). Boston: Pearson.

Nevins, D., 2004. Goals-based investing: Integrating traditional and behavioral finance. *The Journal of Wealth Management, 6*(4), pp. 8-23.

Revelli, C. & Viviani, J. L., 2015. Financial performance of socially responsible investing (SRI): what have we learned? A meta-analysis. *Business Ethics: A European Review, 24*(2), pp. 158-185.

Richardson, B.J., 2011. Sovereign Wealth Funds and the Quest for Sustainability: Insights from Norway and New Zealand. *Nordic Journal of Commercial Law, 2011*(2), pp. 1-27.

Sakurai, A., 2019. Laying the Foundations for Sustainable Finance in Europe. *Stanford Social Innovation Review,* February 4, 2019.

Spiess-Knafl, W. & Scheck, B., 2017. *Impact Investing – Instruments, Mechanisms and Actors.* Palgrave Studies in Impact Investing. Cham, Switzerland: Palgrave.

Staub-Bisang, M., 2012. *Sustainable Investing for Institutional Investors: Risks, Regulations and Strategies.* Singapore: John Wiley & Sons.

Trelstad, B., 2016. Making Sense of the many kinds of impact investing. *Harvard Business Review.* Available at: https://hbr. org/2016/01/making-sense-of-the-many-kinds-of-impact-investing

van Duuren, E., Plantinga, A. & Scholtens, B., 2016. ESG integration and the investment management process: Fundamental investing reinvented. *Journal of Business Ethics, 138*(3), pp. 525-533.

Weber, O., 2015. *The Banking Sector's Contribution to Sustainable Growth–Risk Assessment, Sustainable Finance, Voluntary Initiatives and Regulations.* SSRN Working Paper 2658348 (September 9, 2015).

THE ROLE OF TRUST IN AN EFFICIENT HUMAN LEADERSHIP

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Abstract. The aim of this qualitative pre-research is to get a clear understanding about the importance of the factor trust in a modern human leadership. It has been researched, if trust is just some kind of an add-on, which supervisors should use to get a better behaviour to their subordinates or if it's much more important, so that it can be used as a power of leadership.

In structured specialist interviews, each with a duration of 60 minutes, 12 international leaders spoke about their own impression and relation between leadership and trust. It has to be remarked, that leadership and trust is researched between a supervisor and a subordinate. It is not researched between a supervisor and a whole company or organization. The result itself is the objective basis for the next planned quantitative research with questionnaires.

Overall it can be said, that in the modern leadership of today, leadership and trust can be announced as one. It seems to be, that due to the different needs of a complex environment, trust is no more only one of different factors or possibilities of leadership, it is stable element of leadership.

100% of the specialists answered in a total open question that trust and leadership belong to each other and/or that a leader is not able to lead without trust.

To understand more of the daily behaviour of the leaders, the use of the different powers according French and Raven had been analysed. The leaders had been asked, what kind of powers they use to convince the employee, to do a special work (which the worker normally doesn't do voluntary). E.g. that the employee shall work on a special weekend or something else. Result was, that there are good and bad powers, which is in line with a trust leadership model based on another pre-research of 106 employees.

Also 100% of the specialists came to the result, that a specific use of the five categories of power could influence the trust level of the subordinates.

The specialists stated clearly, that respect without reserve and just hierarchy are leadership advantages from the past. Today leaders must win the subordinate. This can be done only with trust.

Key words: *trust, leadership, confidence, trust scale*

JEL code: M12, M54

Introduction

One of todays most influencing management problem is not the change of something itself. It is the speed and complexity the changes have. For the manager of today, it's not enough, to read a newspaper in the morning and to understand the latest turnover values. Today the manager must collect the whole time information from different time zones around the world, different meetings and different items (e.g. Industrie 4.0, Brexit or other modern changes also in its own company) where the manager has in the normal case just a limited understanding. In best case, the manager gets only an information overflow after a while, but in normal case the manager will also not understand all the things due to the high complexity and the short time period to understand it. This is exactly the reason, why the manager of has to trust more than ever its subordinate, to handle this huge amount of different and complex items in the networked business

world. The main aim of this pre-research is to get a more clear understanding, if the role of trust inside a todays leadership is a own standing part, which can be increased by different management behaviour or just some kind of add-on, which is nice to have but not really relevant in the daily business leadership.

Also trust can be a binding element between subordinates and supervisor, and so also to the company. Looking at the Hays Human Resources Report 2018 (Eilers et al., 2018), 27% of the Managing Directors (Top3 Item after development of company culture (32%) and flexible working structures (28%)), 32% of the Human Resources Department Leaders (Top Item) and also 43% of other Department Leaders (Top Item), sees the task to bind employees as a top challenge. So trust can be an important element here, too.

12 specialist interviews had been done to give the author an external impression of the relation between leadership and trust. The result should confirm or reject personal experiences to give a brighter, objective basis for the next planned quantitative research.

In addition it has to be remarked, that leadership and trust is researched between a supervisor and a subordinate. It is not researched between a supervisor and a whole company or organization.

The trust of the employee has a direct effect on the identification of the employee to the company and its performance (Dirks/Ferrin, 2001), the higher the trust, the higher the identification and performance. On the other side a leadership is based on social powers and not only on trust. As a general definition of the social power of leadership can be said, that it is the capability of the leader to control and/or influence the approach and/or behaviour of the subordinates. (Scott, 2007; Scovetta, 2013) Nevertheless the relationship between trust and power seems to be asymmetric (Hardy et al., 1998; Neubauer&Rosemann, 2006; Jäckel, 2018) so that trust and power are not able to reach its maximum at the same time. So trust and power in business systems are researched before and can be seen in the case of trust as a factor to create easier a cooperation and to reduce uncertainty but on the other side power is described as a similar factor, that also reduces in the most cases complexity and uncertainty, to control a business relationship. With trust, same as power the other person can be influenced to do what another person wants (Bachmann, 2001). Just the view of expectation is another one. In the way of trust it is the version of a good end. In the way of power the end, in eyes of the subordinate can be all, good, neutral or bad. So trust seems to be every time the better option for the subordinate. Power and trust can be especially for the supervisor sometimes a problem because Lammers et al. (Lammers et al., 2015) stated that persons with high power are more immoral than persons with less power, which is based on the corruptness of power of the powerful persons.

The specialists

The interview partners were chosen by different criteria. In first they should have long lasting experiences in the leadership of employees. This for sure seemed to be in first way the overall and most important criteria to be a specialist. On the other side, if only interview partners with very long experiences had been chosen, it could be that a generation problem occurs and that the research got just a very specific view on this item, so different levels of leadership experiences are chosen.

The next criterion was the level of management. Here for sure a high management level is preferred, but the management-level by its own is useless, also the relation to the company size must be given. The company size itself is also very interesting, because a CEO in a 3000 employee company has another daily management work to do than a CEO in a 20 employees company.

In the case of the CEO and employee the experience of the author is, that CEO & owners (shareholder) have another way and position than an employed CEO. So also different CEO's had been interviewed.

It was not expected, that the kind of company (manufacturing, consulting, service provider) has an influence of the leadership of employees, but especially the information of the consulting area is very interesting, because here the

specialist got over years experiences of third party companies and their leadership behaviour. This had been done with a share of 75% inside Germany, but also leaders in other countries had been interviewed, to get direct information about potential cultural aspects.

Twelve international leaders had been chosen for the specialist interviews, who should give an overall intersection of the before mentioned criteria. The list of specialists is shown in the appendix.

The Interview

The duration of each interview was 50 to 70 minutes. The content of questions itself was every time the same, just the length and kind of answers differed.

Each interview had been held in personal or by phone and each interview partner got in front of the meeting the questions to get a better understanding of the interview. The questions which had been provided, and which just should give a "red line" of the interview in front of the meeting, should gave the interview partner the feeling, that there will not some surprises inside the interview itself. Because in the contact phase, where the potential interview partners were asked to give some information about leadership and trust, the author felt often some of scepticism, due to the word trust. To reduce this scepticism, the questions had been provided in front of in the most cases. Nevertheless, the answers had been just documented by the author, coming out of the conversation of the meeting.

What is very important and what had been made clear at the beginning of the interview and if necessary also some times in the interview again is, that all questions have to be answered in view of the relationship of the interview partner, to his next level subordinate and not to the whole organization below them. Especially on CEO & Owner Level it could be observed, that the answers about trust from or to the subordinate were given in the first step for the whole organization. Not to falsify the answers, the author corrected in these cases the partner, so that the answer was just given to the next level subordinate.

The Questions

The red line of this interview had been created by 13 questions, all round about trust, social power and leadership. Partly, the questions are totally open, and partly the interviewed person was asked for a scaled answer from e.g. completely disagree is "1" to completely agree is "7". But independent of the kind of question, the additional answers or information had been evaluated later on. Also the interviewed person was allowed to skip questions, if the person doesn't want to give a personal answer or if the content of the question is not really understood, also if the author formulated the question in other words. In general this was only the exception.

Research results and discussion

Every interview was started in the same way. After a short introduction of the theme by the author the respondent were asked by a total open question, to give an own impression of trust in a supervisor/subordinate relationship. Based on a detailed overview table, the following result was extracted:

1. The status of trust in a human leadership

Due to the fact, that no potential answers were specified by the author for the opening question, it was surprising, that 100% of the person answered, that trust and leadership belong to each other and/or that a leader is not able to lead without trust.

In detail 9 of 12 persons said by their own words, that trust and leadership belong together, and 7 of 12 said that a leader is not able to lead without trust, which has nearly the same meaning than the statement before.

But as described before, these were no predefined answers, which persons were able to choose. These were individual answers, formed by the interviewed persons as a result of an open question and to underline the result in 100% of the cases one or both of these statements had been given.

Just these part result showed, that trust is not only a tool of leadership, it is essential, as the following answers of the respondents show in addition and which reflect the answers overall:

"I employ people by checking factors same as knowledge, personality, marks, etc. but if there is not a first feeling of having trust to the person, all other points are not relevant."

"Trust in leadership gives loyalty in both directions, flexibility, good salary, good working atmosphere."

"Trust is essential for leadership, otherwise I just have to control which is not efficient."

This result is the more interesting, because only half of the interviewed persons have had a trust-based relationship to their former supervisor. Every fourth person has made no trust experience with its former supervisor, because they are owner in the second generation and saw just as a maximum their father as their supervisor, which is a different background. One person didn't give information and two others had definitely not a trust-based relationship to one of their former supervisor.

Independent of that, all interviewed leaders have the meaning, that trust in a leadership is a must.

Regarding the potential disadvantages of trust the interviewed leaders have a split view.

- 50% of them see definitely no disadvantage or haven't seen disadvantages in reality by the use of trust inside a supervisor/subordinate relationship.

- Two (16,6%) of them lead with trust, but they have the meaning that they have to control, otherwise it can be misused.

- One person made the experience that personal (negative) decisions about subordinates with trust, takes too much time, compared to a person, without trust. So this is good for the subordinate, but not for the supervisor. Another negative effect of trust for the career can be, that if the person has a trust based relationship to a person, who is in the wrong team, the career can be handicapped.

At the end also two leaders made negative experiences with trust, when it will be misused (in both directions). Here one leader has seen the effect, that a subordinate, who has the a good, trust-based relationship to its supervisor, is exploiting the trust and uses this to its own interest while discussions about daily items with its colleagues. The effect Sende (2016) or Zahra et al. (2006) found out had been not mentioned by the managers: Normally trust reduces competitive conflicts inside relationships between competitors (Lin et al., 2010), but Sende came to the result, that even it seems to be logical, the good effects of trust does not exist every time. She analysed for this the negative impact of trust in a coopetitive relationship and shows that trust can lead to an increased risk of opportunism or can lead to a lower innovation rate, because trust negatively affects conflicts, which is not wanted on the one side, but team members are hampered to raise a conflict, because they don't want to destroy the team spirit. This is in line with Zahra et al., who stated, that often-established partners just develop the current situation in small steps. But as mentioned before, the managers have not seen this effect.

With this research it should be also checked if leaders uses special kind of trust creating tools to give or to get trust. For this the leaders were asked in the different categories referred to Adams and Sartoris (Adams et al., 2006), how important these items are. These categories for trust are benevolence, integrity, predictability, and competence. The respondent had the possibility to answer in a 7-point Likert-scale, that they agree (7) or disagree (1). The answers differ

very much and are for sure also depended onto the type of leader. In general for all leaders is integrity and competence a very important factor, which they want to see at their subordinates. Other points are not so clear, but what can be seen in figure 1: it is visible in three of four categories, that it is for the leader more important to give benevolence, to give integrity and to be competence, than the leader is awaiting from the subordinate. Only exception is predictability. Here it can be seen, that the leaders want to have subordinates, where the leader know what they will do, but the leader itself don't want to be predictable. This is general not a good starting point to create trust when this situation will be compared with Mc Knight et. al. (Mc Knight et al., 1998), who said, that the initial development of trust is based only on two basics. The first one, trust-conviction, is this what the supervisor wants to have from the subordinate, but just want to give by half. It's the goodwill, fairness and competence, which will be given, but the personal behaviour, which could be calculated or forecasted, will be denied. Unfortunately this is normally a blocking point in a wished two sided trust relationship (Doney et. al. 1998).

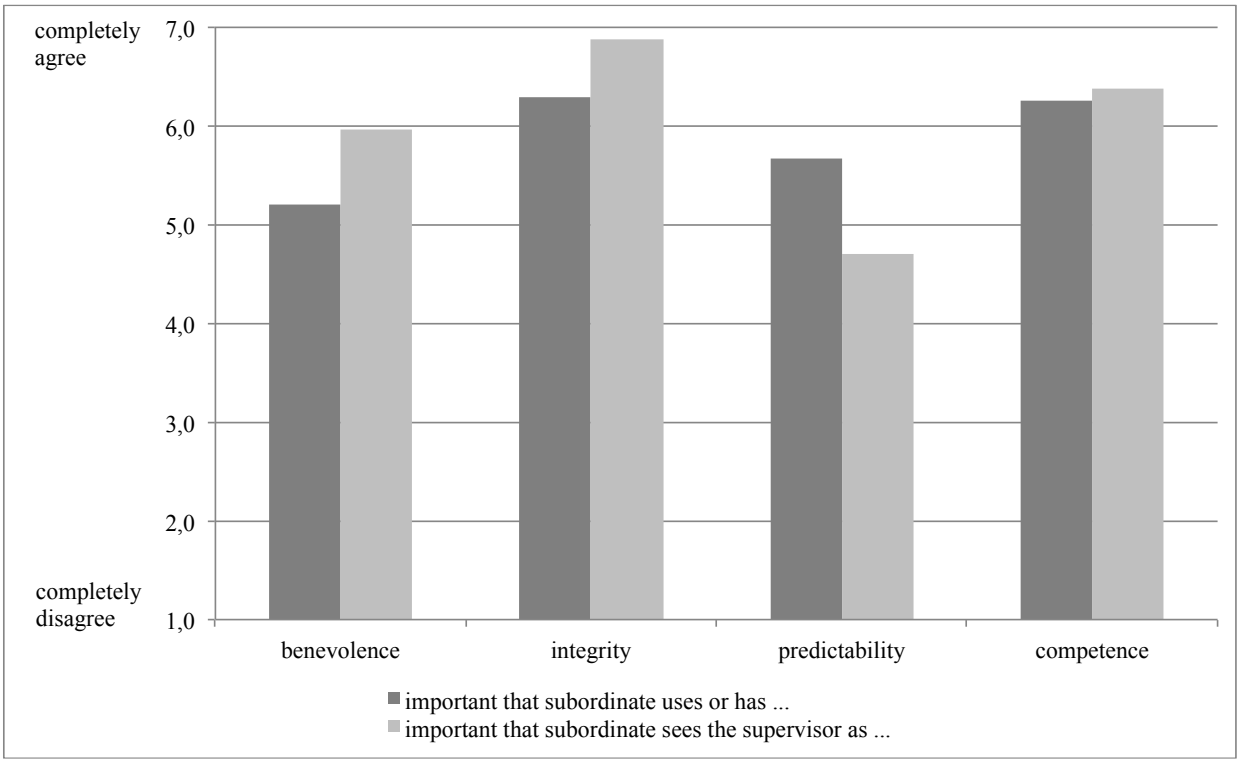

Figure 1: **relevant components of trust in leadership (leaders view)**

In other words, independent from this one remarkable deviation it can be shown, that the high-level manager of today are all creating an environment, in which trust can grow. They wish to have employees, who have integrity to the leader, but also the leader gives integrity. The leaders want to be competent, but they also ask for competence. Mostly they are awaiting, that the employee keep their own back free but even more, the leader want to take care about the back of the employee. Also, if some of the managers don't want be predictable, the manager's wants in a high amount employees, who are predictable. These are in general all very good circumstances, that trust can grow, which is in line with the statement of all manager, who are saying, that trust is a must in leadership.

The low bar for the predictability in comparison, to the others factors, same as compared with the predictability that the supervisor wants to see in the subordinates is a problem for trust. So that the meaning of predictability is near to the meaning of trust is confirmed many times (Gambetta, 1988). Both terms take expectations to a happening in the future, but the difference is that trust includes the factor risk. So if something is predictable, then the subordinate does not has to have trust, because there is no risk, that the expectations will not be fulfilled (Mayer, 1995).

Regarding the question, if the importance of trust is depending on the level of management (vertical) or depending on different business types (horizontal), no one found a clear difference in horizontal view, but 75% made the experience, that trust is the more important, the higher the management level is (vertical). As reason for that statement, the specialists mentioned the high complex decisions, which have to be made and the complexity increases, the higher the management is. This is also in line with the observations Luhmann (Luhmann, 2001) made. He is saying, that human is only capable of acting when it's possible for them to reduce the numbers of information, so the trust of the leader to the employee reduces such information and gives the possibility to work with more information. Or as Coleman interprets Simon's view of the rational choice theory It's impossible, to act just on hard facts. The actor must have trust in his own decision, based on the experiences he made by himself, same as its trust to the employee he got the basis information for decision from.

The remaining 25% of the specialists see a trust-based leadership is depending on the personal structure or that a trust-based leadership is a leadership style and makes no difference of level.

About the question, who will get more trust, a CEO or a CEO & owner, the specialist meaning differs from 7 of 12 person, who said that the CEO & owner will get more trust. As a main reason for that, the specialists see the circumstance, that the CEO only has a 5 year contract and the CEO & owner is bounded to the company. Interesting is also that 5 of 7 CEO & Owner are part of the group, who are thinking that way.

The other remaining 5 specialists see this characteristic as a not important figure and explain this with statements same as:

- It makes no difference, because trust must grow, the supervisor must earn it while the years.

- Both versions (more trust in CEO or CEO & owner) were seen in reality.

- It makes no difference. It depends on the leader, if people will follow.

2. The different use of power in human leadership

To understand more of the daily behaviour of the leaders, the use of the different powers according French and Raven (French & Raven, 1959) had been analysed. The leaders had been asked, what kind of powers they use to convince the employee, to do a special work (which the worker normally doesn't to do voluntary). E.g. that the employee shall work on a special weekend or something else.

The leader got the option to choose one or more out of the following five powers:

- referent power: the leader takes the leader role, to convince a employee, to do it in the same way

- reward: the leader allure the employee with a bonus

- expert: The employees are following because the leader is the specialist with special knowledge. The leader leads with knowledge

- coercive: The leader convinces a employee with thread and punishment

- legitimate: The leader just shows, that he/she is on this supervisor position "make what I want because I'm the supervisor"

100% of the specialists are leading with referent power.

7 of 12 are also using the expert power, 4 sometimes, 1 doesn't use it.

6 of 12 are also using the reward power, 3 sometimes, 3 doesn't use it because they said, that is only a short term power.

The coercive power is used by 6 of 12 only as a last exit and 5 definitely not. This statement is in line with the results of the research of Bal et al., (Bal et al., 2008) who asked 260 leaders about their power understanding, "The power of punishment or the ability to sanctions individuals for failure to conform to standards or expectations is the least leveraged source of power."

Only one leader inside this specialist interview was saying, that the manager is using it also sometimes in daily life. This is also more according Scholl (Scholl, 2014), who described persons with power in organisations with a hierarchy as light menace and using coercive power.

This result is similar to the use of legitimation power. Here 9 of 12 didn't use it, 1 person uses it as a last exit and the remaining two leaders use legitimation to be fast in moments where no time is available for an explanation.

Overall this result of the used powers shows, that there are good and bad powers, which are in line with the occurrence, they are used today.

The good powers, which are used today by the specialists, are referent, expert and reward power.

The bad powers are coercive and legitimation power, which will be in general not used by the specialists today or only as a last exit.

Also this result shows that the specialists are working with trust as a basis in their leadership method, which shows the following combination of an earlier pre-research, which had been extended to 106 employees, but the result is still the same:

The result was similar to the used powers of the specialist: expert and referent power is important (referent power not so important in the eyes of the employee as the leader think it is), reward power is also wished, but legitimation and coercive are powers, that are not wished from the employees and what they don't have in their relation to their leader. The relation to their supervisor itself is based on trust, because trust has the highest peak, compared with the powers of leadership, in reality and in the requested leadership.

3. The influence of power in a trust-based human leadership

All interview partners had the meaning, that trust is important in the leadership. Even 11 of 12 specialists came to the result, that trust is a missing power in the before discussed listing and underlined this with statements same as.

- Trust is a must have.
- Trust is basis to convince people.
- Trust is essential, other powers based on this.
- If there is no trust all other points are not relevant.

Only one person didn't find a clear relation between trust and leading power.

With the five categories of powers itself, 100% of the specialists came to the result, that a specific use could influence the trust level of the subordinates. Not to manipulate the interview partners, the specialists were not asked power by power, if it could influence in positive or negative way. 3 of 12 specialists rated all powers in good and bad ones by their own, all other rated just one to three of them. But independent of the number of powers they rated, it came to no crossings of the results. No crossing of good and bad powers, which is highly interesting.

So referent, reward and expert power were rated as a positive power, coercive and legitimation power were rated as a negative power to create trust. The negative coercive power, defined by dominance or punishment is not supporting a

trust-based relationship (Willemyns, 2003). This result is also in line with an earlier research (Hede, 2005) who also did not found a high influence of coercive power in the today leadership.

A very high conformity of the specialists is found in the result that 11 of 12 persons see the referent power as good power to influence the trust level in a positive way. In detail the following statements were given, with what kind of power the trust level can be influenced in a positive or negative way

- referent: 11/12 to influence trust in a positive way
- reward: 5/12 to influence trust in a positive way
- expert: 6/12 to influence trust in a positive way
- coercive: 5/12 to influence trust in a negative way
- legitimation: 5/12 to influence trust in a negative way

4. Cultural influence on a trust-based human leadership

Not all interview partners felt as specialists for cultural aspects and so not all could give answers about cultural deviations. Some of them tried to answer but with no clear statement. Overall the half of the asked managers, see a cultural aspect. One person doesn't see it and the rest of the answers were not relevant. Often the Asian culture is seen as a hierarchy culture, with a clear difference to the European one. Due to this hierarchy the build up of trust is seen more difficult in Asia. Distance (due to respect) to CEO or owner is more given and this makes it more difficult to create trust, than in western culture, where the people work more self depended and so trust is a must.

5. General results of the research

The most important and first general result is that the specialists stated clearly, that respect without reserve and just hierarchy are leadership advantages from the past. Today leaders must win the subordinate, which can be done only with trust. It's same than teacher and student from generation "Y" who are not thinking: what can I do for the job? They are thinking more: what can the job do for me? This statement is totally in line with the statements of earlier results of the author, where employees preferred trust as a leadership tool instead of the use of different negative powers. That is the reason for the first result

(1) Trust is the most important factor to lead an employee. This view is independent of supervisor or subordinate view.

This first result will be supported by the fact, that the more trust a leader has in its subordinate, the more important things can be delegated, the more complex decisions can be made in a short time period. This is also what the specialists said, when they were asked about their most critical leadership problems from today.

The second and third observation results are the hypothesises, that

(2) The use of the referent-, expert -and perhaps reward-power in a business relationship between supervisor and subordinate creates a trust-based relationship between supervisor and subordinate.

(3) The use of the coercive-, legitimation- and perhaps reward-power in a business relationship between supervisor and subordinate prevents a trust-based relationship between supervisor and subordinate.

This is based on the not crossing statement of the specialists, who are separated the different powers in positive and negative ones. This result is also confirming the results of the pre-test, with the subordinates, which shows the same result.

So in general it can be said, that the level of importance and the used powers in a business relationship is not different for a supervisor or a subordinate. There are no general differences in the researched reality and no general differences in

the expectations of the powers, which have to be used. There is also a common understanding, which power has not to be used.

(4) The coercive power is mostly not used in the daily leadership between supervisor and subordinate in a business relationship.

One thing that definitely prevents a trust-based relationship between supervisor and subordinate is the behaviour of the non-predictability of the leader, which in some case is used by full awareness of the leader itself. The predictability is one of four factors to create trust and due to the fact, that trust is the result of a two-sided relationship (Zand, 1981), it's a barrier, if the supervisor wants to have predictability from its subordinate, but just gives less or no predictability, to the subordinate itself. This is also a reinforcing problem, because the leader has to start building this trust-relationship (Schweer, 1997), and if the leader gives the wrong signal, trust can be blocked, before it can arise. The other three factors of trust are in line with the wish to create trust, so the last general result is that

(5) In the case of a non trust-based leadership between a supervisor and a subordinate, the factor predictability has the highest probability to be the cause of this circumstance.

Conclusions

In eyes of the specialists, the business world becomes more difficult day by day. Industry 4.0, communication, requirements, knowledge and quantities of changes are raising and increasing. Success stories of the past will not work in future, complete industries will change (e.g. Automotive) or occur (e.g. Internet), all these items show a much more complex world in future. On the other hand, the fast pace of today lead to less personal relationship. Leaders have to allow failures to find risks and potentials and on the same way leaders have to be predictable in the eyes of the subordinate to create the second step of trust, because the expectations of the subordinate from a leader to make every time the right thing, to motivate and to be consequent is something which will be the more difficult the complex the environment is. All this is supporting the 100% answer of the specialist, that

(Conclusion 1) "Trust is the most important factor in the business leadership of today." (leaders view)

This statement also supports the view of the author and the reason of this specialist interview research. On the other side and based on the fact that trust is only possible if both sides trusts the other side it has to be researched both sides, supervisor and subordinate, in a quantitative research.

(Proposal 1) "Research the trust behaviour in reality and wish of the subordinates in a leadership relationship"

Furthermore supports the result of the this interview the main hypothesis, that

(Conclusion 2) "A specific use of social leadership powers can predict the trust behaviour between supervisor and subordinate"

Unfortunately the result for the good and bad powers is based not on predefined answers. The here shown results based on answers from an open question. This can increase the importance of independent stated powers, but it can be also, that some powers just had been forgotten to define by the interviewed partner. So this should be researched in a more defined way.

(Proposal 2) "Research the influence of the social powers on the trust relationship with validated questionnaires."

The most surprising result of the research is the behaviour of the specialists in the way of their own and their expected predictability. Coming back to the first conclusion, that all supervisors see trust as the most important factor of today's leadership it is not in line with their own attitude, that they don't want to be predictable. But in line with their expected behaviour of their subordinates, which should be predictable. Perhaps this is an effect, based on the small number of

participants or perhaps it is the biggest barrier of a business trust based relationship. So this effect has to be investigated more deeply.

(Proposal 3) "Research the components of trust in reality and wish for subordinates and supervisors."

Over all it can be said, that in the modern leadership of today, leadership and trust can be announced as one. It seems to be, that due to the different needs of a complex environment, trust is no more only one of different factors or possibilities of leadership, it seems to be an important item for future researches of an efficient human leadership, that is why the here shown conclusions same as proposals are the research basis of the actual quantitative research of the author.

Bibliography

Adams, B.D., & Sartori, J.A. (2005) The Dimensionality of Trust Report to Department of National Defense. DRDC Report No. CR-2005-204 in Adams, B.D., & Sartori, J.A. (2006) Validating the Trust in teams and Trust in Leaders Scales. DRDC Report No. CR-2006-008, p.25ff

Bachmann, R. (2001). The role of trust and power in the institutional regulation of territorial business systems. (p.11) University of Groningen.

Bal, V., Campell, M., Steed, J. & Meddings, K. (2008) The role of Power in Effective Leadership, A CCL research white paper, Center of Creative Leadership (p. 4,10)

Dirks, K. /Ferrin, D. (2001), The role of trust in organizational settings, publiched in Organization Science, 12, (p.450-467), p.8

Doney, P.M., Cannon, J.P., & Mullen, M.R. (1998), Understanding the influence of national culture on the development of trust. Academy of Management Review, 23(3), p.601-620

Eilers, S, Möckel, K., Rump, J., Schabel, F. (2018), Hays HR Report 2018, https://www.hays.de/documents/10192/118775/hays-studie-hr-report-2018.pdf/243a467e-bc39-6b0a-3ac1-95c5f9bd43bc (09.01.2019)

French, J.R.P./ Raven, B. (1959): The bases of social power, in: Cartwright, D. (Hrsg.): Studies in Social power, Ann Arbor, S.150-167. and in: Raven, B.H./ Kruglanski, A.W. (1970): Conflict and Power, in: swingle , P. (Hrsg.): the structure of conflict, New York, p. 69-110.

Gambetta, D.G. (1988) Can we trust "trust"?, In D.G. Gambetta (Ed.), Trust: Making and Breaking Co-Operative Relations (p.213-237), New York, NY: Basil Blackwell

Hardy, C., Phillips, N., & Lawrence, T. (1998). Distinguishing trust and power in interorganizational relations: Forms and facades of trust. Trust within and between organizations, (p.64-87).

Hede, A.(2005), Patterns of Power and Leadership: Understanding Total Behaviour Leadership, Australian Institute of Management, University of the Sunshine Coast, Queensland Australia (p.13)

Jäckel, A. (2018), Gesundes Vertrauen in Organisationen. (p.86) Wiesbaden : Springer

Lammers, J., Galinsky, A. D., Dubois, D., & Rucker, D. D. (2015). Power and morality. Current Opinion in Psychology, 6, 15-19.

Lin, C.-P., Wang, Y.-J., Tsai, Y.-H., & Hsu, Y.-F. (2010). Perceived job effectiveness in coopetition: A survey of virtual teams within business organizations. Computers in Human Behavior, 26(6), (p.1598-1606)

Luhmann, N. (2001). Vertrautheit, Zuversicht, Vertrauen. In M. Hartmann & C. Offe (Hrsg.), Vertrauen. Die Grundlage des sozialen Zusammenhalts, Campus. p.149

Mayer, R.C., Davis, J.H., Schoorman, F.D. (1995) An integrative model of organizational trust. Academy of managementreview, 20(3), (p.714)

McKnight, H., Cummings, L.L., & Chervany, N. (1998). Initial trust formation in new organizational relationship. Academy of Management Review, 23(3), p.473-490

Neubauer, W. & Rosemann, B. (2006) Führung, Macht und Vertrauen in Organisationen (p.125) W. Kohlhammer Druckerei, Stuttgart

Schweer, M. (1997): Eine differentielle Theorie interpersonalen Vertrauens in Psychologie in Erziehung und Unterricht, 44, S.2-12 in Neubauer, W. & Rosemann, B. (2006) Führung, Macht und Vertrauen in Organisationen (p.132) W. Kohlhammer Druckerei, Stuttgart

Scott, J. (2007) Power, Domination and Stratification: Towards a conceptual synthesis. Sociaologia, Problemas e Practicas, n.º 55, 2007, Doctoral Conferences at ISCTE, Lisbon, Portugal on September 28th 2007 and at the Sosiologisk Institutt, Bergen University, Norway on 19th-20th September 2007 (p. 25)

Scovetta, V. (2013), The impact of Leadership Social Power on Knowledge Management Success, Pro Quest LLV UMI Number 3563506, p. 14

Sende, M., (2016) Potential negative impacts of trust on coopetitive relationships (p.1, 6) , 7th IBA Bachelor Thesis Conference, July 1st, 2016, Enschede, The Netherlands, University of Twente, The Faculty of Behavioural, Management and Social sciences.

Scholl, W. (2014), Führung und Macht: Warum Einflussnahme erfolgreicher ist, artoop, Institut an der Humboldt-Universität Berlin, p.5

Willemyns, M., Gallois, C., & Callan, V. (2003) Trust me I'm your boss: Trust and power in supervisor-supervisee communication. (p.117-127) International Journal of Human Resource Management, 14(1)

Zahra, S. A., Yavuz, R. I., & Ucbasaran, D. (2006). How much do you trust me? The dark side of relational trust in new business creation in established companies. Entrepreneurship Theory and Practice, 30(4), (p.541-559)

Zand, D. E. (1981). Trust and the Decision Process. In D. E. Zand (Hrsg.), INFORMATION, ORGANIZATION, AND POWER. Effective Management in the Knowledge Society (p. 37 - 55, i - xii). New York, St. Louis, San Francisco, et al.

HOW TO IMPROVE THE FUNCTIONING OF THE EU SINGLE MARKET FOR SERVICES

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Abstract. The Single Market is one of the biggest accomplishments of the EU. However, it has not, to date, delivered the same benefits for services that it has for goods. This results from the fact that regulations concerning the Single Market for services are not known, they haven't been implemented, or various (often unjustified and disproportionate) obstacles still hinder cross-border services activities. The purpose of this paper is to provide systematized assessment of the real effectiveness of the series of policy initiatives proposed within the so-called "services package", aiming at better use of opportunities offered by the common market for services, in light of existing significant barriers.

The examination of specific European legislative documents and analysis, as well as opinions and views expressed by advisory committees, national parliaments and stakeholders, demonstrate that although the latest Commission's proposals address both administrative and regulatory barriers, they are not ambitious enough for the completion of the free movement of services within the EU. The research findings confirmed the imperative of making greater progress in making the Single Market for services a reality, in an economic context where services are contributing an increasingly greater share of manufacturing and digitalisation. Thus, it is essential to take resolute and comprehensive policy actions to overcome the persisting deficits in the proper functioning of the internal market for services. These include actions at both the European level – for the Commission, and at the national level – for the Member States.

Key words: *services package, Services Directive, Single Market for Services, European Union*

JEL code: L84, F15

Introduction

25 years after its creation, the Single Market for goods and services is one of the biggest accomplishments of the European integration process. It has improved the living standards for EU citizens and 56 million jobs within the EU depend on trade created by the Single Market (Højbjerre Brauer Schultz, 2018). Furthermore, it has increased the competitiveness of the European businesses globally and made the EU the largest exporter of goods and services in the world.

However, the economic rationale and potential benefits of a completed single market have yet to be fully realised. A further widening and deepening of the single market could provide very substantial additional gains for EU consumers and citizens if remaining barriers could be eliminated and if existing European law were applied effectively (European Parliament, 2017a). Fully completed, the 'classic' single market in the fields of free movement of goods and services, public procurement and in relation to the consumer law (Pataki Z., 2014), combined with a fully functioning digital single market (Copenhagen Economics, 2010), could eventually generate 1.030 billion EUR per year in additional efficiency gains for the EU economy.[1] For the free movement of goods alone, untapped potential represents as much as 183 billion EUR per year – 1.3% of EU GDP. The biggest rewards, however, would come from further integration of services, and

[1] 615 billion EUR for the 'classic' Single Market and 415 billion EUR for the Digital Single Market. The classic and the digital single markets constitute separate points on the political agenda and are subject to distinct policy action plans.

in particular business services. Removing barriers further could create opportunities for nation-based companies and professionals to venture across borders. The possible gain in this area has been estimated at up to 338 billion EUR per year (European Parliament, 2014). Estimates suggests that the full implementation of the Services Directive could add 1.8% to EU GDP (Monteagudo J., Rutkowski A. and Lorenzani D., 2012). Together with taxation and social rights, services is an area where the gap between the rhetoric on Single Market integration and delivery of the necessary measures is most evident (Thelle M.H. and Rytter Sunesen E., 2018).

The European Union is a service economy[2] and yet cross-border trade mostly concerns goods. Only 20% of services are traded across borders accounting for only 5% of the EU GDP (Szczepański M., 2016). Large sections of the service economy are not taking advantage of the Single Market, in particular business services[3] and network industries. The multiplicity of legal and regulatory requirements at a national level in many service sectors partly explains the low degree of cross-border activity. These requirements, covering issues such as legal form and shareholding, prohibition of multidisciplinary activities and advertising, exist in particular in highly regulated professional services (European Commission, 2018). The untapped potential of the EU services market has been noted in the majority of the empirical economic literature, which seems to support the view that further integration should create additional economic growth.

The economic importance of services barriers is growing over time. The reason is that gains from lower barriers to services trade are not limited to the services sectors but will spread throughout the EU economy along with the increasing digitalisation, servicification and innovation. Hence, radical improvement of the internal market for services should be high on the EU competitiveness agenda.

The paper identifies and analyses the potential added value and impact of the series of policy initiatives recently proposed by the European Commission (EC) to advance the development of a 'true' Single Market for services – from a European services e-card to notification procedure of draft national laws on services. The natural question is therefore whether or not these proposals are delivering a simple, coherent and balanced framework that would enable us to unlock the full potential of the EU single market for services? The analysis is based primarily on specific European legislative documents and analysis, opinions and views expressed by advisory committees, national parliaments and stakeholders, which are referenced in bibliography.

The study is intended to make a contribution to the on-going discussion about the ways and means of enhancing the functioning of the EU Single Market; it is an attempt to contribute to the process of shaping a broad-based programme to complete the Single Market and of monitoring progress in its implementation. Precise analysis of the potential of the internal market for services has key cognitive, and practical significance. The research results will allow us to determine priority areas of action, the implementation of which could contribute to the establishment of a more open and competitive environment for services. Further to this, the issue requires a diligent examination due to the increasing role of the services sector in the economies of individual Member States, as well as the EU as a whole. It is worth noting that the analysis in this paper dovetails with wider research being undertaken in the academic and think-tank community.

It is particularly appropriate to undertake work in the services field at this present time, when the concept of the Single Market is under pressure like never before. Recent events and broader trends have put the integrity of the Single Market into question. There is an urgent need to drive forward efforts to complete the Single Market, instead of taking the positive effects of a deeper and wider market for granted. All Member States recognise that the Single Market is under-performing in almost all areas – notably in boosting the digital economy as a driver for cross-border trade, in successfully promoting

[2] Total services account for 71% of GDP, representing slightly more than 10 trillion EUR and 68% of total employment, i.e. roughly 150 million people (Eurostat, 2018).
[3] Only 10% of providers in business services provide services across borders.

start-ups, in integrating the EU economy into global supply-chains, and in promoting and regulating new business models; it is also falling short on market facilitation, on standardisation and on the licensing of-professionals (European Parliament, 2016). In light of challenges that the EU Single Market is facing today, analysis included in this paper appears all the more relevant.

Within the size constraints, the paper is structured as follows: the introduction defines the scope of the study and sketches out the current state of the EU Single Market by pointing its untapped potential. The next section maps the key challenges and obstacles to the services trade that the EU Single Market is facing today. In the third section, a review is conducted, as well as an objective assessment of the legitimacy and effectiveness of the actions proposed by the European Commission within the so-called "services package". In the concluding section, some policy recommendations for the policy makers – at both the EU and national levels – are provided.

Research results and discussion

1. The complex administrative and regulatory environment of the Single Market

Despite the principles introduced by the Services Directive which have enabled positive progress towards a better functioning of EU services market, there are still significant challenges and gaps remaining, which contribute to costs and uncertainty for both – the services providers and recipients. European businesses still experience many administrative and regulatory barriers when providing services in another Member State, including high shareholder requirements, requirements for professionals to hold 100% of the voting rights in some countries or compulsory minimum tariffs for some professions (OECD, 2018). Administrative complexity and costs are also high, including lack of information about applicable rules, differences in rules and requirements among countries, complexity of procedures and formalities, lack of electronic procedures, unclear deadlines and multiple fees. This is the case particularly in several business services[4] and construction sectors where service providers cannot easily exploit business opportunities in other Member States.[5] Finally, the Internal Market Information (IMI) System (Regulation EU, 1024/2012) established to enhance administrative cooperation between Member States and exchange information is seldom used (European Court of Auditors, 2016). As a result, Member States continue to impose specific domestic requirements on service providers established in other Member States.

Each year, the amount of notifications of new national requirements regarding the cross-border provision of services and the freedom of establishment[6] keeps growing, which makes it more difficult for entrepreneurs and firms to navigate, expand across borders within the EU and engaging in global value chains. In addition, national rules often account only for national situations without clarifying how they should be applied to service providers from other EU Member States. Reduced ability to trade and expand across the Single Market hampers the growth and productivity of EU businesses and has a larger negative impact for small and medium-sized enterprises (SMEs), as they are the most impacted by administrative complexity when operating cross-border (SME Envoy network, 2018).[7] At the European level businesses also experience confusion from partially overlapping rules, as well as the lack of a one-stop shop effectively providing them with the necessary administrative and legislative information – relevant for entering a new market and covering all business-related aspects. Instead, there are many different contact points established by various EU regulations that

[4] Business services (e.g. accounting, tax advice, architecture, engineering, IT) and construction are particularly affected by stringent regulatory obstacles when going cross-border.
[5] Both sectors are of key importance for the EU economy; they cover about 20% of EU GDP and employment.
[6] National regulations concerning services are notified via the IMI system.
[7] Barriers tend to accumulate over the value chain and hurt SMEs more than larger firms, and SMEs in the services sector are on average four times smaller than SMEs in manufacturing (Copenhagen Economics, 2018).

occasionally give different and even mutually exclusive information, sometimes available only in the local language. Furthermore, there is a tendency to address the problems by adopting new pieces of legislation or reviewing existing sector regulation, rather than revising the horizontal legislation. For businesses, this results in a fragmented regulatory environment instead of having to deal with one coherent set of rules.

The complexity of regulatory frameworks ill-adapted to new digital technologies and innovations is also a huge barrier to reaping the benefits of the common market. The inconsistency of laws and regulations involving digital service providers in the Single Market causes a lack of legal clarity for information society service providers which try to realise the European ambitions for a European Single Market for digital services. Too many restrictions to digital trade still block the free flow of goods and services across national borders, and although e-commerce is growing rapidly in the EU – the level of cross-border e-commerce is still relatively low (European Parliament, 2017a). In 2017, 33% of European consumers and 18% of European businesses sold or purchased online cross-border (European Commission, 2018). Failing to achieve the Digital Single Market imposes not only a huge short-term cost on citizens and businesses, but also threatens Europe's long-term prosperity. Benefiting from further integration of the Single Market for services is critically dependent on performing well in digital services as this is the fastest growing area of services trade.

To further increase the complexity of the regulatory environment, the traditional distinction between goods and services is getting more and more blurred. Much of the debate on the Single Market has seen services as separate from manufacturing while from a business perspective, the division between a Single Market for goods and a Single Market for services no longer exists. In reality, the manufacturing sector is increasingly relying on services, whether as inputs, as activities within firms or as output sold bundled with goods they sell (Miroudot S. and Cadestin C., 2017). Unfortunately, the legislation has not followed this development, which often makes the legislation out of touch with reality. Thus, the old division does not make sense anymore and a more holistic approach is needed for future regulation.

The challenge of a complex regulatory environment is further exacerbated by the fact that too often the legislation is purely made from a law-makers perspective. This leads to rules and procedures that are difficult for the end user to understand and to comply with. It is often the procedure rather than the regulation itself that creates a burden for businesses. The more steps in a procedure, and the more different authorities that are involved in the process, the harder it is for especially the SMEs to enter the market in another Member State (SME Envoy network, 2018).

Another problem is the lack of focus on digitisation. Digital solutions can – when tailormade from a business perspective – help reduce the complexity of the Single Market as many procedures can be made much easier to comply with for the end users. Today, many rules are based on discretionary assessments, which makes it difficult to create digital solutions. Furthermore, as many of the key legislative instruments were drafted before the advent of the Digital Age, they are not adequate for addressing the challenges and opportunities of the digital economy. This is harmful to legal certainty and discourages entrepreneurs from innovating with new service models. It is also important to use uniform concepts in all legal acts (SME Envoy network, 2018). The different use of terms such as "establishment" under company law and under the Services Directive makes it very difficult to establish user-friendly digital solutions for cross-border companies.[8]

In summary, it is highly important to ensure a transparent and clear legal base for European start-ups and scale-ups. It is the responsibility of regulators to ensure that legislation is simple, comprehensible and 'digital-by-default'. When the administrative and regulatory environment on the European level becomes too complex there is a risk that businesses will stop exporting and instead stick to their national market where they already know the rules. At the same time, it should be noted that furthering the Single Market for services is an inherently complex process as it touches upon a large

[8] For example, a company may not be considered established under the European company law, but will at the same time fall under the definition of establishment used in the Services Directive.

number of policies, some of them requiring the agreement of Member States that may have divergent national interests. Many barriers stem from national traditions, and changing these is politically sensitive (Szczepański M., 2016).

2. The changes the new services package would (and would not) bring

To make it easier for companies and professionals to provide services in other Member States, in January 2017 the European Commission launched a new services package, as part of the roadmap laid out in the Single Market Strategy. The proposed measures aim to facilitate service providers to navigate administrative formalities, and to help Member States identify and reform excessively burdensome or outdated requirements that exist in their service markets. Rather than modifying the existing EU rules in the area of services,[9] the Commission focuses on ensuring that they are applied in a good way through better regulatory practices, as evidence shows that implementing them to their full potential would provide a significant boost to the EU economy.

The key legislative initiative of the four proposed was a new services e-card[10] meant to simplify administrative formalities required to provide services in another Member State. Other measures in the services package include 1) a proportionality assessment of national rules on professional services, setting out criteria for conducting an ex-ante proportionality test when adopting new or amending existing provisions which restrict access to or the pursuit of regulated professions; 2) guidance on national reform needs in the regulation of professional services with high growth and jobs potential; 3) a notification procedure aimed at improving timeliness, completeness and relevance of notifications of draft national laws on services.

The proposal for a regulation introducing a European services e-card and related administrative facilities aims to reduce administrative complexity for service providers that want to expand their activities to other Member States (European Commission, 2017a). The services e-card was intended to facilitate the temporary provision of services across borders and the set-up of agencies, branches and offices,[11] where administrative complexity and legal uncertainty is still an important challenge. The card would allow service providers to liaise with a single interlocutor in their home country and in their own language. In a first stage, it would apply to business and construction services, to the extent that these already fall under the Services Directive and accordingly it would not cover areas such as tax, labour and social security. It would be offered on a voluntary basis as an alternative route to show compliance with the applicable national rules. It allows service providers to use a fully-electronic EU-level procedure to complete formalities when expanding abroad, hereby offering them increased legal certainty and significantly reducing red tape. Through the e-card they would be able to avoid administrative obstacles such as uncertainty as to which requirements apply, filling-in disparate forms in foreign languages, translating, certifying or authenticating documents and non-electronic procedures (European Parliament, 2017b). The e-card procedure would rely on cooperation – implemented via the existing IMI – between the coordinating authorities appointed or established in home and host Member States. Cost savings related to the formalities covered by the e-card procedure would be significant compared to the existing situation, potentially going up to 50% or even more.

The proposal drew a mixed response from advisory committees, national parliaments and stakeholders[12] in the business services sector. On the one hand, it was welcomed as an attempt to remove existing barriers and promote the mobility of service providers, while on the other hand it raised concerns about its impact, added value, certain practical

[9] The Commission highlights that discussion on the Services Directive is not reopened, but that the proposals seek to facilitate the application of some of its provisions.
[10] The initial name of the services e-card was services passport.
[11] It would be available for both natural persons who are self-employed but also for companies who want to provide services in another Member State.
[12] Service-providers and business-services customers.

implications and possible undesirable consequences it might trigger. Among the key concerns it raised the following should be pointed out:

1. The approach of shifting the main responsibility for the procedure to the home Member State authorities is in conflict with the established host Member State principle governing the Services Directive (European Committee of Regions, 2018). The services e-card proposal as presented by the Commission would introduce several elements based on the country-of-origin principle by allowing service providers to deal exclusively with the home Member State as an intermediary, requiring host Member States to accept home Member State decisions on the validity of documents and the veracity of their content, thereby limiting control mechanisms and thus harmonising the exchange of data based on the country-of-origin principle (European Economic and Social Committee, 2017).
2. Some features of the services e-card such as the "once only" principle for submitting information[13] (European Commission, 2016), its indefinite validity period, the obligation for the Member States to use information contained in the services e-card without the possibility of requesting proof of the validity of information provided at a later stage, as well as restrictive revocation procedures[14] could significantly endanger the control of compliance with national laws and the enforcement of workers' and consumers' rights (European Committee of Regions, 2018). Moreover, the legislative proposal does not include effective sanctions – either for the Member State or for the applicant company – for abuse of the European services e-card.
3. The fully electronic procedure combined with limited possibilities for host Member States to verify the information provided to the home Member State through the services e-card will make it easier to establish letterbox companies and bogus self-employment for purposes of tax evasion and social dumping (European Economic and Social Committee, 2017).
4. The fact that a coordinating authority has to check the validity of information provided by an applicant for a services e-card in the shortest time possible seems particularly problematic. This should be reconsidered to allow authorities as much time as necessary to process applications (European Economic and Social Committee, 2017).
5. As a voluntary instrument, the uptake of the services e-card will depend on its value-added for service providers and also on the efforts of the business community and relevant authorities in the Member States, to promote awareness of the e-card and its benefits.
6. The proposal has been criticised for being incompatible with the subsidiarity and proportionality principles. It raises concerns about whether or not the right balance is achieved between the benefits that cross-border service-providers hope to derive from the services e-card and the resulting bureaucratic burden for the Member State authorities concerned, considering also that a single point of contact is already available in every Member State and that Member State authorities can exchange information through the IMI System (European Affairs Committee, 2017).
7. Even though, the e-card is intended to reduce administrative complexity and costs for cross-border service providers when fulfilling administrative formalities, the proposal does not clearly specify which administrative obligations on service providers will become unnecessary for holders of an e-card.
8. The scope of the e-card is limited in the first stage to business services and construction services which implies that it only will have a marginal impact on addressing real barriers while forcing Member States to create an extensive and costly administrative system.

[13] Authorities in Member States may not require an e-card holder to provide any information already contained in the e-card.
[14] The procedures for cancelling the services e-card can require a final court decision to take affect and provide service providers with several mechanisms for continuing their services in the meantime.

The European services e-card proposal in its current form is unlikely to be approved in the EU legislative process, as its introduction in the form proposed does not generate sufficient added value. The application of the e-card would not lead to simplification, but would rather complicate structures and increase the administrative burden; its negative effects might not be proportionate and outweigh its benefits. The proposal needs improving and fine-tuning or rather an alternative solution should be found to reduce barriers in the business services sector by simplifying procedures for self-employed and companies to complete the administrative formalities to establish and provide cross-border services (OECD, 2018).

Considering the wide importance of professional services regulation, the services package also included measures aimed at strengthening the single market in this area, in particular: guidance for existing national reforms in the regulation of professions and a proportionality test for new professional services regulations. Altogether, the 28 Member States have put in place over 5.500 regulations[15] on professional services with different sets of requirements concerning qualifications (European Commission, 2019). These regulations affect 22% of the workforce or almost 50 million people in the EU. The activities and qualification requirements applicable differ very widely between Member States. Furthermore, there is a lack of clarity as regards the criteria to be used by national competent authorities when assessing the proportionality of the regulation of professions, as well as uneven scrutiny of such measures at all levels of regulation (Koumenta M. and Pagliero M., 2017). This ultimately has a negative effect on the provision of services and the mobility of professionals, as well as negative consequences for consumers and economics alike.[16]

The Commission offered reform recommendations[17] for regulation in professional services (European Commission, 2017d) which identified possibilities for improving the existing regulatory environment for a number of economically important groups of professional services: architects, engineers, lawyers, accountants, patent agents, real estate agents and tourist guides. Guidance for national reforms in the regulation of professions were formulated for each Member State taking into account the different regulatory models in force. Member States were invited to review legislation in specific professions, and assess whether professional requirements fulfil the declared national public policy objectives. The reform recommendations aimed at refining Member States' approaches to regulation, not by dictating them, but rather by ensuring better regulatory practices to guarantee that regulation is proportionate and that negative economic consequences are avoided. The European Commission meant to assist Member States in balancing the costs and benefits of regulatory reform within a consistent framework (Siôn J., 2017). These efforts are laudable as they provide transparency and pressure on governments to continue their reform process.

To avoid abuses or disproportionate requirements,[18] the Commission announced an initiative laying down a legal framework for a comprehensive and transparent proportionality test to be used by Member States before adopting or amending legislative, regulatory or administrative provisions restricting access to, or the pursuit of regulated professions[19] (European Commission, 2017b). The main objectives of the introduction of a common EU-wide assessment mechanism, applied by all Member States and in a comparable way, are to: provide clear criteria to conduct proportionality assessments of the regulation of professions (e.g. the nature of the risks, the scope of the reserved activities, the link between qualification and activities, the economic impact of a measure); strengthen reliability, transparency and comparability across Member States; and ensure that rules are applied equally, so as to prevent further burdens and

[15] Inappropriate regulation can place a burden on the professional, business and consumer; these burdens can include disproportionate qualification requirements, extensive reserved activities, compulsory membership in professional associations or other measures.
[16] In terms of job creation alone, around 700 000 more jobs could be created in the EU through addressing unnecessary and disproportionate regulations.
[17] As the regulation of professional services is a prerogative of the Member States.
[18] Regulation of professions should be objectively justified on the basis of public policy, public security or public health, consumer protection, or by overriding reasons in the public interest.
[19] 'Regulated professions' refer to activities where a specific professional qualification is required.

fragmentation of the Single Market brought by unnecessary future measures. The proposal also underlines the obligation to inform all interested parties before introducing new measures and give them the possibility to express their views, as well as the mandatory exchange of information between competent authorities of different Member States. The proportionality test is therefore designed to support better regulatory practices and ultimately their outcomes.

The concept of ensuring a more coherent legal framework at EU level for assessing the proportionality of the regulation of professions could indeed help to identify and to remove unnecessary regulatory barriers and improve national procedures. However the obligation to use the assessment before any new professional regulation may not be the best approach to enforcing its effective and engaged application. Rather the less binding instrument would be sufficient; non-obligatory (supporting) guidelines or an offer to consult could lead to similar effects without the negative impacts (European Economic and Social Committee, 2017). The proportionality assessments must be thorough, objective and evidence-based, and should also be commensurate, as a 'one size fits all' approach could be unnecessarily burdensome in many circumstances (European Committee of Regions, 2018). In addition, the compulsory and preventive test system could considerably slow down or even hinder any reforms in regard to professional regulation, and impose additional administrative burdens on competent authorities in the Member States, increasing workload and costs and further distortions in the market (Kiss M., 2018). Given that it is a matter for Member States, to decide whether and how to regulate a profession,[20] the proposal could constitute an interference in national legislative competences (Committee on Legal Affairs, 2017). Should the obligatory test be negative, it will hardly be possible for the legislator to argue the compliance with the Services Directive anyway. Finally, the proportionality check would require a close cooperation of Member States authorities and professional organisations with competencies for quality assurance of the regulated profession in question.

The proposal for a directive on proportionality test is consistent with and complements the initiative to reform the notification procedure for measures falling under the Services Directives (European Commission, 2017c), since the current procedure is inefficient and lacks transparency. The Commission has proposed that Member States notify their draft legislation in the field of services so that the Commission can assess whether they comply with Union law before they are adopted, and thus prevent the introduction of discriminatory, unjustified and disproportionate rules. It underlined the importance of notification being given at an earlier stage in the legislative process,[21] in order to allow for timely and proactive feedback from stakeholders and Member States, and to minimise delays in adoption (Szczapański M., 2017). The proposal has widened the scope of requirement notifications by adding authorisation schemes, professional liability insurance, guarantees or similar arrangements, and multi-disciplinary restrictions and also modified the process. Furthermore, the proposal requires that notification provides information sufficient to assess compliance (in particular on proportionality) and allows third parties access to notified draft measures, accompanying information and the final adopted measures.

The improving procedure is welcomed in ways that encourage early engagement, so that national measures can be revised to resolve problems before they occur. However, it seems that the proposed stricter requirements for the notification procedure could have the significant direct impact on national legislative procedures. Broadening the scope and complexity of the procedure, and introducing the standstill period and alert mechanism would hinder the ability of national legislators to undertake reforms within a short period of time and hence restrict their freedom (European Economic and Social Committee, 2017). In addition, it appears that a positive approach, meaning that negative decisions regarding the compliance of draft national laws, regulations or administrative provisions would not be binding, could

[20] Within the limits of the principles of non-discrimination and proportionality.
[21] It introduces an obligation to notify measures at least three months before final adoption.

bring considerably more benefits for Member States. For cases without a positive compliance evaluation the already available post-adoption procedures should be applied.

Conclusions, proposals, recommendations

The vast and highly diversified common market for services still offers significant opportunities for the EU to improve its proper functioning. Nevertheless, addressing obstacles to greater integration is a complex process, cutting through various policy fields and dependent on finding a compromise between sometimes divergent national interests. The overall aim is to dismantle existing barriers to intra-EU provision of services and carry out reforms in less integrated Member States. Indeed, the European Commission's new services package, which aims at making it easier for companies and professionals to start and expand their services cross-border, has been designed in this spirit but do not or very partially fulfil the need to complete the Single Market for services. The latest policy initiatives do provide a list of measures necessary to deliver a deeper and fairer Single Market for services and the core action necessary to improve its functioning. They do not, however, do enough to address the need for a new strategic vision; the full potential of a Single Market for services goes far beyond the sectors covered by the Services Directive and the trade barriers addressed by the Directive. Thus, the scope of services package should be extended, so that in future it is available to as many sectors as possible, including small and micro-enterprises and innovative and high-growth companies. Moreover, all efforts to develop and strengthen EU Single Market are much more likely to succeed if they have been prepared in close cooperation with all representative stakeholders of the sectors concerned.

The ambition of completing the internal market for services is one-of-a-kind – given that services activities generate over 70% of EU GDP– and simply cannot be compared with other EU initiatives in terms of complexity and magnitude. The recent initiative cannot, for that reason alone, pretend to deal with all and everything despite the European Commission's intention to sketch the ideal single services market.

The gaps and deficits in the EU services market integration still remain and require further attention and efforts from the EU and its Member States to achieve the ambitions for the real single market, including in services. The European Commission's efforts to simplify regulatory regimes governing services or to eliminate regulations which are no longer required are most welcome. Nonetheless, in implementing these reforms, it is essential to avoid any unintended fragmentation of the Single Market. Thus, the common denominator for these actions should be that they are not overly burdensome or out-of-date; are EU-wide competition-friendly, as well as business and consumer focused; and aim to be better fit for a digital future and the realities of service/manufacturing inter-dependence. In the following, the four proposals of ideas on how to address some of the shortcomings in the current EU regulatory regime for services are presented.

1. The implementation of existing legislation is in many instances imperfect. In preparing the proposal on the services e-card, the Commission carried out an evaluation of the Services Directive which demonstrated that even eight years after the deadline, it is still not fully implemented in all of the Member States. Despite having generated additional growth through Member State reforms, it has not succeeded in removing a considerable number of barriers facing service-providers in key services sectors (European Commission, 2017a).

Thus, Member States should ensure that all EU directives related to services are speedily and correctly transposed into national law, and, perhaps even more importantly, effectively implemented and enforced. In this regard, The European Commission should make considerably more efforts to monitor the implementation and enforcement of EU directives by national authorities once they are national law. Differences in the way Member States implement or enforce EU law contribute to the fragmentation of the Single Market, rather than its strengthening as originally intended.

All Member States stand to gain from improving the Single Market for services, and closing the implementation gap has become more important as the services covered by the Services Directive account for an increasing share of the EU economy. Notwithstanding, even the full implementation of the Services Directive does not provide everything that is needed to capture the full potential of a Single Market (e.g. in terms of the digital economy).

2. A services reform package should also look at how capable and equipped Member States are in governing services markets during and after the reform process, as there are two important elements to a competition-friendly regulatory framework. First, regulations must be designed in a way that enhances competition and encourages firms to innovate and improve efficiency without being a too heavy burden on companies and, second, these regulations must be complied with or enforced in a transparent and cost-effective way. Regulatory governance and regulatory reform are closely connected with each other; countries with higher regulatory barriers in services are also the ones with least effective governance structures to tackle services reforms (Koske I. et al., 2016).

Therefore, the EU needs to pay far more attention to the institutional set-up of regulatory bodies and Member States' capability to organize regulation in a way that reinforces the benefits from reforming services markets (van der Marel E., 2017). This goes well-beyond any Directive or guidance report for national reforms and rather focuses on how well-equipped regulatory bodies and governments are – in terms of financial resources, regulatory expertise and overall regulatory management practice – to undertake regulatory changes in their systems. These items are complementary to reducing or reforming regulatory barriers. While the European Commission observes the need to make better use of the Single Market for services it neglects the question of how public authorities have to deal with post-services market reforms when knowledge, expertise and regulatory management are required.

3. Developing a Single Market for services is an ongoing process that needs regular updating. For regulation to be fit for purpose, it has to be reviewed regularly in order to take account of changing environments, e.g. technical innovation, better educated consumers, etc. Established rules may no longer be the most appropriate ones and might have lost their justification because of technological, societal or market developments (European Commission, 2017d).

With the Internet of Things, sharing economy, cloud computing and more, the requirements for digital infrastructure and digital solutions will only increase (SME Envoy network, 2018). The pervasive nature of new digital technologies makes the distinctions between digital and non-digital services close to meaningless. It does not make sense to talk about the Single Market and the Digital Single Market as two different concepts, as we already have one Single Market that is highly digitalised and only will be more so in the very near future.

Digital technologies also provide for unprecedented potential for the cross-border delivery of some services, especially services where local presence is not a necessity. Thus, it is of high importance to think about digitisation when creating legislation for services activities. However, the services package does not offer an approach for electronic services. Given that the potential for mobility is extremely high in this sector, the verification of qualifications and fulfilment of legal requirements and minimum quality requirements is especially difficult to estimate for consumers and might require special tools. An initiative focusing on the Internal Market for electronic services would therefore be welcome. It is thus proposed to create a more systematic assessment of proposals tabled by the European Commission in order to ensure that European legislation is digital by default. This could be done by integrating the digital aspect in the impact assessments and to check all legislative proposals for their digital preparedness.

4. In the modern economy where there is an ever-increasing service elements of manufacturing (so-called servitisation), it makes little economic sense to have such a difference between the depth and width of the Single Market for goods and the Single Market for services. Due to the nature of service provision, the sector has strong inter-linkages with

other economic sectors, such as manufacturing. Establishing a well-functioning market for cross-border service provision in the Union is therefore a key component of the future competitiveness of the EU's industry.

Developing efficient policies – including the services package – that support all EU businesses thus requires that the relations between industrial policy and Single Market policy are properly understood and considered. This calls for a Single Market. Not one Single Market for goods, and another for services.

In conclusion, although the Commission's proposals address many non-tariff barriers, the greater Member State involvement, stronger monitoring, and increased political emphasis on the Single Market for services are needed to remove the barriers and deepen market integration (van der Marel E., 2017). As a matter of fact, work still needs to be done to ease both entry as well as conduct barriers, particularly in professional services; an area that the services package tries to tackle. To take advantage of the potential multiplier effect of common market, priority to longer term and collective goals should be given over short-term and national considerations (The Conference Board, 2014). For the moment, the services package is still pending with the co-legislators and is a recent example of where the desire to drive forward the Single Market is not fully matched by the political will to adopt the necessary measures.

Bibliography

Committee on Legal Affairs, 2017. *Reasoned opinion of the German Bundesrat on the proposal for a Directive of the European Parliament and of the Council on a proportionality test before adoption of new regulation of professions.* European Parliament. [Online] Available at: http://www.europarl.europa.eu. [Accessed 18 January 2019]

Copenhagen Economics, 2010. *The Economic Impact of a European Digital Single Market*. Brussels: European Policy Centre. [Online] Available at: http://www.epc.eu. [Accessed 2 January 2019]

European Affairs Committee of the Federal Council, 2017. *Reasoned opinion 20/SB-BR/2017 of 15 March 2017*. [Online] Available at: http://www.ipex.eu. [Accessed 16 January 2019]

European Commission, 2016. *EU eGovernment Action Plan 2016-2020. Accelerating the digital transformation of government*. [Online] Available at: https://eur-lex.europa.eu. [Accessed 14 January 2019]

European Commission, 2017a, *Proposal for a Directive of the European Parliament and of the Council on the legal and operational framework of the European services e-card introduced by Regulation*. [Online] Available at: https://ec.europa.eu. [Accessed 7 January 2019]

European Commission, 2017b, *Proposal for a Directive of the European Parliament and of the Council on a proportionality test before adoption of new regulation of professions*. [Online] Available at: https://ec.europa.eu. [Accessed 7 January 2019]

European Commission, 2017c, *Proposal for a Directive of the European Parliament and of the Council on the enforcement of the Directive 2006/123/EC on services in the internal market, laying down a notification procedure for authorisation schemes and requirements related to services, and amending Directive 2006/123/EC and Regulation (EU) No 1024/2012 on administrative cooperation through the Internal Market Information System*. [Online] Available at: https://ec.europa.eu. [Accessed 7 January 2019]

European Commission, 2017d. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on Reform Recommendations for Regulation in Professional Services*. [Online] Available at: https://ec.europa.eu. [Accessed 7 January 2019]

European Commission, 2018. *The Single Market in a changing world. A unique asset in need of renewed political commitment*. [Online] Available at: https://ec.europa.eu. [Accessed 6 January 2019]

European Commission, 2019. *Database of regulated professions.* [Online] Available at: https://ec.europa.eu. [Accessed 5 January 2019]

European Committee of Regions, 2018. *Opinion of the European Committee of the Regions — The services package: A services economy that works for Europeans*. Official Journal of the European Union (OJ C 54/81, 13.02.2018).

European Court of Auditors, 2016. *Has the Commission ensured effective implementation of the Services Directive?* Luxembourg: Publications Office of the European Union.

European Economic and Social Committee, 2017. *Opinion – Services Package. INT/815-EESC-2017-729*, May 31, 2017. [Online] Available at: https://www.eesc.europa.eu. [Accessed 14 January 2019]

European Parliament, 2014. *The Cost of Non-Europe in the Single Market. II - Single Market for Services*. Brussels: European Parliamentary Research Service. [Online] Available at: http://www.europarl.europa.eu. [Accessed 3 January 2019]

European Parliament, 2016. *A strategy for completing the Single Market: the trillion euro bonus. Report of the High-Level Panel of Experts to the IMCO Committee.* Brussels: European Parliamentary Research Service. [Online] Available at: http://www.europarl.europa.eu. [Accessed 3 January 2019]

European Parliament, 2017a. *Mapping the Cost of Non-Europe, 2014-19*. Brussels: European Parliamentary Research Service. [Online] Available at: http://www.europarl.europa.eu. [Accessed 2 January 2019]

European Parliament, 2017b. *Introducing a European services e-card*. Brussels: European Parliamentary Research Service. [Online] Available at: http://www.europarl.europa.eu. [Accessed 9 January 2019]

Eurostat, 2018. *National accounts statistics*. [Online] Available at: https://ec.europa.eu/eurostat/. [Accessed 2 January 2019]

Højbjerre Brauer Schultz, 2018. *25 years of the European Single Market. Study funded by the Danish Business Authority.* [Online] Available at: http://www.hbseconomics.dk. [Accessed 2 January 2019]

Kiss, M., 2018. *Proportionality test for new national regulations for professions.* Brussels: European Parliamentary Research Service. [Online] Available at: http://www.europarl.europa.eu. [Accessed 7 January 2019]

Koumenta, M., Pagliero M., 2016. *Measuring Prevalence and Labour Market Impacts of Occupational Regulation in the EU.* Brussels: European Commission. [Online] Available at: https://ec.europa.eu. [Accessed 17 January 2019]

Koske, I., et al., 2016. *Regulatory management practices in OECD countries.* OECD Economics Department Working Papers, No. 1296. Paris: OECD Publishing.

Miroudot, S., Cadestin C., 2017. *Services in Global Value Chains: From Inputs to Value-Creating Activities*. OECD Trade Policy Papers No. 197. Paris: OECD Publishing.

Monteagudo J., Rutkowski A., Lorenzani D., 2012. *The economic impact of the Services Directive: A first assessment following implementation*. Brussels: European Commission. [Online] Available at: https://ec.europa.eu. [Accessed 9 January 2019]

OECD, 2018. *OECD Economic Surveys: European Union 2018*. Paris: OECD Publishing. [Online] Available at: https://doi.org/10.1787/eco_surveys-eur-2018-en. [Accessed 7 January 2019]

Pataki, Z., 2014. *The Cost of Non-Europe in the Single Market. 'Cecchini Revisited'. An overview of the potential economic gains from further completion of the European Single Market*. Brussels: European Parliamentary Research Service. [Online] Available at: http://www.europarl.europa.eu. [Accessed 2 January 2019]

Regulation EU No 1024/2012 of the European Parliament and of the Council of 25 October 2012 on administrative cooperation through the Internal Market Information System and repealing Commission Decision 2008/49/EC ('the IMI Regulation'). Official Journal of the European Union (OJ L 316, 14.11.2012).

Siôn, J., 2017. *Smart Single Market regulation in the area of professional services.* Strasbourg: European Parliament. [Online] Available at: http://www.europarl.europa.eu. [Accessed 19 January 2019]

SME Envoy network, 2018. *Barriers for SMEs on the Single Market.* Copenhagen: Danish Business Authority. [Online] Available at: http://www.danishbusinessauthority.dk. [Accessed 2 January 2019]

Szczepański, M., 2016. *Understanding the Single Market for services.* Brussels: European Parliamentary Research Service. [Online] Available at: http://www.europarl.europa.eu. [Accessed 7 January 2019]

Szczepański, M., 2017. *Reform of services notification procedure*. [Online] Available at: http://www.europarl.europa.eu. [Accessed 9 January 2019]

The Conference Board, 2014. *Unlocking the ICT Growth Potential in Europe: Enabling people and businesses.* Brussels: European Commission DG Communications Networks, Content & Technology. [Online] Available at: https://ec.europa.eu. [Accessed 3 January 2019]

Thelle, M.H., Rytter Sunesen, E., 2018. *Making EU trade in services work for all*. Copenhagen: Copenhagen Economics. [Online] Available at: https://www.copenhageneconomics.com. [Accessed 2 January 2019]

van der Marel, E., 2017. *Economic effects of reform in professional services*. European Parliament. [Online] Available at: http://www.europarl.europa.eu. [Accessed 18 January 2019]

CHINA'S ROLE IN EAST ASIAN ECONOMIC INTEGRATION SINCE AFC – EVOLUTION AND PROSPECTS

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Abstract. The Asian financial crisis of the late 1990s contributed to the intensification of regional economic integration in East Asia. However, the initial optimism resulting from the greater interest in integration among participants weakened over time. One of the most important countries with real and growing influence on partners in East Asia is China. Its rising economic position makes China's perception of regional integration and its activity in that field crucial for the development of the process. These issues are covered in this study.

The main purpose of the paper is to present and evaluate China's role in the development of regional economic integration in East Asia in the period from the Asian financial crisis to the present. Two most important components of the regional economic integration will be analysed, namely regionalisation and regionalism. The main conclusion is that as a result of China's growing position as one of the leading economic centres of East Asia, its role in the development of East Asian economic integration has significantly increased. It can be observed in engagement in institutional frameworks, but above all, in the development of real economic ties in the region. Potentially, China can act as the most influential promoter of regional economic integration in East Asia. However, it depends on the significance of regional aspirations in a broader global strategy of China. It seems that currently global ambitions far outweigh the regional ones.

Various research methods are used to achieve the goal of the study: method of critical analysis of literature, method of inference and method of statistical data analysis.

Key words: *China, East Asia, regional economic integration*

JEL code: F15, F21

Introduction

Two seemingly contradictory tendencies characterise the contemporary stage of the world economy development. On the one hand, there is progressive globalisation of economic activity, which leads to activities on a worldwide scale, on the other, there is a tendency for closer cooperation by a group of countries in territorially limited areas. The latter phenomenon is referred to as regional economic integration and depending on whether it is the result of market forces or intended governmental activity, it is called either regionalisation or regionalism, respectively. Regional economic integration in East Asia[*] is assessed as relatively little advanced, especially in its institutional dimension. Nevertheless, there are quite intense economic relations here, which means that the market component of integration processes is relatively highly developed. The development of integration processes depends on the degree of involvement of individual countries, which in turn results from their assessment of the possibility of achieving benefits. The degree of involvement, complemented by the economic and political potential, defines the role of individual countries in integration processes.

The economic transformation of China, initiated in the late 1970s, triggered the country's economic potential. In 2010, China reached the position of the second biggest economy in the world and the first in East Asia, ahead of another Asian

[*] In this study, East Asia comprises of ten ASEAN member states: Brunei Darussalam, Cambodia, Indonesia, Lao P.D.R., Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam (Southeast Asia) as well as China, Japan and South Korea (Northeast Asia).

power – Japan. The Chinese ambitions of strengthening its position in the global economy do not contradict the country's aspirations to increase their role in the region. Chinese entities are more and more active here, intensifying cooperation with regional partners. Also, the Chinese government is increasingly involved in institutional integration on a bilateral, plurilateral and multilateral basis. Thus, the role of China in shaping the processes of regional economic integration is evolving. This is of interest to this study. The presentation of evolution and the assessment of the role that China played in the development of regional economic integration from the Asian financial crisis (AFC) will allow us to verify the hypothesis about the key role of China for the development of integration processes in the region.

Several research methods have been used to achieve the study's objectives, including a critical review of the literature, an analytical and descriptive method, an inference method, and a method of statistical data analysing and interpreting. The period of analysis covers the years 1997-2018, and within the subject scope of the study are market connections (trade, investment and production links) as well as institutional ones. Due to the limited size of the study, the financial aspects of integration, that deserve more in-depth analysis, will not be covered.

Regional economic integration – theoretical background and current tendencies

1. The basic theory of regional economic integration

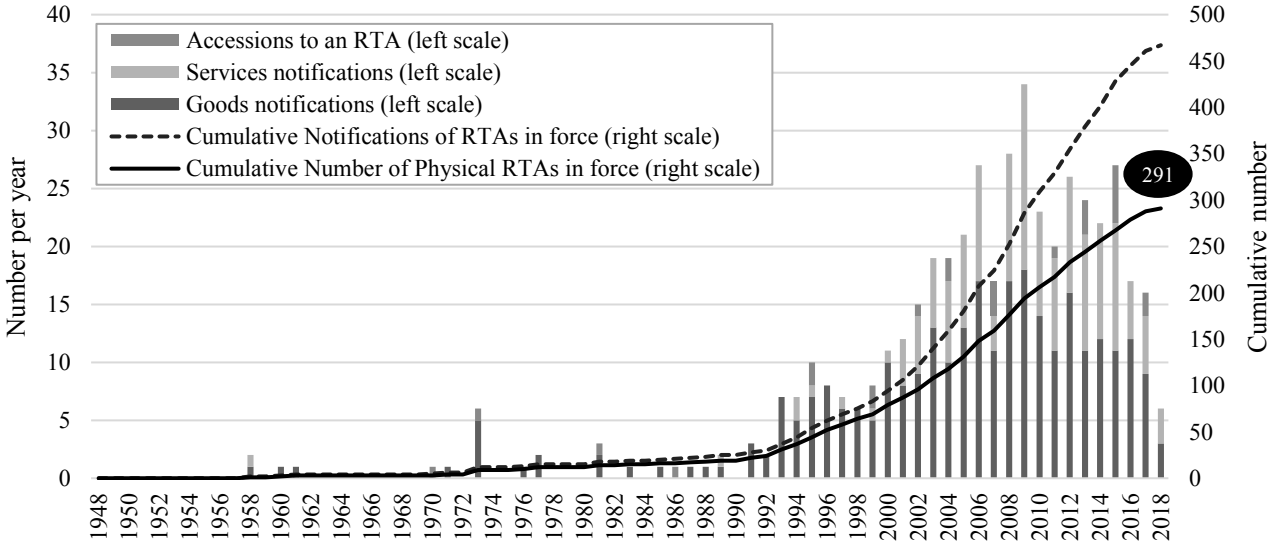
Economists differently interpret the phenomenon of international economic integration, and therefore there are many definitions of the term. The very content of the definition depends on the way of presenting the essence of integration and on what the authors consider the most important (e.g., premises, purpose or scope of integration). One of the general definitions of integration was proposed by W. Wallace, for whom this process takes place by developing intense and diverse models of interaction between previously autonomous units (Wallace, 1990). These models are partly political, partly social and partly economic, which, according to the author, means that all definitions of political integration must assume the accompanying intense interactions of a social and economic nature. Almost three decades earlier, in the early 1960s, B. Balassa revealed his concept of integration. In static terms, integration means the absence of various forms of discrimination between national economies, while in dynamic terms, it encompasses measures designed to abolish discrimination between economic units belonging to different national states (Balassa, 1969). For Ali M. El-Agraa (El-Agraa, 2015) international economic integration concerns, firstly, the abolition of discriminatory instruments in trade between the integrating countries and, secondly, the establishment of certain elements of cooperation and coordination between the partners. The scope of this cooperation and coordination will depend only on the form that integration will take. The short presentation of definitions shows that the concept of integration is quite often a subject of concern. For this study, a new, more actual definition of international economic integration can be proposed. Therefore, international economic integration is a process leading to an increase in the intensity and scope of links between national economies of a geographically defined area, as well as between economic entities from these economies. This process occurs in the sphere of market phenomena and the institutional sphere, leading to an ever deeper economic, political and social interdependence of integrating countries. The consequence of this process is the emergence of a new economic structure, different from its constituent elements.

In the literature, there are different classifications of regional economic integration. Depending on the adopted criteria, they may differ regarding forms (types), methods, or integration spheres. From this study point of view, the most important is the division into formal integration (regionalism, *de iure* integration) and informal integration (regionalisation, *de facto* integration) (Wallace, 1990). In this sense, processes of regional integration can be considered firstly as undertakings at the institutional level, but secondly, as a bottom-up (market) activities deepening economic ties between countries. In the case of regionalism, an institutional and instrumental component is developed, while in the

regionalisation, a real component prevails (Misala, 2005). A manifestation of *de iure* regional integration is a growing number of economic agreements, while the real integration process develops through the intensification of economic interdependencies on a regional scale, resulting from the strengthening of trade, capital or production ties (Misala, 2005). In the practice of regional integration, both processes co-occur, while if there is a predominance of an instrumental and institutional component over the real one, then we are dealing with the concept of regional integration stimulated by political factors (politically driven integration). Real integration is stimulated mostly by economic factors (economically driven integration). The concepts of regional economic integration described above are also reflected in the processes taking place in East Asia.

2. Current tendencies in regional economic integration

Regional economic integration is not a new phenomenon in the global economy. On the contrary, it has been around for centuries, although its intensification occurred after World War II, and especially from the mid-1980s. In the development of post-war integration processes, we can distinguish several stages. According to the WTO, there were three phases of that process (WTO, 2011): the late 1950s and 1960s; 2) the mid-1980s extended into the 1990s, and 3) since the beginning of the 21st century. In each of them, Europe was at the centre of events, although other geographical areas were increasingly involved in subsequent stages. The dynamic development of regional integration processes in the world is illustrated in Figure 1 which shows the number of regional agreements in the years 1948-2018. The data presented in Figure 1 show that integration processes began to accelerate from the second half of the 1980s. In 1980 a cumulative number of physical RTAs in force was at the level of 12, but a year before the creation of the WTO (1994), this number increased to 37. Since that time (in the years 1995-2018) additional 254 agreements appeared, rising a total number up to 291 currently functioning agreements.



Physical RTA: although notifications on goods, services and further accession to an RTA are counted separately (each as one notification), in physical RTA all these notifications are counted as one RTA.
Source: Own preparations based on (WTO, 2018).

Fig. 1. **Evolution of Regional Trade Agreements, 1948-2018**

If to look at the breakdown by geographical participation, as of December 2018, Europe had the largest share in physical RTAs in force (20.1%), followed by East Asia (17.5%) and South America (12.4%). The growing popularity of regional agreements is also confirmed by the fact that currently, since Mongolia and Japan signed a regional trade agreement (June 2016), each of the 164 WTO member countries is a party to at least one such agreement. The agreement

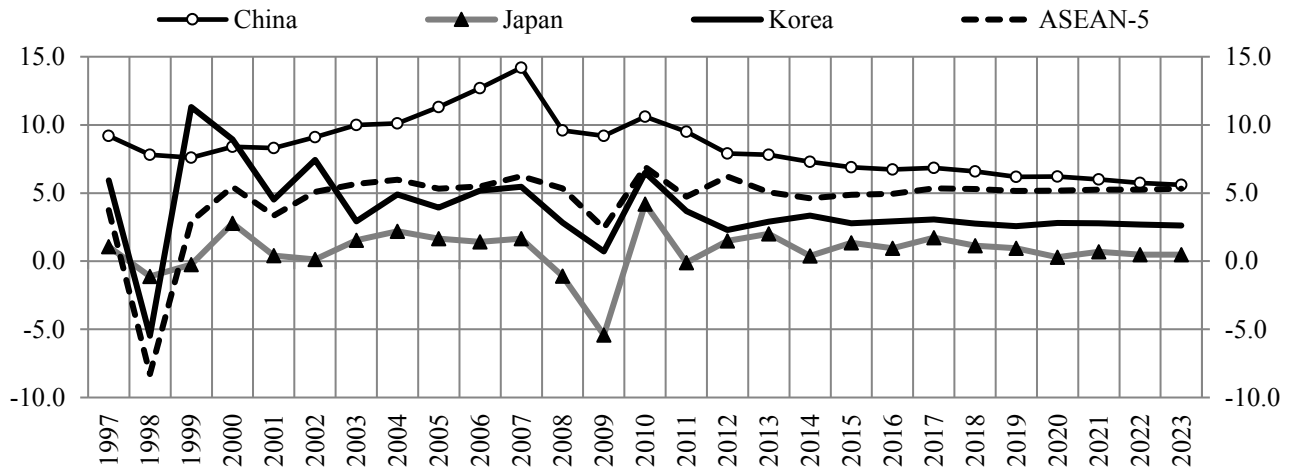
between Mongolia and Japan confirms the importance of this form of cooperation among Asian countries. The region is more and more active in forming an institutional framework for economic cooperation, which is confirmed by WTO data (2018). Until the beginning of the 21st century, regionalism in East Asia did not exist. Up to 2000, there were only four agreements with countries from East Asia. The situation changed fundamentally in the new century when some countries began to negotiate agreements intensively (including Singapore, China, Japan or South Korea). In 2002, Japan signed its first agreement with Singapore, and in subsequent years the number of agreements notified in the WTO by the East Asian countries multiplied. In 2005, six agreements in the area of goods and five in the area of services were notified to the WTO. In the record year 2015, 15 agreements were notified (eight concerned goods and seven services). Between 2000 and 2018, the total number of physical agreements in force involving East Asian countries increased from 4 to 69. It can, therefore, be concluded that the countries of the region were seriously involved in regional integration, having a large share in shaping global trends. Looking at the commitment of individual countries, it is possible to indicate leaders. According to ADB (2018a), the countries with the highest number of signed agreements in force were: Singapore (22), China (17), South Korea (16), Japan (15), Malaysia (14) and Thailand (13). The lowest number of agreements was demonstrated by Cambodia (6) and Myanmar (6). Agreements take the form of bilateral, plurilateral and multilateral agreements. They cover both the area of East Asia and even more often the other areas, constituting forums for supra-regional cooperation. A significant trend in contemporary regionalism is also a negotiation of mega-FTAs, which concern large economies often from different geographic regions (e.g., Regional Comprehensive Economic Partnership or Comprehensive and Progressive Trans-Pacific Partnership, Transatlantic Trade and Investment Partnership).

China and East Asian economic integration

Forty years ago, China began to implement socio-economic reforms, the effects of which are now visible in many areas, including the economic sphere (Twarowska, 2015). Observing China's achievements in foreign trade, investments or the financial sphere, one can state that this country has achieved a high position in the contemporary international division of labour. China's significant economic potential and its transformation into real economic power allow the country to pursue foreign economic policy both globally and regionally. China strives to secure leadership in the region, but it is well-established with its growing global economic position. Foreign trade, foreign direct investments and globally and regionally integrated production networks are the main channels for the development of economic regionalisation in East Asia, stimulated by market factors and private sector entities. Enterprises operating in the region, developing contacts with each other, bring the economies closer together, which increases East Asian regionalisation. Although no institutional arrangements are required for this type of bottom-up integration, institutional initiatives to support this process are also emerging in East Asia. They include such spheres as trade, finances or infrastructure. Examples of such agreements are ASEAN, ASEAN Plus Three (APT) and Chiang Mai Initiative (CMI). China is involved in the development of regional economic agreements, and the growing economic position of this country has favoured the growth of many economies of the region. Thus, the role of China in shaping regional economic integration in East Asia should be considered comprehensively, i.e., broken down into two components: market (regionalisation) and institutional (regionalism).

1. Role of China in East Asian regionalisation

The country's role in the development of economic ties in the region is determined primarily by its economic potential enabling economic impact in the region, its significance in trade, in the flows of direct investments and participation in regional production networks. From this point of view, the importance of China in Asian regionalisation has increased. In 1997-2018 China significantly improved its economic position, becoming the largest economy of East Asia. It was due to the higher than in other countries of the region long-term dynamics of economic growth (see Figure 2).



ASEAN-5: Indonesia, Malaysia, Philippines, Thailand, and Vietnam.
Source: author's construction based on (IMF, 2018b).

Fig. 2. **Real GDP Growth in China, Japan, Korea, and ASEAN-5 in 1997-2023, %**

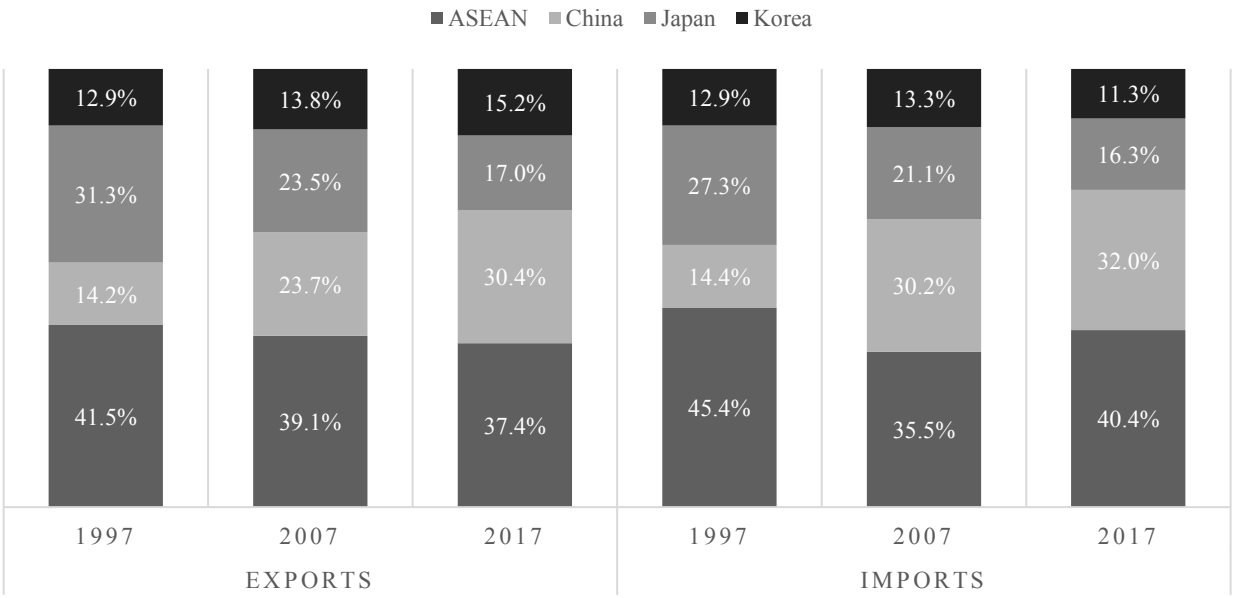
Analysing data from Figure 2, it can be seen that the GDP growth in China practically throughout the entire period exceeded the dynamics of the compared countries. After a slowdown in 1997-98 (AFC), since 1999, GDP growth in China has increased to reach 14.2% in 2007. In other countries, the situation was varied. The Asian crisis hit ASEAN and South Korea to the greatest extent (in 1998 their GDP decreased by 8.3 and 5.5% respectively), and slightly lower in Japan (here a GDP decline by 1.1% was recorded). In the following years, both Korea and ASEAN improved their situation. Since 1999 in both cases higher dynamics than Japan have been shown. The slump in growth, which came with the global financial and economic crisis, affected the economies of all the countries discussed, with Japan being hit the most (-1.1% in 2008 and -5.4% in 2009). In the case of Korea, the dynamics of growth fell to 0.7% (2009), while in China, a slowdown was also observed, although the dynamics were positive and high (9.6% in 2008 and 9.2% in 2009). After 2011, stabilisation of the situation in Korea, Japan, and ASEAN-5 was noticed, while the high rate of China's economic growth weakened, although it was still distinctly higher than in the compared countries. In 2017, it was 6.9%, and IMF forecasts indicate a possible further drop to 5.6% in 2023.

The changes described led to a change in a balance of economic power in the East Asian region, but also on a global scale (Mucha-Leszko, 2018). From a global point of view, there exists a polycentric system, in which the European Union, the United States, and China play leading roles (Mucha-Leszko and Kąkol, 2012). Therefore, China, while engaging in regional processes, must also take into account the global perspective. Regional changes consisted mainly in the growth of China's position at the expense of the existing economic leader – Japan (Pasierbiak, 2017; Park and Pasierbiak, 2018). According to the IMF (2018b) in 1997, Japan had a dominant share in the GDP of East Asia (66%), while China showed a 14.4% share. Until 2017, the situation completely reversed, because China showed a share of 56.7%, and Japan only 23%. Therefore, the remaining countries accounted for around 20% of East Asia's GDP. China has replaced Japan as Asia's largest economy in 2010 (GDP in current USD), and if GDP is calculated according to the purchasing power parity, then China became an economic leader in the region as early as 1999.

The existence of such a dynamic and robust centre of growth increased opportunities for the development of regional economic integration in East Asia, as new possibilities for developing links for both China and their partners emerged. They were mainly reflected in the increase in trade volume resulting from the growing sales and supply markets in China,

a change in the product structure of trade between partners, the development of foreign direct investment and the development of vertically integrated production networks.

In 1997-2017 intra-trade in East Asia significantly increased: the export from 956 USD billion to 4.03 USD trillion, while imports from 1.2 to 5.1 USD trillion (IMF, 2018a). At the same time, the dynamics of internal trade growth was higher than external trade, which meant an increase in the share of intra-trade from 20 to 27.5% in exports and from 17.9% to 23.8% in imports. The development of trade has become an essential channel of market integration of East Asian countries. China had a large share in this process, and its position in regional trade has improved (Figure 3).



Source: author's construction based on (IMF, 2018a).

Fig. 3. **Share of China, Japan, Korea and ASEAN in intra-APT trade, %**

The growing importance of China is noticeable in the export and import of APT states. The country's share in exports increased from 14.2% in 1997 to 30.4% in 2017. It was mainly at the expense of Japan, which dropped from 31.3 to 17%. On the import side, similar changes can be observed, i.e., the role of China increased significantly (from 14.4 to 32%), and this increase was mainly at the expense of Japan, but also other partners (Korea and ASEAN). The increase in China's share in trade of Eastern Asia means that the country has more significant potential to influence the formation of regional market integration.

Even more clearly, the importance of China in the development of trade links in East Asia is manifested when analysing the position of this country in the bilateral trade with individual countries. The analysis of the position of China as a trading partner allows us to formulate an unambiguous conclusion about the growing and dominating role of this country in the bilateral trade relations of East Asian countries. According to the information presented in Table 1, currently, China is a leading trading partner for all East Asian countries. While in 1997 it was not the primary export market for any partner (China held the highest third position in Korea exports), in 2017 China was the most important export market for five countries, and for the next four the second the most important market. China's domination is even more apparent in the area of imports. In 1997, China was not the most important market of supply for any country from East Asia, while twenty years later for all countries, except Lao P.D.R. Such a vast dominance in trade allows China to influence the growth of trade in the region, shaping the primary channel of development of market integration.

Table 1

Rank of China in trade of East Asian countries in 1997, 2007 and 2017

Specification	Exports			Imports		
	1997	2007	2017	1997	2007	2017
Brunei Darussalam	20	6	7	10	5	1
Cambodia	5	18	5	9	2	1
Indonesia	5	4	1	8	2	1
Lao P.D.R.	14	3	2	5	1	2
Malaysia	11	4	2	8	2	1
Myanmar	5	4	1	2	1	1
Philippines	12	4	4	12	5	1
Singapore	8	4	1	5	3	1
Thailand	8	3	1	7	2	1
Vietnam	4	4	2	8	1	1
Japan	5	2	2	2	1	1
Korea	3	1	1	3	1	1

Source: author's calculations based on (IMF, 2018a).

Another channel is foreign direct investments. The role of China in this area is slightly different than in the case of trade. The country is a recipient of investment much more than an investor in East Asia. According to UNCTAD (2014), in 2001 the share of China as a location for accumulated investments in East Asia was at the level of 56.5%, to fall to 33.6% by 2012. At that time, ASEAN member states enjoyed growing interest, and in consequence, its share in the corresponding period increased from 33 to 55.2%. These changes took place due to the growing attractiveness of ASEAN for East Asian countries, including China. Increasing labour costs in Japan, Korea, and China resulted in increased investment in ASEAN. It indirectly caused a relative decline of investment in China (Pasierbiak, 2017). On the other hand, China's interest in investing in East Asia was relatively small so far, and Japan remained the largest traditional investor. Still, in 2003, the contribution of the Middle Kingdom to the cumulative value of FDI in East Asia was only 0.9% (UNCTAD, 2014). By 2012, this share increased to 5.5%. The growing capital involvement of China can be attributed to the development of production networks in the region.

International production networks are widespread in East Asia, having a considerable influence on trade and investment flows (Gaulier, Lemoine and Ünal-Kesenci, 2004). Specific conditions made enterprises changed their strategies on the Asian market from exports to international production. Cross-border activities in the region served to reduce costs and adjustments to rapidly changing technology and market requirements. This kind of transnational production largely explains the changes taking place in intra-regional trade and investments, influencing changes in their structure and, more broadly, East-Asian specialisation.

China relatively recently joined the production networks in East Asia but made a significant contribution in that field (Das, 2014). The growing complexity of production processes leading to its vertical fragmentation of production and trade has contributed to the transformation of China into the leading centre of regional production networks of East Asia. Gradually, the country became the hub of Asian production networks, connecting the countries of the region through the development of trade in parts, components, and semi-finished products. In 2010, the share of intermediate goods in Asian exports was around 50%, of with about 30% was intra-regional trade (ADB, 2012). The role of China in the development of regional production networks was reflected in bilateral production links with partners. From 2010 to 2017, China's bilateral value chains intensified with Japan and South Korea and slightly weakened with Indonesia, Malaysia, the Philippines and Thailand (ADB, 2018). The development of production and distribution networks in Asia together with the global conditions affecting them has led to the creation of a specific trade pattern, referred to as a triangular trade (Gaulier, Lemoine and Ünal-Kesenci, 2004; Haddad, 2007). Japan, Korea and other Asian countries with a high level of

technological development exported capital goods, advanced intermediate goods, including parts and components, to relatively less technologically developed countries, such as China or some ASEAN countries. The latter group of countries after processing them into final products, exported them to the largest global markets, i.e., to the United States and Western Europe (Białowąs, 2018). Thus, it can be concluded that this pattern of triangular trade supported the development of market integration in East Asia. On the other hand, in conditions of crises (e.g., from 2007-2008), it is possible that the decline in demand from the most significant global recipients will lead to a simultaneous decline in trade in countries involved in international production networks, negatively affecting the economic situation of these countries.

The development of production networks in East Asia and the growing importance of China in their formation have stimulated the intensity of trade and capital ties within the region. The changes consisted mainly in the intensification of intra-regional trade (including, above all, intermediate goods) between the partners and the growth of mutual investments. The result was an increase in economic interdependencies in the region, contributing to the development of regional economic market integration. An essential complement to this type of integration is usually institutional integration, which in the case of East Asia, although initially limited, also occurred.

2. Role of China in East Asian regionalism

The development of *de facto* economic integration has become one of the premises of *de iure* integration in East Asia. Countries have begun to realise that effective mechanisms of cooperation will allow the promotion of regionalisation and, consequently, more significant economic benefits (Pasierbiak, 2016). Until the 1997 crisis in East Asia, virtually there was no regional integration of *de iure* type. In the 1960s, the ASEAN association was created, but it was concentrated more on the implementation of political objectives in the area of security than on achieving economic purposes (Wojtas, 2013). In turn, the proposals of Malaysian Prime Minister Mohamad Mahathir from the early 1990s to promote cooperation solely in East Asian group of countries did not gain acceptance from those partners that were strongly linked to external world powers (e.g., Japan and Korea to the USA). The initiatives that were in operation were mainly based on cooperation within a wider Asia-Pacific area (e.g., APEC). The situation changed in the late 1990s with the outbreak of the financial crisis, which strongly affected a large group of countries in the region. They recognised that closer cooperation would allow better protection against similar crises in the future.

China demonstrated a similar attitude towards institutional economic integration. Almost to the end of the 20th century, the country showed a complete lack of interest in institutional integration with partners from East Asia, focusing above all on the development of multilateral cooperation. The first cooperation forum in the region, which China joined in 1991, was APEC (Pasierbiak, 2016). Later, in 1994, it became involved in the ASEAN Regional Forum (Ye, 2012). However, in both cases, it was a passive reaction to the actions of other countries, and not a desire to shape intra-regional processes actively. Until then, China, like most Asian countries, recognised that multilateral cooperation would bring more significant benefits. The situation changed with the outbreak of the Asian crisis in 1997 and with the change of China's global position in international relations. Although China's involvement in East Asian regionalism came relatively late, it nevertheless developed rather strongly. The systematically growing economic and political position of the Middle Kingdom in the world caused that China began to be perceived by the United States not as a partner but as a strategic rival. In this regard, China has recognized that greater involvement in intra-regional cooperation will be a step firstly, to provide the foundations for sustainable economic development (Munakata, 2004), and secondly, to limit the current hegemony of the United States and the economic domination of Japan in the region (Friedman, 2006).

Since the Asian crisis, China has taken an active and consistent attitude to shape East Asian regionalism, which has shifted the centre of gravity towards the Middle Kingdom. Regionalism in East Asia, like previously regionalisation, became more and more China-centric. In 1997, China, South Korea as well as Japan were invited by ASEAN to regional

cooperation. For the first time, a cooperation forum composed exclusively of East Asian countries – ASEAN Plus Three (APT) was created.

From the very beginning, China was very active, primarily in the financial sphere. Already in 1998, they submitted a proposal that the heads of central banks and representatives of the Ministries of Finance of all East Asian countries would hold regular meetings in order to prevent further financial crises. In 2000, the initiative of bilateral currency swaps - Chiang Mai Initiative (CMI), and in 2002 the Asian Bond Market Initiative (ABMI), which were strongly supported by China, came into force. The end of fifteen-year-long negotiations on China's accession to the World Trade Organization in 2000 increased the country's self-confidence. In the same year, China proposed to ASEAN to open negotiations on the creation of a free trade zone (Zhang, 2010). It was somewhat surprising, considering the previous Chinese attitude of preferring multilateral solutions. On the other hand, it was a visible sign of China's foreign economic policy reorientation towards the promotion of regional trade agreements, alongside the traditional use of multilateral fora (Long and Zhang, 2005). The dynamics of this process was and remains high, which is confirmed by the data of the Chinese Ministry of Commerce (see Table 2).

Table 2

China FTA Network, as of January 2019

In force	Under negotiation	Under consideration
1. China-Maldives FTA 2. China-Georgia FTA 3. China-Australia FTA 4. China-Korea FTA 5. China-Switzerland FTA 6. China-Iceland FTA 7. China-Costa Rica FTA 8. China-Peru FTA 9. China-Singapore FTA 10. China-New Zealand FTA 11. China-Chile FTA 12. China-Pakistan FTA 13. China-ASEAN FTA 14. Mainland and Hong Kong Closer Economic and Partnership Arrangement 15. Mainland and Macau Closer Economic and Partnership Arrangement 16. China-ASEAN FTA Upgrade 17. China-Chile FTA Upgrade 18. China-Singapore FTA Upgrade	1. Regional Comprehensive Economic Partnership, RCEP 2. China-GCC(Gulf Cooperation Council) FTA 3. China-Japan-Korea FTA 4. China-Sri Lanka FTA 5. China-Israel FTA 6. China-Norway FTA 7. China-Pakistan FTA second phase 8. China-New Zealand FTA Upgrade 9. China-Mauritius FTA 10. China-Moldova FTA 11. China-Panama FTA 12. China-Korea FTA second phase 13. China-Palestine FTA 14. China-Peru FTA Upgrade	1. China-Colombia FTA Joint Feasibility Study 2. China-Fiji FTA Joint Feasibility Study 3. China-Nepal FTA Joint Feasibility Study 4. China-Papua New Guinea FTA Joint Feasibility Study 5. China-Canada FTA Joint Feasibility Study 6. China-Bengal FTA Joint Feasibility Study 7. China-Mongolia FTA Joint Feasibility Study 8. China-Switzerland FTA Upgrade Joint Feasibility Study

Source: author's preparation based on (Ministry of Commerce; PRC, 2019).

Since 2002, when negotiations with ASEAN were initiated, the number of free trade agreements with China as a party has sharply increased. According to the Ministry of Commerce, currently China is party to 16 agreements in force, further agreements are being negotiated, and a large number of agreements are under consideration. What is characteristic of China's policy is not limiting itself to the region of Eastern Asia only.† There are such agreements, but they constitute a distinct minority. Thus, it can be concluded that China is more interested in the geographic diversification of its trading partners, and the area of their involvement extends beyond Eastern Asia alone. An example of such an attitude is the Regional Comprehensive Economic Partnership agreement (RCEP), negotiated since 2012. The talks so far have led ASEAN, China, Japan, South Korea and India, Australia and New Zealand (ASEAN+6) to complete the 23rd round of negotiations in August 2018 (ADB, 2018). In this way, China is part of the general trend of negotiating mega-FTAs (other agreements of this type implemented by Asian countries are: Comprehensive and Progressive Trans-Pacific Partnership - CPTPP, signed in March 2018, and Japan and the European Union Partnership Agreement, which is supposed to come

† The increase in initiatives implemented with non-Asian partners is a trend observed in 2017-2018 among most Asian countries (ADB, 2018b).

into force in February 2019). It seems that China's attitude towards negotiations is determined to a large extent by global conditions. Quite intensive negotiations that took place at RCEP slowed down after the withdrawal of the United States from a concurrent TPP agreement.

Also, there is a conflict between the regional integration policy and China's global ambitions. This country does not focus only on the region of East Asia or even Asia. Its global expansion is visible through many activities. An example of such an action is the program announced in 2013 by Xi Jinping, which would strengthen economic integration and coordination of policies in the broadly understood Eurasian region (Belt and Road Initiative – BRI). This initiative includes many infrastructure projects based primarily on two pillars: the Silk Road Economic Belt and the 21st Century Maritime Silk Road. The first of them (Belt) is to connect China with Central and Southern Asia and further, with Europe, while the second one (Road) will connect China with Southeast Asia, Gulf countries, East and North Africa and further with Europe (Baniya, Rocha and Ruta, 2019). This program arouses great interest among the countries of the region, but it contributes more to China's individual strategic goals than to East Asian integration.

The prospects of regional economic integration in East Asia, especially in its institutional dimension, are ambiguous. A great individualism is visible in the activities of individual countries. Many of them have an independent policy of forming bilateral and plurilateral agreements with Asian and non-Asian partners. It creates an excessive complexity of institutional connections in Asia (noodle bowl). China plays a unique role in this process as it is the most influential economy in the region. Its ambitions go beyond East Asia, which means they do not have to (do not want to) be interested in promoting East Asian integration. This is confirmed by the projects they undertake (e.g., BRI, RPEC), binding them more or less with selected countries. In turn, the role of China in real economic ties of the region will strengthen along with keeping the developmental dynamics higher than the partners. If China maintains the position of the strongest economic centre, then the trade, investment and production ties will deepen.

Conclusions

1. China was a latecomer to the regional economic integration in East Asia, but both in the case of regionalisation and regionalism has made a relatively high contribution, increasing its role in shaping the integration processes. Regional economic integration in East Asia has become more China-centric.
2. The long-standing advantage of China over regional partners in the dynamics of economic growth has changed the balance of economic power in the region. Therefore, China gained more possibilities to influence economic ties in East Asia by its economic potential. Consequently, China achieved a crucial position in shaping *de facto* East Asian integration.
3. The most important channels of China's influence on the development of market integration were trade and investment links as well as production networks. Production networks are of particular importance, as they have an impact on the increase of the degree of market integration by intensifying trade and investment ties between countries of East Asia. As China became a key production hub, it allows influencing the intensity of trade and investment and production relationships between East Asian countries directly.
4. China's approach to *de iure* integration in East Asia has evolved. The involvement in the process, which did not exist before the Asian crisis, increased immediately after the outbreak of the crisis. Nevertheless, it turned out that joining in the processes of institutional cooperation in East Asia was subordinated to the individual interests of the Middle Kingdom. China is guided by its own priorities, and the predominance of global aspirations over regional ones means that China does not focus exclusively on East Asian integration. On the contrary, its ambitions go far beyond the region of East Asia, which weakens the possibility of developing *de iure* integration.

5. The future role that China will play in the development of East Asian regional integration processes depends first of all on keeping the development dynamics higher than at the partners, which will allow the country to maintain the role of the leading economic centre in the region. Thus, China will strengthen its impact on regionalisation in East Asia. Secondly, it will depend on the importance that regional integration will have in implementing the global development strategy of China. It seems that currently, regional economic integration in East Asia is not a priority for the Middle Kingdom.

Bibliography

ADB, 2012. *Asian Economic Integration Monitor*. Manila.

ADB, 2018. *Asian Economic Integration Report 2018*. Manila.

Balassa, B., 1969. *The Theory of Economic Integration*. 3rd ed. London: George Allen &Unvwin Ltd.

Baniya, S., Rocha, N. and Ruta, M., 2019. Trade Effects of the New Silk Road. A Gravity Analysis. *World Bank Policy Research Working Paper*, 8694(January), 1–40.

Białowąs, T., 2018. Osłabienie powiązań produkcyjnych w gospodarce światowej jako czynnik spowolnienia handlu międzynarodowego w latach 2008-2015. *International Business and Global Economy*, (37), 231–243.

Das, D.K., 2014. *China and the Asian Economies. Interactive Dynamics, Synergy and Symbiotic Growth*. Abingdon and New York: Routledge.

El-Agraa, A.M., 2015. *The European Union Illuminated. Its Nature, Importance and Future*. New York: Palgrave Macmillan.

Friedman, E., 2006. The Fragility of China's Regional Cooperation. In: E. Friedman and S.C. Kim, eds., *Regional Cooperation and its Enemies in Northeast Asia*. London and New York: Routledge, 125–142.

Gaulier, G., Lemoine, F. and Ünal-Kesenci, D., 2004. *China's Integration in Asian Production Networks and its Implications*. RIETI Discussion Paper Series.

Haddad, M., 2007. *Trade Integration in East Asia: The Role of China and Production Networks*. World Bank Policy Research Working Paper. Washington D.C.

IMF, 2018a. *Direction of Trade Statistics (DOTS)*. [online] Available at: <http://data.imf.org/?sk=9D6028D4-F14A-464C-A2F2-59B2CD424B85> [Accessed 3 Jan. 2019].

IMF, 2018b. *World Economic Outlook Database, October 2018*. World Economic Outlook.

Long, G. and Zhang, L., 2005. China's Approach to an Institutional Regional Arrangement. In: C.Y. Ahn, R.E. Baldwin and I. Cheong, eds., *East Asian Economic Regionalism. Feasibilities and Challenges*. Dordrecht: Springer, 1–19.

Ministry of Commerce; PRC, 2019. *China FTA Network*. [online] Available at: <http://fta.mofcom.gov.cn/english/index.shtml> [Accessed 11 Jan. 2019].

Misala, J., 2005. *Wymiana międzynarodowa i gospodarka światowa. Teoria i mechanizmy funkcjonowania*. Warszawa: Oficyna Wydawnicza SGH.

Mucha-Leszko, B., 2018. Causes of the European Union's Decreasing Position in the Global Economy in 2000-2016. *Problems of World Agriculture*, 18(33)(1), 159–175.

Mucha-Leszko, B. and Kąkol, M., 2012. Globalizacja i zmiany w układzie sił gospodarczych a międzynarodowy system walutowy. In: E. Molendowski, ed., *Globalizacja i regionalizacja we współczesnym świecie*. Kraków: Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie, 313–322.

Munakata, N., 2004. *Regionalization and Regionalism: The Process of Mutual Interaction*. RIETI Discussion Paper Series. *RETI Discussion Paper Series*.

Park, S.C. and Pasierbiak, P., 2018. Japan's Role in East Asian Economic Regionalism. *Institutions and Economies*, 10(2), 121–145.

Pasierbiak, P., 2016. Chiny a wschodnioazjatycka integracja gospodarcza de iure. *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, (266), 167–177.

Pasierbiak, P., 2017. In the Quest for Dominance in East Asia: Evolution of Economic Position of Japan and China. *Research Papers of Wrocław University of Economics*, (486), 49–60.

Twarowska, K., 2015. Od Mao Zedonga do Xi Jinpinga. Cechy, cele, kierunki i narzędzia zagranicznej polityki gospodarczej Chińskiej Republiki Ludowej. *Ekonomia Międzynarodowa*, (10), 50–63.

Wallace, W., 1990. Introduction: the dynamics of European integration. In: W. Wallace, ed., *The Dynamics of European Integration*. London: The Royal Institute of International Affairs, 1–24.

Wojtas, M., 2013. Regionalna integracja gospodarcza w Azji. *Annales Universitatis Mariae Curie-Skłodowska, sectio H, Oeconomia*, 47(2), 143–151.

WTO, 2011. *World Trade Report 2011. The WTO and Preferential Trade Agreements: From Co-Existence to Coherence*. Geneva.

WTO, 2018. *Regional Trade Agreements Database*. [online] RTAs currently in force (by year of entry into force), 1948-2018. Available at: <http://rtais.wto.org/UI/Charts.aspx#> [Accessed 28 Dec. 2018].

Ye, M., 2012. The Rise of China and East Asian Regionalism. In: M. Beeson and R. Stubbs, eds., *Routledge Handbook of Asian Regionalism*. London and New York: Routledge, 251–262.

Zhang, Y., 2010. *China and Asian Regionalism*. London: World Scientific.

SOCIAL RESPONSIBILITY OF HIGHER EDUCATION INSTITUTIONS: YOUTH ATTITUDE

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Abstract. Social Responsibility in the higher education institutions encourages ethical approaches, develop a sense of civil citizenship by encouraging the students and the academic and administrative staff to provide social services to their local community, promote ecological or environmental commitment for local and global sustainable development and so on. Such practices are very important in today's world, where organizations strive to act as socially responsible and at least partially contribute to sustainable development.

In the article we raise problematic questions: How do young people understand social responsibility? How studies of social responsibility subject impact young students' attitude towards corporate social responsibility (further – CSR)? How does a higher education institution implement socially responsible initiatives in their activities? What is the main benefit of a social responsibility? *The aim of the research* is to investigate the attitude of youth to social responsibility of higher education institutions. Quantitative research and data processing *methods* were applied in the empirical research. In this survey participated 356 respondents from two higher education institutions (College and University). The collected empirical data were processed using the SPSS (*Statistical Package for the Social Sciences*) programme. The research respondents indicate that social responsibility manifest as a part of business companies' activity, the phenomenon of society and part of public / governmental institutions activity. The evaluation of social responsibility implementation in institutions of higher education revealed that main attention is given to employee well-being, focus on environment area and intolerance for bribery, rust of any corruption. Mostly respondents think that publication of social initiatives strengthen higher education institutions image and reputations, increase its authority, and creates a stronger organizational culture. Comparison of attitudes of respondents, who have studied the subject of social responsibility, and respondents, who had not studied such subject, indicated the benefits of social responsibility studies by revealing the wider respondents awareness of impact of social responsibility implementation.

Key words: *higher education institutions, social responsibility, youth*

JEL code: I2, M14, J13

Introduction

The spread of corporate social responsibility philosophy and practice is observed for two decades. CSR refers to companies taking responsibility for their impact on society. Corporate social responsibility has become a standard practice in the modern world, and yet its purpose, rationales, mechanisms and outcomes are still intensely debated (Amiri E. et al., 2015). The European Commission (future - EU) (2018) believes that CSR is important for the sustainability, competitiveness, and innovation of EU enterprises and the EU economy. Global, European and national institutions struggle to accelerate countries and companies involvement in Global compact agreement, sustainable development goals, and other social responsibility activities.

Corporate social responsibility usually is defined as a voluntary activity (Pučėtaitė R., 2009; Bagdonienė D., Paulavičienė E., 2010; Potašinskaitė M., Draugelytė A., 2013; Vitell S.J., 2015) and business practices (Korschun D. et

al. 2014), which contributes to the (social) welfare of society (Vishnubhai P.N., 2012; Korschun D. et al., 2014; Vitell S.J., 2015; Nwanne T.I., 2016). CSR can also be understood as the economic commitment of a business to the social development of the community in which it operates (Lahdesmaki M., Suutari T., 2012). Some scientists also include philanthropic responsibility in the definition of CSR (Weyzig F., 2009; McGehee N.G. et al., 2009). CSR is a continuous and long term process guided by organizational and personal values. It is concerned with people (as stakeholders), environment and organizational policies, and is influenced by political concerns (Stanislavska L.K. et al., 2014). Today implementing CSR many organizations take responsibility for the impact on society (Supanti D., Fredline K.B.L., 2015). In practice, in the majority of companies CSR takes the form of charitable activities, without a profit-making goal (Behringer K., Szegedi K., 2016). According to S.Geethamani (2017) CSR policy functions as a self-regulatory mechanism by which a business monitors and ensures its active compliance with the spirit of the law, ethical standards and national norms. A.Dahlsrud (2016) analyzed CSR definitions and come to a conclusions that the CSR definitions are describing a phenomenon, but fail to present any guidance on how to manage the challenges within this phenomenon. In essence we can say that CSR is a dynamic process in which organizations are constantly changing, developing so as to contribute to sustainable development. The ongoing social responsibility provides new opportunities for eco-friendly suppliers, environmentalists, creators of safe materials and processes, organizations that invest in eco-efficiency and those who are involved in building public welfare as higher education institutions.

Social Responsibility in the higher education institutions encompasses many different areas including the following: the need to strengthen civil commitment and active citizenship; to provide services to the community through community engagement and outreach; to promote economic and national development; to promote ethical approaches to issues; to develop a sense of civil citizenship by encouraging the students and the academic and administrative staff to provide social services to their local community; to promote ecological or environmental commitment for local and global sustainable development; to develop local and global human resources; to expand human knowledge through quality research and education for the nation and for humanity (Alzyoud S.A., Bani-Hani K., 2015). As the complexity of higher education operations increasingly overlap with societal interests, higher education institutions are pressured for responsible practices. Thus responsible higher education practices not only will contribute to the well-being of the shareholders and the public in general, but also these practices will increasingly become a long-term value proposition for the institution itself (Dahan G.S., Senol I., 2012).

According to S.A.Alzyoud and K.Bani-Hani (2015) university's social responsibility can be put into practice when university leaders emphasize responsibility to the public, ethical behavior, and the need to practice good citizenship. University leaders should be role models on ethics and the protection of community health, safety, and the environment. Practicing SR refers to support of issues that are important to the public but that are within the limits and resources of the university. According to E.Amiri et al (2015) nowadays, companies and organizations require a professional manager with analyzing and ideas generating skills. Professional skills of a manager and entrepreneur extend well beyond the economical information about the company (financial accounting, analyses, control and forecasts). The manager has to be capable, of making human resources related decisions, where apart from the economical and legal aspects, psychological, pedagogical, esthetic and social aspects have to be considered. The new management theories are increasingly focusing on the imperative of the corporate social responsibility. Therefore higher educational establishments have to take on teaching corporate social responsibility to their students - prospective managers and entrepreneurs.

The problem of the article. While companies' reports present the practice and examples of social responsibility implementation, scientists scrutinize the peculiarities of this philosophy. Studies that are conducted in the context of analysis of corporate social responsibility most often address the notion of corporate social responsibility itself (Vaitkevičius S., Stukaitė D., 2009; Dahlsrud A., 2006; Carroll A.B., Shabana K.M., 2010), ethical principles and their

importance for the society (Mirvis P., 2012), employees (Vishnubhai P.N., 2012), the impact on the competitiveness of an organization (Juščius V., 2008; Battaglia M. et al., 2014), brand (Taleghani M. et al., 2012; Bakanauskas A., Vanagienė V., 2012; Plungpongpan J. et al., 2016), innovation (Kim Y. et al, 2014; Hague H.M., 2018), etc. Notwithstanding that institutions of higher education are greatly affecting the diffusion of progressive theories and philosophies there are less surveys of social responsibility implementation in higher education institutions (Alzyound S.A., Bani-Hani K., 2015; Stanislavská L.K. et al, 2014; Amiri E. et al, 2015; Dahan G.S., Senol I., 2012). Most of these articles are analyzing the problems of social responsibility. This article scrutinize the attitude of youth to social responsibility. There is a lack of surveys on young people understanding on CSR and recognition of its manifestation in particular organization. **In the article we raise problematic questions:** How do young people understand social responsibility? How studies of social responsibility subject impact young students' attitude towards CSR? How does higher education institutions implement socially responsible initiatives in their activities? What is the main benefit of a social responsibility?

The aim of the research is to investigate the attitude of youth to social responsibility of higher education institutions.

The methods of the research. Analysis of research literature sources, systematization, synthesis, generalization, and comparison were applied it the theoretical level. Quantitative research and data processing methods were applied in the empirical research. In this survey participated 356 respondents from two higher education institutions (College and University), Social Sciences Faculties, from Klaipeda city (Lithuania). 227 college students and 129 university students participated in the research. 45.0% of all surveyed students from both higher education institutions had studied subject of the corporate social responsible, 55% students had not studied subject of the corporate social responsible. The questionnaire consisted of seven questions. Students' opinion was researched about: areas and ways of manifestation of social responsibility; social responsible organization's impact on society; benefits for higher education institutions when they publicize social initiatives. Students also had to assess the implementing social responsibility areas of higher education institutions.

The collected empirical data were processed using the SPSS (*Statistical Package for the Social Sciences*) programme. In the data processing descriptive statistics was used, such as percentiles, mean, mode and standard deviation. The data was also processed by nonparametric Kruskal Wallis test. To assess the reliability, or internal consistency, of a set of scale, Cronbach's alpha coefficient was used.

Research results and discussion

The research pursued to reveal respondents understanding of social responsibility usually manifestation areas (table 1). Respondents were allowed to choose an unlimited number of relevant answers; therefore the total expression is more than 100 percent. In addition, it was important to determine whether respondents, who have studied the subject of social responsibility, were more likely to choose different answers than respondents, who had not studied the subject of social responsibility.

Table 1

The percentage distribution of respondents' opinions about areas of manifestation of social responsibility

The areas of manifestation of social responsibility	N	Percent of Cases	Percent of 100	Social responsibility subject is …	
				studied	not studied
1. .... part of business companies activity	195	54,8%	29,4%	18,6	10,8
2. ... part of public / governmental companies activity	153	43,0%	23,1%	12,4	10,7

The areas of manifestation of social responsibility	N	Percent of Cases	Percent of 100	Social responsibility subject is …	
				studied	not studied
3. ... the type of companies advertisements in order to increase notoriety (popularity)	76	21,3%	11,5%	9,2	2,3
4. ...the phenomenon of society	177	49,7%	26,7%	8,9	17,8
5. ...the activity of separate groups of people	54	15,2%	8,1%	5,7	2,4
6. Never heard about that	8	2,2%	1,2%	0	1,2
Total	663	186,2%	100,0%	54,8	45,2

Source: composed by authors from data of research

The analysis of percentage distribution revealed that mostly respondents indicate that social responsibility manifest as a part of business companies activity (54,8 %), the phenomenon of society (49,7 %) and part of public / governmental institutions activity. Other variants of answers were chosen significantly less often. No respondent provided other type of manifestation of social responsibility (answer "other" – 0 %). The data analysis revealed some differences: respondents who have studied social responsibility were more likely to choose specific areas of manifestation (for example answer "… part of business companies activity" – 18,6); while respondents who have no social responsibility subject significantly more often indicated that "social responsibility is phenomenon of society" (17,8 %). Also it is worth mentioning that in spite of social responsibility studies still part of the respondents consider social responsibility a kind of corporate advertising (respondents, who have studied social responsibility – 9,2 %; respondents, who haven't studied social responsibility – 2,4 %; difference – 6,8 %).

The research aimed to reveal respondents perception about ways of manifestation of social responsibility (2 table). Respondents were allowed to choose an unlimited number of relevant answers; therefore the total expression is more than 100 percent. Also, it was important to determine whether respondents, who have studied the subject of social responsibility, were more likely to choose particular answers than respondents, who had not studied the subject of social responsibility. Research data (table 2) reveals that respondents were choosing possible ways very actively. The most popular manifestation ways of social responsibility were: nature conservation and environmental protection (71,9 %), focus on society (71,9 %), focus on employee welfare (67,4 5), voluntary activities of enterprises (65,7%), charitable activities of organizations (65,4 %). The rarely chosen answer was "maximization of profit" (9,0 %). So, nearly the same quantity of respondents think that social responsibility is a kind of corporate advertising used for profit earning. This might indicate that not all students perceive the true essence of social responsibility and further indications – young people still need various information on social responsibility.

Table 2

The percentage distribution of respondents' opinions about ways of manifestation of social responsibility

The ways of manifestation of social responsibility	N	Percent of cases	Percent of 100	Social responsibility subject is …	
				studied	not studied
1. Charitable activities of organizations	233	65,4%	11,9%	7,7	4,3
2. Voluntary activities of enterprises	234	65,7%	12,0%	7,8	4,2
3. Nature conservation, environmental protection	256	71,9%	13,1%	8,4	4,7
4. Maximization of profit	32	9,0%	1,6%	1,2	0,4
5. Focus on employee welfare	240	67,4%	12,3%	6,3	6,1
6. Focus on society	256	71,9%	13,1%	8,1	5,0
7. Complying with the requirements of the law	183	51,4%	9,4%	4,2	5,0
8. Assurance of business transparency	184	51,7%	9,4%	7,0	2,4
9. Assurance of equal opportunities in the organization	171	48,0%	8,8%	6,2	2,8

The ways of manifestation of social responsibility	N	Percent of cases	Percent of 100	Social responsibility subject is …	
				studied	not studied
10. Ethical behavior	161	45,2%	8,3%	4,1	4,1
Total	1950	547,8%	100,0%	61,0	39,0

Source: author's calculations based on research data, 2018.

The research intended to evaluate CSR implementation in institutions of higher education. Research respondents had to assess fifteen statements about CSR with a range scale, where 1 means that students completely disagree with items, 5 - completely agree. The scale consists of the following CSR essential areas: attention to environment (4 statements); voluntary initiatives (2 statements); attention to employee welfare (5 statements); attention to economic area (4 statements). For the assessment of the question scale internal consistency, Cronbach's alpha coefficient was used. Cronbach's alpha coefficient value for a properly and qualitatively composed question scale should be greater than 0,7. In our case, the analysis of the questionnaire scale items obtained that Cronbach's alpha coefficient is 0,864, and Cronbach's Alpha Based on Standardized Items is 0,865. This shows that the scale is properly prepared. Analyzing CSR items are submitted mean, mode and std. Deviation (table 3).

Table 3

Social responsibility areas are implemented in higher education institutions

Items	Mean	Median	Mode	Std. Deviation
Environmental area				
1. Attention is paid to environmental protection by reducing any negative environmental impact of the organization	2,92	3,00	3	,899
2. The services provided do not pollute (or minimize) the environment	3,25	3,00	3	1,081
3. The waste / garbage is sorted	3,19	3,00	3	1,208
4. Paper, electricity, water is saved	3,27	3,00	3	1,119
Voluntary initiatives				
1. Employees and students are encouraged to participate in voluntary activities	3,56	4,00	4	1,045
2. Funds for support / charity are allocated	3,21	3,00	3	1,131
Attention to employee welfare				
1. Safe and healthy (ergonomic) working conditions are provided	3,41	3,00	3	1,116
2. Compliance with law requirements	3,80	4,00	4	,988
3. Work ethics is respected	3,86	4,00	4	1,016
4. Equal rights are ensured	3,99	4,00	4	,951
5. Employees and students are motivated to make the studies effective comply with the law	3,12	3,00	3	1,132
Attention to economic area				
1. Workers are encouraged to cooperate to overcome external competition	3,39	3,00	3	,977
2. Quality standards are implemented in order to gain an advantage, improved image against other organizations	3,21	3,00	3	1,140
3. Various savings programs are implemented	3,07	3,00	3	,936
4. Intolerant bribery, rust of any corruption.	4,30	4,00	4	1,052

Source: author's calculations based on research data, 2018.

Research data analysis (table 3) reveals that the main attention is given to employee well-being, where the mode ranges from 3 to 5, mean values close to mode and range from 3,12 to 3,99. Students are also encouraged to take part in voluntary activities (mode 4, mean 3,56). The respondents opinion on average are focus on environment area (mode 3, mean 2,92 – 3,27), charity (mode 3, mean 3,21) and economic area (mode 3, mean 3,07 – 3,39), except intolerant bribery, rust of any corruption where mode is 4, mean - 4,30. We see that higher education institutions involve enough aspects of

social responsibility in their activities. However, social responsibility is implemented differently in each higher education institution. There are significant differences between the two higher education institutions. p value provided in table 4 shows significant differences between institutions (p <0,05).

Analyzing the data in the environmental protection area, it is noted that university respondents tend to disagree more with the submitted items. The big differences come out when respondents assess sorting trash and saving electricity, water and paper. This leads to the conclusion that university students are less encouraged to consider environmental aspects than college students. According to respondents' opinion charity is more assigned by the college than by the university. Such data indicates the conclusion that in college the information is more publicized and students are more encouraged to contribute to these initiatives themselves than at the university.

Table 4

Kruskal Wallis test of social responsibility areas for higher education institutions

CSR areas	Type of institution	Mean	Sig. p
Environmental area	College	3,48	*p = 0,001 <0,05*
	University	2,51	
Voluntary initiatives	College	3,65	*p = 0,000 <0,05*
	University	2,48	
Attention to employee welfare	College	3,88	*p = 0,000 <0,05*
	University	3,01	
Attention to economic area	College	3,76	*p = 0,000 <0,05*
	University	2,90	

Source: author's calculations based on research data, 2018.

Greater attention to employee well-being is given in college (mean 3,88) than at university (3,01). Here the biggest difference is highlighted by the analysis of claims: provides safe and healthy working conditions, compliance with law requirements. According to the college respondents, for these areas are given sufficient attention, but university respondents evaluate these statements on average.

The college (mean 3,76) focuses more on the economic sphere than the university (mean 2,90). Except when we talk about savings programs and corruption, here college students agree that there are many savings programs in the institution, while university students only agree on average with these items. Such results may lead to the fact that in more college degree programs are included the course of social responsibility. Students who have studied this course are more aware of certain aspects of social responsibility and are more aware of them.

The research aimed to reveal respondents perception about social responsible organizations impacts on society (table 5). Respondents were allowed to choose an unlimited number of relevant answers, therefore the total expression is more than 100 percent. Next table (table 5) also displays the comparison between attitudes of respondents, who have studied the subject of social responsibility, and respondents, who had not studied such subject. The data (table 5) indicate that mostly respondents think that social responsible organizations help to solve particular social problems (74,5 %), or take care of environment (64,6 %). It is worthwhile to mention that no respondent provided other variant of answer (other – 0 %). Although respondents who have studied the subject of social responsibility have been more active in choosing different answers, the differences are not very cardinal. A few more respondents who studied social responsibility said they were socially responsible take care of environment (respondents, who have studied social responsibility – 24,5 %; respondents, who haven't studied social responsibility – 10,6 %; difference – 13,9 %). Such finding substantiate the benefits of social responsibility studies by revealing the awareness of young people about the positive impact of social responsibility on the environment.

Table 5

The percentage distribution of respondents' perceptions about social responsible organization's impact on society

Types of impact	N	Percent of Cases	Percent of 100	Social responsibility subject is …	
				studied	not studied
1. Financial assistance to those who mostly need it	159	45,0%	24,5%	10,9	13,5
2. Organizations help to solve some social problems	263	74,5%	40,5%	20,2	20,3
3. Organizations take care of the environment	228	64,6%	35,1%	24,5	10,6
Total	650	184,1%	100,0%	55,6	44,4

Source: author's calculations based on research data, 2018.

The research aimed to reveal respondents perception about the benefits, which are received by institutions of higher education organizations after publishing information on their social responsibility initiatives (table 6). Respondents were allowed to choose an unlimited number of relevant answers, therefore the total expression is more than 100 percent.

Table 6

The percentage distribution of respondents' opinions about higher education institutions' benefits, which are received after publishing social responsibility initiatives

Social responsibility benefits	N	Percent of Cases	Percent of 100	Social responsibility subject is …	
				studied	not studied
1. Strengthening of institutions image and reputation	297	83,4%	23,2%	11,6	11,6
2. Strengthening relations / dialogue with stakeholders	175	49,2%	13,7%	10,2	4,2
3. The quality of the institution's activity is improving	112	31,5%	8,8%	7,0	1,2
4. The stronger organizational culture is created	244	68,5%	19,1%	9,8	9,3
5. The communication within the institution is improving	173	48,6%	13,5%	6,8	6,5
6. The authority of the institution is increasing	262	73,6%	20,5%	14,4	6,0
7. Social initiatives should be not publicized	17	4,8%	1,3%	0,2	1,2
Total	1280	359,6%	100,0%	60,0	40,0

Source: author's calculations based on research data, 2018.

The data (table 6) indicate that mostly respondents think that publication of social initiatives strengthen higher education institutions image and reputations (83,4 %), increase its authority (73,6 %), and creates a stronger organizational culture. 6 table displays the comparison between attitudes of respondents, who have studied the subject of social responsibility, and respondents, who had not studied such subject. It is interesting to notice that two of earlier mentioned mostly popular answers were nearly exactly popular between both groups of respondents, while other answers between those groups of respondents differs more significantly. Such findings indicate the benefits of social responsibility studies by revealing the wider respondents awareness of impact of social responsibility implementation.

Conclusions

Respondents indicate that social responsibility manifest as a part of business companies' activity, the phenomenon of society and part of public / governmental institutions activity. Respondents who have studied social responsibility were more likely to choose specific areas of manifestation, while respondents who have no social responsibility subject significantly more often indicated "social responsibility as phenomenon of society". In spite of social responsibility studies still part of the respondents consider social responsibility a kind of corporate advertising. The most popular manifestation ways of social responsibility indicated by young people were: nature conservation and environmental

protection, focus on society, focus on employee welfare, voluntary activities of enterprises and charitable activities of organizations. But some answers about CSR using for "maximization of profit" or as "a kind of corporate advertising used for profit earning" indicate that not all young people perceive the true essence of social responsibility and further indications – young people still need various information on social responsibility.

The evaluation of social responsibility implementation in institutions of higher education revealed that main attention is given to employee well-being, focus on environment area and intolerance for bribery, rust of any corruption. Students are also encouraged to take part in voluntary activities. However, there are significant differences between the two higher education institutions: university respondents tend to disagree more with the submitted items on the environmental protection area, economic sphere. Such results may lead to the fact that in more college degree programs are included the course of social responsibility. Students who have studied this course are more aware of certain aspects of social responsibility and are more aware of them.

Young respondents mostly think that social responsible organizations help to solve particular social problems, or take care of environment. Findings substantiate the benefits of social responsibility studies by revealing the awareness of young people about the positive impact of social responsibility on the environment. Mostly respondents think that publication of social initiatives strengthen higher education institutions image and reputations, increase its authority, and creates a stronger organizational culture. Comparison of attitudes of respondents, who have studied the subject of social responsibility, and respondents, who had not studied such subject, indicated the benefits of social responsibility studies by revealing the wider respondents awareness of impact of social responsibility implementation.

Bibliography

Alzyoud, S.A., Bani-Hani K., 2015. Social Responsibility in Higher Education Institutions: Application Case from the Middle East in *European Scientific Journal,* Vol.11, No.8, 122-129.

Amiri E., Ranjbar M., Amiri N., 2015. Corporate Social Responsibility in Higher Education in *International Conference on Humanities, Literature and Management (ICHLM'15) Jan. 9-10, 2015 Dubai (UAE),* 36-40.

Bagdonienė D., Paulavičienė E., 2010. The Intergration of Social Responsibility and Organization's Management System in *Economics and Management,* No. 15, 366–373.

Bakanauskas A., Vanagienė V., 2012 Guideline of Company Social Responsibility Enhancing Brand Reputation in *Management Theory and Studies for Rural Business and Infrastructure Development*, No. 3 (32), 15–22.

Battaglia M., Testa F., Bianchi L., Iraldo F., 2014. Corporate Social Responsibility and Competitiveness within SMEs of the Fashion Industry: Evidence from Italy and France in *Sustainability*, Vol 6, No 2, 872-893.

Behringer K., Szegedi K., 2016. The Role Of CSR In Achieving Sustainable Development – Theoretical Approach in *European Scientific Journal*, Vol.12, No.22, 10-25.

Carroll A.B., Shabana K.M., 2010. The Business Case for Corporate Social Responsibility: A Review of Concepts, Research and Practice in *International Journal of Management Reviews*, Vol 12, Iss 1, 85-105.

Dahan, G.S., Senol, I. 2012. Corporate Social Responsibility in Higher Education Institutions: Istanbul Bilgi University Case in *American International Journal of Contemporary Research,* Vol. 2 No. 3, 95-103.

Dahlsrud A. 2006. How Corporate Social Responsibility is Defined: an Analysis of 37 Definitions in *Corporate Social Responsibility and Environmental Management,* Vol 15, Iss 1, 1-13.

European commission, 2018. [Online] Available at: https://ec.europa.eu/growth/industry/corporate-social-responsibility_en [Accessed 10 December 2018].

Hague H.M. 2018. Corporate Social Responsibility (CSR) Driven Innovation & Opportunities for Sustainable International Business in *International Journal of Business and Social Research*, Vol. 08, Iss. 03, 19-28.

Geethamani S., 2017. Advantages and Disadvantages of Corporate Social Responsibility in *International Journal of Applied Research*, No 3 (3), 372-374.

Juščius V., 2008. The Influence of Corporate Social Responsibility on the Competitiveness of Human Resources in *Economics and Management*, No. 13, 526–531.

Kim, Y., Brodhag, Ch., Mebratu, D., 2014, Corporate Social Responsibility Driven Innovation in *The European Journal of Social Science Research*, Vol. 27, No. 2, 175-196.

Korschun D., Bhattacharya C.B., Swain S.D., 2014. Corporate Social Responsibility, Customer Orientation, and the Job Performance of Frontline Employees in *Journal of Marketing*, Vol. 78, 20–37.
Lahdesmaki M., Suutari T., 2012. Keeping at Arm's Length or Searching for Social Proximity? Corporate Social Responsibility as a Reciprocal Process Between Small Businesses and the Local Community in *Journal of Business Ethics*, No.108 (4), 481–493.

McGehee N.G., Wattanakamolchai S., Perdue R.P., Calvert E.O., 2009. Corporate Social Responsibility Within the U.S. Lodging Industry: an Exploratory Study in *Journal of Hospitality & Tourism Research*, No. 33, 417–437.

Mirvis P., 2012. Employee Engagement and CSR: Transactional, Relational, and Developmental Approaches in *California Management Review*, Vol. 54, No. 4, 93–117.

Nwanne T.I., 2016. Effect of Corporate Social Responsibilities of banks on Their Host Communities: A case of Godfrey Okoye University, Enugu, Nigeria in *Journal of Finance, Accounting and Management*, No. 7 (1), 30–44.

Plungpongpan J., Tiangsoongnern L., Speece M., 2016. University social responsibility and brand image of private universities in Bangkok in *International Journal of Educational Management*, Vol. 30, Iss. 4, 571–591.

Potašinskaitė M., Draugelytė A., 2013. Corporate Social Responsibility Constituents' Fragmentary Use in Lithuania in *Management Theory and Studies for Rural Business and Infrastructure Development*, Vol. 35, No. 3, 424–431.

Pučėtaitė R., 2009. Corporate Social Responsibility Management Analysis from the Perspective of Integrity *in Economics and Management,* No 14, 328-334.

Stanislavská L.K., Kvasnička R., Kuralová K., Margarisová K., 2014. Social Responsibility of Higher Educational Institutions – the Comparison of the View of Students and Potential Students in *Journal on Efficiency and Responsibility in Education and Science*, Vol. 7 No. 3-4, 95-99.

Supanti D., Fredline K.B.L., 2015. Enhancing the employer-employee relationship through corporate social responsibility (CSR) engagement in *International Journal of Contemporary Hospitality Management*, Vol. 27, Iss. 7, 1479–1498.

Taleghani M., Delafrouz N., Tonekaboni S.M.S., 2012. Investigation of Corporate Social Responsibility's Effect on Industrial Brand Performance in Industrial Markets in *Journal of Basic and Applied Scientific Research*, Vol. 2 (10), 10598–10606.

Vaitkevičius S., Stukaitė D., 2009. Formation of Corporate Social Responsibility Based on Rational Behaviour in *Economics and Management*, No. 14, 624–632.

Vishnubhai P.N., 2012. The Impact of CSR Perception on Job Attitudes of Employees in India in *Advances In Management*, No. 5 (7), 58–61.

Vitell S.J., 2015. A Case for Consumer Social Responsibility (CSR): Including a Selected Review of Consumer Ethics/Social Responsibility Research in *Journal of Business Ethics*, No. 130, 767–774.

Weyzig F., 2009. Political and Economic Arguments for Corporate Social Responsibility: Analysis and a Proposition Regarding the CRS Agenda in *Journal of Business Ethic,* Vol 86, Iss 4, 417-428.

ELECTRONIC PROCUREMENT SYSTEM – INSTRUMENT FOR IMPLEMENTING GREEN PUBLIC PROCUREMENT: ANALYSIS OF THE LATVIA'S EXPIERENCE

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Abstract. Green public procurement (GPP) is a mean of saving up finances for public institutions, especially taking into consideration not only procurement price but also total expenses of the contract lifecycle. In Latvia the first Electronic Procurement System (EPS) was established in 2005 and was the first such procurement system in the Baltic States. Initially, it only acted as an e-Procurement system in which public institutions can purchase standard goods and services. This paper analyzes the success of the implementation methodology for evaluating e-Procurement in public procurement.

The aim of the paper is to explore the proportion of applied GPP of total procurement in EPS in Latvia in the period from 2015 to 2017, and to analyze how the aims of the proportion of GPP are achieved. In order to investigate the share of GPPs in the EPS, data on purchases made by EPS was collected and analyzed. An analysis was made of the percentage of GPP and the most important groups for which GPP was appropriate, and it was assessed whether the objectives set by the GPP have been achieved. GPP proportion in procurement made within the EPS in 2015 was 9%, 2016 - 8%, but in 2017 - 19.10%, which means that GPP a substantial increase. As the calculations made in the study prove a complete transition to e-Procurement will reduce both administrative costs and significant savings for the state budget in the Latvia.

Key words: *Electronic procurement, Electronic procurement system, Green public procurement*

JEL code: Q01, Q58, R11, H57

Introduction

Nowadays, in the 21st Century the very rapid development of information systems are taking place, which also demand developing and moving towards the public administration sector equally. Public procurement is a way for public authorities to buy goods and services and it is very important that funds are used effectively. In the European Union, public procurement averages 14% of gross domestic product per year (EC, 2017). The Organisation for Economic Co-operation and Development (OECD, 2017) emphasizes that effective public procurement is an essential step towards meeting the needs of the population, and therefore gradually becoming one of the pillars of good governance that can restore confidence in public administration. E-Procurement - the purchase and payment of goods and services - can help the government to improve its operations by reducing transaction costs by making better decisions and saving time on procurement (Panayiotou, Gayialis, Tatsiopoulos, 2004).

Global economic output is projected to treble between 2010 and 2050 and resource use may double by 2030 (Reichel, 2016). Public sector spending is an essential part of the economy and it is relevant to use this purchasing power to influence production processes and consumption, so it is essential to apply green public procurement (GPP) to public procurement in order to achieve the desired reduction of the environmental impact (Lundberg et.al., 2015).

This paper analyzes the success of the implementation methodology for evaluating e-Procurement in public procurement. The definition of e-Procurement is also assessed, as well as the success and benefits of the e-Procurement system.

The object of the research: the proportion of GPP in EPS in Latvia, in the period from 2015 to 2017.

The aim of the paper is to explore the proportion of applied GPP of total procurement in EPS in Latvia in the period from 2015 to 2017, and to analyze how the aims of the proportion of GPP are achieved. In order to investigate the share of GPPs in the EPS.

In order to evaluate the proportion of GPP and the factors that affect the development of GPP, the author has **two hypotheses**:

1. If public procurement is carried out in the electronic procurement system, the administrative costs are significantly reduced.
2. When purchasing GPP in the electronic procurement system, goods that can be clearly defined as requirements, such as Information and communications technology (ICT), are purchased the most.

The method of the research are: Analytical, graphic, statistical research methods as well as other qualitative and quantitative research methods have been used in this research. In order to investigate the share of GPPs in the EPS, data on purchases made by EPS was collected and analyzed. An analysis was made of the percentage of GPP and the most important groups for which GPP was appropriate, and it was assessed whether the objectives set by the GPP have been achieved. The regulatory framework for the application of the GPP was analyzed and the directions of the EPS were evaluated.

Information sources: In analyzing the proportion of GPP the data of the Procurement Monitoring Bureau (PMB) and State Regional Development Agency of the Republic of Latvia (SRDA) about public procurement performed in Latvia since 2015 til 2017. The strategical documents in green public procurement of the EU and Latvia were analyzed. The articles in the following journals were analysed: Journal of Public Procurement, Research Policy, R&D Management, etc.

Literature review

In general, ICT widespread support for public administration has been recognized (Yildiz, 2007), as an example, to improve the efficiency of service provision in order to improve the transparency of public processes for network connectivity. As mentioned Panayiotou, Gayialis, Tatsiopoulos (2004) that e-Procurement has become an object of distinctiveness in the private and public sectors and e-Procurement has gained special attention especially in recent years in public sector.

E-procurement definition according to the European Commission (EC) (2010) is “a catch ll term for the replacement of paper based procedures with ICT based communications and precessing throughtout the procurement chain.” According to Concha et.al. (2012) public e-Procurement is evolving rapidly and is included in every country's e-government program. Dubosson - Torbay et.al. (2001) stresses that significant organizational transformations in ICT are taking place in sectors and public administration. Brun et.al. (2007) mentioned that currently, e-Procurement challenges include making the procurement system more efficient in the light of technological developments and solutions offered by them, developing a legal framework and developing and improving good governance practices. According to the World Bank (2016), in order to develop the e-government system successfully, reforms should also be made in non-dogmatic (analogous) sectors where new technologies are widespread. As Hanna (2018) points out, governments would be advised to take into account the comprehensive digital development of the country and the vision of shared use, long-term commitment and institutionalized cooperation in the digital transformation process.

As expected by the EC, the expected benefits from the transition to e-Procurement are significant, as the introduction of this technology can reduce public procurement costs by 5-20% (EC, 2012). What very important is, that e-Procurement as mentioned Alomar, Visscher (2017) makes it possible to increase the dissemination of tenders, improve the transparency of procedures, protect the environment and combat corruption. As pointed out by Cheng et.al. (2018), in

recent years, the introduction of GPP marks a new industry, showing new practices. GPP is defined in the EC's Communication as "a process whereby public authorities seek to procure goods, services and works with a reduced environmental impact throughout their life cycle when compared that would otherwise be procured" (EC (2008) 400, p.4). Testa et al. (2011) points out that the effectiveness of GPP is closely linked to investment in technological innovation. Cheng, Apolloni et al. (2018) indicates that public procurement, where environmental requirements are applied, can quantify energy consumption and CO_2 reductions.

The new procurement directives - Directive 2014/24/EU and Directive 2014/25/EU - state that one of the most important things to change is that the main criterion for evaluation in purchases will change - the European Union's Member States will have to choose the most economically advantageous tender rather than the lowest price offer. It is true that the Directive allows the choice and, in some cases, the principle of the lowest price. It also includes the assessment of life-cycle cost estimates, which will include both the cost of acquisition, maintenance and utilization.

E-Procurement in this context refers to the use of electronic communications and the processing of transactions by public sector entities through procurement, service and public works contracts (European Commission, 2010).

According to Directive 2014/24/EU and Directive 2014/25/EU, Member States should ensure that all communications and exchanges of information covered by these Directives are carried out by electronic means. This includes publishing notices, access to procurement procedure documents and electronic submission. E-Procurement involves the introduction of electronic processes to support the various stages of the procurement process - notices on publication of procurement, procurement of procedural documents, submission of tenders, evaluation, award of contracts, execution of orders, invoicing and payment. In 2014, the EC estimated that, on average, around 20% of all EU procurement procedures are carried out electronically (EC, 2014).

Cisco, Chevron and Eastman shows very significant improvements in the implementation phase of the e-Procurement system (Andersen Consulting, 2000). The most significant are:

- improved procurement efficiency;
- reduced prices from major suppliers;
- reduced the duration of the order cycle;
- ensured higher level of service.

As Alomar and Visscher (2017) indicate the benefits of switching to e-Procurement are planned to be significant.
As its mentioned in a special report of the European Court of auditors (2015) by using e-Procurement you can:
(a) promote competition and the efficient use of resources by expanding access to procurement in the single market, including small and medium-sized enterprises;
(b) improve the efficiency of public procurement management by expanding access to procurement and automating key procedures that could lead to cost savings for both tenderers and contracting authorities; and
(c) help detect and prevent irregularities, corruption and fraud. According to Panayiotou, Gayialis, Tatsiopoulos (2004), the most significant saving in e-Procurement is due to the fact that procurement has been carried out centrally, which means that prices are significantly lower. According to more elaborate information, e-Procurement is important and has an increasingly important role in public procurement.

Research results and discussion

Development of Electronic procurement in Latvia

First period

The EPS is the first such procurement system in the Baltic States, established in 2005. Initially, it acted only as an e-Procurement system in which public institutions can purchase standard goods and services. In order to secure the operation of the SRDA as a central purchasing body, within the meaning of the Public Procurement Law, holds centralized public procurement procedures under its EPS portal (www.eis.gov.lv) for the conclusion of general agreements between one or more direct administrations and one or more suppliers on conducting transactions in the process of e-Procurement. In accordance with the results of centralized procurement procedures, the EPS provides suppliers with a possibility to offer products in one or several delivery regions of the Republic of Latvia for registered EPS buyers at prices not exceeding the number indicated in the relevant centralized tendering bids. The EPS also provides for a number of mechanisms aimed at ensuring the ability of narrow profile companies to offer their goods and services successfully, such as the possibility of the EPS offering goods only in a single part of the procurement or only one item in one part of the procurement subject. The EPS maintainer, the SRDA currently ensures that the system includes the widest possible range of products at the lowest possible price. The EPS is the electronic point of purchase of goods and services for public institutions, which can be used by unrestricted number of registered buyers (purchasers) of the system - the number of public institutions. The EPS registered customers have an opportunity to order goods orders free of charge on the Internet by choosing goods from the cheapest published offer at the moment in the electronic orders (e-orders). In an e-Procurement process between the supplier and the buyer, an electronic transaction is concluded that defines the basic terms of the particular delivery of the goods (quantity of goods, prices, place of delivery, etc.) in addition to the standard delivery terms (delivery terms, rights and obligations of the parties, penalties, etc.) determined by the SRDA's agreements with the winners (suppliers) of the respective open competitions. Taking into account that customers have the opportunity to purchase only one product - the cheapest product corresponding to each specification - suppliers compete with each other after concluding agreements, thus the prices of goods and services offered by the EPS decrease and are lower compared to the results of simple open tenders (SRDA, 2017)

EPS users can buy, for example, computer hardware at the lowest price in the market. In addition, the administrative costs of the procedure are greatly reduced as the customer needs to join the system, choose the goods and the supplier starts ordering or manufacturing the product and delivery to the customer. Such a client avoids both the organization of the procedure and the convening of meetings of procurement commissions and complaints to the Procurement Monitoring Bureau of the Republic of Latvia.

Second period

In 2011, an international Open Government Partnership initiative was launched and Latvia joined this initiative. One of the commitments made by Open Government Partnership is "Publicity and efficiency in public procurement". Public procurement in the OECD's Member states accounts for an average of 12% of gross domestic product or 29% of general government (state budget) expenditure. The OECD states: "Since public procurement accounts for a significant proportion of the use of taxpayers' money, countries are expected to be effective in complying with stringent standards of conduct in order to ensure a high level of service quality and compliance with public interest" (OECD, 2015).

By joining the Open Government Partnership, Latvia signed the Open Government Declaration, committing to implement the principles mentioned therein, including to promote the use of ICTs to ensure openness, accountability and participation.

The Report on Latvia - 2017 by the European Commission (2017) states that one of the problems in Latvia is that the use of the e-platform is not compulsory, which would both increase transparency and reduce costs.

Basic information on all purchases that are subject to the requirements of the law is available on the PMB website, but on the Latvian Open Data Portal www.data.gov.lv - information on transactions performed using the e-Procurement functionality. Procurement publications as announcements of public procurements, as well as notices of award (including information on the winner, the contract price offered by them, or the involvement of subcontractors, participation in small and medium-sized enterprises in procurement, etc.) are available on the PMB website. The PMB website publishes also information on complaints received regarding breaches of procurement, as well as decisions of the Commission for the Examination of Proceedings, thus, everyone has an opportunity to obtain information about procurement violations and the results of their examination.

In accordance with the Cabinet of Ministers Regulations No. 108 "Regulations for Public Procurement" of 2017, state institutions, local governments and their institutions have an opportunity to use the EPA for purchasing standard goods and services. In accordance with the Cabinet Regulations No. 108 Items 11 (technical equipment, office paper and stationery, printing and copying equipment, furniture, household goods, food items, etc.) should be purchased through the mandatory use of the EPS system.

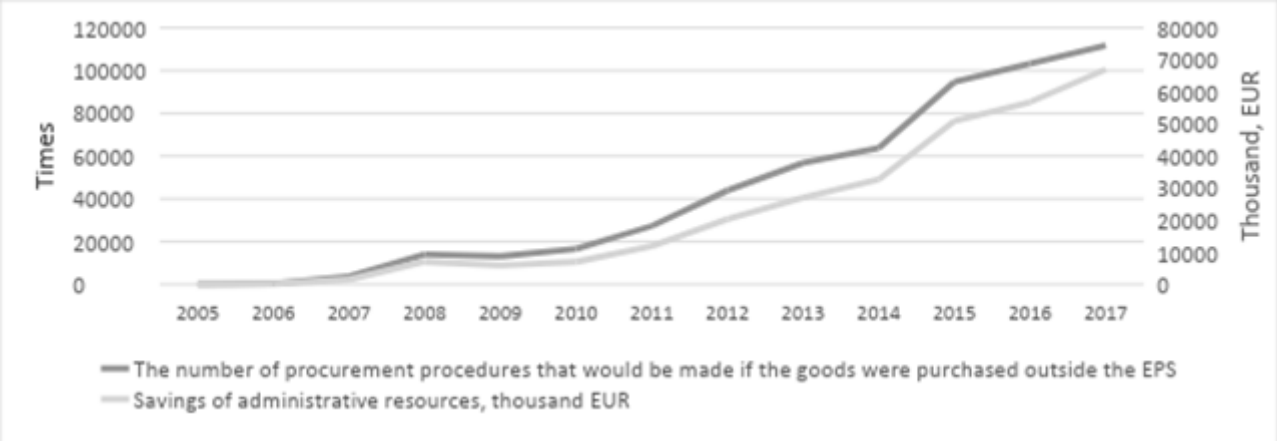
At present, the EPS consists of four different subsystems:

1. E - orders: a system that acts as an online store for public sector customers to purchase standard products and services offered by suppliers with general agreements as a result of open competitions organized by the National Agency for Regional Development.
2. E - auctions: a subsystem for organizing e-auctions. At present, the subsystem is under construction;
3. E-competitions: a subsystem designed to organize electronic procurement, ensuring procurements, electronic submission and opening of applications or tenders, evaluation of tenders submitted by suppliers, etc. Procurement related activities;
4. E-Inquiries: a subsystem for the receipt of bids for candidates and candidates participating in public procurement, checking the exclusion conditions specified in regulatory enactments (SRDA, 2017).

Third period

In 2017, changes in public procurement laws, which, among other things, are aimed at greater openness, came into force. The Public Procurement Law and Public Service Providers Procurement Law stipulate not only the publication of procurement announcements and procurement plans, but also the gradual transition to the publication of electronic procurement documentation, as well as submission of electronic offers in one place - the EPS of the SRDA.

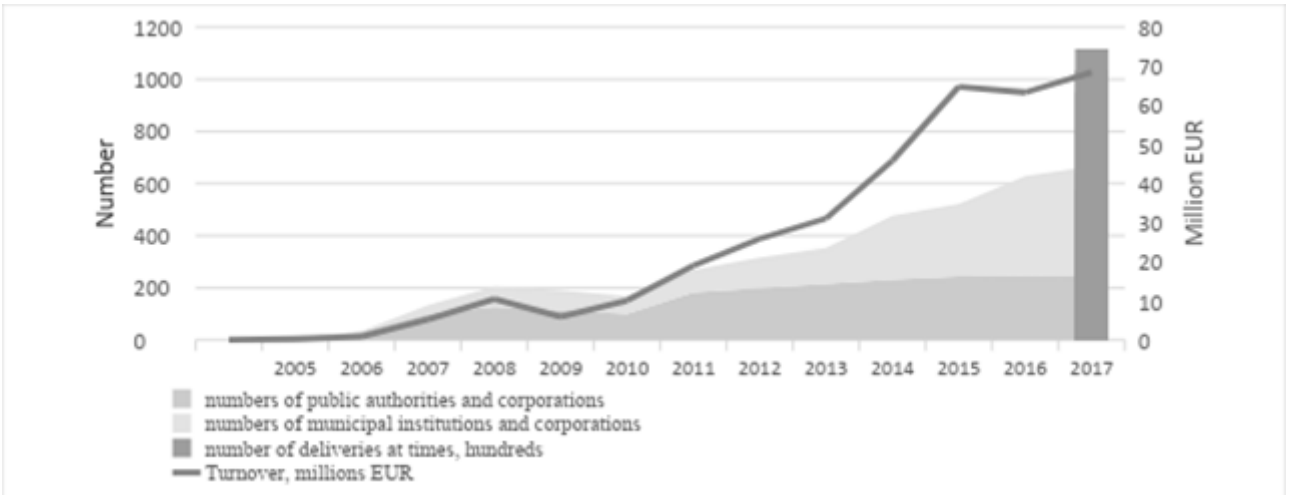
In turn, by January 1, 2019, the submission of electronic bids will be mandatory for all public tenders above € 10,000. Since the amendments to the law that came into force in 2017, it publishes procurement plans for state and local government institutions. The electronic procurement system also publishes information on transactions performed (customer, supplier, volume of transaction, subject matter). For each procurement proclaimed, further information is available on the website of the relevant institution or corporation (on the buyer's profile) - procurement documentation (regulations, technical specifications, responses to candidates and tenderers' questions, including information on amendments to procurement documentation).



Source: The data of the Central Statistical Bureau and the SRDA, the authors' summary have been used

Fig. 1 **The financial savings of state, municipal institutions and state and local government capital companies in purchasing Electronic Procurement System 2015-2017, EUR**

According to the EC assessment report "EU Public Procurement Legislation delivering results of the summary of assessment report" (2016) it is indicated that the average number of working days consumed by the customer per procurement is 27 working-days; (Procurement procedure in Latvia has the following labor-intensive stages: development of procurement procedure regulation and technical specification; preparation of answers to tenderers; participation of several members of the procurement commission in committee meetings; individual evaluation of tenders made by each member of the commission; proclamation of the results of the procurement procedure and requesting of bids; PMB and court, preparation and conclusion of a contract), purchases on the EPS are consumed on average by 2 man days, therefore the difference or total efficiency of the calculation of the efficiency of the administrative resource saved per product group (catalog) is 25 man-days. Doing the calculations the average daily earnings in the public sector were taken into account, according to data from the Central Statistical Bureau on the average salary in the public sector, which was indexed with 0.5 workload. Indexing was done to calculate the benefits. As Figure 1 shows, the number of purchases made by the EPS generates significant savings in the budget by lowering administrative costs, reaching even 6.9 million EUR in 2017.



Source: the data of the SRDA, the authors' summary have been used

Fig. 2 **Electronic procurement system development 2005-2017**

In January 2014 the EPS introduced the e-Bulletin subsystem, but since 2016 the EPS has been provided with an e-Competition Subsystem, which is designed as a unified electronic environment for supporting procurement procedures. As shown in Fig. 2, the EPS has evolved significantly, at the end of 2017, 26 catalogs of goods and services were available to customers, 111 652 deliveries were carried out in 2017, 702 active consumer organizations, while the active users of

EPS e-auctions and e-tenders subsystems The number reached 3 628 users, that is 1 474 suppliers and 2 154 subscribers. The turnover of EPS transactions in 2017 reached 68.56 million euro with VAT. In order to ensure that the principle of openness and the availability of information is respected, all procurement information is publicly available on the EPS. Essential for data interoperability - the State Information System Interoperabiser is a set of solutions that provides data exchange between different public information systems and accesses to various sharing components. In the framework of the EPS, the National Information System Interlocutor is used to provide user authentication using features such as authorization for a smart card or internet bank requisites and to sign an offer using the Latvia state radio and television center e-signature.

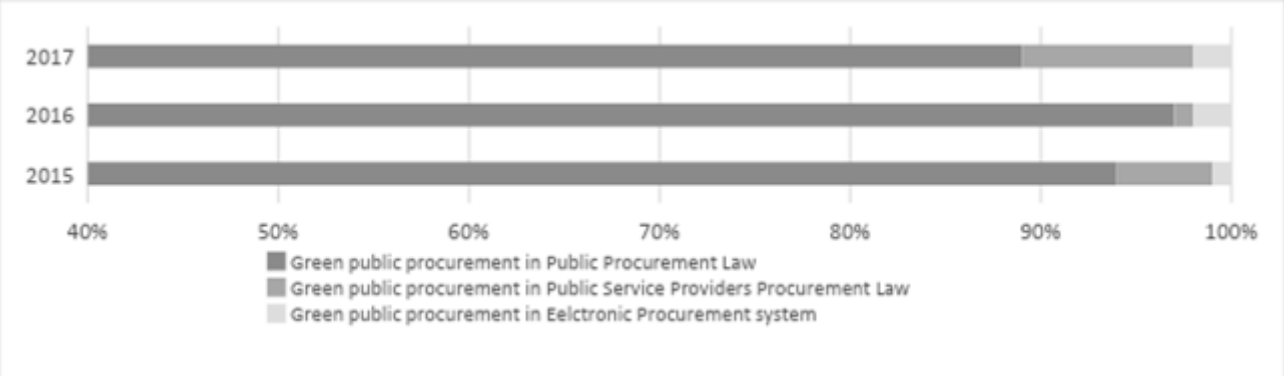
According to the annual report of the SRDA (2017), the EPS will be linked to the e-CERTIS portal that helps to identify and compare the various certificates requested by the EU public procurement tenders, as well as facilitate the participation of merchants in international procurement by providing a re-usable European Single Procurement Document data availability on the EPS platform. It is also planned to make information on electronic procurement and procurement data accessible to the public, as well as to extend the level of electronically accessible data and processes for the implementation of electronically executed e-Procurement processes among public entities.

When purchasing in the EPS, a budget of a customer (state and local governments) is saved, as several orders are combined with centralized procurement, as well as small purchases, to obtain more favorable prices.

Green public procurement in the EPS

In 2010, the SRDA-monitored EPS included green directories, which also contributed to GPP implementation. On 17 February, 2015 the Cabinet of Ministers approved the Green Public Procurement Support Plan 2015-2017 which determined that in 2015 the amount of procurements planned from the state budget and to which green procurement requirements should be applied must be at least 15% of the financial means of the total state and municipal institution procurement volume, in 2016 it had to be 20%, and in 2017 – 30% (CoM, 2015). On 20 June, 2017 the Cabinet of Ministers approved the Regulations No 353 that determine the process of application of GPP, its implementation, supervision, evaluation, as well as control and mandatory groups of goods and services which GPP is applied to. According to the Regulations No 353, seven groups of goods and services to which GPP applied obligatory are: office paper, printing devices, computer hardware and infrastructure of information and communication technologies, food and catering services, cleaning products and services, internal lighting, street lighting and traffic lights (CoM, 2017).

From 2015 to 2017 the total amount of public procurement (Public Procurement Law, Public Service Providers Procurement Law, EPS) has increased from 2 310 million EUR in 2015 up to 2 595 million EUR in 2017. Despite the fact that total amount of procurement in financial expression increased during this period, total GPP amount in financial expression decreased from 375 million EUR in 2015 to 330 million EUR in 2017. Total GPP proportion from 2015 to 2017 there was a downside - 16.23% in 2015, 14.28% in 2016 and the lowest point – 12.71% in 2017 (Pelsa, 2018). According to the EC report (2017), the bulk of public procurement (67%) is awarded on the basis of the lowest price criterion, while the EEA average is 64%.



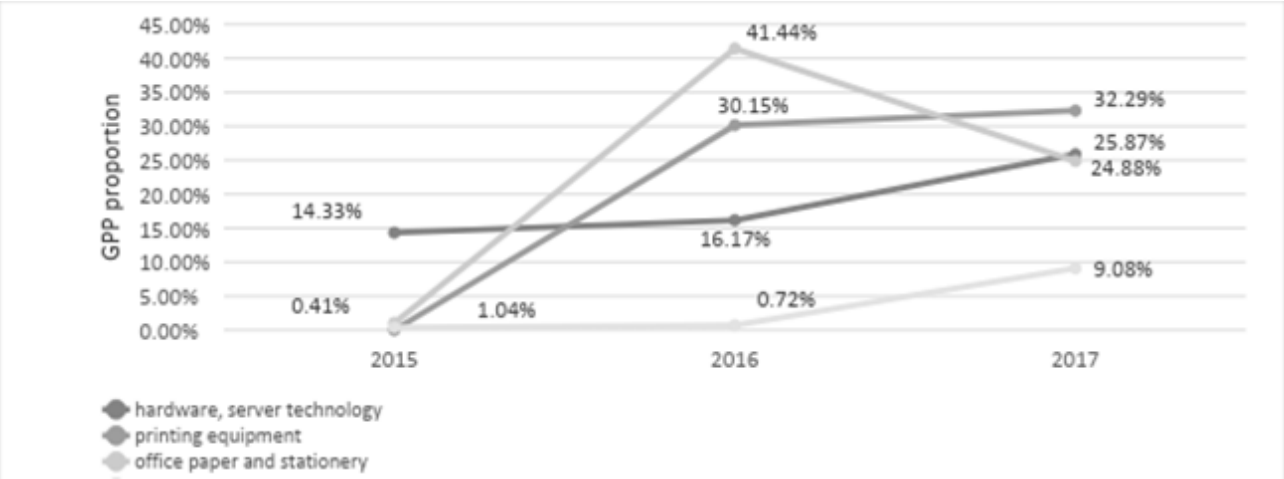
Source: author's construction based on data from PMB and SRDA

Fig.3 **Proportion of GPP in procurement performed by PPL, PSPPL and EPS in 2015-2017, %**

If we analyse a situation in green public procurement split between Public Procurement Law, Public Service Providers Procurement Law and Electronic Procurement system, it is evident that a convincing leader is Public Procurement Law. Green Public procurements that are made in the Electronic Procurement system is approximately 1%-2% of the total amount in financial terms, approximately 5 million EUR in 2015 and 2016, but 11 million EUR in 2017 from all public procurements. GPP proportion in procurement made within the EPS in 2015 was 9%, in 2016 - 8%, but in 2017 - 19.10%, which means that GPP a substantial increase.

In 2017, labels are created in EPS catalogs to make eco-friendly goods easier to identify- GPP criteria (the catalogue offers goods that fully meet the GPP criteria), partly GPP criteria (specifications for the products in the catalog have environmentally friendly requirements that partly meet the EU's GPP criteria), EPEAT, Green spoon (items available in the calatog complying with the National Food Quality Schemes) and Bordeaux spoon (the catalog offers products that meet high quality requirements and have a full recycling cycle in Latvia). Discussions have been held on the separate allocation of "Green Spoon" and "Bordeaux Spoon", since, given the fact that the "Green Spoon" supports integrated agriculture, there is no evidence that this practice leaves less contamination than the other (Simanovska, 2017).

Comparing the green purchases made by the EPS groups in the different product groups, it should be noted that several product groups take into account the relevant eco-labeled and do not evaluate all the criteria for the GPP compliance, which essentially means that there is no GPP in its entirety. The share of GPP in the EPS product groups is evaluated, which, according to the Cabinet of Ministers Regulation No. 353 are mandatory groups of goods and services to which the GPP should be applied.



Source: author's construction based on data from Electronic procurement system

Fig. 4 **Green public procurement proportion in Electronic procurement system 2015-2017, %**

The proportion of GPPs in the EPS product and service groups from 2015 to 2017 has increased from 9% in 2015 to 11% in 2017. As shown in Fig. 4, the groups of products that have the most suitable GPP requirements, then the average is higher, from 3.16% in 2015 to 18.49% in 2017. The greatest increase is seen in office paper, reaching 41.44% of all purchased paper in the 2016 by GPP. In the second place in 2017 there are printers with the GPP reaching 32.29%, followed by computer hardware with a GPP share of 25.87% in 2017. A small proportion of GPPs is observed in household goods and cleaning products, 0.76% in 2016, and in 2017 only 9.08%. The smallest share of food products is in 2017, reaching only 0.34%.

In addition to the groups of goods, which according to the Cabinet Regulation No. 353 GPP should be mandatory, green procurement is applied in the electronic procurement system, for example, toilet paper, paper towels, napkins included in the group household goods and cleaning products.

In 2017 compared to 2016, the EPS catalogs do not offer indoor lighting. At the same time, it should be noted that the set of requirements for EPS products in the green catalogs is higher than the environmental protection criteria for procurement in the framework of Public Procurement Law, Public Service Providers Procurement Law. In the procurement process, the EPS significantly accelerates the process of purchasing goods and services in comparison with classical procurement procedures, since it is only necessary to identify needs and order in the relevant catalog of goods or services. The benefits of the EPS are the fact that clients are relieved from organizing their own separate procurement procedures, since transactions are carried out centrally, ensuring the ordering of goods and services through the e-Order Subsystem. Considering that a seller can change a price of a product several times a day and a customer has to choose the cheapest solution, the problem accordingly with the moment of purchase of the goods, while coordinating with the management of the purchase of the item, the price may change.

Conclusions, proposals, recommendations

1. The first hypothesis was confirmed that the calculations made in the study prove a complete transition to e-Procurement will reduce both administrative costs and significant savings for the state budget in the Latvia.
2. The second hypothesis was confirmed - the greatest increase is seen in office paper, reaching 41.44% of all purchased paper in the 2016 by GPP. In the second place in 2017 there are printers with the GPP reaching 32.29%, followed by computer hardware with a GPP share of 25.87% in 2017.
3. Procurement in the EPS makes purchases more transparent and reduces the risks of corruption.
4. At the same time, the winner will be a supplier, as it will have to participate in only a few procurement procedures during the year, and will be able to devote all its strength to providing EPS visitors with the best product at the best price.
5. The requirement to publish EPS contracts in Latvia is mandatory. At the same time, information on public procurement contracts and procurement contracts is not available in one place, but on the websites of institutions and corporations. Therefore, their search is often difficult.
6. In Latvia often procurement decisions are still made on a basis of a purchase price, but costs that may arise in the upkeep and disposal of many products and work can also be very significant, such as energy consumption, aggregation, and the disposal of relevant materials. In order to improve performance in the field of GPP, involvement and motivation for all levels of management in the promotion of sustainable consumption and production of the public sector and society, as well as the development and development of EPS directories, are required.

7. In Latvia a serious obstacle to GPP promotion is the lack of a uniform and well-founded monitoring and reporting system (monitoring). In the EPS system, products are considered environmentally friendly if they are purchased from green directories. The PMBs list the purchases for which the customer has indicated (ticked) the documentation that the environmental criteria have been used as environmentally friendly. In neither case nor in the other, it is not analyzed whether the environmental conditions used were sufficient to result in the actual purchase of the environmentally friendly product from the proposed ones.

Bibliography

Alomar, M.A., Visscher, C. (2017) E-public procurement: Which factors determine its acceptance by small- to medium-sized enterprises and large companiesin Belgium? nternational Review of Administrative Sciences 0(0) 1–21

Andersen Consulting, 2000. European Logistics Software Guide 2000 (ISBN I-862130-48-5), pp. 67–71.

Brun, A., Corti, D., & Cozzini, S. (2007). Value assessment of e-Procurement Projects: A Modular Methodology. Production Planning & Control, 15, 742–760.

Cabinet of Ministers (2015), "Green procurement support plan 2015-2017", "Latvijas Vēstnesis", 35 (5353)

Cabinet of Ministers (2017), Cabinet of Ministers Regulations No 353 "Requirements and Application of the Green Public Procurement", "Latvijas Vēstnesis" 129 (5956)

Cheng, W., Apolloni, A., D'Amato, A., Zhu, Q. (2018), "Green Public Procurement, missing concepts and future trends – A critical review", Journal of Cleaner Production 176 (2018), pp770-784

Concha, G., Astudillo, H., Porrua, M., Pimenta, C. (2012) E-government procurement ovservatory, maturity model and early measurements, J. Government Information Quartery 29 (2012), p. 43-50

Dubosson-Torbay, M., Osterwalder, A., Pigneur, Y., 2001. eBusiness model design, classification and measurements. Thunderbird International Business Review 44 (1), 5–23.

European Commission (2008) Public procurement for a better environment, COM(2008) 400 final

European Commission (2010) Green paper on expanding the use of e-Procurement in the EU SEC (2010) 1214

European Commission (2012) Communication from the commission to the European parliament, the council, the european economic and social committee and the committee of the regions. A strategy for e-Procurement. Brussels: European Commission.

European Commission (2014) COMMISSION STAFF WORKING DOCUMENT Annual Public Procurement Implementation Review 2013, SWD (2014) 262 final, 1.8.2014.

European Commission (2016) EU Public procurement legislation delivering results summary of evaluation report, p 24

European Commission (2017) Commission staff working document Country Report Latvia 2017, SWD (2017) 79 final

European Court of auditors (2015) Special report "Efforts to address problems with public procurement in EU cohesion expenditure should be intensified", p.68

Hanna, N. (2018) A role for the state in the digital age, Journal of Innovation and Entepreneurship 7:5

Lundberg, S., Marklund, P.O., Strömbäck, E., Sundstrom, D. (2015), Using public procurement to implement environmental policy: an empirical analysis, Environmental Economics and Policy Studies, 17 (4), 487-520

OECD. "Government at a Glance 2015". Paris: OECD Publishing, 2015. [viewed on 15.01.2019.]: http://www.oecd.org/gov/government-at-a-glance-2015-country-factsheets.htm

Panayiotou N.A., Gayialis S.P., Tatsiopoulos I.P. (2004) An e-procurement system for governmental purchasing, Int. J. Production Economics 90, 79-102

Pelsa, I. (2018) The proportion of green public procurement in Latvia during the period of 2015-2017: Factors that influence development of green public procurement. Faculty of Business, Management and Economics, University of Latvia, Proceedings, p. 488-499

Reichel, A., De Schoenmaker, M., Gillabel, J. (2016). Circular economy in Europe. EEA Report/No 2/2016. Luxembourg: Publications Office of the European Union, 2016. ISBN 978-92-9213-719-9

Simanovska, J., (2017) "Green populism misleads customers", "Diena", October 22, 2017

State Chancellery (2017) Latvia's third National Open Government Action Plan, p.45

State Regional Development Agency (2017) Annual report, p.49

Testa, F., Iraldo, F., Frey, M., (2011). The effect of environmental regulation on firms' competitive performance: the case of the building and construction sector in some EU regions. Journal of Environmental Management 92, 2136-2144

World Bank (2016). Digital dividends. World Development Report 2016. Washington, DC: World Bank

Yildiz, M. (2007). E-government research: Reviewing the literature, limitations, and ways forward. Government Information Quarterly, 24 (3), 646–665.

BLOCKCHAIN IN FINANCIAL INDUSTRY: BETWEEN INFLATED EXPECTATIONS AND DISILLUSIONMENT

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Abstract. "Blockchain", "distributed ledger" and "smart contract" are terms that were anonymous only a decade ago, but today they are increasingly aggressive present in our daily lives. The financial industry is one of the areas in which the implementation of blockchain technology is reasonably expected to lead to dramatic changes. The time of the initial euphoria is gone, giving way to realism and "sobering" of the illusions about the possibilities and limitations to the feasibility of the new technology. The main research goal of the present study is systematization and testing using selected criteria, to arrive at a differentiated assessment of the degree of applicability of blockchain in different segments of the financial services industry. The methodological tools used are based on literature review and secondary data, through which the expected positioning of blockchain in the financial industry in line with the Gartner Hype Cycle of Emerging Technologies is explored. Based on the analysis of the specificities of the selected segments of the financial industry and the comparative analysis of the benefits and limitations in the development and application of the technology, the criteria for assessing the degree of applicability and the expected impact of blockchain technology on the analyzed segments are systematized. The results of the study testify to the uneven level of impact and penetration of blockchain in various spheres of the financial industry. The main challenges and barriers to the application of the technology and the possible solutions for overcoming them are outlined.

Key words: *blockchain, distributed ledger, smart contract, financial industry, financial services*

JEL code: O31, G10, G20

Introduction

Blockchain is one of those new technologies that were "born" only about a decade ago. Since then, its popularity has been growing steadily. Blockchain is often mistakenly identified with the bitcoin, as the cryptocurrency itself has been created through the blockchain technology (BT). However, the capabilities of blockchain go far beyond the cryptocurrencies. According to forecasts by high-tech experts, the application of blockchain will lead to revolutionary changes in the financial industry, comparable to the impact of the Internet and social networks on the development of communications (Perez Y., 2015, Swan M., 2015). These high expectations are based on the potential of the technology for increased security, transparency and cost-effectiveness of transactions. The availability of three key drivers: cost reduction, risk management and compliance-effectiveness outlines the reasons for the expected boom in blockchain application in various areas of the financial industry (Tayeb S. & Lago F., 2018). The unceasing euphoria and the buzz around BT logically raise the question of how realistic the forecasts of "booming" application are, when tangible results can be expected, or whether it can eventually turn out to be "much ado about nothing"? Scepticism about the future of BT can be counter argued by examples of the necessary time period from the execution of other important technological inventions to their actual application[*]. Whether and when a new technology will give "fruit" and what the extent of its

[*] For example, between 1939 and 1942, Iowa University professor John Atanasoff and his student, Clifford Berry, invented the world's first model of an electronic digital computer with regenerative memory. This discovery "matures" for almost half a century before it

penetration will be are difficult issues whose answers require an analytical look at the cycles and phases of innovative technology development - a problem that is in this paper's focus of analysis.

The paper first clarifies key blockchain parameters as a distributed ledger technology and its functional interaction with smart contracts "implanted" in financial transactions. The review of the specialized literature is based on an analysis of potential opportunities and limitations to the application of blockchain in the financial industry. The focus of discussion is on the argumentation of expectations about the degree of relevance and intensity of BT's impact in different segments of the financial services industry. The methodology of the study is based on an assessment of the extent of applicability of blockchain in 10 selected segments of the financial industry based on 43 indicators, divided into 16 selected evaluation criteria. The combined analytical synthesis of both "applicability" and "impact" gives the opportunity to justify and interpret the expected positioning of BT in the studied segments. The results of the analysis show the existence of clearly defined polarized values of the expected applicability rates and the degree of impact of blockchain in the researched areas of the financial industry. Due to the characteristic fragmentation of financial markets, the present study could not fully and comprehensively cover all areas of the financial services industry. The analysis focuses on selected segments of the financial market, and its scope covers some of the traditional financial services that are considered to have a differentiated potential for BT application.

1. Key characteristics of blockchain and smart contracts in the financial industry

The functional nature of the blockchain technology (BT) can be described as *distributed ledger* (DL), maintaining copies of the same data on multiple computers, controlled by different users. The DL functioning system is fully decentralised and contains traceable information about any individual transaction (Petrasic K. & Bomfreund M., 2016). In practice, this means that in the use of blockchain there is no need for the involvement of third parties – intermediaries in the transactions, i.e. organisations providing clearing, settlement, etc. (Woods P. et al., 2017).

A fundamental principle of BT is the *shared storage of information*, resulting in practically zero risk of data loss. The security of transactions is achieved through authorization and encryption processes. If a separate so-called "node" in the system is damaged, the information will not be lost irrevocably, but it will be kept in its entirety and completeness, since every other participant will have a copy of the same database. In addition, DL stores the transaction history, not just the final results (e.g. current balances), which protects the system from manipulating or falsifying data. The validity of the transactions is certified with the digital signature of the participants in the transaction. Signed transactions are arranged in separate blocks, and each block in this chain is "assigned" a unique so-called hash-code generated by computers using a complex mathematical formula. Changing transactions will change the hash-code of the block in which they are stored. In addition, these changes are reflected simultaneously in all blocks along the chain. A possible change will be first immediately registered and secondly immediately visible and traceable by all participants.

The automation of the *Know Your Customer (KYC)* process is often pointed out as one of the most important benefits of using BT in the financial industry (Refinitiv, 2018; Thomson Reuters, 2017a; FinTech Network, 2017; Chamber of Digital Commerce, 2016). The average duration of KYC activities and customer onboarding is currently taking financial institutions over 26 days (Thomson Reuters, 2017b). This period can be drastically shortened by using a digitized database. Participants can conduct KYC activities in real time, establishing the digital identity of the corporation through DL functionality (McWaters R. et al., 2016). Institutions can be confident that the documentation submitted has passed the procedures for independent control and data verification. This leads to a reduction in administrative costs and time as the

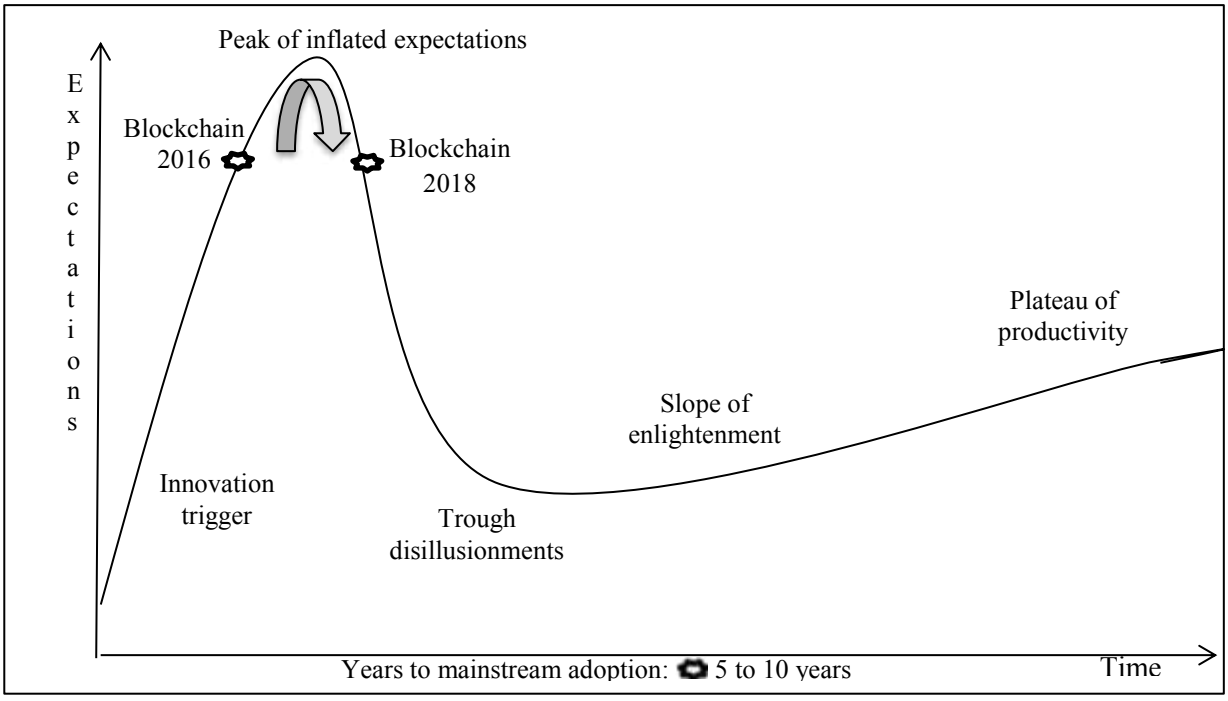
becomes an integral part of our daily life. Another common example is the creation of the Internet in the 1960s and the beginning of its popularization in the mid-1990s as a global network.

need to conduct own KYC activities is eliminated. An advantage for customers is that they will have to pass KYC procedures once, regardless of the number of financial institutions they interact with.

The idea of using smart contracts in a blockchain is extremely suitable for financial transactions where there is a link between performance of contractual terms and actual transactions. They could be described as a series of self-fulfilling contract commitments that provide automated execution of the terms of the contract, make intermediaries redundant and speed up the payment process (Gheorghe P., Tiganoaia B. & Niculescu A., 2017). Smart contracts typically work by generating computerized contract codes of "if-then" models (Genpact, 2016). Their major advantage is that they provide greater security and traceability to legally valid transactions, thereby greatly facilitating the operation of regulatory bodies (Petrasic K. & Bomfreund M., 2016). Key components of smart contracts are autonomy, self-sufficiency and decentralization. A classic example of demonstrating the work of a smart contract is the automated execution of a coded order from a vending machine (Swan M., 2015). In addition to automating real transactions, the use of smart contracts in DL "takes over" the central registry functions, as there is no need for an intermediary agency that performs clearing and settlement through independent transaction confirmations. Instead, the smart contract can be programmed to manage the whole cycle, from negotiation to completion of the transaction without human intervention, while regulators receive up-to-date information about the business activity.

2. Expected positioning of blockchain

It is typical for new and early-stage technologies to attract the interest of experts and the specialized community. The emergence of the blockchain has undoubtedly provoked a giant wave of high expectations. At present, the discussion of the future of this innovative technology extends widely, from scepticism regarding inflationary over-expectations to euphoric visions that what is ahead of us will outweigh even the boldest fantasies. Blockchain definitely has the characteristic features of a disruptive new technology, according to the classic interpretation of this term (Bower J. & Christensen C., 1995; Zeleny M., 2012). According to *McKinsey* blockchain as an infant technology is positioned on the border between two stages: "Pioneering" and "Growth" (Higginson M. et al., 2019). A different interpretation of the development cycle of new technologies is provided by *Gartner*.



Source: adopted according to Gartner, 2016 and Gartner, 2018.

Fig. 1 **The movement of blockchain on Gartner Hype Cycle for Emerging Technologies during the period 2016 - 2018**

According to *Gartner Hype Cycle* technological innovations pass through five phases (Figure 1). The first is the "Innovation trigger", a phase associated with the emergence of the new technology. Following are the phases of "Peak of inflated expectations", "Trough of disillusionments", "Slope of enlightenment" and the final stage of "Plateau of productivity", which explores the full potential of the technology's productivity. The first appearance of blockchain in the *Gartner Hype Cycle* was in 2016 (Gartner, 2016). As an emerging technology, it was positioned between the phases of "Innovation trigger" and "Peak of inflated expectations". Two years later, BT went through the "peak" of inflationary expectations and headed for the next phase - the "sobered" illusions (Gartner, 2018). One logical interpretation of this repositioning is that, after the euphoric stage, a phase of awareness and “landing" occurs, in which the initial enthusiasm gives way to realism and criticism.

As can be seen from the graph (Figure 1), not all technological discoveries are placed under a common denominator in terms of the time they need to go through all stages of development and become an integral part of everyday life. In this respect, it is estimated that a period of 5 to 10 years is required before the massive application of BT takes place. As this forecast is not parameterized by application domains, the period may vary depending on the nature of the problems to be solved and the barriers to be addressed in the areas concerned. In the sphere of financial services, it is more realistic that the expected time needed for BT to be "put into operation" be closer to the upper limit of this time horizon. Reason for such a prediction is the presence of obstacles of a different nature, the removal of which may prove to be a difficult task. One of the most serious problems is the anticipated reaction of key stakeholders. In the era of digital technology, financial institutions typically react to changes by adjusting and adapting their business models (Japparova I. & Rupeika-Apoga R., 2017). The emergence of disruptive technologies, such as blockchain, could be treated as a threat to the status quo of the so called "system" market players and face their fierce resistance. There are fears among financial intermediaries, which are quite reasonable, that the blockchain application will eat up their profits, will eliminate them from the market and will lead to financial losses, even bankruptcies (McKinsey, 2018). The increasing scepticism towards blockchain is fueled by the vague results of the cost-benefit analysis, the varying degrees of interest among the main players involved, the slow progress and the lack of convincing real-life examples of BT implementation (Higginson M. et al., 2019).

3. Research results and discussion

For the purposes of this study, key criteria and indicators for assessing the degree of BT feasibility and the intensity of expected impact on different segments of the financial industry have been selected (Table 1).

Table 1

Key criteria and indicators for assessing the degree of blockchain applicability

Key criteria	Indicators
1. Operational efficiency	1.1. High administrative costs 1.2. The manual processing of transactions is predominant
2. Clearing and settlement	2.1. Prolonged technological time for clearing and settlement 2.2. Payment systems are maintained by an external service provider
3. Transparency	3.1. Existence of information asymmetry 3.2. Rating agencies and other information intermediaries are relied on 3.3. Some participants benefit from unequal access to information
4. Security/reliability	4.1. Possible data loss 4.2. Vulnerability of the system from entering unreliable information 4.3. At least one authorized institution is required to confirm the transactions
5. Mediation	5.1. There are at least two intermediaries in the transaction 5.2. High intermediaries costs

	5.3. Delay in the execution of transactions caused by the intermediaries
6. Data	6.1. Necessary data storage 6.2. The same data is stored simultaneously by different counterparties 6.3. The data is not synchronized simultaneously 6.4. High data synchronization costs
7. Documentation	7.1. Each participant keeps their own digital or paper-based "book of records" 7.2. A large number of documents with complex document flow procedures 7.3. Predominantly manual documents processing
8. Time frame	8.1. Time-consuming process of transactions preparation and execution 8.2. Transactions are not processed and executed in real time
9. Immutability	9.1. Possible replacement of historic data by an authorized system participant 9.2. Need for reconciliation activities 9.3. There are preconditions for counterfeiting, fraud, hacker attacks
10. Autonomy	10.1. Transactions administration (arbitrage) by a third party 10.2. Key processes are not automated
11. Validity	11.1. Issues with the authorization and validity of transactions 11.2. Unauthorized access to the systems is possible 11.3. Possible counterfeiting of signatures and tampering of documents
12. Traceability	12.1. Missing or incomplete access to transaction history 12.2. Only the final result is available (current balance, final balance) 12.3. Problems with the identification of ownership of assets/collateral
13. Counterparties	13.1. Too many counterparties on a deal 13.2. Different counterparties are entitled to modify the transactions 13.3. High counterparty risk
14. Liquidity	14.1. Availability of a "frozen" resource in deals 14.2. The need to hold a capital position and to form reserves
15. Clients	15.1. High costs for KYC activities 15.2. Time consuming onboarding
16. Regulatory environment	16.1. High regulatory requirements 16.2. High compliance costs 16.3. High cost procedures for AML activities

Source: author's construction

Thus structured indicators on key rating criteria serve to assess the presence or absence of the necessary prerequisites for the application of BT according to the defined indicative conditions on the selected criteria. For example, a given financial market segment would be appropriate as a "field" for BT application if the following circumstances are present: complex documentation, heavy document flow between the parties, prevailing manual processing of transactions, slow settlement, transaction asymmetry, lack of transparency in terms of negotiation, etc. The selected sample includes some of the most common segments, traditional for the financial industry, in which an upcoming blockchain application can be expected. The results of the analysis of the indicators on the selected segments are presented in Table 2

Table 2

Analysis results

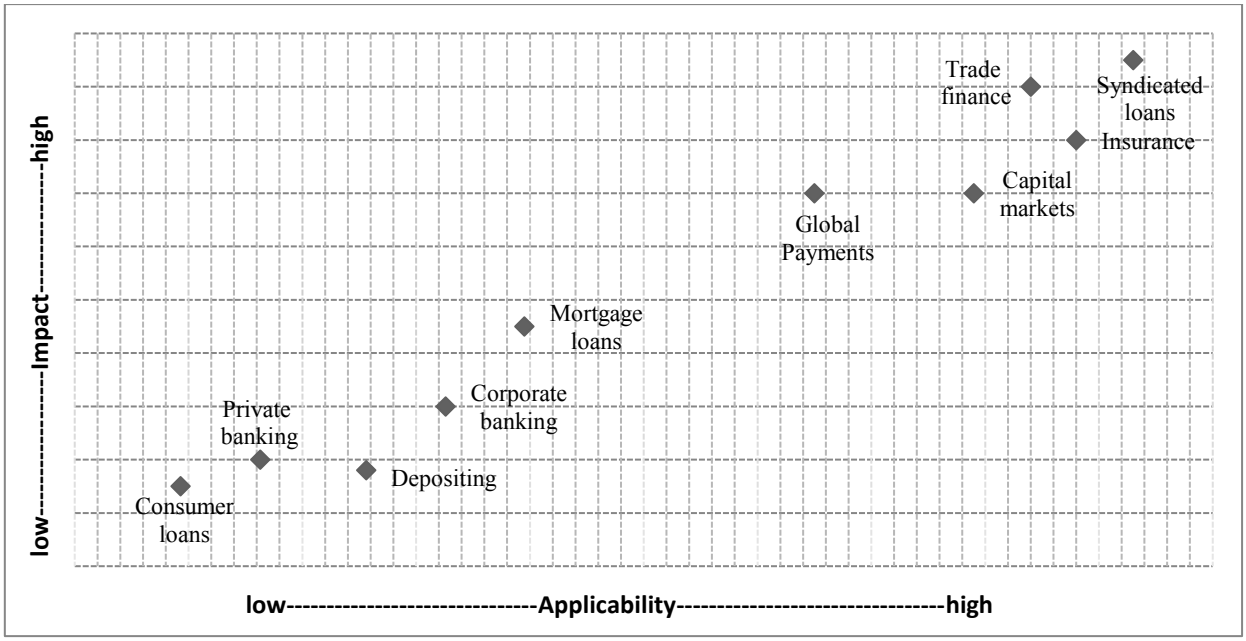
Indica-tors	Retail banking			Private banking	Corporate banking	Syndicated loans	Global payments	Trade financing	Capital markets	Insurance
	Depositing	Lending								
		Consumer loans	Mortgage loans							
1.1	✓		✓	✓	✓	✓		✓	✓	✓
1.2			✓	✓	✓	✓		✓		✓
2.1						✓	✓	✓	✓	✓
2.2							✓		✓	

Indica-tors	Retail banking			Private banking	Corporate banking	Syndicated loans	Global payments	Trade financing	Capital markets	Insurance
	Depositing	Lending								
		Consumer loans	Mortgage loans							
3.1		✓	✓		✓	✓	✓	✓	✓	✓
3.2			✓		✓	✓		✓	✓	✓
3.3						✓			✓	✓
4.1	✓					✓	✓	✓	✓	✓
4.2		✓				✓	✓	✓	✓	✓
4.3						✓	✓	✓	✓	✓
5.1						✓		✓		✓
5.2						✓	✓	✓	✓	✓
5.3						✓	✓	✓	✓	✓
6.1	✓	✓	✓		✓	✓	✓	✓	✓	✓
6.2						✓	✓	✓	✓	✓
6.3						✓		✓		✓
6.4						✓		✓		✓
7.1					✓	✓	✓	✓	✓	✓
7.2	✓		✓			✓	✓	✓	✓	✓
7.3	✓		✓	✓	✓	✓	✓	✓	✓	✓
8.1			✓	✓	✓	✓		✓		✓
8.2						✓	✓	✓		✓
9.1	✓					✓	✓	✓	✓	✓
9.2						✓	✓	✓	✓	✓
9.3	✓		✓				✓	✓	✓	✓
10.1						✓	✓		✓	✓
10.2						✓		✓		✓
11.1						✓	✓	✓	✓	✓
11.2					✓	✓	✓	✓	✓	✓
11.3	✓		✓			✓	✓	✓	✓	✓
12.1						✓			✓	
12.2						✓			✓	
12.3			✓					✓	✓	✓
13.1						✓	✓	✓	✓	✓
13.2						✓	✓	✓	✓	✓
13.3						✓	✓	✓	✓	✓
14.1			✓			✓	✓	✓	✓	
14.2	✓	✓	✓			✓		✓	✓	
15.1			✓	✓	✓	✓		✓		✓
15.2			✓	✓	✓	✓		✓		✓
16.1	✓		✓		✓	✓	✓		✓	✓
16.2			✓		✓	✓	✓		✓	✓
16.3	✓			✓	✓	✓	✓	✓	✓	✓

Source: author's construction

The results show that there are differentiated prerequisites for blockchain application in the financial industry segments. There are very few prerequisites for applying the technology as a whole in Retail, Private and Corporate Banking. Against this backdrop, the relatively high coverage rates of the indicators (between 65% for Payments and 93% for Syndicated loans) are highlighted in five other areas of financial services: Syndicated lending, Global payments, Trade finance, Capital markets and Insurance. These results indicate that the necessary prerequisites and possibilities for BT application in the studied areas are in place.

The clearly expressed polarization of the estimates indicates the uneven possibilities for BT penetration in the examined segments of the financial industry, which is also confirmed by the synthesis of the degree of applicability and the expected impact of the technology in these areas presented in Fig. 2. The question remains about the intensity of the impact and the expected changes that the new technology will bring precisely to those segments that blockchain is targeted at.



Source: author's construction

Fig. 2 **Blockchain technology positioning by degree of applicability and expected impact in selected segments of the financial services industry**

The *"Trade Finance"* segment has traditionally been characterized by cumbersome procedures, complex documentation, a large number of involved stakeholders, heavy document turnover and mostly manual transaction processing. The benefits of BT in an industry where short-term business mediation is estimated at 6-8 trillion US$ are in the automation of manually intensive processes, higher security in operations and communications with other internal systems, and automatic refresh of clauses through intelligent templates (Tayeb S. & Lago F., 2018). Traditional trade finance instruments, such as Letters of Credit, Bills of Exchange and Commercial Papers, are currently characterized by the presence of overly complex and diverse information and cash flows. Implementing BT and smart contracts would have a very positive impact on time and resource costs by simplifying procedures through automation. A significant part of the intermediary chain, such as numerous correspondent banks, becomes redundant, leading to higher operational efficiency and cost savings (Deloitte, 2016).

In the area of *"Global Payments"*, the implementation of the new EU Payment Service Directive (PSD2), which allows non-financial companies to provide access to financial services for bank customers, creates a favorable environment for the development of competition and the acceleration of innovations (Romanova I. et al., 2017). A competitive technological advantage of blockchain is the ability of each participant to track the full chronology of transactions and the role of all parties involved. Modern payment systems achieve this, paying the high costs of exchanging uncoded data and messages between payment processors and relying on a third-party clearing mechanism. Clearing and settlement mediation prolongs and increases the cost of the payment process as it requires activities such as data storage, coordination, initiation, verification, execution and reporting of transactions, etc. (Guo Y. & Liang C., 2016). The data exchange process in DL is significantly simplified in terms of administrative procedures and manual processing of information, which significantly reduces operating costs. In addition, the payment process is much safer and faster due to encryption, digital identification of the participants and the impossibility of manipulating data.

Current *capital markets* are based on multiple clearing and settlement systems. The Goldman Sachs Investment Research analysis shows that capital markets can save $ 6 billion a year using blockchain (Goldman Sachs, 2016). The study is limited to four cash instruments, which is why the actual cost savings are expected to be higher. Transactions

using BT could radically transform capital market trading, which is built on instruments with standardized requisites such as maturity, face value, due date, coupon, payment date, etc., which in turn can be components of a smart contract. Derivative contracts are also based on specific parameters that can be transformed into a smart contract with algorithms for Mark-to-market value calculations, margins, options and exercise conditions. In the case of swaps and OTC (over-the-counter) derivatives, where each contract is unique, their specific algorithm can be "embedded" into separate smart contracts. Using DL could be useful in trading with some hybrid instruments such as CoCo bond (contingent convertible bonds) that have a complex structure combining debt financing and own resources (Deloitte, 2016). Blockchain conceptually modifies the issuance, the processes of notification and updating of current balances, clearing, settlement and reporting, thus increasing the efficiency of investment management and storing information. It also achieves, on the one hand, a reduction in the risks posed by a large number and volume of transactions, which on the other hand provides greater opportunities for regulators to perform their functions (Tayeb S. & Lago F., 2018).

It is argued in a number of studies that BT will find favorable conditions for application in *syndicated loan*s (Rutenberg S. & Wenner R., 2017; Turner E., 2016 Genpact, 2016; Padmanabhan G. & Komma K., 2016). These expectations are based on the presence of a number of factors that adversely affect the effectiveness of this market, such as: low degree of transparency of the processes of bank syndicate formation and pricing of loans, too slow settlement and high administration and servicing costs of syndicated loans (Genpact, 2016). Using the DL architecture of blockchain technology, banks can combine a variety of tasks into a block, such as local regulations, KYC, and anti-money laundering. Banks in the syndicate will benefit from increased transparency of transactions, reduced complexity, reduced time and costs of customers' onboarding and complying with local regulations. In general, the benefits of introducing blockchain for counterparties can be summarized in the following components: increased security, shortening the time required to execute transactions, lower transaction costs, and increased operational efficiency (Petrov D., 2018).

The application of BT in *insurance* is possible due to the fact that this activity is characterized by the assumption of a financial risk of loss and damage (Gatteschi V. et al., 2018). This is especially true of property insurance, where, apart from the insurer and the insured, other stakeholders, such as reinsurers, brokers, control and regulatory bodies and data processing organizations, are also involved. In the event of damage, the verification of the declared data, the presence of intermediaries and the possibility of fraud is a hindrance to the process of assessing the value of the damage and paying the insurance amount. These processes could be administratively simplified by using so-called "smart" assets, which through sensors and other external sources can automatically report damage and lodge claims for compensation. The use of smart contracts would lead to the elimination of intermediaries along the chain and a faster processing and consideration of the reported damage. Probably the most significant advantage of the new technology is the minimization of attempts at insurance frauds and counterfeits. The insurer will have access to integrated sources of information for all details of the claim history and the origin of the insured asset, which is a prerequisite for identifying suspicious behavior on the part of the insured entity (McWaters R. et al., 2016).

Conclusions

Blockchain is an innovative technology that, according to the results of this study, has a potential for application in some of the traditional areas of the financial services industry. Based on the analysis of the degree of applicability of blockchain using the selected key criteria and indicators, the following conclusions can be drawn:

1. There is a polarization of the results in the surveyed set, which results clearly outline the belonging of the financial industry segments to one of two formed groups with varying degrees of BT applicability.

2. In some of the traditional areas of the financial services industry, such as Retail and Private Banking, massive application of blockchain is unlikely, however in the Corporate banking and Mortgage loans segments there are prerequisites for a limited application of the new technology.
3. In the areas of Syndicated Loans, Global Payments, Trade Finance, Capital Markets and Insurance the necessary prerequisites for blockchain implementation exist and there are good reasons to expect that these are the "target" segments of the new technology.

The evolutionary development and the current positioning of blockchain between inflated expectations and disillusionments is evidence for the existence of challenges that the new technology faces. These challenges can be summarized, as follows:

- The need to develop and test an adequate legal infrastructure with detailed regulation reflecting the specificities and capabilities of BT;
- The benefits of the co-operation between the major stakeholders can be tested through pilot projects, delivering convincing results of the cost-benefit ratios and return on investment data;
- Launching initiatives to build joint rating systems that allow automated KYC processes and their real-market testing to smooth out possible controversies and doubts among their users.

Bibliography

Bower J. & Christensen C., 1995. Disruptive Technologies: Catching the Wave, *Harvard Business Review*, January-February, 43-53.

Chamber of Digital Commerce, 2016. *Smart Contracts: 12 Use Cases for Business & Beyond*. [Online] Available at: http://digitalchamber.org/assets/smart-contracts-12-use-cases-for-business-and-beyond.pdf [Accessed 12 January 2019].

Deloitte, 2016. *Over the Horizon: Blockchain and the Future of Financial Infrastructure*, [Online] Available at: https://www2.deloitte.com/... /over-horizon-blockchain-future-financial-infrastructure.html [Accessed 12 Jan. 2019].

FinTech Network, 2017. *Four Blockchain Use Cases for Banks*. [Online] Available at: https://blockchainapac.fintecnet.com/uploads/2/4/3/8/24384857/fintech_blockchain_report_v3.pdf [Accessed 12 Jan. 2019].

Gartner, 2018. *5 Trends Emerge in the Gartner Hype Cycle for Emerging Technologies*. [Online] Available at: https://www.gartner.com/smarterwithgartner/5-trends-emerge-in-gartner-hype-cycle-for-emerging-technologies-2018/ [Accessed 12 January 2019].

Gartner, 2016. *Gartner's 2016 Hype Cycle for Emerging Technologies Identifies Three Key Trends That Organizations Must Track to Gain Competitive Advantage*, [Online] Available at: https://www.gartner.com/newsroom/id/3412017 [Accessed 12 January 2019].

Gatteschi V. et al., 2018. Blockchain and Smart Contracts for Insurance: Is the Technology Mature Enough? *Future Internet,* Vol. 10, Issue 2, 20. [Online] Available at: https://www.mdpi.com/1999-5903/10/2/20#citedby [Accessed 12 January 2019].

Genpact, 2016. *Impact of Distributed Ledger Technology on Syndicated Loans*, WhitePaper. [Online] Available at: https://www.genpact.com/.../impact-of-distributed-ledger-technology-on-syndicated-loans.pdf [Accessed 12 January 2019].

Gheorghe P., Tiganoaia B., Niculescu A., 2017. Blockchain and Smart Contracts in the Music Industry – Streaming vs. Downloading, *The 8th International Conference of Management and Industrial Engineering*, Bucharest, Romania.

Goldman Sachs, 2016. *Blockchain Tech Could Save Capital Markets $6 Billion a Year*, [Online] Available at: https://www.coindesk.com/goldman-sachs-blockchain-tech-save-capital-markets-12-billion/ [Accessed 12 Jan. 2019].

Guo Y. & Liang C., 2016. Blockchain Application and Outlook in the Banking Industry, *Financial Innovations*, 2:24, p.6.

Higginson M., Nadeau M., Rajgopal K., 2019. Blockchain's Occam Problem, *McKinsey on Payment*. [Online] Available at: https://www.mckinsey.com/ [Accessed 12 January 2019].

Japparova I. & Rupeika-Apoga R., 2017. Banking Business Models of the Digital Future: The Case of Latvia, *European Research Studies Journal*, Vol. XX, Issue 3A, 846-860.

McKinsey, 2018. *Blockchain Beyond the Hype: What is the Strategic Business Value*. [Online] Available at: https://www.mckinsey.com/... /blockchain-beyond-the-hype-what-is-the-strategic-business-value [Accessed 12 January 2019].

McWaters R., et al., 2016. *The Future of Financial Infrastructure, An Ambitious Look at How Blockchain Can Reshape Financial Services*, World Economic Forum. [Online] Available at: http://www3.weforum.org/docs/WEF_The_future_of_financial_infrastructure.pdf [Accessed 12 January 2019].

Padmanabhan G. & Komma K., 2016. Reinventing Syndicated Loan Processing with Distributed Ledger Technology, White Paper, *TCS Banking and Financial Services*. [Online] Available at: https://www.tcs.com/syndicate-loan-processing-distributed-ledger-technology [Accessed 18 December 2018].

Perez Y., 2015. *Santander: Blockchain Tech Can Save Banks $20 Billion a Year*, CoinDesk, June 16. [Online] Available at: http://www.coindesk.com/santander-blockchain-tech-can-save-banks-20-billion-a-year/ [Accessed 18 December 2018].

Petrasic K., Bomfreund M., 2016. Beyond Bitcoin: The Blockchain Revolution in Financial Services, *White & Case*, N.Y. [Online] Available at: https://www.whitecase.com/publications/insight/beyond-bitcoin-blockchain-revolution-financial-services [Accessed 8 January 2019].

Petrov D., 2018. Blockchain Technology - A Bank Lending (R)evolution: The Case of Syndicated Loans, *New Challenges of Economic and Business Development - 2018: Productivity and Economic Growth*, Proceedings, May 10 - 12, Riga, University of Latvia, 500 - 511.

Refinitiv, 2018. *A Blockchain Enabled KYC Solution: New Horizon or False Down?* [Online] Available at: https://www.refinitiv.com/content/dam/gl/en/documents/white-papers/kyc-blockchain-white-paper.pdf [Accessed 8 January 2019].

Romanova I., Grima S., Spiteri J., & Kudinska M., 2018. The Payment Services Directive 2 and Competitiveness: the Perspective of European Fintech Companies, *European Research Studies Journal*, Vol. XXI, Issue 2, 5-24.

Rutenberg S. & Wenner R., 2017. *Blockchain Technology: A Syndicated Loan Revolution, Financial Technology (FinTech) and Regulation*, Polsinelli. [Online] Available at: https://sftp.polsinelli.com/publications/fintech/resources /upd0717fin.pdf [Accessed 2 January 2019].

Swan M., 2015. *Blockchain Blueprint for a New Economy*, O'Reilly Media Inc., CA, USA.

Tayeb S. & Lago F., 2018. Blockchain Technology: Between High Hopes and Challenging Implications, *The Mena Business Law Review*, First Quarter, 34-43.

Thomson Reuters, 2017a. *KYC Compliance: The rising challenge for financial institutions*, [Online] Available at: https://risk.thomsonreuters.com/en/resources/special-report/kyc-compliance-the-rising-challenge-for-financial-instutitions.html [Accessed 8 January 2019].

Thomson Reuters, 2017b. *KYC Challenges in 2017: A Focus on the Impact of Global Regulations in the United States*. [Online] Available at: https://risk.thomsonreuters.com/content/dam/openweb/documents/pdf/risk/report/kyc-challenges-2017-usa.pdf [Accessed 5 December 2018].

Turner E., 2016. *Blockchain Stands to Disrupt Syndicated Loans, S&P Global Market Intelligence*, [Online] Available at: https://www.snl.com/Cache/snlpdf_c2a459c7-d971-425b-8943-5da31b2887c5.pdf [Accessed 2 January 2019].

Woods P. et al., 2017. Blockchain and Distributed Ledger Technology: Application to the Loan Market, *Loan Syndication and Trading Association*, Operations Conference, April 4.

Zeleny M., 2012. High technology and barriers to innovation: from Globalization to Relocalization. *International Journal of Information Technology & Decision Making*. 11(02), 441-456.

SMART CONTRACTS FOR ENTREPRENEURIAL COLLABORATION IN LOGISTICS NETWORKS

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Abstract. Smart contracts are transactional scripts on the top of the blockchain technology that are created for executing and enforcing legal contracts. Self-executable they check contractual pre-defined conditions and automatically fulfil respective actions or transactions, respectively. Through this form of automation, the layers of middlemen can be reduced or even completely replaced. Accordingly, smart contracts bear the potential to decrease transaction and enforcement costs. In addition to this narrow obvious characteristic, we argue that smart contracts encase the potential to foster entrepreneurial collaborations of cross-organisational business processes and enabling trans-national networks of entrepreneurs and SMEs to enter into new business sectors which are currently still closed due to high entry barriers or to domination of big players. Especially, the logistics sector is well-known for dominating global players that try to limit entrepreneurial activities of small companies by using closed organisational structures and dedicated IT systems. The foundation and the organisational support for entrepreneurial collaborations in such logistics-related networks can be realised by the implementation of decentralized autonomous organisations based on blockchain technology and smart contracting. Accordingly, this paper discusses the research question how smart contracting and blockchain technology can facilitate the implementation of collaborative business structures for sustainable trans-national entrepreneurial activities in logistics networks. Our research is based on expert interviews, surveys and case studies from several EU projects with a focus on the ongoing project "Connect2SmallPorts". The research results will showcase and assess this potential of using smart contracting in the case of charter-parties.

Key words: *Entrepreneurial Collaboration, Smart Contracts, Blockchain, Logistics Networks*

JEL code: M16, O31, O33

Introduction

The presence of networks of materials flow in conjunction with information networks lead to the emergence of logistics networks that are typically distributed and decentralised (Ghiani et al., 2013). A logistics network, as defined by Liedtke and Friedrich (2012), on the micro- or meso-logistics level is the central decision-objects of an entity (e.g. firm or company), which represents a set of nodes (e.g. warehouses or transhipment spots) and transport connections; whereby logistics networks can differ from physical transport networks or links that are available to stimulate mobility demand of the entire economy (macro-logistics level). They are directly or indirectly interconnected and interlinked with other networks and tend to change their structure over time. In the latter case, for instance, the policy decisions about the inclusion of new EU-member states led next to new freight transportation, enhanced quantities and changed quality of cargo, in addition, to novel collaborations, products and actors as well as allocations in value adding logistics networks (Haasis, 2008). Similar as supply chains, logistics networks encase among other things suppliers, warehouses, distribution centres, retail outlets, raw materials, goods-in-process stocks and finished products (Simchi et al., 2000). Intermodal

logistics networks are integrated transportation systems with at least two different transport modes, which are linked by terminals that ensure the modal shift (Haasis, 2008). Within logistics networks, the business performance is dependent from various agents, processes and product diversity (Gleissner & Femerling, 2013). Accordingly, they face characteristics like network complexity, time challenges, various customer needs, finite capabilities and resources, as well as security and safety requirements (Chandra and Kamrani, 2004; Haasis, 2008; Haasis and Szafera, 2005).

As a response to this, nowadays, the logistics related research efforts rise to develop potential reorganisations for a transition from scattered supply chains to open logistics networks where resources are accessible, compatible and interlinked (Rusich, 2017). Accordingly, supply chain management (SCM) challenges become smarter, more networked and fragmented as well as distributed (Prause, 2015; Olaniyi & Reidolf, 2015). This transition process in particular refers to Logistics 4.0 – also known as smart logistics – which is regarded as a specific management approach for developing, designing, managing and realising change-oriented networks of object flows (e.g. goods, information, values) based on pattern recognition, generalisation and self-organisation, enabled through the usage of new technologies and innovative services (Wehberg, 2015). A new and promising approach is based on blockchain technology and smart contracts.

Smart contracts are transactional protocols or scripts, respectively, on the top of the blockchain technology that are created for executing and enforcing legal contracts. Self-executable they check contractual pre-defined conditions and fulfil respective actions or transactions, respectively. Through this, the layers of intermediaries can be reduced or even completely replaced. Accordingly, smart contracts bear the potential to reduce transaction and enforcement costs and they bear the potential to foster entrepreneurial collaborations of cross-organisational business processes and enabling trans-national networks of entrepreneurs and SMEs to enter into new business sectors which are currently still closed due to high entry barriers or to domination of big players (Prause & Hunke, 2014; Prause & Hoffmann, 2017). The authors participate in several EU projects related to transnational entrepreneurship, regional development and service networks in the context of green logistics and sustainable supply chain management. As a result, scientific studies have shown that in the context of Industry 4.0, especially small and medium-sized enterprises can profit (e.g. Prause & Atari, 2017; Gerlitz, 2015 & 2017). This paper discusses the research question how smart contracting and blockchain technology can facilitate the implementation of collaborative business structures for sustainable trans-national entrepreneurial activities in logistics networks. To address this issue, we use the case of a simplified charter-party contract process with a single voyager in the freight market, and show the arising benefits of an appropriate technology implementation. The research is based on expert interviews, surveys and case studies from several EU projects with a focus on the ongoing project "Connect2SmallPorts", which investigates the digitalisation of small and medium-sized ports in Southern Baltic Sea Region. The research results will show that smart contracts are especially value adding for smaller and entrepreneurial actors, since their competiveness and efficiency may be improved and participation facilitated through the enabling adoption of this new technology due to the shared value that arise from the exclusion of intermediaries.

The present study is organised as follow: The subsequent section describes briefly the theoretical background of the blockchain and smart contract technology. Afterwards, the methodology is presented, followed by the research results and discussion chapter. The paper ends with a conclusion inclusive some limitations and implications for future research.

Theoretical Background

The blockchain technology – in its first stage of development – was designed by the scientist Satoshi Nakamoto in 2008 with the objective to generate digital coins whose control is distributed under the independent participating actors (i.e. decentralised) in a global virtual network, instead of a central institution (e.g. government or bank) with high bureaucracies, whereby the related preliminary first field of application – the cryptocurrency Bitcoin – became fully

operational in January 2009 with the first successfully completed mining operation (Fridgen et al., 2018; Nakamoto, 2008; Pinna et al., 2018; Swan, 2015). Therefore, blockchains have their origins in the financial sector. They are regarded as open and decentralised ledger systems and allow participants or users via address account (i.e. alphanumerical code) and private key to process quickly transactions with each other in specific cryptocurrencies without a third party (e.g. intermediary, middleman, broker or agent), which leads to a decentralised network of trust (Chuen, 2015; Gallay et al., 2017; Liao & Wang, 2018; Manski, 2016; Swan, 2015). According to the provided distributed ledger or database, all participants have a copy and are allowed to contribute without repudiation, which replaces paperwork and potentially physical signatures. This decentralised character of blockchains can facilitate smaller, independent users' (e.g. entrepreneurs and SMEs) competitiveness and efficiency enabled through the improved information accessibility, reduced risks and layers of middlemen, and thus declining intermediary and transaction costs (Wu, 2018). Hence, this technology bears the potential to foster entrepreneurial collaborations in logistics networks across international borders. Generally, blockchains – as global shared networks or infrastructures – are differentiated into public and private, as well as permission-less and permissioned ones. A public blockchain – which is generally permission-less – is open for everyone (very often: anonymous participants), whereas a private blockchain network is accessible only for specific participants that are usually known. In a permission-less blockchain all users – also known as nodes – are allowed to mine, while in a permissioned blockchain this right to act as a minor is exclusively available for certain participants, whereby the access – similar to a private blockchain – is regulated (Fridgen et al., 2018; Kouhizadeh & Sarkis, 2018). Next to the decentralised network character, the term blockchain refers to a data structure, an ordered sequence of blocks – each containing data about a variable number of validated transactions – that are cryptographically chained (i.e. one by one) by the inclusion of the respective hash values and cryptographic signatures, which makes it impossible to amend a former already validated and integrated block of the chain without network members consensus (García-Bañuelos et al., 2017; Lansiti & Lakhani, 2017; Pinna et al., 2018). This unique data structure is permanently visible (i.e. transparent), verifiable and stored among a network of machines (e.g. computers), whereby each machine that dispose a full replica is a so-called full node (García-Bañuelos et al., 2017). Each network participant can verify and add new transactions to blocks (Wang & Liu, 2015), but afterwards this newest block needs to be validated by the minors, that are some of the full-nodes in proof-of-work blockchains like Bitcoin and Ethereum (García-Bañuelos et al., 2017). This validation procedure or creation of new blocks is called mining and poses a process, where the minors in the peer-to-peer network try to solve a computationally hard problem of determining a hash key for the new block, which then incorporate next to the transaction data (or any kind of information) among other things a timestamp, the respective hash code of the previous block, its height (associated progressive number) as well as the IP address of the first minor that has validated the new block (Pinna et al., 2018). As in a competition the winner takes it all, here the first minor who created the block receives a reward in form of new crypto-coins (Wang & Liu, 2015) and the transaction fees of all consolidated transactions (García-Bañuelos et al., 2017). Before the proposed new block is attached to the entire already existing chain of blocks, the full nodes check the consensuses via a mechanism or the validity of the created block, respectively (Kouhizadeh & Sarkis, 2018; Pinna et al., 2018). For more information regarding the technical details, reference is made to Nakamoto (2008). To summarise, the blockchain technology at first glance exhibits some special features or characteristics, which at the same time represent the key advantages compared to other respective information technologies (Fridgen et al., 2018; Kouhizadeh & Sarkis, 2018): 1. decentralisation, 2. transparency and auditability (through tamper-proof process history), 3. data integrity, security and immutability.

The second development stage of the blockchain technology extends the preliminary first field of application and promises even greater use cases through the integration of smart contracts – also known as: digital contracts or e-contracts (Gallay et al., 2017; L'Hermitte et al., 2018; Swan, 2015; Wu, 2018). Smart contracts are transactional protocols or scripts

that encompass the terms of contracts and business rules, which run on the top of blockchains embedded in digital codes with software that automatically conduct the negotiated terms of contract agreements to which the respective participants previously agreed (Liao & Wang, 2018). They are stand-alone programmes that check the pre-defined conditions of a contract agreement, and if these are met, a certain number of actions (e.g. transactions) are triggered according to the contractual agreed conditions (Kouhizadeh & Sarkis, 2018). Accordingly, smart contracts are able to read and write from the blockchain, and enable whenever a certain transaction occurs that further transactions are automatically executed (García-Bañuelos et al., 2017). The smart contract computational code is self-executable, fosters and verifies the completion of a contractual arrangement or transaction and represents one of the simplest forms of decentralised automation with the positive effect that human interventions in contracts as well as the presence of trust among the contractual participants becomes superfluous (Kouhizadeh & Sarkis, 2018; Liao & Wang, 2018), which leads to the emergence of decentralised autonomous organisations (DOA) (Manski, 2016). The contractual conditions and related legal principles to be observed are programmed as algorithms in smart contracts that are transparently stored on the distributed and decentralised blockchain network (Kouhizadeh & Sarkis, 2018), where they are shared among other things with their digital record and signature among the authorised contractual participants as well as secured from distortion, revision, tampering and deletion due to the special features of the blockchain technology mentioned above (Liao & Wang, 2018). Accordingly, the usage of smart contracts based on blockchain technology further removes the value of former involved third parties (e.g. intermediary, middleman, broker or agents like government, bank, lawyer, etc.) in diverse business activities, which in addition reduces transaction costs and fosters the efficiency and redesign of complex business processes and logistics networks. Considering the example of a public registry for land titles from García-Bañuelos et al. (2017), where the registry is compiled as a blockchain that records the land tenure, the disposition of a property as a collaborative business process can be configured as a transaction, cryptographically signed by both contractual parties. By using a smart contract this sales transaction together with the related funds, taxes and land titles might be automatically transferred in one and the same action. In practice, such a comparable kind of e-notarisation example is already in place. In December 2015, the firm called Bitnation cooperated with the Estonian government for the implementation of a public notary to e-residents that ensures the notarisation of marriages, birth certificates, land titles, business contracts and safe spaces on basis of the blockchain technology (Manski, 2016).

Besides all potential use cases, logistics bears some of the most pervasive blockchain application possibilities (Kouhizadeh & Sarkis, 2018). Indeed, in the frame of digital document exchange and the tracking of goods, the blockchain technology can foster the complex flow of information, goods and services from their origins to the customers through its inherent features of transparency, security, immutability, decentralisation and public availability, whereby especially the two latter characteristics allow all respective parties to participate in logistics processes (Liao & Wang, 2018). The blockchain technology also offers great potentials for the formation of e-logistics, which faces the attribution to be a complex system of producers, distributors, resellers, carriers and consumers, with digital data flows (ibid.). Taking into account the coordination and integration challenges of the different supply chain parties, the technology behind blockchain in conjunction with smart contracts might enable the development of a virtual ERP system for the supply chain management through the sharing of the same information among the different participants, which triggers, if a demand is occurring, that all relevant parts of the respective supply chain might get immediately orders to generate the needed components (Hofmann & Rüsch, 2017). At the same time, additionally, this would improve the efficiency and flexibility of logistics networks. An important issues which makes the application of blockchain technology including smart contracts even more interesting, is stressed by García-Bañuelos et al. (2017), who advice that especially supply chain and logistics processes traditionally rely on the involvement of trusted third parties, which exhibits as a centralised architecture high entry barriers for SMEs and entrepreneurial firms as well as hinders process innovations, whereby

blockchain as a complementary approach facilitates to perform these processes in a peer-to-peer fashion. In addition, it is reasoned that through the adoption of blockchain technology, on the one hand, logistics providers could transparently display their availability to the whole market, which makes them more independent from transport brokers, and on the other hand, different smaller suppliers could consolidate their production outcomes in order to fulfil volume orders, so that they are empowered to sell directly to the retailers instead of a middlemen. However, next to these examples the current research on the adoption of blockchains and smart contracts in supply chains and especially in logistics networks is still limited or just at the beginning (Liao & Wang, 2018), despite the advantages of authentication of traded products, disintermediation, and decrease of transaction costs (Nowiński & Kozma, 2017). To the best of our knowledge, currently there exist no published work that discussed how smart contracting and blockchain technology can facilitate the implementation of collaborative business structures for sustainable trans-national entrepreneurial activities in logistics networks. To address this issue, we use the case of a simplified charter-party contract process with a single voyager in the freight market, in particular break-bulk market, where multiple parties are involved, in order to showcase and assess the potentials of using smart contracting.

Methodology

In the framework of the given study, the theory based and practice related research have been applied built upon comprising qualitative expert interviews, surveys and practical findings that have been originally collected and produced in the frame of several EU projects with a focus on the ongoing project "Connect2SmallPorts". This project is implemented in the framework of the INTERREG VA South Baltic programme. Among other things the project focus mainly on improving cross-border connectivity for a functional blue and green transport area, with the objective to improve the quality and environmental sustainability of transport services in the Southern Baltic Sea Region. Apart from the systematic literature review, analysis and study of relevant theories and concepts, relevant policy regulations and guidelines, the research findings demonstrated here have been mainly based on primary and qualitative data collected directly by the projects' partners, associated organisations and project interest groups. The primary empirical data sources were gained in form of evidence-based observations (here: case studies), empirical data from quantitative surveys and qualitative expert interviews with the involved project experts, researchers and relevant stakeholders, observations gathered from respective project activities such as workshops, conferences, round table discussions and open seaport thematic conferences with relevant stakeholders. Furthermore, gained research findings have been validated and verified by the main project target groups during practical workshops and targeted seminars. The main target groups include: policy makers that are responsible for the ports' and infrastructure development; ports' and terminals' operators, incl. cargo handling companies; international associations and corporations involved in the port-related value chains; shipping companies, ship building yards; relevant academic and research institutions as well as regional industries that might benefit from governmental investments and higher data security.

Research results and discussion

In the following, we firstly describe a simplified charter-party contracting process within a single voyager in the break-bulk market, in order to show exemplarily the present situation in the freight market. Generally, the charter-party contracting process embraces the phases: pre-fixture, fixture, post-fixture loading and post-fixture discharging. Afterwards, we will discuss the application possibilities for blockchain-based smart contract implementation to arrive at an optimised process flow, and showcase the arsing potential benefits of the appropriate technology usage.

Pre-fixture phase: The process usually starts with a charterer, who is in our simplified case also the trader as well as the shipper or at least closely related to these parties. In the initial situation, the charterer has fixed a sales contract with a supplier, e.g. wood logs as break-bulk. Since the further processing company is far away (e.g. in another country), the charterer is looking for a transport (i.e. ship), and thus would like to achieve a charter-party contract with a ship-owner. The ship-owners have vessels or ships available for cargo that needs to be transported from an origin port to a destination port – also known as loading and discharging ports or exporting and importing ports. Usually, the charterer appoints a shipbroker to find a suitable ship for his cargo. Before the shipbroker can check the current market situation, he ask the charterer for several information, like: name and address as well as contact details of charterer, cargo type and quantity as well as physical dimensions, loading and discharging ports and rates, expected laycan, etc.

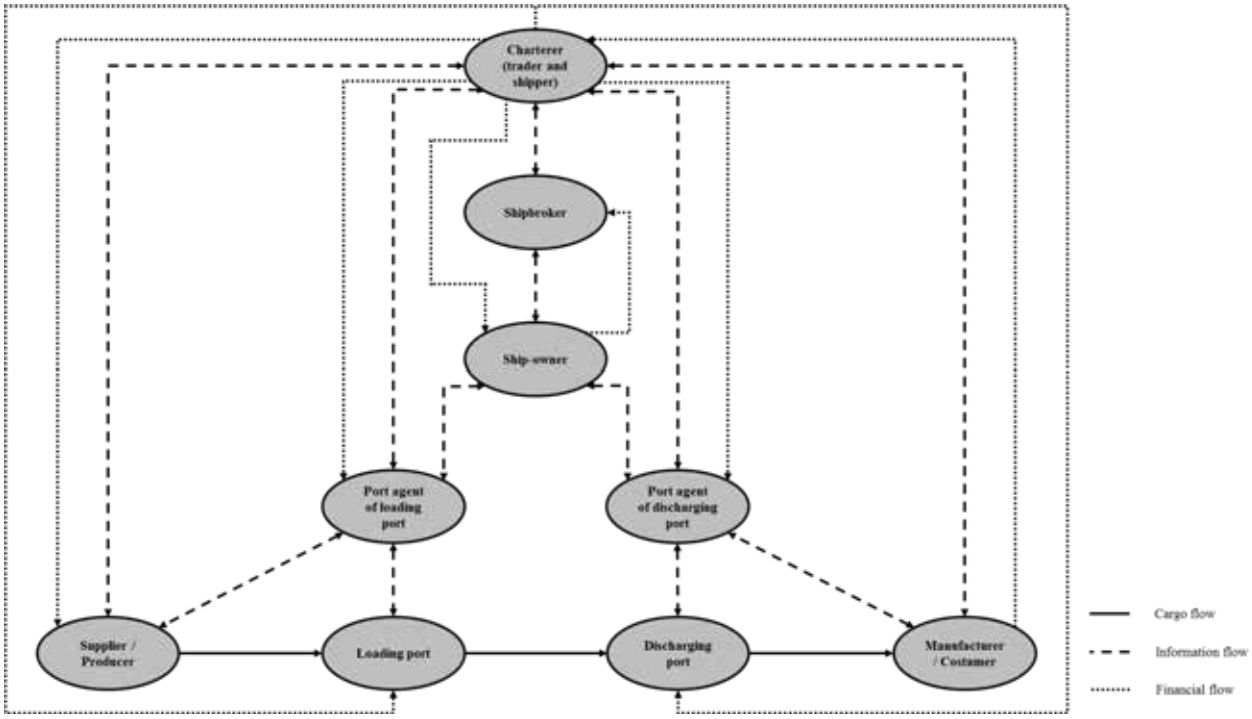
Fixture phase: In this process phase, the shipbroker searches for a suitable vessel according to the cargo specifications, period of time and expected rate(s). He contacts several ship-owners and starts the process of negotiation with them on behalf of the charterer. This procedure may be finished in some hours, but often takes few days or even weeks. When the shipbroker has found a suitable ship according to the initial conditions, he sends the offer including initial terms and conditions of the charterer to the ship-owner. The ship-owner needs to check the offer from the charterer, and performs pre-calculations according to the offer and sends the initial time charter or freight rate (here simplified as: general charter rate) to the charterer via the shipbroker – whereby in some cases the shipbroker also has an initial charter rate idea. This negotiation procedure may result in a consensual agreement, a counteroffer, or a disagreement, which may takes some time, since this process is not automated and thus causes that the relevant offers or documents are send back and forth. Independently, what the charterer or ship-owner decides, the shipbroker acts as the intermediary between the charterer and the ship-owner, and receives the decisions and information of both parties and communicates theses decision with the charterer and ship-owner. Once the charterer and the ship-owner agreed to the charter rate, terms and conditions that are transmitted by the shipbroker to each party, the shipbroker prepares the contract with the agreed rates, terms and conditions, for final fixture. Accordingly, the charterer and ship-owner check the charter-party contract in a final step and sign this final contract if all terms and conditions are correct. In an optimal case, the signed charter-party contract contains all relevant information, e.g. details regarding the ship-owner and charterer as well as shipbroker, ship details, brokerage fee (commission), charter rate, cargo and carriage specifications, loading and discharging ports and rates as well as dates, laytime, demurrage and despatch rates, freight payment, payment terms and details including currency, and other obligations and rules as well as clauses. Therefore, also legal aspects and responsibility in case of unexpected events or in case of non-performance are integrated in the charter-party contract. Accordingly, especially for voyage charters typically standard charter-party contracts are used that cover the most relevant clauses that needs to be considered (e.g. NUBALTWOOD, GENCON, etc.). Nevertheless, also in case of time charters some standard forms exist (e.g. ASBATIME, BALTIME, GENTIME, LINERTIME, NYPE, etc.).

Post-fixture loading phase: This phase embraces mainly monitoring tasks. Normally, the ship-owner and the charterer are not personally present at the loading and discharging ports. Accordingly, they appoint port agents at the loading and discharging ports and give them the necessary information and instructions. This represents an additional clause, which is usually also clarified in the charter-party contract in advance. Regarding the lading sub-process at the origin port, the port agent monitors the loading progress, stevedores, bills of lading, notice of readiness statement (NOR) and vessel's statement of facts (SOF), etc. Furthermore, the port agent sends progress information to the ship-owner and charterer, as well as audits and transmits the freight receipt.

Post-fixture discharging phase: In the first place, also this phase contains mainly monitoring tasks. Regarding the discharging sub-process at the destination port, the port agent monitors the discharging progress, notice of readiness statement (NOR) and vessel's statement of facts (SOF), payment status, etc. Additionally, the port agent sends progress

information to the ship-owner and charterer. After successful discharging, the ship-owner and charterer perform concluding calculations based on the agreed charter-party contract. If both parties come to a concluding joint outcome, the charterer arranges the payment of the ship-owner and the ship-owner pays the shipbroker. However, if both parties do not reach a joint concluding consensus regarding the invoice, a dispute between both parties may arise and causes additional unnecessary delays. Finally, this might lead to the involvement of lawyers, or the shipbroker as a mediator. However, for such reasons, and in order to avoid legal disputes it is important that the charter-party contract is quite detailed and sound.*

Figure 1 exemplifies the present situation in the freight market (in our case, the break-bulk market).



Source: Authors' own construction and compilation.

Fig. 1. **Present situation in the freight market**

The present situation of the charter-party contracting process exhibits several possibilities for improvements, which can be partly empowered by the implementation of blockchain or smart contract technology, respectively. Therefore, in order to improve the entire charter-party contracting process, we propose a blockchain driven smart contracting system for the efficient direct connection of charterer and ship-owners. As a result, this will enhance the information and cargo flow of the overall logistics network and foster entrepreneurial collaborations.

In the pre-fixture phase, the charterer seeks for a ship and the ship-owner for cargo, which at the end should lead to a charter-party contract between two suitable parties in the fixture phase. Some of the relevant information from the charterers' side in the pre-fixture phase are: cargo type and quantity as well as physical dimensions, loading and discharging ports, expected laycan, etc. On the other hand, the ship-owners' relevant information embraces such as: ship type and size, current position, period of availability, etc. In the current situation, the charterer appoints a shipbroker for the generation of potential offers according to the respective situation on the market – here: break-bulk market. Accordingly, the shipbroker administer the shared information of both involved parties and searches matches. Especially this initiation phase between charterer and shipbroker can be facilitated through a sharing information platform via

* In this context, it needs to be mentioned that the payment could also be arranged during an earlier date, e.g. before discharging, on discharging, or as instalment during contract term, etc.

Internet such as OpenSea.Pro. OpenSea.Pro is a web-based chartering marketplace system, which simplifies the work of shipbrokers, as it facilitates the monitoring of the respective situation of the global freight market in real time, shorten the search of matches through the entered and stored data of charterers and ship-owners, and eases the communication procedure with the respective parties and the shipbroker. Hence, there are already virtual marketplaces in place, where charterers and ship-owner can easily make contact to each other according to their entered initial conditions and characteristics. Therefore, these comparable platforms – like OpenSea.Pro – are able to connect both parties directly without the necessity of intervention through shipbrokers, what at the same time streamlines the process of matching suitable potential contract partners and saves time as well as enable the exchange of relevant information in further stages of the entire cargo voyage process.[†] On the other hand, this pre-fixture phase in conjunction with a virtual marketplace also represents the possible starting point for the implementation of a blockchain and smart contract application. An implemented smart contract application could compare the shared initial data from charterer and the ship-owner and thus, automatically check whether the pre-conditions for a match are fulfilled. Accordingly, some kind of pre-contracts can be automatically generated, as the shared initial data of the participants represent the initial information and pre-conditions that must be given and fulfilled for the development of a charter-party contract.

The fixture phase is mainly dominated by negotiation activities between charterer and ship-owner, whereby the information flow in the current situation is once again organised via the shipbroker. Once, a suitable vessel was found by the shipbroker according to the pre-defined conditions, the shipbroker sends the initial offer to the ship-owner. The ship-owner itself checks the initial offer and performs respective pre-calculations. Afterwards he sends the charter rate to the charterer via the shipbroker. This negotiation procedure may result in a consensual agreement, a counteroffer, or a disagreement. This negotiation process can be extremely time consuming, since currently this process is not automated. Once the charterer and the ship-owner agreed to the charter rate as well as terms and conditions, the contract will be prepared with the agreed rates and clauses, for final fixture. This process phase represents a further connecting factor for the implementation of a smart contract application. For instance, Norta (2015) already developed a smart-contracting setup lifecycle for the negotiation procedure, which might be seen as a viable foundation for the transition and implementation in the context of smart charter-party contracts. In addition, the existence and present usage of standard charter party contracts further foster the potential of extensive automation via smart contracts, since charterer and ship-owner appreciate that standard charter party contracts cover the most relevant clauses that needs to be considered. Additionally, indices – like the Baltic Dry Index – that are usually used in practice function as a possible orientation (e.g. hurdle rate) for price negotiations between the charterer and ship-owner, whereby the respective market data as input data could be automatically integrated in the smart contracting negotiation procedure. As a result, once both parties accept the rates and terms, the charter-party agreement is fixed, and is automatically elaborated via smart contracts and stored on the blockchain. Through this, the charter-party contract becomes decentralised secured, fraud-resistant, immutable, transparent and permanently auditable and accessible for all involved parties during the cargo voyage.

The post-fixture loading phase embraces mainly monitoring tasks that are executed to a certain degree by the appointed port agent in the loading port. These monitoring activities refer to the loading progress, stevedores, bills of lading, notice of readiness statement (NOR) and vessel's statement of facts (SOF), etc. The relevant information gained from the port operations are send to charterer and ship-owner, and function as relevant input data for the final calculations in the post-fixture discharging phase. In the current situation mainly documents, copies and time sheets are transferred between all involved parties. Also in this stage, the blockchain technology can be integrated and optimise the process flow. Through the usage of IoT (i.e. especially smart devices), the relevant information received from the loading activities in the origin

[†] Another interesting solution represents MarDocs, which was developed by the Marcura Group and is a cloud-based collaboration tool for charterers, ship-owners and shipbrokers, which also aims to streamline the charter-party process.

port can be up-loaded and stored on the blockchain. Thus, again, all relevant documents and information are decentralised secured, fraud-resistant, immutable, transparent and permanently auditable and accessible for all involved parties. As smart contracts are able to read from and write on the blockchain, high priority documents like vessel's statement of facts (SOF) or bills of lading can be automatically generated by an implemented smart contract application – if all pre-defined conditions are fulfilled, and thus all necessary information are available on the blockchain through other up-loaded, secured and shared files.

In the post-fixture discharging phase, similar monitoring activities occur and lead to the flow of information between all involved parties. Accordingly, also in this sub-process, comparable integration-efforts for blockchain and smart contracting applications are reasonable as described in the post-fixture loading phase; IoT applications feed the blockchain with necessary input data and smart contracts process these data for further actions or transactions, respectively. In the current situation, additionally to the monitoring tasks, this phase is also characterised by the final concluding calculations by the charterer and ship-owner on the basis of the previously fixed charter-party contract and all collected data that was generated during the entire voyage of the cargo. Finally, this phase should lead to the payment of the ship-owner. Also the process of calculating the different expenses (e.g. demurrage and despatch) can be automated via smart contracts as the relevant rates are recorded in the charter-party contract and thus, in our optimised process, secured on the blockchain. The other important input data, which is needed for the final calculations via smart contracts, are served in our optimised process flow through the used IoT applications. Based on all available and secured data on the blockchain – collected by all involved process parties during the cargo voyage and IoT applications – an implemented smart contract is able to generate – next to the automatically calculable expenses – also the respective invoices. In addition, if all requirements and conditions are fulfilled the smart contract is also able to trigger automatically the respective transactions (i.e. payments) according to the automatically generated invoices. Through the integration of smart contracting in this calculation and payment process, the emergence of objections through the charterer and ship-owner can be limited to a certain degree due to the decentralised nature of the smart contracts or blockchain, respectively. This can be traced back to the fact that the automated calculation of expenses lies on the previously agreed charter-party contract including the different rates and terms as well as on the documents and data that was elaborated through relatively independent third parties like the port agents. This procedure guarantees a fair and trustful method of calculation. Accordingly, a dispute between the charterer and ship-owner might be less likely. This makes the involvement of lawyers or the shipbroker as a mediator superfluous and prevent delays of the entire process.

The advantages of an integration of a blockchain smart contracting system in the ecosystem of a virtual marketplace are numerous. For instance, in combination with IoT devices, the cargo flow becomes trackable and the necessary data generation for feeding the smart contract application is enabled, whereby among other things the possible incorporation of GPS shipping data could even foster this development. Furthermore, the data transfer between incompatible systems in the entire process can be avoided (i.e. higher flexibility) and the data exchange becomes digital and automated, which both streamline the process and information flow as well as saves time, since no sending of documents via courier is necessary. This is also reasoned by the fact that all relevant documents and data are stored on the blockchain, which secures every time availability for all involved parties during the entire cargo voyage, and therefore replaces the paperwork with multiple versions of documents and physical signatures, whereby each authorised participant can digitally sign via a private key, validate documents and receive copies, if necessary. Since in each cargo voyage, many but every time different particular parties are involved, a permissioned blockchain would be an appropriate choice for these purposes. Furthermore, within a permissioned blockchain it is possible to clarify the access and modification rights according to all involved parties as well as proof of personal identification. In addition, some actions or transactions can remain private to certain participants like price negotiations and the results thereof, in a way like a data filter so that certain authorised

participants only add, receive or view relevant necessary data and information that are crucial for respective further operations in their area of responsibility. On the other hand, a simultaneous document processing and process tracking is enabled, which foster the transparency of the entire process. Overall, through the blockchain storage, all relevant documents become decentralised secured, fraud-resistant, immutable, transparent and permanently auditable and historically retraceable as well as accessible for all involved and authorised parties during the cargo voyage, which foster the trust among all participants and the efficiency of the entire process due to a higher flexibility. Furthermore, especially through this blockchain recording, the smart contract application possibilities receive great fields of application. In particular, relevant documents like charter party contracts can be elaborated automatically through a smart contract, if all pre-defined conditions that are available through the shared and stored data on the blockchain are fulfilled. This includes also the automation of auditing processes of documents and negotiation procedures and the incorporation of external data that is available on the market, e.g. Baltic Dry Index on the freight market for price negotiations. On the other hand, concluding calculations are automated as well through smart contract application, since calculation basis is given through the underlying blockchain. Accordingly, an implemented smart contract is able to generate also the respective invoices and if all requirements are fulfilled, can trigger automatically the respective payments. This smart contract implementation guarantees a fair and trustful method of expense calculations as well as decentralised monetary transactions. All these aspects mentioned here in the frame of the optimised process flow reduce costs due to shorten process time and lower manual activities.

Nevertheless, of all advantages that become visible in the described optimised process flow for a charter party contract, especially the possible exclusion of the shipbroker as the central intermediary between charterer and ship-owner can have far-reaching positive impacts on the entire logistics networks. In such a setting, where it comes to the implementation of a blockchain driven smart contracting system for the elaboration and conduction of a charter-party agreement in the ecosystem of a virtual marketplace, the shipbroker becomes superfluous. To be more detailed, the integration efforts of smart charter-party contracts replace the shipbrokers and therefore reduce the layers of intermediaries in the logistics networks through the direct connection of ship-owners and charterers. Through the contract automation on a web-based marketplace, the ship-owners could transparently display their service supply and period of availability to the charterers, who in a similar way could show their time-bound service demand to the ship-owners, without the interposition of a shipbroker. Through this, the flow of information is also shorten, which additionally saves time. The exclusion is also reasonable, as the cause of trust through the former presence of the shipbroker, may be compensated by the decentralised nature and other advantages of the blockchain or smart contract, respectively, which automatically lead to the emergence of trust among all participants. Furthermore, there are cost savings with potential spill-over effects that arise through the extraction of the shipbroker. At first glance, the brokerage fee or commission is saved by the ship-owner. Depending on the fact whether a voyage charter or a time charter is achieved, each shipbroker receives a commission on the gross freight or hire price for the ship. Furthermore, the brokerage fee is also dependent from other impact factors like type of cargo, kind of fixed ship, negotiations and agreements with the ship-owner, etc. For instance, within voyage charters the commission may vary between 1 and 5 %. Against this, in the frame of time charters, the brokerage fee amounts typically 2.5 % of the hire price. Since the ship-owner has to pay the shipbroker, regardless whether the charterer previously appointed the shipbroker, this leads to direct cost savings for the ship-owner. Through this, the ship-owner might be able to lower the charter rate for the charterer, which might be regarded as a spill-over effect. Furthermore, this could also lead to higher payable loading and discharging rates at the ports. Accordingly, the absence of a brokerage fee indirectly could have also positive effects to all involved participants on a monetary basis (e.g. seaports through higher wharfage and port dues). Hence, the exclusion of shipbrokers is value adding to the entire logistics networks. Especially for smaller and

entrepreneurial actors this foster competiveness, increases efficiency and facilitate participation through the enabling adoption of this new technology due to potentially arising spill-over effects.

Conclusions, proposals, recommendations

Smart contracts are transactional protocols or scripts on the top of the blockchain technology that are created for executing and enforcing legal contracts. Self-executable they check contractual pre-defined conditions and automatically fulfil respective actions or transactions, respectively. Through this form of automation, the layers of middlemen can be reduced or even completely replaced. Accordingly, smart contracts bear the potential to decrease transaction and enforcement costs. Nevertheless, our research revealed that the potential of smart contracts can go far beyond cost reductions by facilitating entrepreneurial collaborations of cross-organisational business-processes that are characteristic for smart logistics networks.

The case study of a charter-party contracting process within a single voyager in the break-bulk market highlighted the potential of blockchain technology and smart contracts to simplify the business processes in the freight market with increased efficiency. All identified aspects in the frame of the optimised process flow reduce costs due to shorten process time and lower manual activities, whereby the potential exclusion of the intermediary is especially value adding for smaller and entrepreneurial actors, since their competiveness and efficiency may be improved and participation facilitated through the enabling adoption of this new technology due to the emergence of spill-over effects. This exemplifies that smart contracts encase the potential to foster entrepreneurial collaborations of cross-organisational business processes and enable trans-national networks of entrepreneurs and SMEs to enter into new business sectors.

In general, further research should have a deeper look on the positive effects that arise from the exclusion of shipbrokers in the context of transaction cost theory. Furthermore, the legal aspects that must be overcome in the frame of the development of smart charter-party contracts needs to be thoroughly analysed, as so far they have not been discussed here. Another interesting future research field would be to develop such a respective smart contract for charter-parties.

Bibliography

Chandra, C., & Kamrani, A. K. (2004). Mass customization: a supply chain approach. Springer Science & Business Media.

Chuen, D. L. K. (Ed.). (2015). Handbook of digital currency: Bitcoin, innovation, financial instruments, and big data. Academic Press.

Fridgen, G., Radszuwill, S., Urbach, N., & Utz, L. (2018). Cross-Organizational Workflow Management Using Blockchain Technology-Towards Applicability, Auditability, and Automation.

Gallay, O., Korpela, K., Tapio, N., & Nurminen, J. K. (2017). A peer-to-peer platform for decentralized logistics. In Proceedings of the Hamburg International Conference of Logistics (HICL) (pp. 19-34). epubli.

García-Bañuelos, L., Ponomarev, A., Dumas, M., & Weber, I. (2017). Optimized execution of business processes on blockchain. In International Conference on Business Process Management (pp. 130-146). Springer, Cham.

Gerlitz, L. (2015). Design for product and service innovation in Industry 4.0 and emerging smart society. Journal of Security & Sustainability Issues, 5(2).

Gerlitz, L. (2017). Design-driven innovation in SMEs: smart and sustainable organisation within industrial transformation. International Journal of Environmental Policy and Decision Making, 2(2), 98-124.

Ghiani, G., Laporte, G., & Musmanno, R. (2013). Introduction to logistics systems management. John Wiley & Sons.

Gleissner, H., & Femerling, J. C. (2013). The principles of logistics. In Logistics (pp. 3-18). Springer, Cham.

Haasis HD. (2008) Knowledge Management in Intermodal Logistics Networks. In: Kreowski HJ., Scholz-Reiter B., Haasis HD. (eds) Dynamics in Logistics. Springer, Berlin, Heidelberg

Haasis, H. D., & Szafera, S. (2005). Supply chain management und intermodale logistische korridore. Dimensionen angewandter Wirtschaftsforschung: Methoden, Regionen, Sektoren. Hamburg, 311-319.

Hofmann, E., & Rüsch, M. (2017). Industry 4.0 and the current status as well as future prospects on logistics. Computers in Industry, 89, 23-34.

Kouhizadeh, M., & Sarkis, J. (2018). Blockchain Practices, Potentials, and Perspectives in Greening Supply Chains. Sustainability, 10(10), 3652.

L'Hermitte, C., Wang, W., & Deakins, E. (2018). Exploring the Physical Internet Concept to Improve Disaster Relief Operations.

Lansiti, M., & Lakhani, K. (2017). R.,(2017).“The Truth About Blockchain”. Harvard Business Review, January-February.

Liao, D. Y., & Wang, X. (2018). Applications of Blockchain Technology to Logistics Management in Integrated Casinos and Entertainment. In Informatics (Vol. 5, No. 4, p. 44). Multidisciplinary Digital Publishing Institute.

Liedtke, G., & Friedrich, H. (2012). Generation of logistics networks in freight transportation models. Transportation, 39(6), 1335-1351.

Manski, S. (2016). Building the blockchain: the co-construction of a global commonwealth to move beyond the crises of global capitalism. In 12th Annual California Graduate Student Conference, 7th May.

Nakamoto, S. (2008). Bitcoin: A peer-to-peer electronic cash system.

Norta, A. (2015). Creation of smart-contracting collaborations for decentralized autonomous organizations. In International Conference on Business Informatics Research (pp. 3-17). Springer, Cham.

Nowiński, W., & Kozma, M. (2017). How Can Blockchain Technology Disrupt the Existing Business Models?. Entrepreneurial Business and Economics Review, 5(3), 173-188.

Olaniyi, E. O., & Reidolf, M. (2015). Organisational Innovation Strategies in the Context of Smart Specialisation. Journal of Security & Sustainability Issues, 5(2).

Pinna, A., Tonelli, R., Orrú, M., & Marchesi, M. (2018). A petri nets model for blockchain analysis. The Computer Journal.

Prause, G., & Atari, S. (2017). On sustainable production networks for Industry 4.0. Entrepreneurship and Sustainability Issues, 4(4), 421-431.

Prause, G. (2015). Sustainable business models and structures for Industry 4.0. Journal of Security & Sustainability Issues, 5(2).

Prause, G., & Hoffmann, T. (2017). Cooperative Business Structures for Green Transport Corridors. Baltic Journal of European Studies, 7(2), 3-27.

Prause, G., & Hunke, K. (2014). Secure and Sustainable Supply Chain Management: Integrated ICT-Systems for Green Transport Corridors. Journal of Security & Sustainability Issues, 3(4).

Rusich, A. (2017). Collaborative Logistics Networks.

Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2000). Design and managing the supply chain.

Swan, M. (2015). Blockchain: Blueprint for a new economy. " O'Reilly Media, Inc.".

Wang, L., & Liu, Y. (2015). Exploring miner evolution in bitcoin network. In International Conference on Passive and Active Network Measurement (pp. 290-302). Springer, Cham.

Wehberg, G. G. (2016). Logistik 4.0: Komplexität managen in Theorie und Praxis. Springer Gabler.

Wu, L. (2018). Blockchain Smart Contracts in Megacity Logistics (The Pennsylvania State University).

BAYESIAN MODEL OF PROVISION FOR EMPLOYEE RETIREMENT BENEFITS

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Abstract. Retirement benefits are an additional security for an employee that impacts present and future lives of both – an employer and an employee. The employer tries to expand the job offer and looks for additional forms of remuneration for its employees. An employee satisfied with work, encouraged by additional employee benefits (retirement benefits, jubilee awards, etc.) decides to retire after reaching the required seniority.

The article presents a Bayesian approach to the valuation of a provision for employee benefits. The main goal of the article is to create a Bayesian model of provision for employee benefits. To achieve the goal, non-classical statistical methods were used to estimate the provision for an employee in accordance with current legal standards in Poland (ie the Accountancy Act, Labor law, International Accounting Standards). In the Bayesian approach, the provision for retirement is described by the posterior distribution, which can be used to estimate selected characteristics, such as. measurement position or dispersion.

Key words: *Bayesian approach, the provision for employee benefits*

JEL code: C11, M40

Introduction

In the modern world more and more frequently information on the phenomena being analyzed is presented in a numerical form (average earnings, average expenses, average skills). However, the nature of the studied phenomena is much more complicated and often requires full information. The paper attempts to describe the phenomenon of paying salaries of retired employees with the help of randomness and variability in time, as well as presentations on how to modify initial knowledge based on new information. Using the experience of researchers and assumptions (a priori information), based on the conducted research experiment (empirical information), the initial knowledge was modified and final information was obtained (a posteriori information). The result was not obtained in the form of a single characteristic, but the entire probability distribution of the provision for employee retirement benefits (a posteriori distribution of the provision for employee retirement benefits).

In the process of calculating a value of a provision for the future employee benefits two dates are very important: the day of balance sheet calculation of the provision („balance sheet date") and the day of the payment of the benefit („payment of benefit date"). Presented research conception refers to the short-time prediction in which the benefit is to be paid within 12 months from the balance sheet data (Figure 1). However, presented models and formulas can be adapted to determine the reserve in a longer period of time. The presented approach to the process of creating reserves (valuation of provisions) for pension benefits is new due to incorporation of the principle of stochastic modelling. This principle is based on the assumption that values and factors used in the process of the valuation of the provision are modelled as random variables. In the last years, randomized methods have been introduced into economic analyses and now this process is becoming more and more popular. For example, in actuarial sciences deterministic methods have been used in previous years but now appropriate institutions had recommended stochastic and randomization methods, (especially the

international regulatory framework for banks: [Basel I 1988, Basel II 2004, Basel III 2010] and for insurance institutions: [Solvency II 2009]). The structure of influences of random factors incorporated in the calculation of reserves and their specific form are the subject of empirical analysis and implementation of exogenous information.

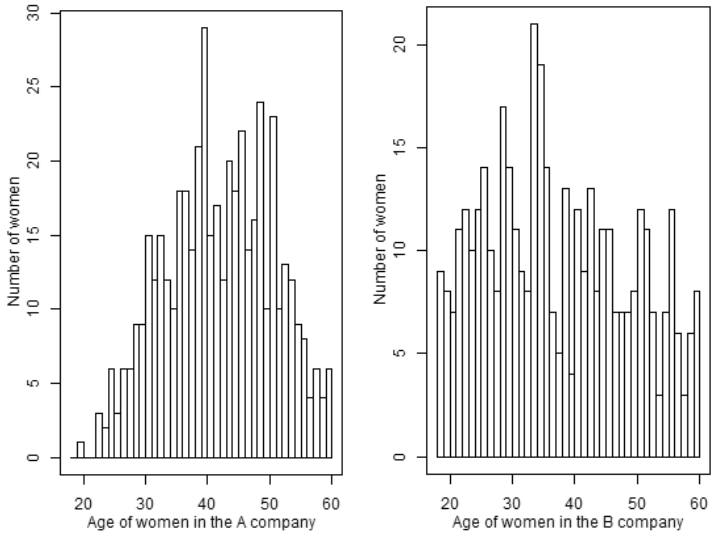

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Fig. 1. **Distribution of age of women employee in the company A and the company B**

Example 1. As an illustration of a stochastic approach an example concerning the subject of age of women in a certain hypothetical company is used. Public information (various types of media) is most often limited to setting the average age of women employed in the company (for example, 37.7 years). Sometimes there is an impression that providing/presenting one number is not enough and so this information about the age of women is supplemented by calculating a few more descriptive characteristics (for example quartiles: Q25% = 29 years, Q50% = 36 years and Q75% = 47 years). These values give far more detail about the age of women in this company, but it is not yet the full information. Full information would be available if we simply presented the number of employed women at each age. This information can be presented in the form of a histogram (Figure 2). This is the probabilistic approach.

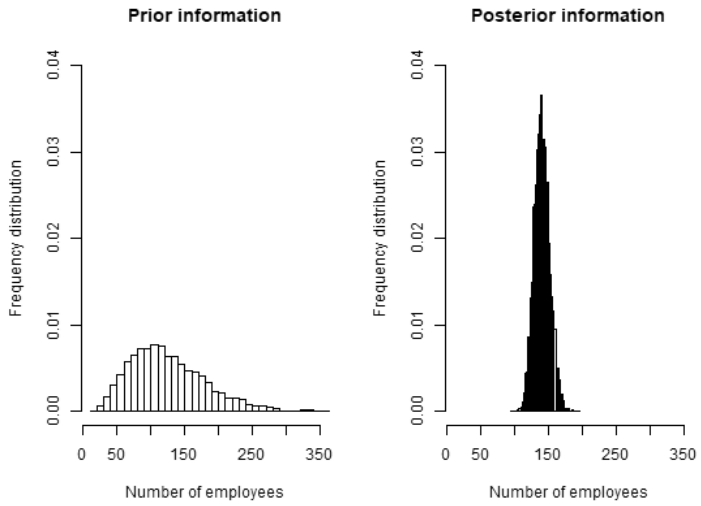

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Fig. 2. **The distribution of employment intensities as a result of application of the Bayes procedure**

It is assumed that all of research variables have some probability distribution (just like the age of women in the example) and the result of research is also given in the form of a probability distribution. It is possible to imagine that in a certain

group of enterprises, the age of women is represented by the distribution given in the form of a histogram shown in the left plot in Figure 2, and in another it is as shown in the right plot in Figure 2. Both distributions are basically different, have different characteristics and give different conclusions based on the interpretation of these distributions (see: [Szreder 2018]). In special cases it may happen that two different probability distributions will have an identical expected value, although other characteristics will be different.

The Bayes method, used later in the paper, is a modern and productive approach. In general, this method allows to make modifications of global models into models corrected with empirical data. In almost every research process there is an initial knowledge resource about the subject matter. This knowledge is often in the form of partial fragmentary observations, but also in the form of global statements regarding the behaviour of the research values measured in different conditions or in other groups. In the Bayesian approach research observations which have been obtained empirically modify this initial knowledge about the nature of the analysed phenomenon. This Bayesian approach was schematically presented in Figure 3. The input information is applied in the form of a probabilistic distribution and the output information is also obtained in the form of a distribution [Borowiak 2003, p. 26; Gelman and all, 2000, p. 8-11; Grabski Jaźwiński 2001, p. 19-20; Kellison 1991, p. 5-16]. The introduction is concluded by looking at an example of Bayesian method.

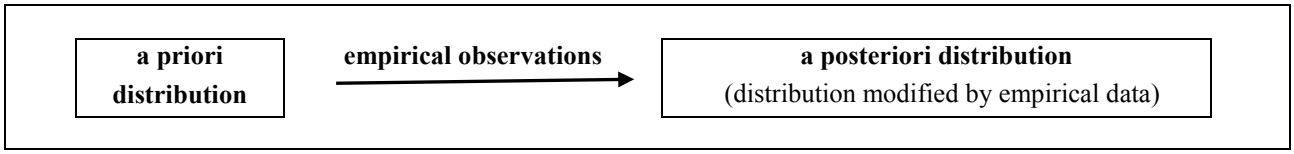

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Fig. 3. **The scheme of Bayesian modifications of the distribution**

Example 2. Let us consider the number of employees in companies from a certain sector. The companies are different so we assume that the probability distribution of the number of employees is a Poisson distribution with parameter λ. Such information is obtained from an earlier historical long-term observations and theoretical observation. This is not yet a prior information in the sense of the Bayes procedure. The parameter λ can be referred to as an intensity of employment in the researched sector and be treated as an indicator focused on employment. The parameter λ of the Poisson distribution for the number of employees is random and may vary between different sectors. It is assumed that it follows a Gamma distribution with parameters α and β. We assume that in researched sector the parameter λ follows a Gamma distribution with parameters α = 4.94 and β =0.04 (based on earlier information). This Gamma distribution is an introductory information (a priori distribution) which accumulates the knowledge about employment. An empirical check showed that the number of employees in a given company from the analysed sector was equal to 140 people (the so-called sample or empirical information). How does this empirical information modify knowledge about the intensity of employment in this sector? We can observe the result in Figure 4. The initial (a priori) intensity followed a Gamma distribution Γ (4.94, 0.04) (left graph) and empirical data caused a change in the distribution of intensity of employment (a posteriori distribution) and Gamma distribution Γ (144.94, 1.04) was obtained. It is worth noting how significant was the influence of this single result on the a posteriori distribution of the number of employees. The expected value of a number of employees for the a priori distribution is $\mu_{\,a\ priori}$ = 125 people with standard deviation $\sigma_{\,a\ priori}$ = 56.25 but the expected number of employees for the a posteriori distribution is $\mu_{\,a\ posteriori}$ = 139.43 people with standard deviation $\sigma_{\,a\ posteriori}$ = 11.58 [Albert 2009]. It is particularly evident in a significant reduction in the dispersion of a posteriori distribution compared with the a priori distribution. In the problem of estimating the provision for employee retirement benefits a series of initial information will be accumulated and transformed into secondary information.

Aim of this paper is to create a Bayesian model of provision for employee retirement benefits. Additional aim is to present a Bayesian approach to the valuation of a provision for employee benefits. To achieve the goal, non-classical statistical methods were used to estimate the provision for an employee in accordance with current legal standards in Poland (ie the Accountancy Act, Labor law, International Accounting Standards). Two research hypotheses were set:

- H1: It is possible to use non-classical, Bayesian methods to estimate the provision for employee retirement benefits in accordance with current legal standards.
- H2: It is possible to estimate the posterior distribution of the provision for employee retirement benefits, which can be used to estimate selected characteristics, such as measurement position or dispersion.

In order to verify first hypothesis, models which allow to estimate funds accumulated in pension schemes and benefits paid out have been constructed. These take into account factors such as rate of investment return earned by the scheme, rate of salary increase and expected longevity. Calculations were performed for the current legal standards in Poland (ie the Accountancy Act, labour law, international accounting standards) published by Central Statistical Office of Poland (GUS 2018). The article focuses on presenting how Bayesian methods can be used to estimate the provision for retirement benefits. To understand the idea of the Bayesian approach, a short time horizon was used. Future studies will concern a longer time horizon. This work is a development of the study [Krzykowski, Pobłocka, Spigarska, 2018], in which a probabilistic model of a provision for employee retirement benefits was built.

Research results and discussion

1. Assumptions for pension benefits according to the law

Due to the fact that the population has been aging, including the decrease of the retirement age, many enterprises face the issue of payment of retirement benefits. In order to comply with the principle of maintaining a faithful and reliable image of a business entity, enterprises are obliged to create provisions for retirement severance benefits. This increases their costs and thus affects the balance-sheet financial result. In order to maintain the reliability of accounting books, business entities are required to include all provisions and accrued expenses in the financial result. According to the Polish National Accounting Standard No. 6 „Provisions, passive accruals, contingent liabilities", the basis for recognizing (creating) a provision or recognition (making) of a passive accrual of expenses in accounting books is the occurrence of an event that obliges the entity to perform benefits in the future, where a reliable estimate of the costs (or losses) that are necessary for the entity to meet its obligations is reasonable and possible.

These issues are also regulated by international regulations, including, in particular, the International Financial Reporting Standard No. 19 *Employee benefits.* The history of this standard dates back to 1980, when a Project of the Standard E 16 „Accounting for retirement benefits in the financial statement of employers" was developed. Then, in 1983 the project was replaced by the International Accounting Standard No. 19 „Accounting for retirement benefits in the financial statements of employers", which became effective from January 1, 1985. With its current name, the standard has been effective since January 1, 1999 [Gościniak 2017, p. 979; Giesecke Lee 1994; Atteridg, Daskais, Sze 1991, Grizzle 2005, Krajowy Standard Aktuarialny Nr 1/2015 Wycena zobowiązań z tytułu świadczeń pracowniczych (National Actuarial Standard No. 1/2015 Valuation of liabilities for employee benefits)].

In accordance with International Accounting Standard No. 19 *Employee benefits*, an employee is entitled to specific employee benefits, which include all types of unit benefits offered in exchange for the work performed by employees or due to termination of employment. They also include benefits received after the period of employment, that are due after termination of employment, and do not fall under the category of other benefits received for termination of employment and short-term employee benefits [Hewitt Associates 2005].

The issues related to retirement benefits are also regulated by labor law. For example, in Poland, the Labor Code (Art. 921) provides that retirement severance pay is a one-time/single benefit paid by the employer to an employee whose employment relationship ceases due to his retirement. This is a universal benefit to which all employees acquire the right pursuant to the provisions of the Labor Code. It is worth noting that payment of a retirement benefit is an employer's obligation, which should establish the necessary reserves for their implementation in advance. Detailed regulations regarding the payment of retirement benefits are contained in the Labor Code.

The provision for retirement benefits should be estimated on the basis of a reliable estimate made by the management of a given entity, based on the labor law and collective agreement regulations in force at the entity. This obligation also results from Art. 39 of the Accounting Act, according to which business entities make passive accruals of costs in the amount of probable liabilities falling into the current reporting period, resulting in particular from the obligation to perform future employee benefits, including retirement benefits and related to current operations. When calculating retirement benefits, actuarial methods are most often used, in which many assumptions regarding the macroeconomic conditions and staff turnover, the risk of death and other factors should be taken into account.

To establish reserves, the following information in needed:

- the amount of the severance pay (e.g. 200% of remuneration) – which should result from the company's regulations;
- the likelihood of employing an employee in this unit until the year when retirement severance pay must be paid - rotation of employees,
- discount rates (depending on the market conditions, economic data, macroeconomic forecasts) – the forecasted inflation;
- employee's monthly remuneration in the current year;
- the anticipated/planned annual wage increase;
- the conditions that may affect the amount of the final severance payment (the exemptions planned, changes in remuneration conditions).

[Peters and Allen, 2016] believe that the risk resulting from pension programs for defined benefits affects the amount that an external investor is willing to pay for a given entity. Estimating the scale of this impact is more of an art than science. It is an art, because there is no single answer to the question of how high the pension obligation is. Possible answers include: the amount disclosed in accordance with the IAS 19, the amount estimated by trustees on the basis of cautious assumptions used to determine financial contributions, or the amount that the insurer would have charged the trustees, if it took over pension liabilities from them.

A reliable estimate should be made on the basis of a conscious judgment of the entity's management. The basis for valuation of the provisions for future employee benefits is the provisions of the labor law and the regulations in the entity's collective agreement in force. In practice, calculation of retirement benefits cannot take place on the basis of assumptions only. The reserves must be estimated reliably, thus their amounts cannot be determined without actuarial calculations. The recommended method of estimation of the provision for these benefits is actuarial valuation, which contains many assumptions regarding the macroeconomic conditions and employee rotation, the risk of death and others. It should also be underlined that in accordance with the IAS 19 [Praktyczny przewodnik po MSSF 2018 (Pracital guide to IFSR, p. 74)], employee benefit costs are recognized in the period in which the employee works for the welfare of the entity, and not when the benefit is paid or due.

2. Research methodology

A special way of writing names and denoting research objects was used taking into account the variable labels. Formulation "random characteristic" refers to a conventional description of the size of characteristic researched and has an unspecified nature. In contrast formulation "random variable "is a precise mathematical object defined as a measurable function on the probabilistic space [Billingsley 1995]. In the whole research, random variables are models of specific random characteristics with a clearly defined name.

The name of the random characteristics will appear in the determinations/markings and for the random variable we will use the X_{name} , and for the constant value we will use the C_{name}. Functions (as mathematical objects) will be written with the name. For example, the function φ is written in the form name φ (·).

In the process of calculation of the provision three values from the group of so-called basic individual data play a key role: X_{sex} – sex of employee; X_{age} – the age of the employee on the balance date, $X_{seniority}$ – seniority, work experience (number of years of work since the age of employment up to the age of the balance day) and one from the group of other individual data: X_{salary} – average annual employee salary at the balance sheet day. Sex of employee is the random variable X_{sex} with two values: 0 and 1. We assign the value 0 when the employee is Male and the value 1 when the employee is Female.

Age. In our research we calculate pension benefits for an employee who on the balance sheet day has not reached a retirement age and does not reach a retirement age in the period from the balance sheet date to the day of benefit payment. Therefore the employee's age at the balance sheet date only depends on the sex of employee and is given by formula:

$$X_{age} = \varphi_{\text{retirement age}}(\mathrm{X}_{\text{sex}}) - 1 \tag{1}$$

where: $\varphi_{\text{retirement age}} : \{0, \quad 1\} \to \{65, \quad 60\}$, $\varphi_{\text{retirement age}}(x) = \begin{cases} 65 & dla \quad x = 0 \\ 60 & dla \quad x = 1. \end{cases}$ (2)

The above formula means that the age at the balance sheet day (X_{age}) for women is 59 years and for men is 64 years.

Participation of seniority. In order to calculate provisions for retirement benefits the employee's seniority is used. This is due to many reasons - one of them is the disclosure and availability of this type of data. In mathematical models it is more convenient to depart from this principle and base it on the employee's age at the time of starting work and age at the balance sheet date. Of course, these two values determine seniority and there is no formal difference in approaches, but in modelling we obtain a higher level of independence of variables on which the amount of benefits depends. For calculation of provision of future benefits for employees the employee's age (as a random variable X_{age}) and the employment age at the moment of employment (as a random variable $X_{employment\ age}$) will be used. Seniority is then:

$$X_{seniority} = X_{age} - X_{employment\ age} \tag{3}$$

From formula (1) it follows: $X_{seniority} = \left(\varphi_{\text{retirement age}}(\mathrm{X}_{\text{sex}}) - 1\right) - X_{employment\ age}$ (4)

The conditional distribution of the random variable $X_{seniority}$ under the condition of variable X_{sex} is the difference of the retirement ages and employment ages $X_{employment\ age}$ reduced by one year. Participation of the employee's working time in the company in the total working time (i.e., working time to the day of the benefit payment) is given by a model:

$$X_{part\ of\ seniority} = \frac{X_{seniority}}{X_{seniority} + 1} = \frac{X_{age} - X_{employment\ age}}{X_{age} - X_{employment\ age} + 1} = = \frac{\left(\varphi_{\text{retirement age}}(\mathrm{X}_{\text{sex}}) - 1\right) - X_{employment\ age}}{\left(\varphi_{\text{retirement age}}(\mathrm{X}_{\text{sex}}) - 1\right) - X_{employment\ age} + 1}$$

$$= 1 - \frac{1}{\varphi_{\text{retirement age}}(\mathrm{X}_{\text{sex}}) - X_{employment\ age}} \tag{5}$$

A conditional distribution of a random variable part of seniority $X_{part\ of\ seniority}$ under the condition of variable random

sex X_{sex} depends only on the variable employment age $X_{employment\ age}$. Seniority as random value is present in above formula, but it is not technically disclosed.

Reaching retirement age and the mobility of employees. In the research retirement benefits are not inherited and they can be paid out only to living persons (not their heirs). In the model of reserves the probability of an event in which the benefit will not be paid out must be taken into account. Such an event will only happen when the employee dies in the period from the balance sheet date to the day of payment of the benefit. Theoretical object modelling this issue is a binary random variable with values 0 and 1 marked X_{death}. Similar approach is used for the phenomenon of mobility of employees. An event in which the employee leaves their job less than one year before retirement age is very rare. However, due to the possibility of generalizing the presented model for settlements longer than one year, a random variable corresponding to the rotation is introduced and denoted $X_{rotation.}$

Basis of benefits. The basis used for calculation of the benefit may be the average monthly salary of the employee or it may be a different form of calculating the amount of the benefit (it can be an average, median or minimum monthly salary of the employee in the company). In addition, as part of the basis of benefit it is possible to take into account a multiple of the salary. In the model, the basis for calculating the benefit is three times the average salary, that is $X_{basis} = 3 \cdot X_{salary}$. In Poland a minimum monthly salary is in force, which in 2018 is 2250 PLN. Thus, the salary can be treated as the sum of the minimum amount of salary and the amount above the minimum. In the period from the balance sheet date to the date of payment, the remuneration is increased by a specific growth index, which is denoted $C_{indexation}$ and called indexation of salary. It is assumed that for a model company this indicator is constant (non-random).

Rates of return. It is assumed that the nominal interest rate C_{nom} of capital is deterministic (non-random) and is calculated on the basis of information from the financial market. Similarly, the actual interest rate is not random and is determined on the basis of index (referred to as C_{inf}) according to formula [Kellison 1991, p. 299]:

$$C_{real} = \frac{1+C_{nom}}{1+C_{\inf}} - 1 = \frac{C_{nom} - C_{\inf}}{1+C_{\inf}}, \tag{6}$$

where: C_{real} - actual interest rate, C_{nom} - the nominal interest rate, $C_{\inf}$ - the inflation rate.

3. Formulas of reserve valuation

We consider the amount of the provision on the day of the payment. Variable $X_{provision}$ denotes a random value as at the liability date. The reserve is the product of the amount of salary at the balance sheet date adjusted using rates of indexation of salary, part of work in the period up to the retirement age, duration of life and rotation, that is:

$$X_{benefit} = X_{base} \cdot X_{part\ \ of\ \ seniority} \cdot X_{death} \cdot X_{rotation} \cdot \left(1 + C_{indexation}\right) \tag{7}$$

where: X_{basis} – the basis for calculation of an employee benefit (equal 3 X_{salary}), $X_{part\ of\ seniority}$ – share of seniority, X_{death} – death of an employee in the research period, $X_{rotation}$ – employee mobility, $C_{indexation}$ – indicator of salary increase. We can rewrite formula (7) using formula (5) as:

$$X_{benefit} = 3X_{salary} \cdot \left(1 - \frac{1}{\varphi_{\text{retirement\ \ age}}\left(\mathrm{X}_{\text{sex}}\right) - X_{employment\ \ age}}\right) \cdot X_{death} \cdot X_{rotation} \cdot \left(1 + C_{indexation}\right) \tag{8}$$

where: $X_{employment\ age}$ – age of the employee at the time of employment, $\varphi_{retirement\ age}$ – function of retirement age is given by the formula (2), other designations as in formula (7).

In the first stage we trace the way in which the information influences random structures of basis of salary. The basis of salary is three times the average salary earned in the last year of employment before the balance sheet day. In Poland,

by law the minimum salary has been set and is equal to 2.25 thousand PLN. Therefore, it should be considered that the average salary will be equal to 2.25 thousand plus a random profit X_{profit} depending on many specific factors:

$$X_{salary} = C_{\min} + X_{profit} \tag{9}$$

where: X_{salary} - the average monthly salary earned in the last year of employment before the balance sheet day, $C_{\min}$ - the minimum salary in a given country, X_{profit} - the additional salary.

Based on empirical observations about salary of the analysed group of the employees it may be accepted that the random structure of a random profit X_{profit} follows Gamma distribution with the parameters (a, b) (denoted $\Gamma(a,b)$; definition of Gamma distribution is given in an appendix at the end of the paper). The parameter b is a random parameter and has the Gamma distribution $\Gamma(\alpha,\beta)$. We assumed that parameters α and β are deterministic and specify the global image of salary scaling. More accurately, we assume that the parameter a (a shape parameter) is a constant value and results from structural analysis of the process of obtaining influence in general. The parameter b is random value and related to scaling. Random nature of this parameter standardizes the behaviour of salary in the industry or professional group.

4. Results

Empirical experience in this field allows us to accept that parameter $a = 8$, parameters $\alpha = 3$ and $\beta = 0.5$. Prior predictive distribution of random X_{profit} is a BGamma (a = 8, α = 3, β = 0.5) distribution (definition of a BGamma distribution is at the end of the paper). This information allows to calculate the expected value and the variance of the monthly salary from formulas (17):

$$E(X_{salary}) = E(C_{\min} + X_{profit}) = E(C_{\min}) + E(X_{profit}) = 2.25 + 0.5\frac{8}{3-1} = 4.25 \tag{9}$$

$$D^2(X_{salary}) = D^2(C_{\min} + X_{profit}) = D^2(X_{profit}) = 0.25\frac{8(8+3-1)}{(3-2)(3-1)^2} = 5 \tag{10}$$

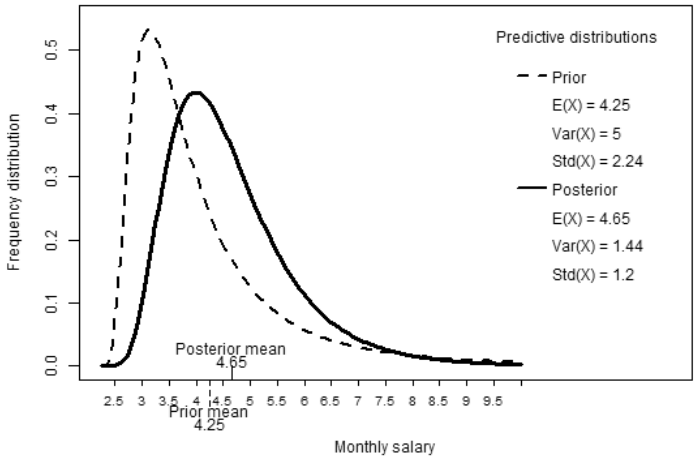
$$D(X_{salary}) = \sqrt{D^2(X_{salary})} = \sqrt{D^2(X_{profit})} = \sqrt{5} = 2.24 \tag{11}$$

As a result of the current measurements information was obtained that in a specified company or specified professional group the average salary was equal to 4.75 thousand PLN (this was empirical information). Then, the profit of salary X_{profit} for that group was equal to 2.5 thousand PLN (4.75-2.25=2.5). This information influenced the structure of wages and, as a consequence, the basis of the benefit. The posterior predictive distribution of the random variable X_{profit} is BGamma (a = 8, α = 11, β = 3) (see the lemma 3 at the end of the paper). Then, the descriptive statistics of this distribution will change in relation to predictive distribution from formulas (17) and (18):

$$E(X_{salary}) = E(C_{\min} + X_{profit}) = E(C_{\min}) + E(X_{profit}) = 2.25 + 3\frac{8}{11-1} = 4.65 \tag{12}$$

$$D^2(X_{salary}) = D^2(C_{\min} + X_{profit}) = D^2(X_{profit}) = 9\frac{8(8+11-1)}{(11-2)(11-1)^2} = 1.44 \tag{13}$$

$$D(X_{salary}) = \sqrt{D^2(X_{salary})} = \sqrt{D^2(X_{profit})} = \sqrt{1.44} = 1.2\,. \tag{14}$$

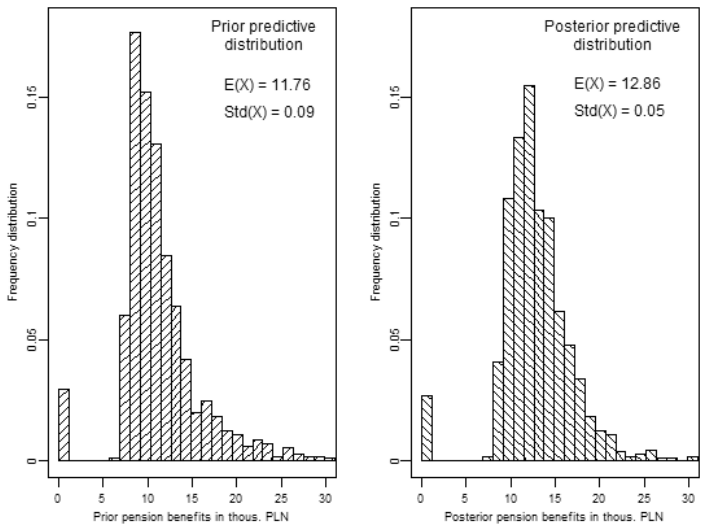


Source: own work.

Fig. 5. **Prior and posterior predictive distributions for random variable salary**

Figure 5 shows the prior and posterior predictive distribution of the salary (random variable X_{salary}). The random structure of salary is very important for calculating the amount of the benefit but the other values ($X_{part\ of\ seniority}$, X_{death}, $X_{rotation}$) also have significant impact (see formulas 7 or 8). In particular, an important the role is assigned to a random variable $X_{part\ of\ seniority}$. For women, the value of this factor ranges from 0 (when a woman starts a job aged 59) to 0.9762 for women employed at the age of 18. Cases of employment just before retirement age are quite rare and, therefore, we take this factor as non-random at 0.95. This value corresponds with the high accuracy to work experience from 16 to 32 years. Two other factors X_{death} and $X_{rotation}$ are obtained from life tables and general information about resignation from work (published by the Central Statistical Office of a given country). It can be assumed that their distribution is identical for women and men.

Pension benefits can be calculated as a result of numerical experiments. The numerical experiment carried out includes the simulation of the distribution in the case of the a priori and a posteriori model (see Figure 5).



Source: own work.

Fig. 6. **Histogram of the size of the benefit for the a priori and a posteriori model**

The retirement benefit as a random variable has the form of the product of random variables (formula 7). We assume conditional independence of gender and age. We get a simple and clear way to simulate the benefits using lemma 1 (see appendix at the end of the paper). The result of the simulation is presented in Figure 6.

The resulting distribution is the newly discovered – the Zero adjusted Gamma distribution (short ZAGA) which was defined by (Rigby B. and Stasinopoulos M., 2017, p. 114), (AIC = 5.7 * 10^6 for Females and 6.2 * 10^6 for males).

Conclusions, proposals, recommendations

The following conclusions were obtained from the study:

1. The Bayesian approach can be used to estimate the provision for employee retirement benefits. Therefore, hypothesis 1 is confirmed and the goal achieved is achieved.
2. The obtained research result is the value of the employee retirement provision presented as a random value with a given probability distribution. Thus, as a result of the study, we obtain not only one value of the future benefit, but an entire probability distribution (entire probability structure) of the future benefit for the employee retirement. On the basis of this any statistics, eg expected value, variance, standard deviation (as presented in the paper) and other distribution characteristics, eg any descriptive statistics (e.g. quartiles, deciles, percentiles) and Value at Risk, etc. can be found. Therefore, hypothesis 2 is confirmed.
3. The Bayesian approach enables description and analysis of the value of the provision, taking into account specific situations occurring in the company. It allows to compare trends in the reserve structure over time and gender classification.
4. The presented Bayesian model of the provision for retirement benefit is very interesting and forward-looking for companies, because it allows for a more reliable and faithful image of the company.

Appendix

Definition 1. The random variable ξ has the Gamma distribution with the parameters (*a, b*) for positive *a* and *b* if its density function $f_\xi(\cdot)$ is given by a formula:

$$f_\xi(x)=\begin{cases}\dfrac{b^a}{\Gamma(a)}x^{a-1}\exp(-bx) & for \quad x\in(0,\infty), \quad a,b>0\\ 0 & for \quad x\notin(0,\infty),\end{cases}, \tag{15}$$

This distribution is marked $\Gamma(a,b)$.

Definition 2. The random variable ξ has the BGamma distribution with the parameters (a , α , β) for positive a and α and β if its density function $f_\xi(\cdot)$ is given by a formula:

$$f_\xi(x)=\begin{cases}\beta^\alpha\dfrac{\Gamma(a+\alpha)}{\Gamma(a)\Gamma(\alpha)}\dfrac{x^{a-1}}{(x+\beta)^{a+\alpha}} & for \quad x\in(0,\infty), \quad a,b>0\\ 0 & for \quad x\notin(0,\infty),\end{cases}, \tag{16}$$

where: $\Gamma(p)=\int_0^\infty x^{p-1}\exp(-x)dx, \quad x>0, p>0.$

This distribution is marked $B\Gamma(a,\alpha,\beta)$. Expected value and variance of random variable ξ with BGamma distribution $B\Gamma(a,\alpha,\beta)$ are given by formula for $\alpha>2$:

$$E(\xi)=\beta\frac{a}{\alpha-1}, \qquad D^2(\xi)=\beta^2\frac{a(a+\alpha-1)}{(\alpha-2)(\alpha-1)^2} \tag{17}$$

Lemma 1. Let a, α and β are positive constant and let the distribution of a random variable η be the beta distribution $Beta(a,\alpha)$. Then the distribution of the random variable $\xi = \beta\frac{\eta}{1-\eta}$ is the BGamma distribution $B\Gamma(a,\alpha,\beta)$.

Lemma 2. Let a, α and β be positive constants and let the conditional distribution of a random variable ξ under the condition random variable B (likelihood) be the Gamma distribution with parameters a and α (marked $\Gamma(a,\alpha)$). Let the distribution of variable B be the Gamma distribution with the parameters α and β (a priori distribution $\Gamma(\alpha,\beta)$). Then the marginal probability distribution of the random variable ξ (prior predictive distribution (Gelman, Carlin, Stern, Rubin 2004)) is a BGamma (a, α, β) distribution and the conditional distribution of the random variable B under the condition ξ (distribution a posteriori) is Gamma distribution ($a+\alpha$, x + β).

Lemma 3. Let a, α and β be positive constants and let the conditional distributions of: a random variable ξ under the condition of a random variable B and a random variable ξ under the condition of a random variable B be identical Gamma distributions with parameters a and B ($\Gamma(a,B)$). Let it be that the conditionally independent of distributions, i.e. for positive $\tilde{x},x,b$ then:

$$f_{\tilde{\xi},\xi|B}(\tilde{x},x\mid B)=,f_{\tilde{\xi}|B}(\tilde{x}\mid B)f_{\xi|B}(x\mid B). \tag{18}$$

Let the distribution of variable B be the Gamma distribution with the parameters α and β (a priori distribution $\Gamma(\alpha,\beta)$). Then posterior predictive distribution (Gelman et al. 2004) meaning conditional distribution of random variable $\tilde{\xi}$ under the condition of random variable $\tilde{\xi}$ is the distribution of BGamma (a, $a+\alpha$, $x+\beta$).

Bibliography

Atteridg J. W.,Daskais R. Sze M. 1991, *Projested Unit Credit Cost Method – United States and Canada*, Record of Society of Actuaries, Vol. 17 No. 3B

Basel I 1988, Umowa Kapitałowa, Bazylejski Komitet Nadzoru Bankowego (The Basel Capital Accord - The international regulatory framework for banks, The Basel Committee on Banking Supervision)

Basel II 2004, Nowa Umowa Kapitałowa, (The New Basel Capital Accord - The international regulatory framework for banks, [Online] Available at: https://www.bis.org/bcbs/bcbscp3.htm [Accessed 6 January 2019].

Basel III 2010, Trzecia umowa Bazylejska – Standardy Bazylejskie (The Third Basel Accord or Basel Standards, The Basel Committee on Banking Supervision) [Online] Available at: https://www.bis.org/bcbs/basel3.htm?m=3%7C14%7C572 [Accessed 6 January 2019].

Billingsley P., 1995, *Probability and measure. Third edition*, A Wilay – Interscience Publication. JOHN WILEY & SONS, New York, Chichester, Brisbane, Toronto, Singapore.

Borowiak D.S., 2003, *Financial and Actuarial Statistics. An introduction*, Marcel Dekker, Inc., New York.

Bowers N.L.Jr, Gerber H.U., Hickman J.C., Jones D.A., Nesbitt C.J., 1997. *Actuarial mathematics*, The Society of Actuaries, Schamburg, Illinois.

Gelman A., Carlin j. B., Stern H. S., Rubin D. B., 2000, Bayesian data analysis, Chapman & Hall/CRC.

Giesecke Lee G. 1994, *The Projected Unit Credit Method with Benefits Apportioned by Interest-Adjusted Salary*, Transactions of Society of Actuaries, VOL. 46.

Gościniak K. 2017, *Międzynarodowy Standard Rachunkowości 19 „Świadczenia pracownicze (International Accounting Standard 19, Employee benefits"* [in:] Gierusz J., Gierusz M. (eds.) *Międzynarodowe Standardy Sprawozdawczości Finansowe w teorii i w praktyce (International Financial Reporting Standards in theory and practice)*, ODDK, Gdańsk, p. 979-1008.

Grizzle L.S. 2005, *Three Pension Cost Methods under Varying Assumptions,* Brigham Young University BYU ScholarsArchive, Department of Mathematics Brigham Young University, [Online] Available at: https://scholarsarchive.byu.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1542&context=etd [Accessed 23 Martz 2018].

Grabski F., Jaźwiński J., 2001, *Metody Bayesowskie w niezawodności i diagnostyce*, Wydawnictwo Komunikacji i Łączności, Warszawa.

GUS, 2018. *Rocznik statystyczny 2017*, Warszawa (Central Statistical Office of Poland, Statistical yearbook 2017)

Hewitt Associates 2005, *Accouting for Employee Benefotss under IAS 19, A primer for Execitives*, [Online] Available at: file:///C:/Users/U%C5%BCytkownik/Downloads/ias19.pdf [Accessed 23 Martz 2018].

International Accounting Standard No. 19 Employee benefits, Official Journal of the European Union L 320 of 29.11.2008, as amended d.

Klugman S. A., 1992. *Bayesian Statistics in Actuarial Science. With Emphasis on Credibility*, Kluwer Academic Publishers, Boston/Dorrecht/London.

Kellison S. G., 1991. *The theory of interest*. Second Edition, RICHARD D. IRWIN, INC, The United Stated of America.

KPMG, 2018. *Poland – Income tax*. [Online] Available at: https://home.kpmg/xx/en/home/insights/2011/12/poland-income-tax.html [Accessed 15.09.2017].

Krajowy Standard Aktuarialny N1 1/2015 *Wycena zobowiązań z tytuły świadczeń pracowniczych* [Online] Available at: http://www.actuary.org.pl/Standard_Wyceny_Aktuarialnej_wersja_f.pdf [Accessed 23 Martz 2018].

Krzykowski G., Pobłocka A., Spigarska E., *Probabilistic model of provision for employee retirement benefits*, W: 10th international scientific conference "*New challenges of economic and business development - 2018: productivity and economic growth*" : May 10-12, 2018, Riga, Latvia : proceedings, University of Latvia, 2018

Międzynarodowy Standard Rachunkowości 19 *Świadczenia pracownicze (ang. Employee Benefits), 2013,* [Online] Available at: *http://polanskiaudyt.pl/wp-content/uploads/2012/11/MSR-19-%C5%9Awiadczenia-pracownicze.pdf* www.europarl.europa.eu/.../COM-AC_DRC(2011)D019014-01(ANN2)_PL.doc [Accessed 5 January 2019].

Notice of the Speaker of the Sejm of the Republic of Poland of 30 January 2018 regarding the publication of a uniform text of the Accounting Act 2018 item 395, as amended.

Peters B., Allen P. 2016, *Ujawnienia emerytalne (Pension disclosures)*, PwC, Aktualności (News), IFRS, December 2016/January 2017, https://www.pwc.pl/pl/pdf/mssf/aktualnosci-mssf-2016-12-2017-01.pdf, (accessed on: 05.01.2019).

Praktyczny przewodnik po MSSF (A practical guide to IRSF) (2018), Delloite, Warsaw. /www2.deloitte.com/pl/pl/pages/audit/articles/praktyczny-przewodnik-po-mssf-2018.html (accessed on: 10.01.2019).

Pronouncement No. 2 of the Minister of Finance of 21 March 2014 on the announcement of the resolution of the Accounting Standards Committee regarding the adoption of the revised National Accounting Standard No. 6 „*Provisions, passive accrued expenses, contingent liabilities*", Official Journal of the Minister of Finance, Warsaw, 7 April 2014, item 12, as amended.

Rigby, R., Stasinopoulos, M., Heller, G., De Bastiani, F., 2017. *Distributions for Modelling Location, Scale and Shape: Using GAMLSS in R*. [Online] Available at: http://www.gamlss.com/wpcontent/uploads/2018/01/DistributionsForModellingLocationScaleandShape.pdf [Accessed 6 January 2019].

Solvency II, 2009, *Rozporządzenie delegowane Komisji (UE) 2015/35UE z dnia 10 października 2014 r. uzupełniające ww. dyrektywę Parlamentu Europejskiego i Rady 2009/138/WE w sprawie podejmowania i prowadzenia działalności ubezpieczeniowej i reasekuracyjnej (Wypłacalność II)*, Dz. U. UE L 12 z 17.01.2015r.
[Online] Available at: Commission Delegated Regulation (EU) 2015/35 of 10 October 2014 supplementing Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of Insurance. and Reinsurance (Solvency II) (accessed on: 05.01.2019).

Szreder M., *Zagubieni w liczbach*, Tygodnik powszechny *2018.12.04 (Lost in numbers,* Journal of weekly general in Poland).

The Act of June 1974, Labor Code, Journal of Laws in Poland, 1974 No. 24 item 141, as amended.

*Ustawa z dnia 11 września 2015 r. o działalności ubezpieczeniowej i reasekuracyjnej (*The Act of 11 September 2015, On insurance and reinsurance activities*)*, art. 34., Journal of Laws in Poland 2015 item 1844, as amended.

*Ustawa z dnia 4 października 2018 r. o pracowniczych planach kapitałowych (*The Act of 4 October 2018, On employee capital plans*)*, Journal of Laws in Poland 2018 item 2215, as amended.

ANTHROPOLOGICAL FAMILY TYPE AND ITS IMPACT ON SUCCESSION PLANNING IN FAMILY BUSINESSES – RESEARCH REPORT

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Abstract. Generational succession in family businesses determines their longevity, development, long-term success and allows such entities to maintain and enlarge family social capital a source of competitive advantage over their non-family counterparts. Empirical research results on succession show that this process is extremely difficult and in majority of cases ends unsuccessfully. The purpose of this paper is presenting the anthropological approach to socialization processes of young generation within different types of families, which can help explain the source of succession failures in family businesses. There are four types of families described by two variables: liberty/authority, equality/inequality characterizing the relations between generations and within the younger generation itself .

The research problem is the question if and how the family socialization pattern influences:

a) the entrepreneurial orientation of the young, and
b) their readiness to take over the family business in the case of entrepreneurial families.

The Author refers to own quantitative, questionnaire research carried out in 2017 year on the sample of 260 management students at the Lodz University, which prove that the socialization within entrepreneurial families has a more positive influence on the entrepreneurial behaviours of the young than it takes place in the rest of families and what's more that female representatives of younger generation in families running businesses are even more entrepreneurial but at the same time less sure as for succession than their male siblings. Finally, the Author identified the dominating type of families in the Lodz region and verified potential problems with succession in businesses controlled by the nuclear egalitarian families on the base of the anthropological concept.

Key-words: *family business, anthropological family structures, socialization, succession planning, entrepreneurial behaviours*

JEL code: F23, F20, F00, F61, L26, M16, M21, O19, O32, O30

Introduction

After business establishing and growing, the generational transfer constitutes the third important phase in the life cycle of family business. The succession planning is a complex process of working out and implementing a strategic plan of ownership and management transfers from current owners of family business to a selected successor (successors), who will be able to ensure the family business continuity and development in the future. The most expected and desirable candidates for successors are those coming from the entrepreneurial family controlling the business for the time being. The process involves such questions like: a) preparing mentally and educationally the young generation of family for taking positions in the business, being strategic and competent entrepreneurs, sufficiently committed to run the business successfully (creating potential leaders with vision, who will have positive, long-term impact on the business as well as on the family), b) regulating tax issues related to ownership transfer (gift, estate, or capital gains taxes in the countries they are mandatory in), c) providing financial and retirement security for the withdrawing owners and determining their role in the new circumstances (Jeżak, Popczyk, Winnicka-Popczyk, 2004, pp.59-75).

Properly conducted succession determines the growth and development of the company, the process of achieving and increasing its competitive advantage, building prestige, the business and family reputations, provides jobs and career paths for future generations of the family, neutralizes family conflicts and shapes good relationships among the family members. The continuation of family traditions in the form of successful business succession makes a deep sense due to the value family businesses add to the market economy. Their high efficiency in managing tangible and intangible assets, exceptional social responsibility, emotional involvement in the life of local communities and creating a positive, strong organizational culture for all participants in the organization make them a desirable formula for running a business (Jeżak, Popczyk, Winnicka-Popczyk, 2004, pp.59-75).

Despite the key importance of succession for the proper functioning of the business and family systems, a significant percentage of family businesses do not pass into the possession of the second generation. Many of them are sold, liquidated or subject to mergers and acquisitions. Empirical research in the world as well as in Poland concerning succession confirm the difficulty and complexity of this process. Due to the ever-growing number of such studies and, on the other hand, formal and editorial limitations, it is pointless to quote all the results of the studies here. What is important is their common denominator in the form of conclusion, that despite the declared will of the vast majority of entrepreneurs regarding the continuation of family traditions, the percentage of successful generational transfers in family businesses seems to be unsatisfactory (Kariozen-Majda, 2018, pp 107-153).

The aim of the article is to present the anthropological concept of family structure by Emmanuel Todd, which may be the basis for explaining potential problems with succession planning in family enterprises and combining the results of previous empirical studies and theoretical considerations. The Author hypothesizes that the cultural family structure, within which the process of basic socialization of the younger generation proceeds, determines the succession potential of family enterprises. Variables that may modify the basic succession scenarios within these individual structures are communication among the members of the entrepreneurial family, the level of recognition of the family business formula in a specific macro-cultural environment, education in the field of family entrepreneurship and the functioning of family enterprises.

Anthropological concept of family structure

The scientific basis for explaining the relatively low number of successful family business transfers may be the anthropological concept of family structure and its impact on the behavior of family members. The feature of family enterprises distinguishing them from the others is the influence of the family system on the business system, and in particular on the management system. This impact manifests itself in:

- high frequency of conflicts arising from different family and business value systems, interests and needs,
- reduction of agency costs,
- greater strength of the company's survival in recession conditions,
- implementing long-term strategies in the case of a planned succession,
- shaping behaviors, attitudes, ideologies of family members in the process of their family socialization.

P. Berger and T. Luckmann (1991, pp. 30-61) - the creators of the theory of socialization claim that each human creates and develops their own concepts of reality in a time that largely determines their later behaviors, perception of the surrounding world, attitudes toward performing professional functions, including managerial ones. Primary socialization processes are carried out with the participation of institutions that have the greatest impact on the upbringing of a child, and that themselves evolve very slowly. These include: family, school and church. Personally, I would include broadly

understood media in this category of institutions. At the stage of professional life, the human is influenced by institutions belonging to the political, legal, financial and economic systems that determine their freedom of action.

Due to strong and frequent emotional ties, the family is the most important institution in the whole socialization process. Family members engaged in running a joint business move the family patterns of behavior and values to the enterprise. The unique organizational culture of family enterprises is the result of transferring the style of "governance in the family" to business management.

Anthropology has developed a family structure concept to describe different organizations, rules and styles of family management. Therefore, it may be used to explain the regularity and specificity in managing a family business. Emmanuel Todd (1985) defines the structure of a family as a relatively stable system of interactions within the family that shapes the perception of reality by each of its members. There are several typologies of family structures depending on the adopted criteria. E. Todd on the base of previous works in the field of family anthropology, own research and historical analyzes identified seven different types of family structures in the world using the following variables (criteria):

- degree of family integration and intergenerational subordination (criterion characterizing parents-children relations), measured by the fact of creating a common household (or living in the immediate neighborhood) or the fact of children becoming independent, creating separate households on their own,
- rules for the division of family assets (equality / inequality in the treatment of successors, children),
- rules for choosing a partner for a spouse (custom, parents, full freedom),
- relationships between spouses (exogamy / endogamy)

The family structures resulting from the combination of the first two variables used by the above-mentioned author are of the greatest importance for the European culture: the degree of family integration and intergenerational subordination (dependence of children on parents versus freedom of thought and deeds) and the principles of family property distribution (equality versus inequality in the treatment of children). It is assumed that families in this cultural circle are exogamous and the freedom to choose a spouse is common, although in the autocratic multigenerational families the head of the family accepts the choice or does not.

intragenerational relations / intergenerational relations	equality	inequality
authority and subordination	**Multi-generational community families**	**Multi-generational authoritarian families**
freedom of thoughts and deeds	**Nuclear egalitarian two-generation families**	**Nuclear arbitrary two-generation families**

Source: Author's own elaboration based on the conception offered by Hanson K.C., Schultenover D. G. Todd E.,, Very P.,Raytcheva S.

Fig. 1. **The most popular types of family structures – the anthropological concept**

Below, the Author presents his own characteristics of possible family structure types based on his observations and experience as well as referring to their profiles proposed by E. Todd, K.C. Hansona D.G. Schultenover, P. Very, S. Raytcheva (1985, pp. 1-22, 1994, pp. 1983-194, 1999 pp. 1-36, 2002).

Nuclear, arbitrary two-generation families - family assets have one owner (it is the head of the household), there is a lack of precise rules of inheritance, arbitrary wills are a common practice in this field, adult children are not encouraged to live with their parents, on the contrary they are expected to set up own independent households and children strive for it. Uncertainty about inheritance and a strong sense of the freedom of thought and deed, responsibility for own fate favors individualism in the behavior of young generation representatives, the development of their entrepreneurial orientation and the multiplication of the "work on their own" model according to the pattern of their enterprising families. There is a widespread opinion that people are not born into prominent positions but have to work for them. The culture of this type of families is characterized by a large tolerance for personality differences, worldviews and life philosophies, changes, innovative ideas, flexibility of action, orientation to the present. Members of such families do not attach much importance to the past and the awareness of inevitability in the future (illness, old age, death) is the source of their motivation and professional activity in the present. Family members are immune to stress, they use common sense, they understand power in terms of competence and not in terms of gender (masculinism) or belonging to a social group (family, party etc.). At the same time, there is egocentrism in this culture. Profits and losses are identified on the basis of the interest of the individual in the first place, then the interests of a group or the general are taken into account. Corporate ambitions cause aggression and rush to overcome career levels, and the belief that "the end justifies the means" is common. Belonging to a social group results primarily from the perspectives and benefits for the individual and not from the fact of being a social unit. The socialization of young generations in schools in the regions, where this type of culture prevails is based on the principle that children are born moral and good. You don't have to interfere in their personality, expression, they are to be prepared for functioning in accordance with their nature. The importance of shaping such competences as independence, entrepreneurship and acting on their own is emphasized. The nuclear, arbitrary, two-generation families dominate in the United Kingdom, the USA and the Netherlands.

Nuclear, egalitarian, two-generation families - have characteristics similar to those of the nuclear, arbitrary two-generation families, but inheritance of family assets is based on the principle of equality guaranteed by law. Children grow in the belief that they may rely on others: their parents, family and the state. The property of the family is divided into equal parts among male descendants who set up their own separate households. The principle of equality in inheritance did not apply to women in the past. It is not strictly observed at present. As in the previous family structure, tolerance is observed in terms of social or moral norms. This type of family is more diverse compared to the one described above. The nuclear, egalitarian, two-generation families dominate in Northern and Central France, Northern Italy, Spain and Greece.

Multi-generational community families (patriarchal communities) are organized vertically. Family property belongs to all family members but is managed by the family head. Sons with their own families live together (they form a joint household) with parents until their death, then they set up separate households. Patriarchal communities are distinguished by strong group identity, attachment to tradition, central "governance", strong sense of subordination, obedience, hierarchy but also equality among the younger generation, reluctance to change and high sensitivity to stress. It happens that parents arrange the marriages of children. Men (masculinity) are predisposed to perform leadership functions. In contrast to the two-generation families, the communities live in the past (family history, traditions and family customs) and in the future. Therefore, strategic thinking aimed at the continuation of family enterprises is a natural property of such families, which prevail in Central Italy, Russia and China. Patriarchal communities also dominated in the Roman Empire.

Multi-generational authoritarian families resemble the vertical patriarchal structures, reminiscent of "absolute monarchies". The head of such a family, usually a man, gathers in his hands full power, which he exercises supreme, overbearingly and to the very end. Family members are obliged to observe strict, social and moral norms, show absolute obedience, loyalty and respect towards the head of the family. It is the family's duty to ensure the continuation of the traditions and increase the family resources, and therefore the interest of the group is more important than the interest of the individual. In this culture, diversity is not tolerated in thinking and acting as well as radical changes and new ideas, regarded as threats to the existing order and identity of the group. Conformism, on the one hand, discipline and formal control, and on the other, lack of trust, fear and uncertainty give the basis for identifying such a family structure with a neurotic, internally contradictory system. Contrary to appearances, wives of decision-makers have always occupied a unique position in the family structure, although they did not formally decide on anything, nor did they participate in the estate. They have fulfilled the role of "home-focus" caregivers of high cultural importance. In this case, the family property is taken over by one of the sons indicated arbitrarily by the head of the family (the oldest or the youngest), who creates his household with his parents. It happens very rarely that a daughter is elected for a successor even more often than in the case of community families. The taking over of full power over family assets by one successor guarantees the integrity, stability and continuity of the achievements of the older generations and family traditions. The other siblings must leave and try to build their own households without much support from the family. It is known from historical sources that fate for them was not necessarily kind in the past. Men enlisted in the army, entered priest seminaries and women joined religious orders. Among siblings, therefore, the competition for the position of a successor of traditions and family assets dominates. This family type is present in the West Länder of Germany, Sweden, Norway, Ireland, Japan and Korea.

E. Todd has identified three more types of families using additional variables that characterize the relationships between potential spouses (exogamy / endogamy) and the rules for the selection of a potential spouse. These are:

Endogamous multi-generational community families - family property is shared by law equally among successors, sons together with their families live with parents, marriages are associated within the same family. This type of family has occurred in ancient Israelis and is now popular in traditionally Muslim countries of the Middle East.

Asymmetric multigenerational community families - they differ from the families of the previous type in the established procedure for the selection of a spouse within the same family. A potential wife is chosen from the maternal cousins. Asymmetrical families can be found in South India.

Atomistic families - are characterized by uncertainty as to the theoretical principle of equality among brothers in the division of family assets because in practice more flexible solutions are used. Also theoretically, the possibility of creating a shared household of parents and children is rejected. In practice, this solution is accepted. Endogamy is allowed. Atomistic families dominate in Indonesia, the Philippines, and among the indigenous people of South America.

Anthropological concept of family structure and succession in family businesses

The family structure and its way of socializing the young generation give rise to important implications for the process of succession planning in family enterprises. In nuclear, two-generation families there is a potential threat of unplanning family succession in the enterprise due to the freedom of life choices for young people who are culturally oriented towards becoming independent and building separate family businesses. Thanks to socialization in the entrepreneurial environment, the probability that representatives of the young generation of nuclear families will start their own businesses and follow their parents' career model is considerable. Therefore, seniors who have a long-term vision of their businesses, conviction about their development opportunities and would like generational continuation should engage in a dialogue with selected representatives of the younger generation as a part of socialization in advance in order to

convince them to the succession proposals, to start developing their desired competences and to plan the transfer in time. Taking over a family business does not necessarily mean giving up freedom of thoughts and deeds or having to create a shared household with parents. The continuation of a family business allows to meet entrepreneurial and self-realization needs of the young people and, at the same time, involves less risk than creating a business from scratch.

In multigenerational families, the process of succession planning is easier, because culturally all members of the young generation want to be successors, which raises competition and conflicts between/among them. Kinship, senior preferences and the will of the candidate are sufficient to take over power and ownership in the family business, even if there is no relevant managerial competence. In larger family enterprises, the head of the family plans to educate a candidate for the successor. It should be assumed that in the contemporary authoritarian families, young people who have not become family successors will start their own independent enterprises, which results from the process of their socialization. In the community families, all members of the younger generation participate in family property and may, if they wish, work in a joint enterprise. The democratic power is transferred to the most frequently chosen male descendant. At present, it is not a common practice for adult children and their own families to live in a shared household with the parents. The head of the family arranges separate households for the descendants but in a close proximity to own, so as not to lose control over them.

Soft competence profile and motivations of management students coming from entrepreneurial families at the Lodz University - a research report

Methodology

Research on the entrepreneurial attitudes of management or economic students, whose parents run family business, have already been described in the Polish literature (Wach, 2015, pp.25-40, Surdej, Brzozowski, 2017, pp. 11-21). Socialization in the entrepreneurial environment has a positive impact on the attitudes and entrepreneurial intentions of representatives of the young generation of entrepreneurial families but there still remains an open question on the intention of taking over family business by natural successors.

In December 2017, the first-year students of the Faculty of Management of the University of Lodz were tested to determine their soft competences acquired in the process of their socialization, which may affect their entrepreneurial behaviours. The family and school environments were in the centre of attention. It is not without reason that the research covered the first-year of management studies, as it is assumed in the literature that the soft skills can be most effectively shaped until young people reach adulthood (Tubbs, Schulz 2006, p.33). 260 first-year students from the faculty of management and finance took part in the survey. The total number of the first-year students on the faculty of management and finance amounted to 650 people coming from the 2017 year recruitment including Lodz – City and Lodz Voivodeship. The research tool was a survey containing 20 detailed closed questions. The students completed the survey in the large assembly hall just before the scheduled lecture in the presence of the Author, who explained all students' doubts related to the survey questions.

In order to compare two or more groups relative to the nominal variable, the Chi-Square or Fisher test was used, in case the Chi-Square test was not possible due to the failure to meet the assumptions required for its application. When testing the significance of differences in the distribution of quantitative variables between two groups of the students, the Mann-Whitney U test was used. The Kruskall-Wallis test, on the other hand, was applied to study the significance of such differences when more than two groups of the students were compared. $P < 0.05$ was accepted as the significance level. In the case of important nominal variables, the level of significance might be exceptionally a bit lower.

For the purposes of this article, only the research question related to the effects of socialization of the students coming from entrepreneurial families will be presented. On the basis of the anthropological concept of the family structure, an attempt was made to identify types of the families the students came from and to examine their interdependence with the motives that the students were guided by choosing the business profile studies. Among the 14 motivational options there were four of particular importance: "my parents have a business and it is possible that I will take over and develop it in the future", "my parents have a business and I will definitely bind my professional future with it", "I want to set up my own business in the future "," I am enterprising (innovative, brave and not afraid of risk). ".

Comparative analysis of students with business traditions and students without business traditions

Among the surveyed students, 41.5% came from entrepreneurial families (74 women and 34 men - the total of 108 people). There are statistically significant differences (Chi-Square test, $p < 0.05$) between this group and students without a family business tradition. The first difference is having a passion, apart from casual sports and IT entertainment, which may affect the professional life of the young people in the future and shape their entrepreneurial behaviours. Vallerand (2008, pp. 13-13) defines passion as a strong inclination to activities that one likes, considers important and in which time and energy are invested on a regular basis. Passion is a key to entrepreneurial behaviours. Three entrepreneurial identities are distinguished: passion of an inventor - means a particular research and development inclination resulting in new products and technologies, a founder's passion - means willingness to undertake projects and generate benefits in them, and finally passion of a developer / investor - means inclinations to develop, leading to the growth of existing enterprises (Cardon et al., 2009, pp. 511-532). In the case of the first two identities, the interest (competence) developed over years in the period of intensive socialization matters. The two forms of passion determine above all the success of enterprises in the first phase of their life cycle. Harmonious passion (as opposed to obsessive one) has always a positive effect on the comfort of human life (satisfaction, vitality, optimism, high self-esteem), human physical condition and development of competences (Vallerand, 2008, pp. 13-13).

48.1% of the students with family business traditions and 34% of the others have such a passion (Chi-square test, $p = 0.0376$).

The results of the research show that 21.2% of all the surveyed students (N=260) have no passion at all because they have not had time to develop them so far. Those who have a passion, when asked about its possible impact on their future professional life, responded that no - 37.8%, that yes – 40,2%, that they didn't know - about 22 %. Among the surveyed men, there is a statistically significant relationship between the declared entrepreneurial orientation and having a passion that may affect their professional life (Fisher's test, $p = 0.034$). Among the male students who declared that one of their motives for choosing management studies was entrepreneurial orientation, seven out of ten (72%) possessed a passion with which they would combine their professional life. Among the other surveyed men (they did not declare entrepreneurial orientation), the percentage was 40.4%.

From the statistics point of view, the differences in the motivation to study at the Faculty of Management related to the will to have their own business were also significant (Chi-Square test, $p = 0.0208$). More often, this was the reason to start business studies in the case of respondents with family business traditions (67.3% compared to 52% in the case of the other students). The first group rarely mentioned among the three possible motives they were asked about: the ease of finding a job after study completing (49.5% vs. 63%, Chi-Square test, $p = 0.059$) and managerial earnings (28,% vs. 37.8%, Chi-Square test; $p = 0.133$).

In psychological literature, it has been assumed that the location of the causative force (the decision-making centre) made by an individual is the result of biology and genes, not culture. 23% of the surveyed students from enterprising families and 35.4% of the remaining students locate this centre outside themselves, externally (Chi-Square test, $p = 0.06$).

Locating this site externally may have a negative impact on entrepreneurial or leadership behaviours. The research result achieved in this respect may be an argument for scientific discussion.

The management students from entrepreneurial families, more time after coming back from primary school than in the case of the other students, spent on work than it was in the case of the other students (U Mann-Whitney test, p = 0.036). According to their declarations, they worked to earn extra money on average 9.58% (± 6.56%, standard deviation) of their out-of-school time during this period of life, while for the remaining respondents the average was 4.71% (± 2.87%). The students with business traditions spent less their free time out of secondary school on IT attractions compared to the other students (U Mann-Whitney test, p = 0.0223). It resulted from more school and home duties as well as from the fact of having extra passions (apart from sports, IT).

Comparative analysis of female and male students from enterprising families

There are also statistically significant differences between female students and male students from enterprising families. The average median grade in junior high school was significantly higher in the case of girls than boys (U Mann-Whitney U test, p = 0.0238); among female students it amounted to 4.7, while among male students it was 4.1.

During their stay in primary school and junior high school, the female students devoted more their free time than the male students to homework and home duties, and less to the activity related to the computer. In addition, during junior high school they spent less free time on practising sports, and less time on passions other than those related to IT or sports during high school.. The statistical significance of these relationships was confirmed by Mann-Whitney U tests ($p < 0.001$ for homework during the junior high school period, $p < 0.05$ in the other cases).

The male students more often than the female students said that after completing high school they did not feel confident in the surrounding reality, did not understand it and had more often problems with the practical side of everyday life (Fisher test, $p < 0.01$). They only acquired their practical competences in the family environment.

A statistically significant difference between the male students and the female students with business traditions also occurred in the declared value system (Fisher test, $p < 0.01$). The vast majority of female students (83.6%) pointed out to the value "achievements" (all the students had to select only one answer out of the following three: power, achievements, affiliation to a social group), while the same answer was given by slightly more than half of the male students (55.9%).

The choice of the field of study in the case of the female students was more often determined by entrepreneurial orientation - 41.1% compared to 11.8% of the male students (Fisher test, p = 0.0033) and a feeling of easier finding a job after graduation - 57% compared to 32.4% of the male students (Chi-Square test, p = 0.0266). What's more the women more often want to have their own business in the future - 72.6% against 55.9% of the men's declarations (Chi-Square test, p = 0.134), however, they are less likely to declare the possibility of taking over their parents' family businesses - 15.1% against 23.5% of the men's declarations (Chi-Square test, p = 0.420) and the certainty of being a successor - 6.8% compared to 17.6% (Fisher test, p = 0.099).

Identifying entrepreneurial family structures the surveyed students come from

The last part of the research concerned the identification of types of the families from which the surveyed students come. 74.1% of the students with business traditions come from *nuclear, egalitarian two-generation families*, 5.6% from nuclear, arbitrary, two-generation families, 14.8% from multi-generational community families and 5.6% from multi-generational authoritarian families. So, nuclear, egalitarian, two-generation families dominate in the Lodz region.

20.25% of the students from nuclear, egalitarian two-generation families are definitely considered as the future successors of their parents' enterprises and 11.4% do not exclude such a possibility, 67% of them want to set up their own business in the future and 36% declare to have a strong entrepreneurial orientation (they are innovative, pro-active, feel

no aversion to risk). At the same time, these are the most common motives for the students to undertake management studies. Knowing the characteristics of nuclear, egalitarian two-generation families, one may conclude that in 20.25% of the families succession has already been planned and in 11.4% it is possible that it is being planned. In total, the number of the planned successions is maintained at a relatively low level, which indicates potential development problems of these family enterprises in the future.

Only two students from multi-generational community families motivate the selection of their study field with succession plans (N = 16). The rest in most cases want to have their own business, earn above average or power is their main motivator.

The small number of students from the other two types of families does not allow statistical inference about their characteristics. Two male students from *nuclear, arbitrary two-generation families* (N = 6) and one female student from a *multi-generational, authoritarian family* (N = 6) do not exclude the role of the successors of their family businesses. Besides, all the students from the two types of families (N= 6+6) want to have their own businesses or find a job easily after graduating from management.

Conclusions, limitations and future research

The results of the research lead the Author to the following conclusions:

1. The types of families described in the first part of the article according to the anthropological concept may indeed determine succession processes in family enterprises in a significant and different way. Due to the cultural conditions in nuclear egalitarian, two-generation families, which dominate in the Lodz region, consisting of full freedom of life choices of the young generation, the succession of power in family enterprises is difficult, especially when the image of family entrepreneurship is not yet strong enough like in Poland. Senior entrepreneurs themselves should make the initiative of planning succession and start a partnership dialogue on this topic with the young generation well in advance.

2. The research results confirm stronger entrepreneurial attitudes of women than men coming from enterprising families and at the same time their weaker bargaining position in the succession process respectively. It is recommended for the seniors to take female representatives of the young generation into consideration while planning succession.

3. The socialization of the young generation in enterprising families shapes their entrepreneurial behaviours more effectively than it occurs in the families without business traditions.

4. The education system in Poland focuses on the diffusion of difficult and in many cases useless verbal knowledge instead of shaping the soft competences: identifying and developing passions in the young that can be a source of success in their future careers and a driving force of their creativity, teaching critical thinking, affirming entrepreneurial attitudes, teaching team work.

The limitations of the conducted research concern the number of students coming from families with structures that are less common in the Lodz region. In this region, *nuclear, egalitarian, two-generation families* dominate and their theoretical characteristics proposed by the Author have been verified positively during the research. It may be hypothesized that the other types of families may dominate in other regions of Poland due to existing historical, cultural differences. For example, in the eastern or south-eastern parts of the country *multi-generational community families* may dominate, and there one could conduct a comparative research on the impact of this culture on the dynamics of succession processes in family enterprises located there, or on shaping entrepreneurial competences of family members.

Another limitation of the research is the concentration only on selected soft competences that most affect the entrepreneurial behavior of young people in their future professional life. The study did not take into account the

measurement of moral and emotional intelligence. It is they that allow enterprises to build the internal and external social capital and determine their competitive advantages.

Bibliography

Berger P.L, Luckmann T. 1991, *The Social Construction of Reality*, Penguin Books.

Cardon M.S, Wincent J., Singh J., Drnovsek M. 2009. *The Nature and Experience of Entrepreneurial Passion,* "Academy of Management Review", Vol.34, No 3.

Hanson K.C. 1994, *Kinship*, "Biblical Theology Bulletin", 24.

Jeżak J., Popczyk W., Winnicka-Popczyk A., 2004, Przedsiębiorstwo Rodzinne. Funkcjonowanie i Rozwój. Difin, Warszawa.

Kariozen-Majda A., 2018, *Modele sukcesji władzy i własności w spółkach rodzinnych notowanych na Giełdzie Papierów Wartościowych w Warszawie*, doctoral dissertation on the faculty of management at the Lodz University.

Safin K. 2015, *Potencjał sukcesyjny polskich przedsiębiorstw rodzinnych*, „Przedsiębiorczość i Zarządzanie", t.XVI.

Schultenover D. G. 1999, *An Anthropological View of the Modern Crisis*, "Journal of Religion & Society", v.1.

Surdej A., Brzozowski J. 2017, *Assessing the Readiness to Family Firm Succession among CEE Students,* "Przedsiębiorczość i Zarządzanie", t.XVIII.

Todd E. 1985, *The Explanation of Ideology: Family Structures and Social Systems*, Basil Blackwell, New York.

Tubbs S.L., Schulz E. 2006, *Exploring a Taxonomy of Global Competitiveness and Meta-competencies*, "The Journal of the American Academy of Business", vol.8, no.2, Cambridge.

Vallerand R.J. 2008, *On the Psychology of Passion: In Search of What Makes People's Lives Most Worth Living,* "Canadian Psychology", vol. 44.No.1

Very P., Raytcheva S. 2002, *Family Structures, Family Firms and Succession*: 47th World Conference, Puerto Rico 2002.

Wach K. 2015, *Środowisko biznesu rodzinnego jako stymulanta intencji przedsiębiorczych młodzieży akademickiej*, „Przedsiębiorczość i Zarządzanie", t.XVI.

EVALUATION OF LABOR SKILLS IN LATVIA

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Abstract. Skills are a decisive factor for the country's economic development and social-well-being. The OECD emphasizes that strips can help countries integrate into global markets and specialize in technological advanced industries, and countries need to invest in fields not only to help people enter the labour market and protect from the risk of job losses and low quality of work, but also to increase international competitiveness and economic progress in an interlinked world. The aim of the research is to evaluate the most demanded labour skills in Latvia within the framework of certain groups of professions, as well as trends in the demand changes according to the skills of employees in order to better identify the specialists and their activities required for the national economy in accordance with the needs of the national economy. A matrix of skill set was developed within the framework of the study, which summarizes the skills characteristic of each occupation group according to their importance, as well as the list of the most bonded strips in the Latvian market (Top 10). By analyzing the scraps groups corresponding to the occupational groups, it concluded that in all major occupational groups among the most important skills mentioned to comply with the requirements of the regulatory enactments and other regulatory documents, to plan and organize the work to be done, to work in the team/group, to communicate and cooperate, and to self-educate, to new knowledge and skills.

Key words: *labour skills, skill demand, skill set* matrix*, occupational groups*

JEL code: J01, J08, J24

Introduction

The development of the global economy and the dynamic changes in the labour market raises a number of challenges related to the balancing of labour supply and demand, and the situation is particularly topical due to increased labour demand and labour supply differences in both quantitative and qualitative sizes. This leads to the need to complexly address issues related to the quantitative forecasting of labour by individual occupational groups, along with the establishment of appropriate changes in the demand for skills. These problems are broadly discussed by researchers and scholars around the world. The reasons and importance of labour market demand changes are connected with technology changes, innovations, societies aging and green economies.

According to data from CEDEFOP (CEDEFOP, 2015), the workforce is becoming more and more educated, but people still choose to work in jobs whose qualifications and skills are too high or low, so that skills are not properly used. In order to prevent this and ensure the efficient use and management of human resources, information is needed on labour market developments and the corresponding demand for labour by a sector, profession and its corresponding skills.

The research question is to identify the most representative skill sets in Latvia within individual occupational groups.

The aim of the research is to evaluate the most demanded labour skills in Latvia within the framework of certain groups of professions, as well as trends in the demand changes according to the skills of employees in order to better

identify the specialists and their activities required for the national economy in accordance with the needs of the national economy. The tasks of the research:

- developing a methodology for establishing a list of skills relevant to professions and their groups,
- conducted 223 expert interviews, discussions of 40 expert focus groups and discussions of 3 mini-groups, identifying the necessary skill sets for professions and their importance,
- input of the results in the own-set skill database, analysis of skills and unifying skill sets.

The principles of the European Skills/Competencies, Classification of Qualifications and Careers (ESCO, 2018) and the European Centre for the Development of Vocational Training (CEDEFOP, 2010) skills were used when defining the specific skill set for each profession group as main research resources. The analysis used combined methods of qualitative and quantitative data collection and analysis, including qualitative analysis of documents and secondary data, data systemisation, semantic analysis and synthesis of data, expert interviews.

The novelty of the research has obtained a skill set matrix with 1970 skill sets for 383 individual profession groups.

The research problematic questions. In the course of the studies, a number of limitations were identified in relation to the characteristics of data collection (for example, only data on registered employment are available in the SRS (State Revenue Servise), the codes of professions identified according to the classification of professions do not correspond to actual employment of workers, etc.), as well as differences in the listing and wording of skills needed for professions in the various sources of information and sectoral expert assessments.

1. Theoretical justification for labour skills

The performance of any job or profession requires certain knowledge, skills and experience that forms clusters of specific skills and competences. Skills are a decisive factor for the country's economic development and social-well-being. In Cambridge Business English Dictionary skills are defined as special skills acquired in training or practice that are useful for work (Cambridge, 2011). The academic information centre (AIC) with skills understands the ability to perform any action according to the quality and extent required (Terminology, 2016). Thus, skills means the ability to systematically and continuously perform complex activities or job tasks that include ideas (cognitive skills), cases (technical skills) and/or people (interpersonal skills). Bernhard Dachs (Dachs, 2018) from Austrian Institute of Technology reviews the academic literature on innovation and employment, and investigates what researchers think about technology and inequality. The pessimistic views on the impacts of new technologies to the labour markets is the starting point for author's short review of the literature on employment and innovation, analysing the successful creation and commercialisation of new products and processes. He gives an optimistic view about the future: innovation and technology as the main drivers of economic growths and new employment will be mainly labour-friendly in the long run. The development of labour markets in the last 20 years has followed the path of skill-biased technological change. The number of jobs and occupations that require only low skills or routine knowledge has constantly decreased. Innovation will create jobs in the future, but they will be in occupations other than those destroyed by technology, and will be characterised in particular by a low share of routine tasks and a high share of tasks that require creative and social skills. Michael Gibbs (Gibbs, 2017) stresses that technology has opposing effects of jobs. It facilitates automation, creating fever and less motivating middle-skill jobs. Conversely, it complements social and innovation tasks, creating more interesting low- and high-skill jobs. This causes market polarisation, "hollowing out" demand for middle skill jobs, and increasing wage inequality. Policy makers should encourage technology that complements employees' work, and should foster education and training that help workers to adapt to change. There are given key findings about technology revolution effects on jobs and labour market. Speaking about skills are most likely to be valuable with future technological change he pays attention to abstract thinking, analytical, and problem solving skills, creativity, and social and communication skills. Gracia Santoso (Santoso, 2016) presents some solutions how to synthesise and build on the discourse of

technological implications for the workforce in a post-information age. He has found that throughout the history, the advance of technology is correlated with social issues, particularly issues of rising unemployment as a result of skills obsolescence and mismatch. Individuals can also pursue the increasing job opportunities emerging within knowledge-intensive and technology sectors. Taking into account trends about development green economy and its influence to labour market, Con Gregg and Olga Strietska-Ilina, from ILO (Gregg, 2015) provides guidance on how to embark on the identification of current and anticipation of future skill needs for the green economy and green jobs. The term "skills for green jobs" is understood broadly as referring to all skills that are necessary for the successful performance of tasks for green jabs and to make any job greener. That includes both core and technical skills and covers all types of occupations that contribute to the process of greening products, services and processes, not only in environmental activities but also in brown sectors. New jobs and new job tasks require different skills. Anticipating new skill needs therefore becomes critical. Analysing current situation in Sweden, Gunhild Wallin, Ingegerd Green (Wallin, 2017) stresses attention, that today exists separate education policies, labour market policies and business policies – three different "pipelines ", which are headed by different government ministries and each have their own separate authorities and agencies. They all deal with issues and take initiatives which in the end are still all about skills provision but only the labour market knows which skills are needed. He recommends to introduce a far more holistic approach and cooperation in order to make the skills provision system work in a labour market perspective, where competency policies have been lifted up to the highest level.

Skills enable workers (employees) to adapt more quickly to the dynamic changes of the labour market by providing employment, access to income, social guarantees and mobility, enterprise (employers) skills are a key component of productivity, competitiveness and innovation capacity, while for society as a whole, skills development provides a higher quality of life, better public services, more active and open a more open company (ETF Position Paper, 2012).

On the demand side, skills define the labour markets with the professions required. Individual skills, or a set of skills required for a particular profession and their level can be common to a number of professions (Kasalis, Jekabsone et al., 2017). Today, the boundaries of profession groups are becoming increasingly blurred, less standardised and more heterogeneous than in the past. The skills required for a particular job vary enormously, even within the same profession. The same profession is often associated with jobs that differ in terms of the working environment, the size of the workplace, the tools and materials used, and the final product, so it is important to understand the skill mix of each individual and the skills required by each job.

On the supply side, skills are developed within the framework of the education system or directly in the labour market (Strategically Most Demanded Skills in Future Latvia, 2013). On the supply side, formal levels of education are most commonly used as a skills-specific size, assuming that candidates of unsuitable quality cannot meet certain requirements for successful completion of the educational programme. However, the use of the formal level of education in the assessment of the skill set gives only a notional preference for the skills required by the employer (Kasalis, Jekabsone et al., 2017). In the labour market today there is a demand for flexible and competent staff who are prepared to carry out a number of job responsibilities at the same time, with a variety of key skills, such as foreign language skills, computer skills and good social and cross-cutting skills (contacts, communication, presentation, negotiating skills, etc.), in addition to the specific needs of the profession. (see Fig. 1).

Source: University of Kent, 2018.

Fig. 1. **Skills map**

THE OECD's 2017 Skills Report highlights that skills can help countries to integrate into global markets and specialize in technologically advanced sectors (OECD, 2017). In order to specialize in technologically developed industries, countries need:

– workers with good social and emotional skills (e.g. management, communication, self-organization) that complement cognitive skills;

– workers with qualifications that faithfully reflect their capabilities, as many technologically developed sectors require employees to meet complex tasks.

THE OECD stresses that countries need to invest in skills not only to help people enter the labour market and protect them from the risk of job loss and low quality, but also to increase international competitiveness and economic progress in the interconnected world.

The pooling of available information on different skill classification systems concluded that there is no uniform approach to the classification of skills, as it is determined both by differences in education systems and by the specificities of the labour market; however, both CEDEFOP and OECD (for example, CEDEFOP, 2012, OECD, 2017) and ESCO (ESCO, 2018) and European Qualifications Framework (EQF, 2018) skills are grouped into general or basic skills (which include skills such as reading, writing, computing, computer skills, knowledge), as well as transversal skills and technical or work-related skills.

2. Skill Matrix Creating Methodology

The availability of data, as well as the differing assumptions about the place of skills in the interaction between labour market demand and supply, mean that there is no single, well-established methodology for forecasting skills demand. The range of methods used is broad and diverse, ranging from employer surveys, expert and focus group discussions to sector or profession studies and model-based projections (Strategically Most Demanded Skills in Future Latvia, 2013). Many countries, including Latvia, forecasting takes place through econometric models, which allow for a more objective assessment of the expected changes in the labour market under the influence of various factors (migration, economic sector structure, etc.). Currently, in Latvia, forecasts show only the demand of the labour market by profession group, but there is a lack of information on the demand for professional skills needed to perform certain job tasks. In order to create a skill set matrix, a database was created that imported skills from LR Professions Standards (Professional standards, 2010), as well as those from ESCO.

In order to include the necessary information in the database, 8672 skills were compiled in a machine-readable format from 305 current profession standards for the skills needed to perform basic professional tasks for each profession, as well as lists of key skills from the ESCO V1 working version and SRS data on registered employees in the professions, information included in the Classification of Professions about the tasks for profession groups. Based on this information, the initial skill model (pre-model of skill sets) was created for each group of professions, including 20-25 skill sets, while maintaining the lists of net skills. In the course of the follow-up study, the initial pre-model information for skill sets was used during field work, interviewing selected sectoral experts, to encourage the achievement of the objectives of the interview by clarifying the views of the interviewees on the skill sets needed for a particular group of professions. In total, more than 300 experts were interviewed. The results of the interviews were entered into the database by modifying the pre-model information of the skill set, supplementing it with new skills or their sets, and by excluding individual skill sets as inconsistent with the current situation in the labour market. The information obtained following the interviews was analyzed, aggregated and, where necessary, directed to further discussion in the focus group discussions. At the end of the field work, the results of sectoral expert interviews and focus group discussions were collected and entered in the database. A list of nearly 2,500 skill sets came after compiling the results of expert interviews and focus group discussions. A follow-up analysis was carried out to identify the major skill sets that are typical of individual profession groups with a view to further unifying them in order to develop a list of skills compiled by the final profession groups (skill set matrix) to be added to the labour demand short-term forecasting model in order to obtain forecasts for the skills required. When performing skill set aggregation and unification, a skill set matrix was created with 1970 skill sets for 383 individual occupational groups.

3. Results obtained and their applicability

The development of the skill set matrix was carried out in several consecutive stages. In the first phase, a database was created and a clean skills analysis and unification was carried out, the creation and refinement of skill sets in cooperation with sectoral experts, and the analysis and generalization of the results obtained, leading to the creation and preparation of a skill set matrix for inclusion in short-term forecasts. The analysis of skill sets for individual occupational groups has been carried out in nine main vocational groups, bringing together the most important (according to the expert assessment of the major skill sets of the profession group concerned) skill sets of individual occupational groups in the main group and dividing the top 10 skill sets for each core group. All the information collected and analyzed in the course of the study is stored in a database enabling individual groups of professions and their respective skills to be considered in terms of their importance and level, as well as to obtain information on individual skills and their spread across different groups of occupations.

An analysis of the skills clusters relevant to the occupational groups concluded that all major occupations included compliance with regulatory requirements and other regulatory instruments, planning and organizing the work to be carried out, working in the team/group, communicating and cooperating, and self-education, learning new knowledge and skills. These skill sets are typical of many profession groups, which are also reflected in the forecasts of the required skills. The skill set to comply with the requirements of regulatory enactments and other regulatory instruments is generally mentioned in 98 different profession groups and is the first place in the skills pool, both by type and level. The skill set to plan and organize the work to be carried out is listed in 25 profession groups and is in the second place on the top of the skills required by type, while the second position on the top is a set of skills to be able to drive and manage the machinery. The third-place in Skills Top is a set of skills to communicate and collabourate with staff, partners, owners, mass media, clients, institutions identified in 40 different occupational groups, while at level the third most important skill set is to ensure the provision of quality, customer-oriented services found in 19 different occupational groups. The five more

demanding skill sets still contain skill sets such as understanding and realizing a company's marketing policy and working in a team/group.

In general, an analysis of the 10 most demanding skill sets by type shows language skills (managing national language and using the professional terminology of the sector in the national language and one or more foreign languages), computer skills, the ability to collect and provide information, and self-education skills, new knowledge and skills. On the other hand, technical skills without the skills to comply with the requirements of regulatory enactments and other regulatory documents have been selected to carry out procedures related to the placement of goods, as well as to ensure the ordering, acceptance, accounting, storage of goods required for commercial workers in the first place of the top of the most demanding professions (see Table 1).

Table 1.

Skills Top 10 in Latvian labour market in 2017

	Skill set/ skill set type	basic	transversal	technical
1.	To comply with the requirements of regulatory enactments and other regulatory documents			X
2.	Planning and organizing the work		X	
3.	Communicate and collabourate with staff, partners, owners, mass media, customers, institutions		X	
4.	Understand and realize the company's marketing policy		X	
5.	Working in the team/group		X	
6.	Self-education, learning new knowledge and skills	X		
7.	Provide quality, customer-oriented services			
8.	Respect the norms and principles of professional ethices		X	
9.	Work with office equipment and computer programs			X
10.	Using the professional terminology of the sector in the national language and one or more foreign languages	X		

Source: author's calculation based un skills matrix results.

It should be noted that the study resulted in an instant photograph of the classification of labour market professions of the situation on the labour market with specific occupational groups and the necessary skill sets, according to their importance for sectoral experts in 2017. The developed skill set model is considered to be open, i.e. it can be supplemented, updated and updated when the labour market situation changes. Similarly, the breakdown of skills (skill sets) by type cannot be unambiguously considered, since it cannot be expressly argued for the unconditional ownership of a particular type of skills that depends to a large extent on the analysis of the target and on the chosen grading approach. Border crossings between basic and rolling skills, rolling skills and technical skills and technical skills and basic skills are not strictly defined: they are blurred, so they may flow from one type to another depending on the circumstances and tasks pursued. As a result of the work carried out, the final list of pooled skill sets by profession group and type is applicable in the short-term forecasting process of labour demand, showing not only the quantitative changes of the requested workforce by profession group but also the ongoing potential changes in skills demand. The authors would like to point out that complementing the short-term forecasting of the work force with trends in demand for skill sets is important not only in the organisation of the work force training process but also in other social processes.

Conclusions and recommendations

1. By skills has to be understood the ability systematically and continuously perform complex activities or job tasks that include ideas (cognitive skills), cases (technical skills) and/or people (interpersonal skills).

2. Skills are grouped in general or key skills, as well as in transversal and technical or job-related skills, but the division of skills by type is not unambiguously traversed, as it cannot be expressly argued for the unconditional presence of a specific type of skills that depends to a large extent on the analysis of the target, as well as the chosen classification approaches.
3. The study carried out revealed that there is no uniform understanding of skills in Latvia and different application documents (ESCO, profession standards, qualification profiles and others) show different wordings in terms of essentially equal or very similar skills, which make it difficult to carry out their systematisation and analysis.
4. In 2017 in Latvian labour market in all major occupational groups among the most important skills were mentioned to comply with the requirements of the regulatory enactments and other regulatory documents, to plan and organize the work done, to work in the team/group, to communicate and cooperate, and to self-educate, to acquire new knowledge and drafts.
5. According to the researchers' assessment, a uniform skill classification system (unified skill classifier) should be established in Latvia, which could be used by the institutions involved in the development of employment policies of the State Employment Agency, Ministry of Welfare, Ministry of Science and Education, Ministry of Economy and other, by developing occupational standards, skill forecasts, etc. However, it should be noted that different skill detail is needed for each needs: for example, educational planning requires very detailed information on specific skills, but skill sets are up for the needs of labour market forecasts, because in deeper detail skills are closely linked to groups of occupations, and the forecast for the demand for these skills will be closely linked to the specific group of occupations.

Bibliography

Anticipating and Matching Demand and Supply of Skills in ETF Partner Countries, 2012. ETF Position Paper, ETF.

Building on Skills Forecasts - Comparing Methods and Application, 2012. Research paper No.18. – CEDEFOP, Luxembourg: Publications Office of the European Union.

Cambridge Business English Dictionary, 2011. Cambridge University Press, 783 p.

Classification of Occupations, 1998. [Online] Available at: https://www.vestnesis.lv/ta/id/50253-profesiju-klasifikators [Accessed 5 November 2018].

Dachs*, B., 2018.* The Impact of New Technologies on the Labour Market and the Social Economy, Austrian Institute of Technology, Brussels, European Union, [Online] Available at: http://www.europarl.europa.eu/stoa/ [Accessed 5 April 2019].

Desfetanis S., 2012. Skills for Competitiveness, Country Report for Italy, OECD Local Economic and Employment Development (LEED), Working Papers 2012/04.

Elias, P., 1997. Occupational Classification (ISCO-88): Concepts, Methods, Reliability, Validity and Cross-National Comparability, OECD Labour Market and Social Policy Occasional Papers, No. 20, OECD.

ESCO Database, 2018. [Online] Available at: https://ec.europa.eu/esco/portal/escopedia/ESCO_v1 [Accessed 20 November 2018].

European Area of Skills and Qualifications, Report, 2014. Special Eurobarometer 417, June 2014, 194 pp.

European Qualifications Framework (EQF), 2018. [Online] Available at: http://www.nki-latvija.lv/en/par-eki [Accessed 20 November 2018].

Gibbs, M., 2017. How is New Technology Changing Job Design?,University of Chicago, USA, [Online] Available at: https://wol.iza.org/articles/how-is-new-technology-changing-job-design/long [Accessed 5 April 2019].

Gregg, C., Strietska-Ilina, O., 2015. Anticipating Skill Needs for Green Jobs, ILO, Geneva, 119 p.

ISCO website, 2018. [Online] Available at: https://www.ilo.org/public/english/bureau/stat/isco/index.htm [Accessed 20 November 2018].

Kasalis E., Jēkabsone S., Ozoliņa E., Dzene L., Briedis J., Solovjovs J., Purmalis K., Ķeire K., 2017. Izvērtējums par profesijām atbilstošo prasmju saraksta izveidi, Corporate Consulting, Rīga, [Online] Aviable at: http://www.nva.gov.lv/docs/31_599570eb5343e6.41004842.pdf [Accessed 20 Januar 2019].

OECD Skills Outlook 2017, Skills and Global Value Chains, OECD Publishing, [Online] Available at: http://www.oecd-ilibrary.org/education/oecd-skills-outlook-2017_9789264273351-en [Accessed 20 Januar 2019].

Professional Standards, 2010. [Online] Available at: http://www.lm.gov.lv/upload/darba_devejiem/prof_stand_1210.pdf [Accessed 5 November 2018].

Santoso, G., 2016. Technology as a Driver of Skills Obsolescence and Skills Mismatch: Implications for The Labour Market, Society and the Economy, The ANU Undergraduate Research Journal, Volume Seven, The Australian National University, Canberra, Australia.

Skills, Qualifications and Jobs in the EU: The Making of a Perfect Match?,2015. CEDEFOP, Luxembourg: Publications Office of the European Union.

Skills Panorama Portal. 2018. [Online] Available at: https://skillspanorama.cedefop.europa.eu/en [Accessed 20 November 2018].

Skills Supply And Demand in Europe. Medium-Term Forecast up to 2020, 2010. CEDEFOP, Luxembourg: Publications Office of the European Union.

Strategically Most Demanded Skills in Future Latvia, 2013. Research, Project and Quality Management Ltd, Riga, Available at: https://www.em.gov.lv/files/tautsaimniecibas_attistiba/1st_research_skills_eng.pdf [Accessed 20 November 2018].

The European Skills and Jobs (ESJ) Survey, 2018. [Online] Available at: http://www.cedefop.europa.eu/en/events-and-projects/projects/european-skills-and-jobs-esj-survey [Accessed 20 November 2018].

The Flux Report, 2014. Right Management ManpowerGroup, January 2014 [Online] Available at: https://www.manpowergroup.co.uk/wp-content/uploads/2015/04/The-Flux-Report_whitepaper.pdf [Accessed 20 Januar 2019].

Terminology in the Context of the Introductory European Qualifications Framework And the Introductory Framework for Latvian Qualifications, 2016. Study Report, AIC, Riga, 17 pp.

University of Kent, The UK's European University, Careers and Employability Service, 2018. [Online] Available at: https://www.kent.ac.uk/ces/ [Accessed 20 September 2018].

Wallin, G., Green, I., 2017. Only the Labour Market Knows Which Skills are Needed, Oslo Metropolitan University, Nordic Labour Journal.

World Indicators of Skills for Employment (WISE) database, 2018. [Online] Available at: https://www.oecd.org/employment/skills-for-employment-indicators.htm [Accessed 20 November 2018].

B2P MARKETING: ONLINE COMMUNICATION CHALLENGE

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Abstract. Being at a time when everything changes with the help of a single click, when marketing strategies are chosen almost personally for each individual client, companies begin to wonder and try to find out how they can create and build communication with their customers. And not just a communication, but a long-term and high-value relationship and interaction. It should be noted that nowadays the scheme such as B2B (business-to-business) or B2C (business-to-the consumer) does not always work in a such way as expected, and as every day an increasing emphasis is placed on individuality, then B2P (business-to-person) marketing occupies a certain niche.

The underlying problem is that this kind of marketing (business-to-person) will show results in the long run and it interacts very closely with relationship marketing. Especially in the online dimension.

The purpose of the paper is to show the relationship between B2P marketing and relationship marketing, and to make marketing communication with the consumer more efficient on the Internet.

Used methods - theoretical analysis of scientific literature, conducting and analysis of authors made consumer surveys and statistical analysis of existing data from Gemius survey. The questionnaire is created and distributed by the author using the Internet facilities - social networks. The questionnaire will receive 214 responses, which are valid for analysis.

The results pointed out strong influence of B2P communication to relationship marketing, this is explained by the importance to create long-term relationship, which are based on trust. The research results will help to provide an understanding on how the consumer reacts to different types of communication directly to the internet in order to be able to improve and adapt them to consumers' needs and expectations. The results have both theoretical and practical significance.

Key words: *b2p marketing, relationship marketing, marketing communication, customer loyalty*

JEL code: M31

Introduction

On the Internet customers have a wide range of opportunities to buy a product or service they want. It is possible to find a lot of different shops and vendors on special platforms. Which means that the number of alternatives has also increased. According to statistics provided by Statista report, revenue from online shopping (ecommerce) for 2018 was 1 785 733 million USD worldwide. It is also mentioned that revenue in the eCommerce market amounts to 2 012 096 million USD in 2019.

Taking into account such tendency it is important to properly communicate with the consumer so that he/she not only choose a particular merchant in the Internet, but also wants to make a repeat purchase and recommend the site to friends and acquaintances.

The underlying problem is that this kind of marketing (business-to-person) will show results in the long run and it interacts very closely with relationship marketing. Especially in the online dimension.

The purpose of the paper is to show the relationship between B2P marketing and relationship marketing, and to make marketing communication with the consumer more efficient on the Internet.

Used methods - theoretical analysis of scientific literature, conducting consumer surveys and statistical analysis.

The author created a customer survey questionnaire within the framework of her research and presented in the paper the first results, which together with the available data from Gemius research and theoretical analysis will help to draw up conclusions.

Research results and discussion

1. Theoretical review

The company's focus on personalized customer service is the cornerstone of its success in targeted interaction with customers. This means, firstly, the use of a narrowly focused communication strategy and, secondly, the adaptation of the goods and services developed to the needs and wishes of consumers. "The current level of development still requires direct involvement of consumers in the business of the company" (Соловьев, 2007). The author points out that direct communication in the process of creating value for the producer and consumer allows to get the most so-called win-win situation. This action should be taken as a basic guideline, and one should look for personal needs for each specific customer. The author refers to the communication that is targeted directly to individuals, so B2P communication.

Many companies are now opting for an online environment to carry out their activities there. However, if companies want to switch to the Internet dimension, it is necessary to understand that the Internet as a marketing channel is modern, but has its own peculiarities and differences from the traditional marketing channels. In the Internet environment, the consumer has a unique opportunity to move quickly between offers and shops, to look for alternatives and the best options that can satisfy his wishes as best as possible. However, it is assumed that the consumer needs to evaluate the product only on the information provided by the trader on the website, namely, image, description, another consumer feedback, etc. It should be pointed out that the design of the website and navigation possibilities in the searching process is also important for the consumer when making the purchase decision (Chiu et al., 2014, Hong et al., 2004, Kolesar, 2000). In essence, the consumer sees only a picture with a description, from which he has to draw conclusions and make a decision on making a purchase. Perhaps the consumer will look for some feedback, ask for help from relatives and friends, but the first impression on the website is the first impression on him. Of course, it is not at all to say that if at the end the consumer receives a product that is not suitable for the image and description, he will not only be dissatisfied, but also the trust of the particular internet marketer will be low and there will be no desire to buy something again. Therefore, to build a long-lasting relationship based on loyal communication, companies need to be open and build their own communication strategy for each client individually.

This is important not only for selling products, but also for online services (Bilgihana, Bujisic, 2015) such as hotel reservations, airline tickets, bank services. Consumers are more likely to buy goods or services from a particular internet merchant in case they have a positive interaction and communication experience. In this case, the interaction will also be with the device itself and the home page. The better the website design and the more convenient navigation, the more satisfied the consumer will be in the purchasing process (Floh, Madlberger, 2013). The author fully agrees that it is necessary for the consumer to feel comfortable and free on the website so that the interaction on the internet is as easy as possible and the consumer would not only want to return to this internet merchant and make repeated purchases, but also recommend this site to his relatives and friends. The author wants to emphasize that there is a link between B2P communication and relationship marketing. The essence of one supplements each other.

In the latest study, it is possible to find information about the three-dimensional structure when working with online clients. This is 3T - timeliness, transparency and trust (Stevens, Spade, Braiseal, Jones 2018). 3T provides an easy-to-use instruction set for companies that build relationships with their customers in an online environment, but do not know how

to meet their needs in an online environment. On trust, there is also a proven hypothesis that the user's confidence in the financial institution's website has a positive and direct impact on customer loyalty on the Internet (Miguens, Vazquez 2018).

B2P communication provides such points as (Subramanian et al., 2014):

- Making an ideal client profile and address message to him personally
- Focus customer attention not only on the benefits that the company will receive, but also on what it will receive personally.
- When creating any marketing message, always plan for the advertiser to perform an action.
- Focus the attention of the advertiser on only one action.
- Do not try to sell goods or services.
- Educate potential customers.
- Before distributing marketing messages, carefully segment the recipient database.
- Deliver marketing messages on time, convenient for the ideal customer.

Such communication principles make it possible to establish a link between the company and the consumer, and this link will be long-term and effective. If the consumer feels that the company cares about his wishes and needs, he will want to shop directly for that particular trader.

From the point of view of consumption, the growth of the Internet has provided consumers with access to information that was either provided to the company or consumed, which was previously unavailable or difficult to access. This consumption information may include product or service information from the manufacturer's or seller's websites and their respective announcements, professional product / service reviews from independent journalists or rating agencies (often accompanied by offers from trading robots), and oral product reviews (electronic) in oral form [eWOM], (Hennig-Thurau et al. 2004). Easy access to product reviews, product benchmarking, performance data and prices allows consumers to better compare their preferences with products and reduce information asymmetry between traders and consumers.

Social media is an effective way to reach a specific target audience. Social media revolution has changed traditional view on consumer and entrepreneur relationship. The usage of social media networks has significantly affected marketing practices and forced to move to user driven technologies (Smith, 2009, pp. 559).

Social networks have already proven to be a powerful communication tool (Fisher, 2011). According to an IBM study, 23% of people gave "interacting with brands" as a reason for using social media (Baird, Parasnis, 2011). Marketing researchers have showed that social networking sites can enhance user loyalty (Tahir, Caroline, 2016). Some authors have mentioned that social networks have also caused a significant democratization of corporate communications (Kietzmann et al., 2011).

Businesses started to integrate social media into their marketing campaigns when penetration of internet users has become very high. Social media with social network capabilities and extra services for marketers make it easier for many businesses to reach a wide range of consumers, target them and therefore making growth more achievable. For marketers, social media should serve as an ideal channel for engaging consumers through a variety of brand activities that will lead them to subsequent engagement behaviours (e.g., trial or purchase) (Baird, Parasnis, 2011).

It is clear that the world is becoming more interconnected and fulfilled with many services. The number of social networks, devices and mobile platforms people can choose from is constantly increasing. This increases competition and

it is important for marketers to understand their customers. Next, the author wants to highlight the factors that are important to the modern consumer in the Internet dimension.

2. Data review

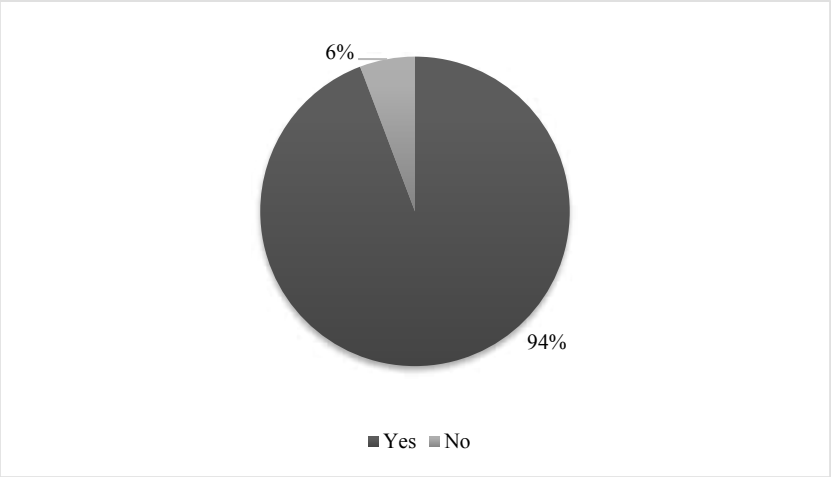
European statistics show Internet usage and, of course, the rapid growth of Internet commerce. It can be outlined that in 2015 516 million people across Europe, accounting for 75%, used the Internet in their everyday lives. Of which, 296 million were those who bought on the Internet. The Internet marketing market has grown by 12%, indicating that the market is very advanced and is developing quite rapidly (Global B2C E-Commerce Report 2016).

In case of Latvia, the second Gemius study on the e-commerce market in the country is available and within it, it was revealed that, compared to 2016, the opportunity to shop on the Internet is used by 5 percent more users. Similarly, to the results of the previous year, both women (53 percent) and men (47 percent) are equally active on the Internet, while almost half, or 48 percent of all users who shop online, are 25-44 years old (Gemius Latvija Database). Interestingly, similar data is available on women (51 percent) and men (49 percent) who say they have not bought but are planning to buy goods or services online in the near future. By contrast, when responding that they do not intend to buy any goods or services on the Internet, only 46 percent of the respondents are women, while men account for 54 percent.

Most often, online stores are used by people with an average net income of 255 to 499 euros (30 percent) per household member. In this group also the most users have admitted that they have not bought anything in the last year, but in the near future, they plan to do this (35 percent). Most of those who buy online use the most frequently used Latvian e-commerce sites (92 per-cent), but also use Chinese e-commerce pages (45 percent) for this purpose. Among top-of-minded e-commerce sites, the most popular is ebay.com (32 percent), followed by the Asian e-commerce giant aliexpress.com (30 percent) and the first trio completes 220.lv (29 percent).

The study is based on a specialized internet survey - gemiusAdHoc. The research is based on data obtained through spin-off internet questionnaires that were displayed randomly by Internet users in the largest news sites in Latvia: tvnet.lv, delfi.lv, eradio.lv, andelemandele.lv, city24.lv, lsm.lv, brivbridis.lv, sportacentrs.lv, gismeteo.lv, kurpirkt.lv, salidzini.lv and jauns.lv. The research was conducted between May 18th and 24th, 2017, and 2787 respondents were interviewed by Gemius in the age group of 18-74 years.

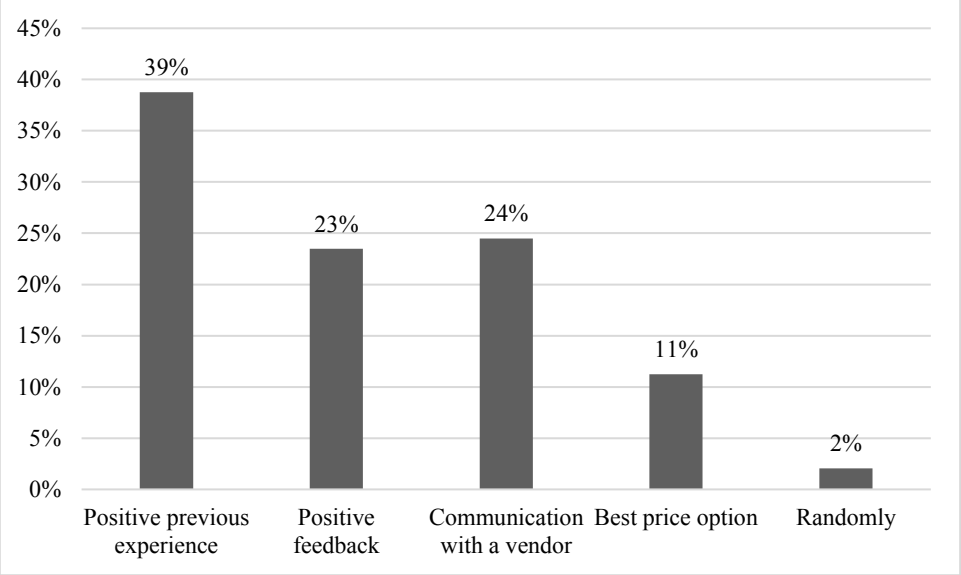
The author also shows the results of self-made research. The questionnaire was compiled for the study that will be used further, so the interim results are currently collected.



Source: author's construction based on author's made survey data

Fig. 1. **Number of consumers who shop on the Internet**

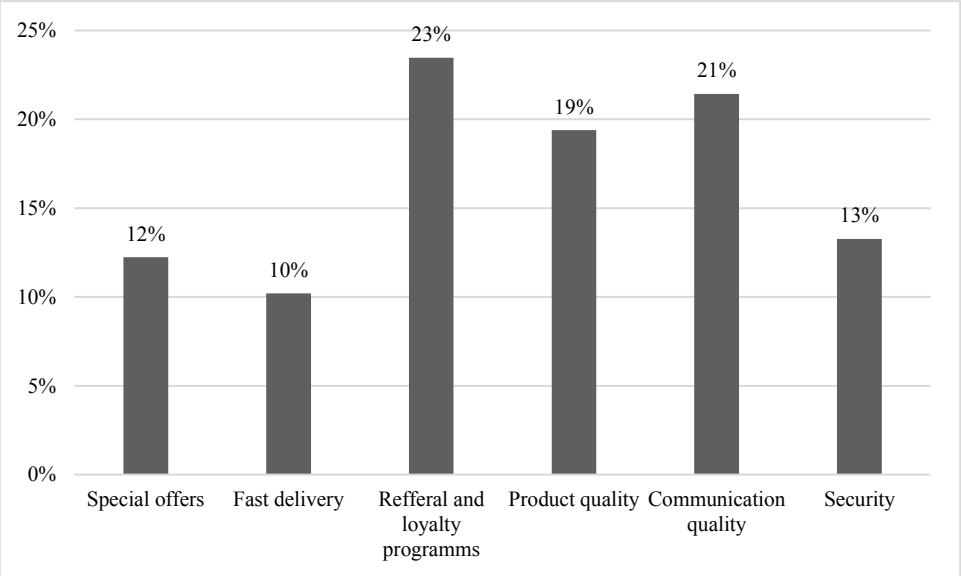
According to the results of the survey it was concluded that almost all (94%) of respondents buy online (fig.1). This indicates that online purchases are no longer new and incomprehensible to many and people are really using it.



Source: author's construction based on author's made survey data

Fig. 2. **Criteria for internet merchant selection**

In turn, an important factor in shopping at a particular merchant is a positive previous experience (39% of respondents). Further, respondents note communication with the vendor, which should be positive and easy (24%). And in third place consumers have positive feedback (23% of respondents) pointing to the link with social media. According to the results it can be pointed out that the process where customer analyses, evaluates and selects particular internet shop/vendor is close to the communication process with the company.



Source: author's construction based on author's made survey data

Fig. 3. **Criteria to recommend a vendor to friends and acquaintances**

The author points out that consumers are happy to recommend an online store if they benefit from it - bonus points, loyalty points, etc. (23%). But communication with the merchant and the quality of this communication (21%) are also important, then only the quality of the product (19%). So, this indicates that communication that is well-targeted and personalized really improves the consumer's interest and thoughts on the company.

The author wishes to draw attention to the fact that the market that is transferred to the internet environment has so many different opportunities, so companies need to adapt and integrate their communication strategy in it. Because approach to consumers, communication with them will be different in these environments.

Conclusions, proposals, recommendations

1. Digital market grows fast as well as opportunities and alternatives on the Internet. The company's focus on personalized customer service is the cornerstone of its success for targeted customer interaction. This means, firstly, the use of a narrowly focused communication strategy and, second, the adaptation of the products and services developed to the needs and expectations of customers on the Internet.
2. The author recommends to use social media for personalization purposes. It is a great tool for reaching a particular audience or group. That way, fewer resources can be used, but the efficiency will be high. Moreover, social media as a personalization tool would be studied in the future research.
3. If companies want to move to the Internet dimension, it is a must to understand that the Internet as a marketing channel is up-to-date, but it has its own peculiarities and differences from the understanding of the traditional marketing channels. On the Internet the customer has unique opportunities to move quickly between offers and shops/vendors, to look for alternatives and best practices that could satisfy his/her wishes.
4. It can be concluded from different researches that customers use online shopping opportunities and have a communication with them. For customers it is hard to understand about a product or service only from the information provided on the website. Therefore, companies need to rethink their communication well and adopt it to the Internet dimension.

Bibliography

Ailawadi K.L., Neslin S.A., Gedenk K., 2001. Pursuing the value-conscious consumer: store brands versus national brand promotions. In *Journal of Markarketing*, Vol. 65 (1), pp. 71–89

Baird, C. H., & Parasnis, G., 2011. From social media to social customer relationship management. In *Strategy & Leadership*, 39(5), 30e37

Bilgihana A., Bujisic M., 2015. The effect of website features in online relationship marketing: A case of online hotel booking. In *Electronic Commerce Research and Applications*, Volume 14, Issue 4, July–August 2015, Pages 222–232

Chiu C.M., Wang E.T., Fang Y.H., Huang H.Y., 2014. Understanding customers' repeat purchase intentions in B2C e-commerce: the roles of utilitarian value, hedonic value and perceived risk. In *Information Systems Journal*, 241, pp. 85–114

Fisher, M. 2011. Engagement Strategy Just a Sales Tool. In *MarketingWeek*, 34, 8 (February 24)

Floh A., Madlberger M., 2013. The role of atmospheric cues in online impulse-buying behaviour. In *Electronic Commerce Research and Applications*, 126, pp. 425–439

Gemius Latvija Database. [Online] Available at: http://www.gemius.lv/all-reader-news/gemius-publice-jaunako-latvijas-e-komercijas-petijumu.html [Accessed 21 November 2018]

Global B2C E-Commerce Report 2016. [Online] Available at: https://www.ecommercewiki.org/wikis/www.ecommercewiki.org/images/5/56/Global_B2C_Ecommerce_Report_2016.pdf [Accessed 21 November 2018]

Hong W., Thong J.Y.L., Tam K.Y., 2004. The effects of information format and shopping task on consumers' online shopping behavior: a cognitive fit perspective. In *Journal of Management Information Systems*, 213, pp. 149–184

Kietzmann, J. H., Hermkens, K., McCarthy, I. P., & Silvestre, B. S., 2011. Social media? Get serious! Understanding the functional building blocks of social media .In *Business Horizons* 54 , 241—251.

Kolesar M.B., Galbraith R.W., 2000. A services-marketing perspective on e-retailing: implications for e-retailers and directions for further research. In *Internet Research*, 105, pp. 424–438

Miguens J., Vazquez,E.G., 2018. An integral model of e-loyalty from the consumer's perspective. In *Computers in Human Behavior*, Vol. 72, 397-411

Pee L.G., Klein G., Jiang J.J. 2018. E-store loyalty: Longitudinal comparison of website usefulness and satisfaction. In *International Journal of Market Research*, pp. 1–17

Smith, T., 2009. The social media revolution. *International Journal of Market Research*, 51(4), 559e561

Stevens J.L., Spaid B.I., Breazeale M., Jones C.L.E., 2018. Timeliness, transparency, and trust: A framework for managing online customer complaints. In *Business Horizons*, 61, pp. 375—384

Subramanian N., Gunasekaran A., Yu J., Cheng J., Ning K. 2014. Customer satisfaction and competitiveness in the Chinise E-retailing: Structural equation modeling (SEM) approach to identify the role of quality factors. In *Expert Systems with Applications* 41, pp. 69-80

Tahir, C. 2016. Brand interactions and social media: Enhancing user loyalty through social networking sites, *Computers in Human Behavior* 62: 743-753

Thorsten H., Gwinner K., Walsh G., Gremler D. 2004. Electronic Word-of-Mouth Via Consumer-Opinion Platforms: What Motivates Consumers to Articulate Themselves on the Internet? In *Journal of Interactive Marketing*, 18, 1, 38–52.

Udo, G. J., Bagchi, K. K., Kirs, P. J. 2010. An assessment of customers' E-service quality perception, satisfaction and intention. *International Journal of Information* Management , 30, pp. 481-492

Соловьев Б. А., 2007. Маркетинг: Учебник. - М.: ИНФРА-М, 383, pp 22

DIGITAL COMPETENCE RATING AND ECONOMIC DEVELOPMENT IN THE EU

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Abstract. Diffusion of information and communication technologies (ICT) in different areas has accelerated the growth of the global economy. It has large impact to the business by transforming processes, creating new services, industries. ICT development requires new technologies and new approaches to innovate and integrate. The European Commission stated: "The Internet and digital technologies are transforming the lives we lead, the way we work – as individuals, in business, and in our communities as they become more integrated across all sectors of our economy and society". The access to high-speed digital infrastructures, skills of the effective usage of highly developed digital technologies represents the prerequisite productivity and the social inclusion in the digital economy.

Development of new technologies and applications demands respective skills and competences of the citizens. That also leads to problems related to measurement of the level of digitization of the economy. There are several institutions that evaluate digital competences. The Digital Economy and Society Index (DESI), developed by the European Commission, is a composite index that summarises relevant indicators on Europe's digital performance and tracks the evolution of EU member states in digital competitiveness.

The aim of the paper is an empirical verification of the assumption that ICT factors (measured by DESI components) affect national economic development. This study uses statistical and econometrical methods to examine the relationship between ICT factors, digital competence indicators and economic development in the EU through statistical evidence.

A panel data analysis confirmed significant linkage between ICT factors (infrastructure, competence, investment and trade size) and economic growth in the EU countries. Taking into consideration the digitalization trends, could be stated that there is still a huge potential for progress and growth.

Key words: *Information and Communication Technologies, Digital Competence Rating, Economic development*

JEL code: C29, O30, C02

1. Introduction

Diffusion of information and communication technologies (ICT) in different areas has accelerated the growth of the global economy. By applying digital skills and technology, the world economy is expected to generate $2 trillion of additional economic output by the year 2020 (Knickrehm, Berthon, Daugherty, 2016). The European Commission has identified that an efficiently functioning Digital Single Market could contribute €415 billion per year to countries economies and create hundreds of thousands of new jobs (Europe Commission). Thereby can be concluded that digital economy brings a significant contribution to the economic development in the future.

Researchers define the digital economy as an economy based on the wide use of ICT in terms of publication of the information, communication, and purchasing and production of hardware and software (Moroz, 2017). Raisinghani (Raisinghani, 2004) has stated that there are four basic pillars that supports the development of digital economy: technical

changes (the development of ICT), social changes caused by the popularization of the use of ICT, microeconomic level of changes, macroeconomic level of changes. Each of these areas has experienced transformation processes that have directed to the creating new services, industries, understanding, and perception. The European Commission stated that "The Internet and digital technologies are transforming the lives we lead, the way we work – as individuals, in business, and in our communities as they become more integrated across all sectors of our economy and society."(DESI report 2018). The access to high-speed digital infrastructures, skills of the effective usage of highly developed digital technologies represents the prerequisite productivity and the social inclusion in the digital economy. The European Union and its member states support the idea of developing the digital society and economy in a number of documents - like Digital Agenda for Europe, Digital Single Market Strategy etc. Additionally, European Commission presents The Digital Economy and Society Index (DESI) - a composite index that summarises relevant indicators on Europe's digital performance and tracks the evolution of EU member states in digital competitiveness.

Statistics of ICT development in the EU member states show the continuous expansion of ICT sector. Country's economy benefits of ICT development in two main ways: as ICT producer (generates economic growth, increase productivity, enhances innovations) and as ICT users (enhances efficiency of production and organization processes and facilitates innovations). (Morin, 2014) Thus, ICT factors have several effects (direct and indirect) on productivity, competitiveness, innovation, and economic growth. Scientific literature mostly is optimistic and shows ICT-initiated economic development and subsequent improvement in quality of life. However, there are some discussions about effect of ICT factors on productivity, labour market and growth, because of negative sides of internet use (time thief), higher risks of corruption etc. Empirical studies about ICT driven economic growth have produced mixed results, mainly because of the research methodology employed, measurement issues quantifying both factors and outcome.

The aim of the paper is an empirical verification of the assumption that ICT factors (measured by DESI components) affect national economic development. This study uses statistical and econometrical methods to examine the relationship between ICT factors, digital competence indicators and economic development in the EU through statistical evidence.

Empirical literature review finds that there are many attempts to evaluate how an economy can benefit from ICT progress, for instance Khan et.al. (2015) with detailed description of direct and indirect effects. Significant and positive linkage between ICT and productivity is found in Jalava & Pohjola (2007) and lot of other papers, Cardona et.al. (2013) gives nice survey of the empirical literature about this topic. Some of papers try to appreciate effect of ICT development on labour force: Frey & Osborne (2017), Cirrillo et.al. (2015) or competitiveness (Oprescu and Eleodor, 2014). Mainstream of the literature pays attention to economic growth theories and estimates impact of ICT development on economic growth: Jin &Cho (2015), Niebel (2018), Pradhan et.al. (2018) and Qu et.al. (2017) etc. Methodology and variables exploited in our analysis are described in Section 3.

The dataset for empirical calculations is taken from the European Commission reports about DESI indicators, Eurostat database and AMECO database. We use panel data: statistics for all 28 EU member states (current composition) for time period 2000-2017. Models are estimated using computer software program EViews.

The rest of the papers is organized as follows: section 2 reviews measurements of digital economy performance and results for EU countries. Section 3 presents model description, variables, and dataset and modelling results. Section 4 concludes.

2. Measurements of Digital economy performance

Researchers define the digital economy as an economy based on the wide use of ICT in terms of publication of the information, communication, and purchasing and production of hardware and software (Moroz,2017). Thereby the most

important characteristics of digital economy are related to degree of use of ICT, the growth of it, their impact on individuals, society, institution, they adaption by individuals, society, institution, evaluation of digital competencies.

There are more than twenty widely used e-indexes used to measure ICT adoption all over the world (Kononova,2015). To name some the most popular are: Information Society Index (developed by IDC), E-Readiness Index (developed by EIU), Knowledge Economy Index and Networked Readiness Index (both developed by World Economic Forum - WEF). Several indices are developed by International Telecommunication Union (ITU): ICT Development Index, Digital Access Index, Digital Opportunity Index, ICT Opportunity Index). European Commission researchers have developed one of the newest one in year 2014: Digital Economy and Society Index (DESI). This may reflect the period in which the expectations of the digital economy were the biggest (Kononova,2015). DESI is calculated based on the statistical data collected by the European Commission's Directorate for communication networks, content, and technology and IHS company, which represents a composite index that summarizes more than 30 significant economic indicators. It uses a weighting system to rank each country based on its digital performance with the aim to benchmarking the development of the digital economy and society. Latest DESI measures the digital economy performance of EU28 Member States and the EU as a whole in comparison with 17 other countries around the world (Australia, Brazil, Canada, Chile, China, Iceland, Israel, Japan, Mexico, New Zealand, Norway, Russia, Serbia, South Korea, Switzerland, Turkey and the United States). DESI utilises 24 datasets to enable trend analysis and comparison of the digital performance of 45 countries. The data included in DESI was mostly collected by the European Commission services - DG Connect and Eurostat8 and by ad-hoc studies launched by the Commission services. It is one of the main analytical tools developed by DG CNECT to provide evidence-based input for the assessment of digital development in the EU as a whole as well as in Member States. (Europe Commission)

Table 1

DESI dimensions and their relative importance

Dimension	Description	Sub-dimension
1 Connectivity	The deployment of broadband infrastructure and its quality Weight 25%	Fixed Broadband (weight 33%)
		Mobile Broadband (weight 22%)
		Speed (weight 33%)
		Affordability (weight 11%)
2 Digital skills (Human capital)	The skills needed to take advantage of the possibilities offered by a digital society Weight 25%	Basic Skills and Usage (weight 50%)
		Advanced skills and Development (weight 50%)
3 Citizen use of Internet	The variety of activities performed by citizens already online Weight 15%	Content (weight 33%)
		Communication (weight 16,5%)
		Transactions (weight 33%)
		Ubiquitous use (weight 16,5%)
4 Business technology integration	The digitisation of businesses and development of the online sales channel Weight 20%	Business digitisation (weight 60%)
		eCommerce (weight 40%)
5 Digital Public Services	The digitisation of public services, focusing on eGovernment Weight 15%	eGovernment (weight 100%)

(Authors representation based on European Commission DESI 2018 report)

As it is shown in the Table 1, there are 5 dimensions in the DESI:

- Connectivity: The deployment of broadband infrastructure and its quality;
- Digital skills: The skills needed to take advantage of the possibilities offered by a digital society;
- Citizen use of Internet: The variety of activities performed by citizens already online;

- Business technology integration: The digitisation of businesses and development of the online sales channel;
- Digital public services: The digitisation of public services, focusing on eGovernment.

The DESI aims to help EU countries identify areas requiring priority investments and action in order to create a truly Digital Single Market, it shows gaps between the performance and capabilities of different Member States.

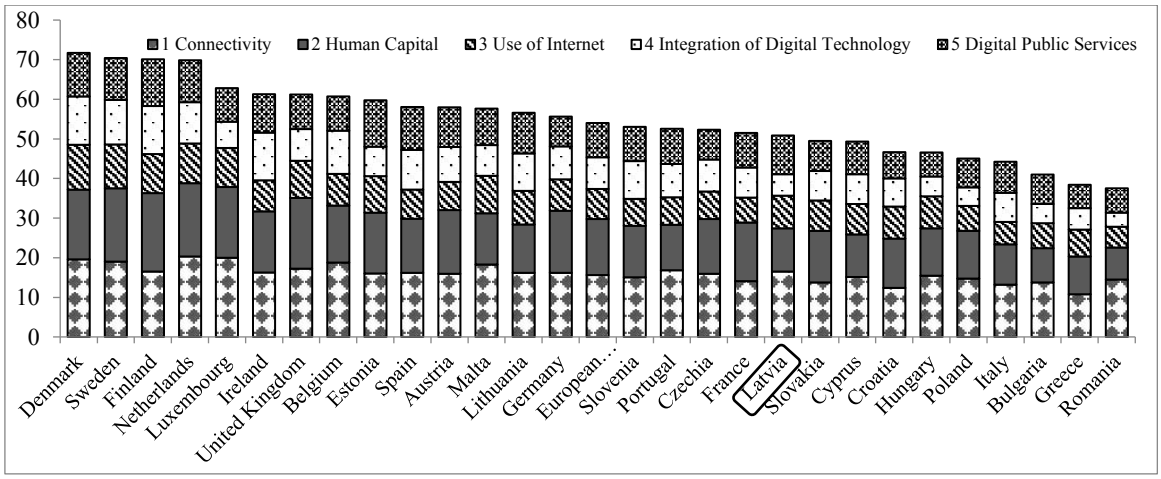

Fig.1. **Digital Economy and Society Index (DESI) 2018 ranking (Source: European Commission DESI report 2018)**

As it is shown in the figure 1, the most advanced digital economies in the EU are Denmark, Sweden and Finland. Our neighbour countries Estonia and Lithuania also have good results – above EU average level. Latvia's performance in 2018 is below EU average. Latvia belongs to the medium performing cluster of countries, and over the last two years Latvia is in the 19th position. (DESI report 2018). Next figure (fig.2) allows to recognize weakest points in digital economic performance in the Baltic countries and EU28 average. The weakest position for Latvia is sub-component of DESI, which measures performance in the Integration of Digital Technologies. Value for this position is 27points in 2018 (EU average was 40.1), what places Latvia in 23rd position among EU28 (in 2017 LV was in 25th position, so this is a good progress). Improvement was achieved through increase in the proportion of enterprises purchasing cloud computing services. European Commission suggests developing strategy for the digitization of businesses, as there are relatively few enterprises selling online across borders. Survey results suggest that this is because of high costs.

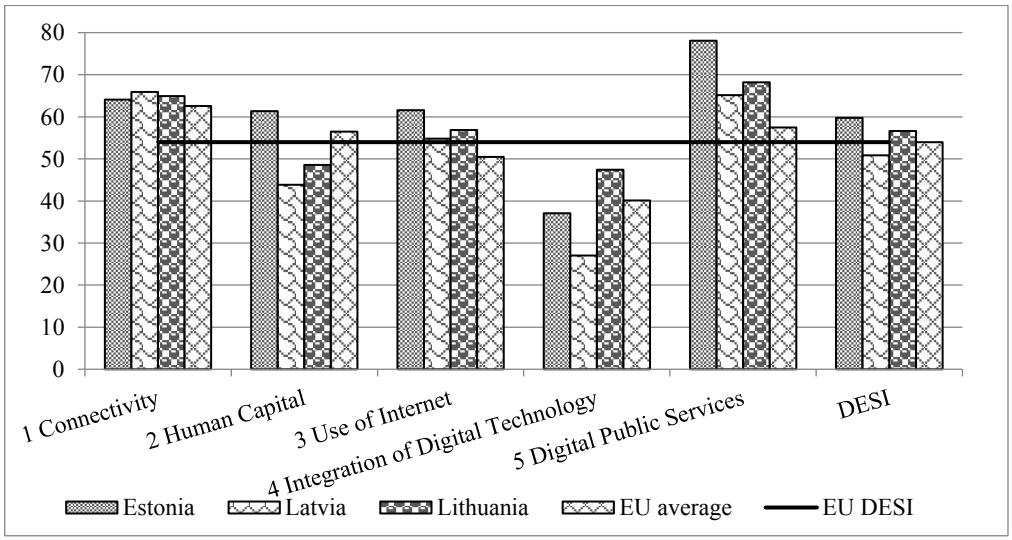

Fig.2. **Latvia's performance comparison in digital development**

(Authors representation based on European Commission DESI report 2018)

Other position with place for improvement in Latvia is the Human Capital area, what is weak also in Lithuania. This component considers several sub-positions describing labour force and citizens in overall. Weak performance was in percentage of individuals with at least basic digital skills. This is one of key competences individual need to use benefits of the digital economy. Other position with results well below EU average is the number of ICT specialists. The proportion of STEM graduates has been decreasing in recent years in Latvia. Speaking about human capital, Latvia's authorities (ministries and associations etc.) do a lot in this area, but effect of projects and measures in this field may take some time to appear in real situation improvement.

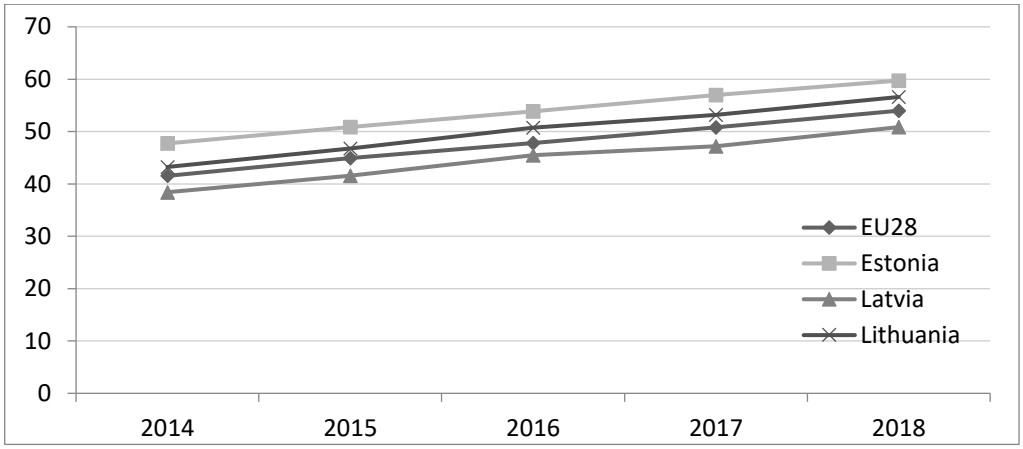

Fig.3. **DESI evolution over time in Latvia, Estonia and Lithuania. Comparison with EU28 average.**

(Authors representation based on European Commission DESI report 2018)

Other aspect of DESI is possibility to evaluate individual country's progress. Figure 3 depicts DESI evolution in the Baltic countries over time. All countries and EU28 average indices have increased over time, showing effectiveness of ICT politics in this region.

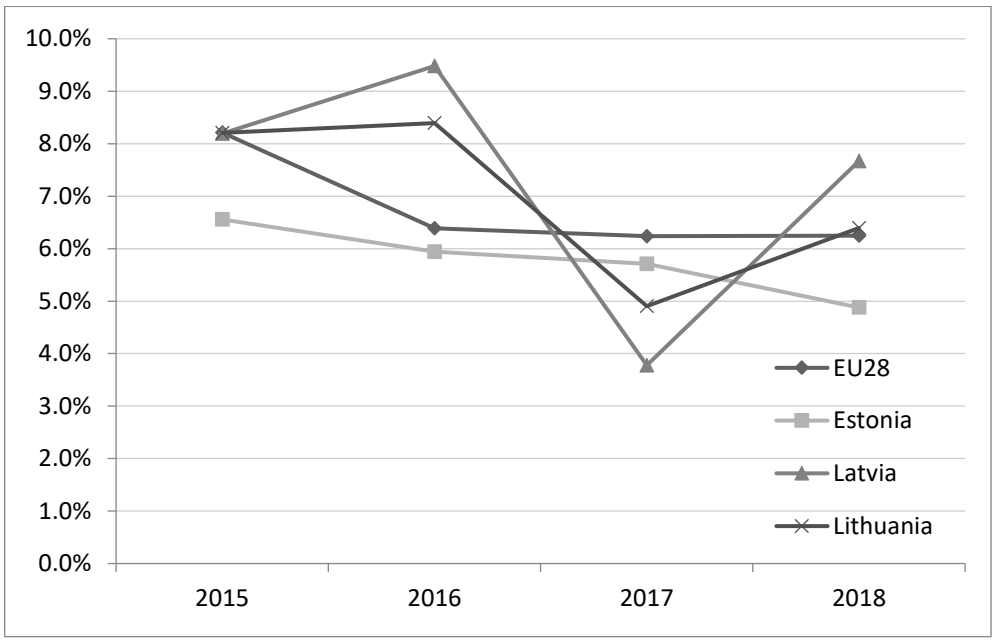

Fig.4. **DESI changes % to previous year**

(Authors calculation based on European Commission DESI report 2018)

But Figure 4 shows that the changes for Latvia have not been smooth. If EU28 average DESI increase in the last years is about 6.2% in a year, Latvia in year 2017 compering to year 2016 has increased DESI only 3.8%. It is good that there is an increase again in the last year that exceeds the average growth rate.

3. ICT factors and economic growth: an empirical analysis

To estimate the ICT impact on economic growth several indicators from DESI database were used. As DESI index is calculated just from 2014, and it is aggregated from several components, for the modelling we use separate DESI components. Data is collected from DESI database (if available), other variables are from Eurostat and AMECO.

Dependent variable representing economic growth is log of GDP per person employed. To catch ITC development's impact on economic growth, we have chosen classical production function approach, additionally involving ICT factors in the model's right-hand side.

Table 2

Modelling results

Dependent variable: log of GDP per person employed		
Variables	Coefficients Model (1)	Coefficients Model (2)
Log of Digital Public Services	0.115 *** (0.027)	0.100*** (0.019)
Log of Connectivity	0.127*** (0.031)	0.011 (0.02)
Log of Business technology integration	0.058*** (0.021)	0.056*** (0.014)
Log of Digital skills	0.334*** (0.071)	0.286*** (0.038)
Log of Use of internet	0.031 (0.039)	-0.028 (0.023)
Log of Capital stock per person employed		0.445*** (0.052)
Constant	8.48***	0.845***
Adjusted R square	0.928	0.967

Source: Authors' calculation.

Notes: *** p-value <0.01; ** p-value<0.05; * p-value<0.1. Numbers in the brackets are standard errors.

Balanced panel data regressions were estimated with EViews, using fixed effects for countries. Because of heterogeneity of data, White diagonal standard errors and covariances are used. Modelling results are described in the next – concluding section.

Conclusions, proposals, recommendations

Along to the traditional economic models emphasizing the importance of human capital, financial capital and technology in economic growth process, there are more and more scientific discoveries showing that the digital economy brings a significant contribution to the economic development. The Organization for Economic Co-operation and Development (OECD) indicates that productivity in business is growing by 5– 10% year to year using ICT (OECD, 2016).

Estimating digitization effects one of challenging tasks is measurement of digital economic performance and its development. Digital Economy and Society Index (DESI) is one of quite good examples. DESI allows rating countries according to their ICT development performance. Latvia is ranked in the middle cluster, taking 19th position between 28

EU countries. Now weakest positions are Human Capital and Integration of Digital Technologies. Respective authorities perform projects for improvement, but materialization of effects takes time.

In this paper empirical evaluation of impact of different ICT factors on GDP growth is realized via panel data regression modelling taking DESI dimensions as cross-sectionally comparable measurements. DESI indicator has five dimensions: broadband infrastructure, digital competences (measured as digital skills), use of internet, business technology integration (business digitization and eCommerce) and digital public services (mainly eGovernment). Panel data models are estimated with several specifications, keeping change in log of GDP as dependent variable (representing economic growth). In all specifications we have found highly significant positive effect of ICT investment. This conclusion is in line with previous empirical research papers.

Other finding from modelling is significance of human capital. Jin & Cho (2015) for basic model specification concluded that human capital (measured as proportion of ICT specialists) has no effect on economic development, and only adding control variables (higher national transparency and management of consumer inflation) this was found as important factor. In our model human capital variable describes digital skills of employment. It is found to be statistically significant factor.

It is not surprising that variable Use of internet is insignificant. Just use of internet (for example, reading news, using social networks etc.) is not generating any value added.

It is necessary to proceed analysis exploiting firm level data to better understand spillovers and externalities of ICT.

Bibliography

AMECO database [Online] Available at: https://ec.europa.eu/info/business-economy-euro/indicators-statistics/economic-databases/macro-economic-database-ameco_en. [Accessed September 22, 2018]

Cardona, M., Kretschmer, T., Strobel, T., 2013. ICT and productivity: conclusions from the empirical literature. *Information Economics and Policy*, Vol.25, pp. 109-125

Cirillo, V., Pianta, M., Nascia, L., 2015. The Dynamics of Skills: Technology and Business Cycles. LEM Papers Series 2015/30. Laboratory of Economics and Management (LEM). Sant'Anna School of Advanced Studies, Pisa, Italy [Online] Available at: https://ideas.repec.org/p/ssa/lemwps/2015-30.html. [Accessed January 18, 2019]

Digital economy data in Eurostat [Online] Available at: https://ec.europa.eu/eurostat/web/digital-economy-and-society/data/comprehensive-database. [Accessed September 22, 2018]

Frey, C.B., Osborne, M.A., 2017. The future of employment: how susceptible are jobs to computerisation? *Technological Forecasting and Social. Change*. Vol. 114, pp. 254–280, https://doi.org/10.1016/j.techfore.2016.08.019

Gasmi, F., & Recuero Virto, V. L. (2010). The determinants and impact of telecommunications reforms in developing countries. *Journal of Development Economics*, Vol.93(2), pp. 275–286.

Giannone, D., Santaniello, M., 2018: Governance by indicators: the case of the Digital Agenda for Europe, *Information, Communication & Society*. [Online] Available at: https://www.tandfonline.com/doi/abs/10.1080/1369118X.2018.1469655?journalCode=rics20. [Accessed January 11, 2019]

Guo, S., Ding, W., Lanshina, T., 2017. Global Governance and the Role of the G20 in the Emerging Digital Economy. *International Organisations Research Journal*, Vol. 12 (4), pp. 169–184

Jalava, J., Pohjola, M., 2007. ICT as a Source of Output and Productivity Growth in Finland. *Telecommunications Policy,* Vol. 31, pp. 463-472.

Jin, S., Cho, Ch.M., 2015. Is ICT a New Essential for National Economic Growth in an Information Society? *Government Information Quarterly,* Vol. 32, pp. 253-260.

Khan, S., Khan, Sh., Aftab, M., 2015. Digitization and its Impact on Economy. *International Journal of Digital Library Services.* Vol. 5 (2), pp. 138-149.

Knickrehm M, Berthon B, Daugherty P, 2016. Digital disruption: the growth multiplier. Accenture Strategy.

Kononova, K., 2015. Some Aspects of ICT Measurement: Comparative Analysis of E-Indexes. *Proceedings of the 7th International Conference on Information and Communication Technologies in Agriculture, Food and Environment. European Commission*, 2018. International Digital Economy and Society Index. SMART 2017/0052, Final Report. [Online] Available at: https://pdfs.semanticscholar.org/ad10/31c4000c2c8c5c425d7bb82fa1172b473f11.pdf. [Accessed January 11, 2019]

Milosevic, N., Dobrota, M., Rakocevic, S.B., 2018. Digital Economy in Europe: Evaluation of Countries' Performances. *Zbornik radova Fakulteta islamskih nauka u Sarajevu.* Vol.36 (2), pp. 861-880.

Morin, M., 2014. General Purpose Technologies: Engines of Change? Columbia University Academic Commons https://doi.org/10.7916/D889140N. [Accessed January 8, 2019]

Moroz, M., 2017. The Level of Development of the Digital Economy in Poland and Selected European Countries: A Comparative Analysis. *Foundations of Management*, Vol. 9, pp. 175-190.

Niebel, T., 2018. ICT and economic growth – Comparing developing, emerging and developed countries. *World Development*, 104 (2018), pp. 197-211.

OECD, 2017. OECD Digital Economy Outlook 2017, OECD Publishing, Paris. [Online] Available at: https://dx.doi.org/10.1787/9789264276284-en. [Accessed January 4, 2019]

Oprescu, G., Eleodor, D., 2014. The Impact of the Digital Economy's Development on Competition. *Quality-Access to Success, Supplement.* Vol. 15, pp.9-20.

Pradhan, R.P., Girijasankar, M., Bagchi, T.P., 2018. Information communication technology (ICT) infrastructure and economic growth: A causality evinced by cross-country panel data. *IIMB Management Review*. Vol. 30(1), pp. 91-103.

Raisinghani, M.S., 2004. Business Intelligence in the Digital Economy: Opportunities, Limitations, and Risks. Idea Group Publishing, Hershey.

Savulescu, C., 2015. Dynamics of ICT Development in the EU. *Procedia Economics and Finance,* Vol. 23, pp. 513-520.

Qu, J., Simes, R., O'Mahoni, J., 2017. How Do Digital Technologies Drive Economic Growth? *Economic Record*, Vol. 93 (Special Issue), pp. 57-69.

EVALUATION OF INTERNAL AUDIT ACTIVITY EFFECTIVENESS IN RISK ASSESSMENT OF ANTI-MONEY LAUNDERING AREA: A CASE OF "LATVIAN BANK N"

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Arina Matvejeva, "Deloitte"

Abstract. Due to recent AML violation cases occurred in financial institutions within Baltic States (Estonian Danske Bank, ABLV Bank AS and Versobank AS) and expressed concerns on Banks' Internal Audit activity within AML area, the author sees the necessity for assessment of Internal Audit activity within AML area in order to determine the level of adequacy of AML regulatory changes within the risk assessment and potential gaps in risk assessment of AML area. The research focuses on AML compliance with the constantly evolving and increasingly more complicated regulatory requirements and evaluation of organizational part of IA activity using an example of a Latvian Bank N.

The aim of this research is to investigate completeness of Internal Audit risk assessment in accordance with recent AML regulatory changes. This research also compares the IA organizational process that affects all banking areas between a Latvian Bank N and an Estonian practice.

This research relies on qualitative methods. Qualitative methods include face-to-face interviews with Board Members of Latvian Bank N, AML Internal Auditor of Latvian Bank N and telephone interviews with Estonian IA Experts. Also, involves documentary analysis of Latvian Bank N internal audit risk assessment conducted in 2017 for the implementation in 2018.

The conducted investigation showed that IA activity has certain deficiencies and shortcomings in relation to AML regulatory changes reflection in IA risk assessment for AML area, and for overall IA organizational process organization that is crucial for audits organization and conduction not only in AML area, but for all Latvian Bank N and other Latvian Banks' activities areas. Elimination of these deficiencies will help to achieve full reflection of AML regulatory changes and thereby mitigate the risks that bank processes which are affected by these regulation changes are not sufficiently assessed within the Internal Audit Risk Assessment. In addition, elimination of the deficiencies identified in relation to IA organizational processes will lead to increase of conformance in accordance with International Standards for the Professional Practice of Internal Auditing (pub. the Institute of Internal Auditors, 2017) and, as a result, will strengthen and improve the IA activity effectiveness that is within Internal Audit department and Bank's interest.

Many of these results are likely to apply not only in the particular bank on which the research is focused, but also to other banks in Latvia. Thus, the research has practical implications in formulating common risk management tactics and methods that could be applied across the banking sector.

Introduction

Anti-money laundering subject has been always the crucial part of any organization, but much more important for those who are in scope of financial service companies. Increasingly, such firms manage all-around the world operations and activities across multiple continents and countries. As a result, the essential consequences of these international expansions are permanent emergence of new official requirements and its updates that puts financial institutions under scrutiny of regulatory authorities.

The year 2018 have been very stressful for financial sector due to situations arisen within banking area of Baltic States. Situations came up in February 2018 when ABLV Bank AS (Gelzis, 2018), the third largest Latvian Bank, has been incriminated by FinCEN on money laundering schemes and resulted in excluding ABLV Bank AS from U.S. financial sector, sanctions from European Central Bank and shareholder's decision on starting liquidations process. Second one, would be Estonian Versobank AS (Mardiste, 2018) which license has been withdrawn as of March 2018 as a result of money laundering probe, permanent violation of AML law requirements and liquidation process have started. The third case, as of September-December 2018 came up with Estonian branch of Danske Bank (Coppola, 2018) where the ten former employees have been arrested due to AML international investigation. Danish, United States, United Kingdom and Estonian authorities are in progress of investigation of money flow from non-residents accumulated in billions of euros made in period of 2007-2015 through the bank that served as "correspondent bank". On the basis of these situations the authors agree with stated by Mellor, anti-corruption expert, (Mellor, 2018): "Ten years on from the financial crash and there are still bankers behaving with scant regard for the law or the impact of their actions on the rest of the world. Europe has a major money-laundering problem".

Despite of the fact that the financial articles on AML cases stated above are described in relation to involvement of Senior Management the authors want to investigate AML matter from different, but closely related, angle – Internal Audit activity that is serving as independent third line of defense. Chairman of the Institute of Internal Audit's (IIA) Global Board of Directors, Mouri stated (2018): "Stakeholders pressure on internal audit has never been greater", and emphasized that nowadays when business world is very dynamic and permanently developing new possibilities for business conduction, internal audit role becomes much more critical. Despite of its standard adding-value objectives, nowadays, the role and responsibilities of internal audit became more critical due to permanent changes and looking for new ways how to hold the independent opinion and make the impact for the company. Also, internal audit accompanying financial institutions cannot allow being static especially for AML area and the first and crucial step to be undertaken is to ensure that all possible risks are detected and sufficiently evaluated within the independent internal risk assessment.

As a result, the authors conclude that in order to mitigate the risk and avoid the circumstances, as happened in outlined AML violation cases, the financial institutions should start from its' inside and promote independent Internal Audit being reliable, strong and trusting tool for protection of financial institution and effective management of AML area.

Background to the Research

AML violation cases happened in the year 2018 (Estonian Danske Bank, ABLV Bank AS and Versobank AS) demonstrate the common problems of the entire banking system within Baltic States and, consequently, the authors will investigate AML area, but performed specifically by Internal Audit activity, serving as independent audit, and which main goal is risk detection and prevention. In order to carry out the research and due to possibility of obtaining information the authors will conduct investigation in a form of case study on the basis of Latvian Bank N. The research focuses on AML compliance with the constantly evolving and increasingly more complicated regulatory requirements and evaluation of organizational part of IA activity that covers all banking areas including AML. For more extensive assessment the authors provide the evaluation of Latvian Bank N IA organizational process and its comparison with the Estonian practice provided by IA Experts.

Aim and Objectives of the Research

Aim of research

To investigate completeness of Internal Audit risk assessment in accordance with recent AML regulatory changes, effectiveness of Internal Audit organizational process and to elaborate recommendations.

Research objectives

- To analyze whether within Internal Audit risk assessment of Latvian Bank N the most recent AML regulatory requirements have been fully applied (Research Question 1);
- To perform evaluation of Internal Audit of the Latvian Bank N organizational process and its comparison with the Estonian practice provided by Internal Audit Experts (Research Question 2);
- To summarize findings, provide the conclusion and develop adding-value recommendations for Latvian Banks' Internal Audit activity within AML area.

Internal Audit Function within AML area

As per Rodriguez (2017): "Money laundering is the criminal process of transforming ill-gotten gains from serious crimes into the appearance that they are indeed legitimate assets".

Banking industry always had a crucial role by establishment of trust between countries, clientele and creating the link between common people and government. Mat Isa, et al. (2015) stated in scientific investigation of money laundering within banking sector: "Assessment of money laundering risk is important, given that any bank would be exposed to considerably high level of such risk due to the inherent nature of banking operation". The authors agree that financial institutions comprise broad range of different services and products, and they are related to various money laundering risks that are needed to be properly managed and mitigated. To decrease the exposure to money-laundering risks the financial institutions analyze, evaluate, weigh intrinsic risks, assign the compliance resources, establish internal structures and controls, internal policies and specific procedures in order to detect and eliminate the aspects of money laundering. In order to evaluate the risks associated with money laundering the financial institutions have to consider wide range of different factors, for example, but not limited to, diversity, scale, business complexity, market targets, nature, jurisdictions, regulatory reports, clientele, transactions' size and volume, etc. As it was noted by Raza, et al. (2017) within their scientific publication:" Adequate internal controls are a prerequisite for the effective implementation of policies and processes to mitigate ML/TF[1] risk". Another argument on importance of internal controls for conduction of AML activities has been expressed by Pinho (2015) in his scientific study: "More specifically, internal control comprises of a plan for organized and coordinated methodologies and procedures which have been adopted by an organization to ensure the safeguarding of assets, the adequacy and reliability of financial report data, the operational efficiency and the adherence, at the various levels of the organization, to the policies set out by the management body".

Internal Audit and internal controls are tightly interconnected. Precise purpose of Internal audit for internal controls can be described as concluded within investigation performed by Nie (2017): "Internal audit is the confirmer of internal control, supervises evaluates as well as proposes amendments". However, the nature of these relationships is often discussed and is the subject of disputes within professional publications on whether the internal audit has an opponent role by independently controlling the bank departments or the value adding role, especially for money-laundering issues, if effectively integrated and managed. The role of Internal Audit has been very precisely defined with scientific study carried by Petraşcu and Tieanu (2014): "The internal audit constitutes a tool at the disposal of the audit committee, the only one able to independently assess fraud risks and anti-fraud measures implemented by the executive board". Therefore, Internal Audit role is independent evaluation of risks, systems, controls and specifically in relation to AML area, where complete, appropriate risk and control effectiveness assessment is a subject of high importance. Moreover, the internal audit assessment of AML internal controls is crucial as these controls have to be designed to comply with the regulatory requirements related to AML and the importance of their quality has been well expressed by pub. Lowers & Associates (2015): "The quality of these outputs will be the basis for enforcement actions if the regulator finds the program deficient or ineffective". Therefore, the role of Internal Audit is significant because the evaluation of AML internal

[1] Money laundering and terrorist financing

controls, risk and overall system, provision of recommendations, deficiencies detection, for which this function is responsible, plays the crucial role for financial institutions when it comes to AML compliance.

Research Question 1: *Whether Internal Audit risk assessment of Latvian Bank N reflects the recent changes in regulatory requirements for AML area?*

During the interview with the 3 Board Members of Latvian Bank N it was determined that AML regulatory changes is one of the most critical matter for IA AML audits to be considered during their risk assessment of business processes. It was argued by the permanent and prompt AML regulatory changes and more stringent and rigid nature of every next requirement. Therefore, the first research question is devoted to investigation on existence and completeness of reflection of recent AML regulatory changes within business processes included in IA risk assessment.

The following periodicity criteria have been applied by the authors for AML regulations changes taken into analysis of their reflection into risk assessment carried in 2017 for the year 2018:

• The changes must have come into force starting from 2017;

• The revisions on changes, if taken place starting from 2017, should be reflected;

• The changes came into force earlier than 2017 will be reflected if the mandatory compliance date is starting from 2018.

By accumulation of all results obtained on each investigated AML regulatory changes in relation to Latvian Bank N processes the following statements have been concluded by the authors in order to present outcomes in precise and effective way:

- *Extent of regulatory changes reflection into Bank N processes for the year 2018*

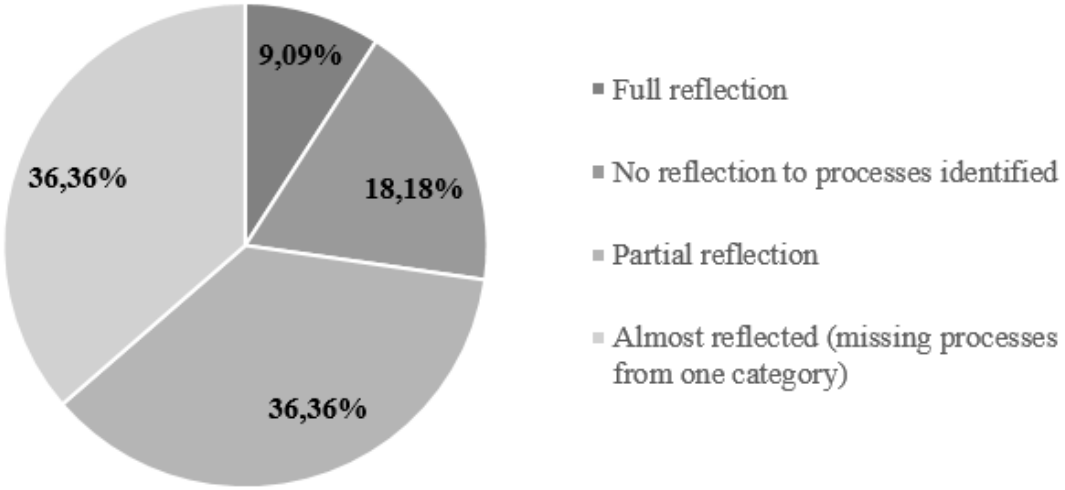

Figure 2.1. Extent of regulatory changes reflection into Bank N processes for the year 2018, developed by the authors (Measure unit: percentage from total 33 regulatory changes)

MiFID II/ MiFIR[2], AML Directive IV[3] (specifically "Requirement on client risk determination") or 9,09% (3 out of 33 total regulatory changes) has been fully reflected into appropriate business processes by IA of Latvian Bank N, however, Payment Services Directive 2[4], Wolfsberg Group Standards and additional revisions of "Call Report" (FFIEC BSA/AML Manual[5]) or 18,18% (6 out of 33 total regulatory changes) have not been reflected to any of banking processes. In relation to remaining regulatory changes: 36,36% (12 out of 33 total regulatory changes) are almost reflected which means that

[2]MiFID II - Markets in Financial Instruments Directive II;
MiFIR - Markets in Financial Instruments and Amending Regulation;
[3]Directive (EU) 2015/849 of the European Parliament and of the Council
[4]Directive (EU) 2015/2366 of the European Parliament and of the Council
[5] Federal Financial Institutions Examination Council Bank Secrecy Act / Anti-money Laundering Manual

missing bank processes are related to one category (for example, customer and third party data, and formation of a package of documents are related to "Transactions" process group) and 36.36% (12 out of 33 total regulatory changes) are partially reflected regulatory changes which means that missing bank processes are from different types of process groupings.

- *Level of appropriate Latvian Bank N business processes reflection per each AML regulation for the year 2018*

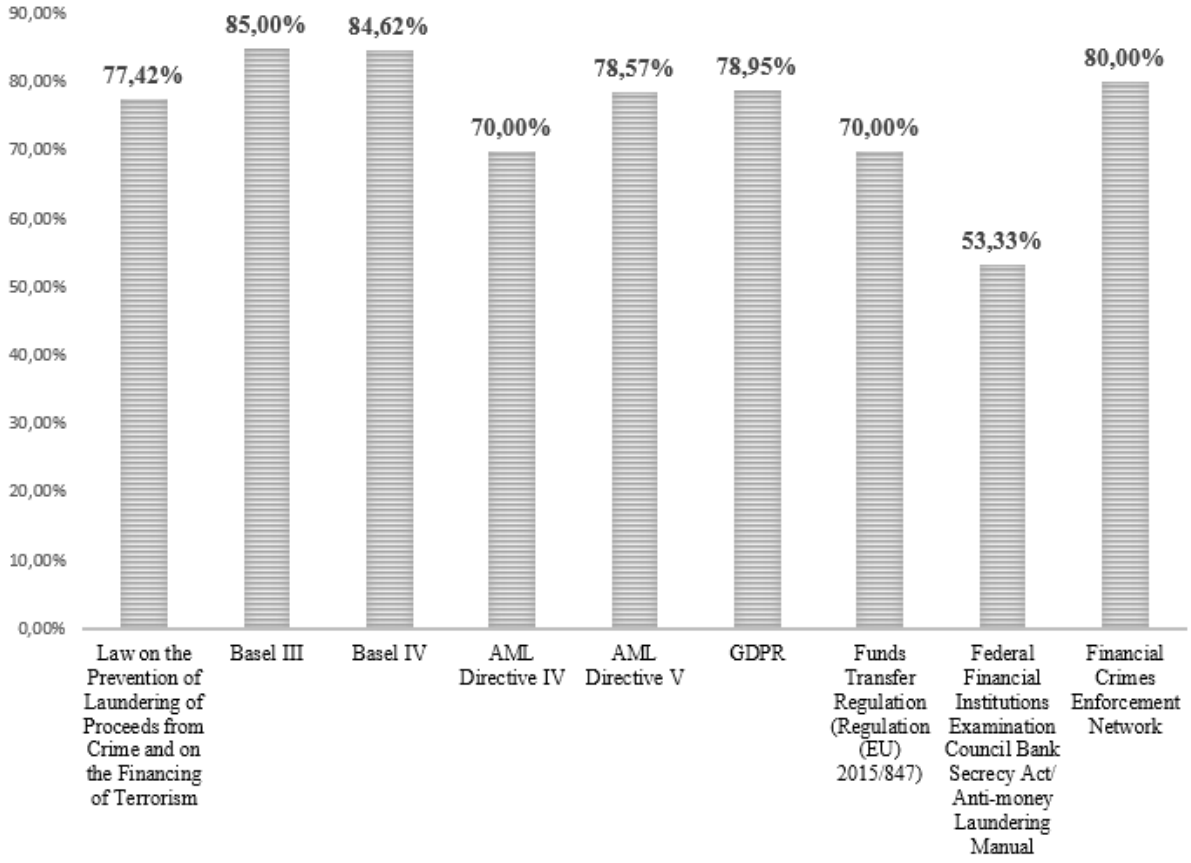

Figure 2.2. Level of appropriate Latvian Bank N business processes reflection per each AML regulation for the year 2018, developed by the authors (Measure unit: percentage from total business processes that have to be reflected to regulatory change)

The Figure 2.2 represents the percentage of business processes that includes in IA risk assessment certain AML regulatory changes (not taking into account not reflected or totally reflected regulation changes as a group, such as, Wolfsberg Group Standards, MiFID II / MiFIR and Payment Services Directive 2). One of the most reflected regulations are: Basel III[6] (85%, implementation level: 34 business processes out of total 40 business processes that had to reflect changes in regulation), Basel IV (84.62%, implementation level: 22 business processes out of total 26 business processes that had to reflect changes in regulation) and regulation changes from Financial Crimes Enforcement Network (80%, implementation level: 8 business processes out of total 10 business processes that had to reflect changes in regulation). The last one having the USA origin and, as supposed, by the authors have such level due to AML violation cases occurred in 2018 in relation to ABLV where Financial Crimes Enforcement Network had a critical regulator role. The authors will not express the opinion on importance due to which the Basel III and IV had the highest level of regulatory changes reflection, as according to the authors point of view all AML regulations due to their nature have a significant level of implementation requirements, but AML Manuals, such as Wolfsberg Group Standards and Federal Financial Institutions

[6] Regulatory standards of the Basel Committee on Banking Supervision

Examination Council Bank Secrecy Act/ Anti-money Laundering Manual, have been set by the ALCB[7] as mandatory AML/CTF[8] guidance to be followed.

The least implemented is Federal Financial Institutions Examination Council Bank Secrecy Act/ Anti-money Laundering Manual (53.33%, implementation level: 16 business processes out of total 30 business processes that had to reflect changes in regulation). The authors suppose that this could be due to the nature of regulation, as Manual, but still needs to be considered on reassessment and further implementation as is considered as mandatory AML/CTF guidance required for being followed as set by the ALCB.

- *Extent of not associated (but should be) Latvian Bank N process groupings with AML regulatory changes for the year 2018*

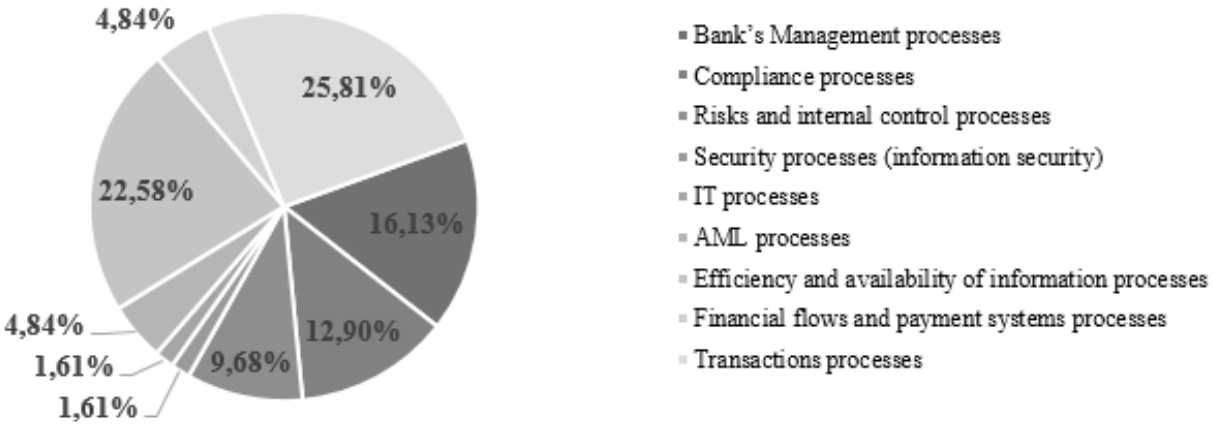

Figure 2.3. Extent of not associated (but should be) Latvian Bank N process groupings with AML regulatory changes for the year 2018, developed by the authors (Measure unit: percentage of non-associated business processes groupings)

The most significant matters that more frequently have been observed as "no evidence noted, but should be associated with regulatory changes" and percentage of which is not less than 5% from total not reflected processes were "Transactions" process group (25,81%, 16 out of 62 not reflected business processes) that includes responsibilities for "Customer and third party data", "Documentation management" and "Formation of a package of documents", and "Efficiency and availability of information" process group (22,58% or 14 out of 62 not reflected business processes) devoted to timely exchange of information with Management and Regulators, however, as it was discussed with IA Experts, that this can be made due to inattentiveness, but performed in practice, therefore, needs to be discussed with IA of Latvian Bank N. Other process groups that have not been, but should be associated with regulatory changes are "Bank's Management" process group (16,13%), "Compliance" process group (12,90%) and "Risks and internal control" process group (9,68%). The authors want the IA department of Latvian Bank N to pay attention on all banking business processes reflected in Figure 2.3 as they demonstrate the business processes that have to be reassessed due to potential risk of underestimation within the risk assessment and risk of insufficiency of planned engagements which are decided on the basis of risk assessment.

[7] Association of Latvian Commercial Banks, 2017
[8] Anti-money laundering and counter-terrorism financing

Research Question 2: *What are the differences between Internal Audit organizational process of Latvian Bank N in comparison with Internal Audit organizational process of Estonian Banks?*

The second question is dedicated to analyzation and comparison of organizational activity of Internal Audit of Latvian Bank N (risk assessment, audit universe, annual plan) to Estonian Banks' practice based on opinions of 2 Estonian Internal Audit Experts who have more than 10 years' experience of internal auditing and possess CIA[9] certificates. The interview conduction has taken place in January 2019. The aim of research question is to evaluate and identify the differences that would lead the authors for development for valuable recommendations for IA activity's organizational part that affects all business processes, including AML area, and is applicable for all Banks.

As a result of analysis conducted the authors have identified the following deficiencies as a result of research conducted:

- *"Revision of risk assessment" - Risk of non-compliance with IIA's International Standards for the Professional Practice of Internal Auditing*

Risk assessment is updated by IA on annual basis, however as in accordance with IIA's International Standards for the Professional Practice of Internal Auditing the risk assessment should be updated at least annually (each time when any additional concern or update occurs);

- *"Reservation of time for consulting services" - Risk of overload and work quality decrease*

As it was noted by the authors audit plan does not provide the time for consulting engagements, if any. In order to eliminate the risk of overload with engagements, decrease of work quality and lack of resources, the authors would advise to reserve 10% of annual time for consulting projects;

- *"Finalization and approval of audit plan" - Risk of non-compliance with formal banking decision-making process and IIA's International Standards for the Professional Practice of Internal Auditing*

As it was noted by the authors the IA audit plan in Latvian Bank N should be finished by the end of January, however, in order to eliminate the risk of non-compliance with formal banking decision-making process (conduction of engagements without approval from the Council and Revision Committee) the authors would recommend to state in IA Policy and implement the finalization and approval of audit plan in December. In addition, it should be noted that as per IA Experts experience from Estonian Banks this deficiency often observed within Estonian financial services industry.

In addition, the following considerations for improvement of organizational process effectiveness have been developed by the authors on the basis of opinion and experience of IA Experts:

- *Risk assessment evaluation elements*

The authors would advise to consider additional elements (as in accordance with IA Experts' experience) that would enhance the risk assessment process, such as: written analysis of each risk in regards to business process (risk causes), usage of benchmarking, industry surveys, update of risk factors from discussion with Senior Management, Revision Committee, Head of Departments, as well, from Head of IAD knowledge and concerns;

- *Risk assessment and Audit Universe separation*

As it was noted by the authors the IA of Latvian Bank N prepares Audit Universe (Strategic plan) and risk assessment in one documentation file. Per James Aquino (2010) the Audit Universe is defined as: "An inventory of audit areas that is compiled and maintained to identify areas for audit during the audit planning process". However, due to different purposes of these IA elements and great amount of banking processes, risks, controls, the authors consider that they have to be separated and role of each of them should be clearly understandable by Internal Auditors. Risk assessment purpose has operational character and it serves as working file with, as a result, identified areas to be audited during next year,

[9] Certified Internal Auditor

however, an Audit Universe has strategic characteristics with different time scope (3-5 years) on projected high risk audit areas and engagements, and overall view on obligatory coverage of all areas during this time scope;

- *Transition to IA specialized software*

As noted, IA department of Latvian Bank N uses Microsoft Office tools for preparation and secured folders for keeping documentation. In order to enhance efficiency and effectiveness of overall IA activity, the authors would recommend to take into consideration the opportunity for transformation of all documented processes into one, specialized on IA, tool. For example, "E-dok" internal audit software developed by Estonian company and already showed itself on Estonian market as highly trusted tool. The price for the annual licensing of "E-dok" (the IT control will be performed by Estonian company) is negotiable depending on size and complexity of organization. It will enable internal auditors to strengthen the consistent quality of their audits in an efficient manner, in compliance with IIA standards, and enhance teamwork and ensure the confidentiality and retention of data. The software has not been generated to require one single narrow methodological path, but enables a variety of approaches, for example, to prevent mistakes done manually on placing the risk assessment updates to Audit Universe and/or update of Audit Universe before risk assessment. The software would help to decrease the manual interactions into Audit Universe by replacement with automated transfers of any risk assessment changes and/or established settings under which a certain manual changes would be possible. As well, using the software enables the internal auditor to take a step back and analyze the approach used so far, providing an opportunity to spot deficiencies in performing audits what is critical for overall IA activity and as needed by Senior Management.

Recommendations

Research Question 1

In order to eliminate the risks described within conclusion part for Research Question 1 and achieve full reflection of recent changes in regulatory requirements for AML area and needs of Board Members within IA risk assessment, the following recommendations related to research question *"Whether Internal Audit risk assessment of Latvian Bank N reflects the recent changes in regulatory requirements for AML area?"* have been developed by the authors for Internal Audit departments of Latvian Banks:

- To consider permanent review and reflection into IA risk assessment any potential changes in AML regulations, for example, proposed changes stated within AML regulatory reports (post-analysis on regulatory change), AML key considerations expressed during official discussions and AML devoted conferences, etc. in order to be well informed and be ready for prompt reactions to any sudden changes within AML regulatory framework;
- To consider establishment of permanent verifications of IA risk assessment on reflection of AML regulatory changes to the bank processes in order to avoid the risk of insufficient bank processes' risk assessment that can lead to non-conduction of appropriate AML audit and, further, lack of proper money-laundering risk coverage.

Research Question 2

In order to enhance the effectiveness of overall organizational process that is important for audits conduction for AML area and all Banks areas, and eliminate the risks described within conclusion part for Research Question 2, the following recommendations related to research question *"What are the differences between Internal Audit organizational process of Latvian Bank N in comparison with Internal Audit organizational process of Estonian Banks?*" have been developed by the authors for Internal Audit departments of Latvian Banks:

- To consider the revision for risk assessment at least annually as in accordance with IIA's International Standards for the Professional Practice of Internal Auditing;
- To consider reservation of 10% of annual time for unexpected consulting engagements to mitigate the risk of engagements overlapping and, as a result, lack of resources and decreased work effectiveness;

- To analyze opportunity for finalization and approval of audit plan in December instead of January to mitigate the non-compliance risk related to formal decision-making process;
- To consider review of risk assessment's evaluation elements in order to improve risk assessment process, such as: written analysis of each risk in regards to business process (risk causes), usage of benchmarking, industry surveys, update of risk factors from discussion with Senior Management, Revision Committee, Head of Departments, as well, from Head of IAD knowledge and concerns;
- To separate risk assessment and Audit Universe documentation due to different aims followed by these IA elements. Risk assessment has an operational character and serves as working file with performed assessment for identification of areas to be audited upcoming year, however, Audit Universe has a strategic nature with different time scope (3-5 years) on future projects and significant audit areas, and view on mandatory coverage of all banking areas within the time scope;
- To analyze possibility of transition to IA specialized software (for example, Estonian tool for Internal Audit – "E-dok") that would strengthen the quality of IA audits in an efficient manner, in compliance with IIA's International Standards for the Professional Practice of Internal Auditing, enhance teamwork, ensure the confidentiality and retention of data. The software enables variety of different approaches. In addition, using this software it will enable internal auditor to analyze the methodology used so far, and will provide opportunity to identify deficiencies and risks within IA activity, for example, prevention of manual mistakes on placing risk assessment updates into Audit Universe or Audit Universe being updated before risk assessment. In such situations the software helps to minimize interactions done manually within Audit Universe by automated transfers of changes in risk assessment and establishing conditions under which manual changes are possible.

Bibliography

Association of Latvian Commercial Banks, 2017. Latvia Banking Developments and Compliance Status Review. [ONLINE] Available at: https://www.financelatvia.eu/wp-content/uploads/2018/03/LKA_prezentacija_eng_11012018-1.pdf. [Accessed 5 December 2018].

Bank for International Settlements / Basel Committee on Banking Supervision, 2017. Basel III: Finalising post-crisis reforms. [ONLINE] Available at: https://www.bis.org/bcbs/publ/d424.pdf. [Accessed 27 January 2019].

Coppola, F., 2018. The Banks That Helped Danske Bank Estonia Launder Russian Money. [ONLINE] Available at: https://www.forbes.com/sites/francescoppola/2018/09/30/the-banks-that-helped-danske-bank-estonia-launder-russian-money/#188baf677319. [Accessed 12 January 2019].

Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing, amending Regulation (EU) No 648/2012 of the European Parliament and of the Council, and repealing Directive 2005/60/EC of the European Parliament and of the Council and Commission Directive 2006/70/EC.

Directive (EU) 2015/2366 of the European Parliament and of the Council of 25 November 2015 on payment services in the internal market, amending Directives 2002/65/EC, 2009/110/EC and 2013/36/EU and Regulation (EU) No 1093/2010, and repealing Directive 2007/64/EC.

Federal Financial Institutions Examination Council, 2014. Bank Secrecy Act/ Anti-Money Laundering Examination Manual. [ONLINE] Available at: https://www.ffiec.gov/bsa_aml_infobase/documents/BSA_AML_Man_2014_v2.pdf. [Accessed 27 January 2019].

Financial Crimes Enforcement Network of 11 May 2016 on Customer Due Diligence Requirements for Financial Institutions, RIN 1506–AB25, Washington: Federal Register.

Gelzis, G., 2018. Latvian banking regulator approves liquidation of ABLV Bank. [ONLINE] Available at: https://www.reuters.com/article/latvia-banking-ablv/latvian-banking-regulator-approves-liquidation-of-ablv-bank-idUSL8N1TE4O7. [Accessed 12 January 2019].

International Chamber of Commerce/ The Wolfsberg Group, International Chamber of Commerce and the Bankers Association for Finance and Trade, 2017. The Wolfsberg Group, ICC and BAFT Trade Finance Principles. [ONLINE] Available at: https://cdn.iccwbo.org/content/uploads/sites/3/2017/01/ICC-Wolfsberg-Trade-Finance-Principless-2017.pdf. [Accessed 23 December 2018].

ISACA / James Aquino, 2010. ISACA Glossary Terms: Audit Universe. [ONLINE] Available at: http://www.isaca.org/Knowledge-Center/Lists/ISACA%20Glossary%20Terms/DispForm.aspx?ID=1011. [Accessed 28 January 2019].

Mardiste, D., 2018. ECB revokes licence of Estonian bank amid money laundering probe. [ONLINE] Available at: https://www.reuters.com/article/banking-estonia/ecb-revokes-licence-of-estonian-bank-amid-money-laundering-probe-idUSL8N1R92LY. [Accessed 12 January 2019].

Mat Isa, Y. et al., 2015. Money Laundering Risk: From the Bankers' and Regulators Perspectives. Procedia Economics and Finance, 28, 7-13. [ONLINE] Available at: https://www.sciencedirect.com/science/article/pii/S2212567115010758#bbib0145 [Accessed 28 January 2019]

McKinsey&Company / Schneider, S. et al., 2017. Basel "IV": What's next for banks?. [ONLINE] Available at: https://www.mckinsey.com/~/media/mckinsey/business%20functions/risk/our%20insights/basel%20iv%20whats%20next%20for%20european%20banks/basel-iv-whats-next-for-banks.ashx. [Accessed 27 January 2019].

Mellor, J., 2018. "Ten years on bankers still behaving with scant regard for law" Danske Bank money-laundering scandal. [ONLINE] Available at: https://www.thelondoneconomic.com/news/ten-years-on-bankers-still-behaving-with-scant-regard-for-law-danske-bank-money-laundering-scandal/19/09/. [Accessed 13 January 2019].

Mouri, N., 2018. A Standard of Performance. [ONLINE] Available at: https://iaonline.theiia.org/2018/Pages/A-Standard-of-Performance.aspx. [Accessed 24 September 2018].

Nie, J., 2017. When Internal Control Meets Internal Audit: Conflict or Combine?. Open Journal of Accounting, [Online]. 6/2, 43-51. [ONLINE] Available at: https://file.scirp.org/pdf/OJAcct_2017042814045675.pdf [Accessed 27 January 2019].

Lowers & Associates, 2015. The Important Role of Internal Controls for AML Compliance. [ONLINE] Available at: http://blog.lowersrisk.com/internal-controls-aml/. [Accessed 28 January 2019].

Petraşcu, D., Tieanu, A., 2014. The Role of Internal Audit in Fraud Prevention and Detection. Procedia Economics and Finance, 16, 489-497. [ONLINE] Available at: https://www.researchgate.net/publication/275541212_The_Role_of_Internal_Audit_in_Fraud_Prevention_and_Detection [Accessed 28 January 2019].

Pinho, C., 2015. Implementation of Internal Control Systems to Combat Money Laundering and Financing of Terrorism – An Applied Exploratory Study to the Angolan Financial Sector. International Journal of Business and Social Research, 05/07, 38-50. [ONLINE] Available at: https://www.researchgate.net/publication/307803461_Implementation_of_Internal_Control_Systems_to_Combat_Money_Laundering_and_Financing_of_Terrorism_-_An_Applied_Exploratory_Study_to_the_Angolan_Financial_Sector [Accessed 28 January 2019]

Raza, M.S. et al., 2017. Money Laundering Risk Evaluation of Financial Institution with AHP Model. Journal of Financial Risk Management, . 6/2, 119-125. [ONLINE] Available at: https://file.scirp.org/pdf/JFRM_2017061215231587.pdf [Accessed 27 January 2019

Rodriguez, T.B., 2017. What Types of Crimes are Considered Money Laundering?. [ONLINE] Available at: http://www.timbowerrodriguez.com/crimes-money-laundering/. [Accessed 24 January 2019].

Sundarakani, S., Ramasamy, M., 2013. Consequences of Money Laundering in Banking Sector. Jurnal Teknologi, Vol 64, No 2, 93-96. [ONLINE] Available at: https://jurnalteknologi.utm.my/index.php/jurnalteknologi/article/view/2243/1787 [Accessed 26 January 2019].

The Institute of Internal Auditors, 2017. INTERNATIONAL STANDARDS FOR THE PROFESSIONAL PRACTICE OF INTERNAL AUDITING (STANDARDS). [ONLINE] Available at: https://na.theiia.org/standards-guidance/Public%20Documents/IPPF-Standards-2017.pdf. [Accessed 21 January 2019].

SMALL BUSINESS IN A SMALL COUNTRY AND THE ROLE OF GOVERNMENT (THE CASE OF GEORGIA)

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Tatiana Papiashvili, International Black Sea University

Abstract. ***Problem statement:*** The value of small and medium-sized enterprises (SMEs) for a national economy is recognized all over the world. Georgia is not an exception. Georgian government has declared the importance of the creation of a strong private sector in strategic documents - "Socio-Economic Development Strategy of Georgia – Georgia 2020" (2014) and "For a Strong, Democratic and United Georgia" (2015), first of all. In line with country's general strategy - to achieve economic growth through private sector development - more proactive reforms to develop entrepreneurship, start-ups and build a competitive SME sector have been developed and special program -"*SME Development Strategy 2016-2020"*- was adopted. Nevertheless, some challenging tasks still remain.

***The aims* of the article** are twofold. Firstly, to analyze Georgian SMEs contribution to the national economy in order to reveal the role of this sector, and following this reasoning, critically assess government policy towards SMEs after signing in 2014 the Association Agreement with the European Union.

Research methods applied in the paper are quantitative and qualitative based upon a bottom-up approach that combines desk research and statistical data analysis provided by the National Statistics Office of Georgia, national researches and international organizations. Desk research consists of analysis of academic literature related to the topic. Media reports and interviews are used as additional sources.

Main results/ Findings *are as follows:*

- nowadays Georgian SMEs contribution to the country's economy is difficult to be assessed due to the new classification methodology applied by the National Statistics Office of Georgia,
- Georgian government policy toward SME is changing,
- Entrepreneurial education still remains a challenge,
- Neither educational programs are fully successful nor government provided effective training programs.

Practical implication of the work: Recommendations for the policy decision-makers were developed in order to provide guidance to policy makers for formulating and adjusting policies and programs.

Key words: *small and medium-sized enterprises (SMEs), government policy, Georgia*

JEL code: M210

Introduction

Problem statement: The value of small and medium-sized enterprises (SMEs) for a national economy is recognized all over the world. It is often defined as "vital" (BSEC , 2014; Keskin, Sentürk , 2010) or even "crucial" (Haltiwanger, et al, 2010). Indeed, more than 95 percent of enterprises in the OECD area are SMEs. In other words, in all OCDE countries SMEs represent almost the totality of the business population. SMEs are recognized as the backbone of the European economy (European Commission, 2013).

In emerging and developing economies SMEs contribute more than one third of GDP, account for 60 percent of total employment and generate between 50 and 60 percent of value added (OECD, 2018).

The vital role of SMEs for national economies and societies has become even more evident since the 2008-2009 global financial crisis. Literature highlights the main reasons of this phenomenon, such as small business flexibility or readiness to respond to changing climates and new economic situation (Keskin, Sentürk, 2010), SME innovative nature (Sahut, Peris-Ortiz, 2015) and ability to work in high-risk sectors, such as telecommunications, scientific research and development and IT services (Longley, 2018). Besides traditional role of being job generator, small business creates job opportunities for those who facing a disadvantage in the workforce like minorities, veterans, and women (U.S. Census Bureau, 2016).

Customers also have appreciated SMEs interactivity and accountability to the local community wants and needs (Moffatt, 2018). Small businesses also represent an effective tool to address societal needs through the market, as in the case of social enterprises (EU/OECD, 2016).

Consequently, the role of SMEs in countries' economy and society has been repeatedly acknowledged at the highest political level. In 2008 European Council initiated new approach in SME policy, named the "Small Business Act" (SBA) for Europe, in order to further strengthen SMEs' sustainable growth and competitiveness (Small, 2008). The EU has thus firmly placed the needs of SMEs at the heart of the growth and jobs strategy changing policy priorities from regulation to public service.

In SBA 10 principles that guide the conception and implementation of policies were also formulated.

American government SME policy has even longer history. The special departments and federal agencies have been created to provide small businesses all kinds of support. The leading agency is the US Small Business Administration (SBA), that was created in 1953 and whose basic functions have been (a) to provide free business counseling helping business owners with management and technical assistance and business training; (b) to help small businesses to get loans by making direct business loans and guaranteeing bank loans; (c) to assist in case of disaster making loans to victims of natural disasters.

It goes without dispute, learning best international practice is crucial for small post-Soviet countries like Georgia. Nevertheless, it should be also recognized that countries have different priorities for different populations of firms, depending on the specific national contexts and circumstances.

***The aims* of the article** are twofold. Firstly, to analyze Georgian SMEs contribution to the national economy and society in order to reveal the role of this sector, and following this reasoning, critically assess government policy towards SMEs after signing in 2014 the Association Agreement with the European Union in order to provide guidance to policy makers for formulating and adjusting policies and programs.

Research methods applied in the paper are quantitative and qualitative based upon a bottom-up approach that combines desk research and statistical data analysis provided by the National Statistics Office of Georgia, national researches and international organizations. Desk research consists of analysis of academic literature related to the topic. Media reports and interviews are used as additional sources.

SMEs in Georgia by the numbers

Keeping in mind 2014 Association Agreement with the European Union that offered both new opportunities and challenges for Georgian SMEs, the prospect of further improvement of legislative framework, updating the definition of SME seems like an urgent issue (OCDE, GIZ, 2016).

Table 1 summarizes SMEs contribution to Georgian economy using the major macroeconomic indicators – turnover, value added, employment, and investment in fixed assets. As one can see, nowadays Georgian SMEs contribution to the country's economy is difficult to evaluate. The problem has raised since the National Statistics Office of Georgia introduced new classification methodology. According to the new approach, part of previously "large" enterprises were mechanically transferred to the group "medium". As a result, the share of the group "small and medium enterprises" in main economic indicators, applied in this analyses, more than double up! The only argument provided by the National Statistics Office is that new methodology is closer to the European standard. How valuable this argument is and how applicable the new classification is for policy-making, is a special question for special research (Papiashvili, Ciloglu, 2017), (Saksonova, et al, 2017). But the fact is that " …. a standard international definition of SME does not exist. SMEs are defined differently in the legislation across countries, because the dimension "small" and "medium" of a firm are related to the size of the domestic economy" (OCDE, 2017, p. 14).

Table 1

SMEs contribution to Georgian economy (% of total)

Year	Turnover		Value added		Employment		Investment in fixed assets	
	Old method	New method	Old method	New method	Old method	New method	Old method	New method
2006	18.7	62.1	21.8	46.2	46.7	63.8	10.5	31.0
2007	14.5	57.7	16.3	49.1	44.1	67.8	11.6	29.9
2008	12.3	51.4	16.6	45.4	40.0	64.7	19.1	42.7
2009	15.6	56.3	22.6	52.3	42.4	66.5	8.0	35.3
2010	16.1	52.0	23.7	50.4	43.6	66.9	12.1	28.8
2011	19.9	57.1	20.3	55.5	45.6	69.5	15.2	41.5
2012	17.0	55.8	22.1	55.4	42.9	68.3	15.0	45.8
2013	18.2	58.0	21.6	56.0	42.7	67.6	19.7	50.9
2014	18.1	57.5	22.5	57.3	43.8	68.5	19.4	55.5
2015	17.5	56.7	10.4	58.1	43.1	68.3	15.1	41.3
2016	17.8	55.9	21.7	58,4	41.7	67.4	19.7	45.0
2017	15.7	67.0	21.4	61.6	36.7	64.3	16.1	39.2

Source: Compiled and calculated by the authors, source of data: Geostat.

The described above statistical "trick" is not trivial or technical as it seems at first glance. According to the "old" methodology, SMEs contribution to economic growth is insignificant. Under these circumstances, Georgian society, business and academic communities have to demand more active government support to the sector development (Papiashvili & Ciloglu, 2015). The "new" methodology changes the picture to opposite – SMEs are very competitive and their contribution to the national economy is quite significant. Despite the fact that a lot proactive reforms have been implemented in order to develop entrepreneurship, start-ups and to build a competitive SME sector (Enterprise Georgia. 2016), this conclusion is misleading. "Results of economic growth did not reach a significant part of the Georgian population and failed to have an impact on reducing unemployment and poverty levels" (Social-economic, 2014, p. 11).

Thus, playing tricks with the SME statistics creates real challenges. Statistical "bread butter on both sides" creates an illusion that causes misleading conclusion concerning the further SME policy. New statistical method provides considerable room for politicians to manipulate with the data, selecting suitable statistics to demonstrate to voters how successful current policy is. New methodology disorients Georgian academic and business communities and sends a wrong signal to the government that main goals have been achieved. The main economic and social function of small business – being one of the important drivers of economic growth and engine of employment and income – might be neglected due to the achieved "successes".

Under these circumstances, the question arises - If SME sector is quite successful in Georgia from economic (at least, based on the reviewed indicators) and social perspectives (its contribution to employment), what kind of government police does the country need? To find out the answer, from the beginning the common fundamental principles of such policy should be defined.

Fundamentals of government SME policy

The philosophy of government SME supporting policy should be rooted on the recognizing SMEs weaknesses which, on one hand, hamper their development and, on another, small business cannot tackle the remaining problems by itself.

Complicating the picture further, compulsory policy principle should be systems approach. The conceptual framework, which consider the environment for business creation, investment, and growth was developed by OCDE (OECD 2017, p.12). It offers insights for characterizing the SME business environment and shows the links between the business eco-system and SME performance. The system consists of four blocks:

1. *Institutional and regulatory framework* (regulation, taxation, competition, public governance, court and legal framework)
2. *Access to markets* (infrastructure, trade and investment policy, domestic demand conditions, public procurement)
3. *Access to resources* (human capital and skills, finance, energy, knowledge and technology/innovation)
4. *Entrepreneurial culture* (abilities, attitudes, opportunities)

Therefore, the proposed framework reflects that

- SME policy space is complex that comprises two levels - broad policies and specific targeted policies;
- SME policy objectives are multi-dimensional and diverse.

A better understanding is needed of the combined effects of structural reforms on the SME business environment, as well as on the role and impact of policies targeted to SMEs. Insufficient understanding of the interdependency of policies leads to not well though-out of the synergies, trade-offs and complementarities within and across policy areas, as well as the

implications for different types of SMEs (OECD, 2016).

Assessing SME policy in Georgia

Despite the variety of SME policy in different both advanced and post-socialist countries, critique of the results is in common (Wapshott, Mallett, 2018), (Chepurenko, 2017), (Mamman et al, 2019). As researchers report, SME support policy is not effective as it could be and small business is still facing limited access to resources (financial, human, technology, others) and markets (Tsuruta, 2017), (Rupeika-Apoga, Saksonova, 2018). Georgia is not an exception (Papiashvili, Ciloglu, 2017).

The guiding principle of Georgia's strategy for economic development has been defined since 1996, when Partnership and Cooperation Agreement between the EU-Georgia was signed. The Association Agreement of 2014, which integral part is Deep and Comprehensive Free Trade Area, deepens this cooperation.

Georgian government has declared the importance of the creation of a strong private sector in strategic documents - "*Socio-Economic Development Strategy of Georgia – Georgia 2020*" (GoG, 2014b) and "*For a Strong, Democratic and United Georgia"* (GoG , 2014 a). In line with country's general strategy to achieve economic growth through private sector development, more proactive reforms to develop entrepreneurship, start-ups and build a competitive SME sector have been developed. Special program -*"SME Development Strategy 2016-2020"* (GoG, 2015) - was adopted which represents the new page in relationships between small business and the government. Indeed, in 2004 when widespread economic reforms started in the country, the main announced goal was to create business-friendly environment for all firms, no matter their size (Georgia, 2011). Therefore, Georgian government rhetoric toward SME special programs and policies has been changing drastically. The new approach focuses on targeted support through providing financial and technical assistance for entrepreneurship, innovation and export promotion. To achieve these goals, tax reform has been implemented, two new institutions, Enterprise Georgia and Georgia's Innovation and Technology Agency (GITA), have been created, significant progress has been made on the indicators for business support infrastructure, access to finance, technical barriers to trade and SME internationalization , etc. (OCDE, GIZ, 2016). Besides, the first "Annual Progress Report of SME Development Strategy Action Plan 2016-2017" that was published recently, provides detail analysis of actions which Georgian government is going to undertake (Annual Progress, 2017).

Nevertheless, despite much has been done, several problems still remain.

The objective of this research is education, because, firstly, in the knowledge-based economy, skills and knowledge are considered among critical prerequisites for the development of dynamic and productive SMEs (OECD, 2017, p.5) . Secondly, entrepreneurial education in Georgia is recognized as the first among the most problematic factors for doing business in the country (World Economic, 2017, p.124).

Keeping in mind the complexity of the investigated problem, some assumptions of the research might be defined. They are as follows:

- Entrepreneurial education is analyzed in broad term as education and training together.
- The country-level studies show that in efficiency-driven country like Georgia, increased investment in entrepreneurship education and training would give fully positive return only if basic requirements such as adequate infrastructure, economic stability, market and technological readiness, others components included in aforementioned fundamentals, have been created (Global, 2018). Due to the fact that Georgia has been internationally recognized as a successful reformer (World Bank, 2017) and reforms in education system has been accompanying all the others, it is worth to assume that entrepreneurial education and training have some effects on entrepreneurial attitudes, activity and aspirations. Conducted surveys provide empirical evidence of validity of this assumption (Papiashvili et al, 2015).
- To define the role of government in education market, demand-supply analysis might be applied.
- Due to the lack or even absent of reliable statistics on Georgian SME, results of surveys might be generalized.

On the demand side: The new industrial revolution changes nature of work increasing the demand for high-skilled and non-routine jobs, generates new opportunities for innovative entrepreneurs (OECD, 2018.p.16). Skillset is diversified and includes commercial (e.g. marketing and serving of new offers), project management (e.g. logistics, organization of events), financial (e.g. capital and cash flow management) and strategic thinking skills (e.g. building internal leadership, coordinating sets of actions to fulfil new strategic objectives) (OECD, 2013).

On the supply side the picture is much more comprehensive.

People may receive entrepreneurship education and training at various times in their lives, whether their formal education (at school, college or university) or beyond it as informal one. Formal education is very important because it

enhances the skills required to start and grow business. Researchers founded that university graduates who have taken entrepreneurship courses were more likely to select careers in entrepreneurship, worked in small businesses and developed patented inventions or innovative processes, services or products (Wiśniewska et al, 2015).

Education system in Georgia has been significantly reforming (Doghonadze , Papiashvili, 2009). Part of these reforms is related to the introduction of strong requirements for accreditation and authorization procedures. General results of implemented reforms are positive in terms of decreasing the number of accredited higher institutions as well as higher competition in the market and higher quality of education. Nevertheless, paradoxical situation appeared. On one side, Georgia traditionally has a high level of adult education and some researches even classify the situation as overeducation. On another side, skills mismatch in the labour market and lack entrepreneur education are observed (OCDE, GIZ, 2016, p.25, 44).

The next proposed step in modifying educational system that the Georgian government could undertake is a change in school curriculum by introducing some elementary business related courses to develop inspiration, attitudes and intentions to start a business in the beginning. It is important because attitudes and perceptions towards entrepreneurial activity started to be formed at primary and secondary schools.

Informal education has its advantages. While formal education provides a foundation, informal education helps people who need specific knowledge and skills, perhaps when they become interested in starting a business or have taken steps to do so. Therefore, informal education as essential component of entrepreneurial education, should be full introduced in the country.

In Georgia there is a lack of training programs provided by NGOs and the government. Another side of this coin is lack of finance (Livny et al, n/d). Taking into account the serious misbalance in the labour market that is

(a) high unemployment rate (around 14 percent in 2018 (www.geostat.ge);

(b) large group of people out of the labour force (approximately one third);

(c) high unemployment among young generation (around one-third of young people (15–24) are not in education, training or employment (OCDE, 2016, p.9),

urgent need of government training programs is obvious.

Moreover, researches has found that in Georgia women have significantly lower rates of entrepreneurial intentions than men, specifically, 38 percent compare to 62 percent, respectively (Global, 2015). This suggests that the Georgian government should also develop special business trainings available for females to motivate them to start businesses.

Training may be voluntarily or compulsory as well formal or informal. Policy makers have to consider how to broaden access and increase the scale and scope of entrepreneurship training for different groups of population, for instance, by using new technology. Internet-based learning will extend a program's geography by including participates from Georgian regions and nascent entrepreneurs. Interesting experience is accumulated in Chile, where online training is linked with business registration and is compulsory (OCDE, 2016, p.24).

Informal training that compliments formal might include non-credit evening courses at a university, local business organization or a government agency. It helps people at a time when they are more directly engaged in starting businesses, rather than focused on their education generally.

As one can see, government directly or indirectly is involved in all forms of entrepreneurial education and training. Consequently, progress in the system significantly depends on further government policies and actions.

Conclusion and recommendations

High value of small and medium-sized enterprises (SMEs) for a national economy and society is recognized across the globe.

Brief analysis shows that in Georgia recent stage of SME related policies is significantly differs from the previous ones. Nowadays Georgian government declared SME sector development as one of the most important priorities on policy agenda. To achieve this goal comprehensive and complex policies have been developed. However, absence of one common SME definition and lack of reliable statistics impede analysis of the policy results.

Education policy is chosen as an objective of this research, keeping in mind, that entrepreneurial education and training has wider economic and social context entailing more than the development of particular business skills. It influences an individual's motivation and desire to start businesses.

Undertaken demand–supply analysis of educational market reveals paradoxical situation in the country. On one side, Georgia traditionally has a high level of adult education and some researches even classify the situation as overeducation, while skills mismatch in the labour market and lack entrepreneur education are observed. Thus, in categories of public finance, there is market failure which creates the ground for more active government direct and indirect intervention. From this perspective, further reforming of higher educational institutions and primary/secondary schools curriculum and course syllabus would make them more close to market demand. Direct administrative regulation of this market should also be continued, for example, strong requirements of accreditation and authorization procedures which have proved their efficiency as a tool of improvement quality of education in Georgia and moved it closer to Bologna standards.

Unfortunately, training as a component of entrepreneurship education is about totally missed in the country. The country needs special targeted formal and/or informal training programs for unemployed young generation and women. To be effective, entrepreneurship training should be a lifelong learning. Also policy makers have to consider how to broaden access and increase the scale and scope of entrepreneurship training for different groups of population, for instance, by using new technology. Internet-based learning will extend a program's geography by including participates from Georgian regions and nascent entrepreneurs.

Due to scarcity of available SME statistics in Georgia, application of cost-benefit analysis is limited. But when SMEs are realizing their full potential, SME policy would ensure that society reaps all the benefits of SMEs development. In other words, monetary and nonmonetary social benefits will exceed direct public expenditure on SME and entrepreneurship programs.

A lot of questions of SME policy and entrepreneurial education still remain for further research. Among them are strategic as well as more specific questions, for example, related to the particular types of entrepreneurship education (formal or informal) to find out which type has the most effect on students' entrepreneurial behavior. Promising and wide direction of the further research is investigation of the Entrepreneurial University Model that requires detail evaluation of its strengths and weaknesses, analysis of the best practice, so forth.

Bibliography

Annual Progress Report of SME Development Strategy Action Plan 2016-2017, 2017. [Online] Available at: http://www.economy.ge/uploads/files/2017/ek__politika/eng_sme_development_strategy_ap_annual_pr_2017.pdf [Accessed October 23, 2018]

BSEC, 2014. *Action Plan of Working Group on SMEs*. KOSGEB

Chepurenko, A. *Combining universal concepts with national specifics: SME support policy*, 2017. Public Administration, Issues 1, p. 7-30

Doghonadze N., Papiashvili T.,2009. Knowledge Triangle in Business Education in Post-Soviet Countries. *The International Management Development Association (IMDA)*, Congress proceedings: Tbilisi, Georgia, p.381-388

Enterprise Georgia. Annual Report. 2016. [Online] Available at: http://enterprisegeorgia.gov.ge/files/document/1938313d7f039122cb076f052ed0aef7.pdf. [Accessed October 12, 2017]

European Commission,2013. Annual Report on European SMEs 2012-2013: A recovery on the horizon? [Online] Available at: https://www.escholar.manchester.ac.uk/api/datastream?publicationPid=uk-ac-man-scw:212438&datastreamId=FULL-TEXT.PDF. [Accessed December 3, 2017]

EU/OECD, 2016. Policy Brief on Scaling the Impact of Social Enterprises, European Union and OECD. [Online] Available at: http://www.oecd.org/cfe/leed/Policy-brief-Scaling-up-social-enterprises-EN.pdf. [Accessed December 12, 2018]

Georgia: Country Strategy, 2011-2014, 2011. BSTDB. [Online] Available at: http://www.bstdb.org/about-us/key-documents/Country_Strategy_2011-2014_Georgia.pdf . [Accessed August 22, 2011]

GoG, 2014 (a). For a Strong, Democratic and United Georgia. [Online] Available at: http://gov.ge/files/41_50258_481988_Strong,Democratic,UnitedGeorgia1.pdf. [Accessed September 4, 2017]

GoG, 2014 (b). Socio-Economic Development Strategy of Georgia – Georgia 2020. [Online] Available at:

https://www.adb.org/sites/default/files/linked-documents/cps-geo-2014-2018-sd-01.pdf. [Accessed September 24, 2010]

GoG, 2015. SME Development Strategy 2016-2020. [Online] Available at:

http://www.economy.ge/uploads/files/2017/ek__politika/eng_sme_development_strategy.pdf. [Accessed October 2, 2017]

Global Entrepreneurship Monitor: 2014 - Georgia Report , 2015. Global Entrepreneurship Research Association (GERA). [Online] Available at: https://psd-tvet.de/wp/wp-content/uploads/2014-Georgia-Report-%E2%80%93-Global-Entrepreneurship-Monitor.pdf . [Accessed December 15, 2018]

Global Entrepreneurship Monitor: Global Report 2016/17, 2018. Global Entrepreneurship Research Association (GERA). [Online] Available at: https://www.gemconsortium.org/report/49812. [Accessed December 15, 2018]

Global Entrepreneurship Monitor: Special Report. A Global Perspective on Entrepreneurship Education and Training, 2010. Global Entrepreneurship Research Association (GERA). [Online] Available at: https://www.gemconsortium.org/report. [Accessed December 15, 2018]

Haltiwanger J., Jarmin R., Miranda J. , 2010. *Who creates jobs? Small vs. large vs. young*. NBER Working Paper 16300. [Online] Available at: http://econweb.umd.edu/~haltiwan/size_age_paper_R&R_Aug_16_2011.pdf. [Accessed October 22, 2018]

Keskin H., Sentürk C.,2010. *The importance of small and medium-sized enterprises (SMEs) in economies: SWOT analyses of the SME sector in Turkey and Albania*. Niğde Üniversitesi İİBF Dergisi, Cilt:3, Sayı:1, s.116-132

Livny E.,, Maridashvili M., Skhirtladze M., Zaldastanishvili M (.n/d). *Entrepreneurship education in Georgian VET system: Current status and a way forward.* [Online] Available at: http://iset-pi.ge/images/Projects_of_PPRC/VET_Report_final_new.pdf . [Accessed March 2, 2019]

Longley, R., 2018. *How Small Business Drives U.S. Economy*. ThoughtCo, [Online] Available at: https://www.thoughtco.com/how-small-business-drives-economy-3321945. [Accessed October 2, 2018]

Mamman, A., Bawole, J., Agbebi, M., Alhassan, A.-R.,2019. *SME policy formulation and implementation in Africa: Unpacking assumptions as opportunity for research direction*. Journal of Business Research, Vol. 97, p. 304-315

Moffatt, M., 2018.*Small Business in the United States*. [Online] Available at: https://www.thoughtco.com/intro-to-small-business-in-the-united-states-1147915. [Accessed October 11, 2018]

National Statistics Office of Georgia: Geostat (database)

OECD, 2018. Cusmano, L., M. Koreen and L. Pissareva. 2018 OECD Ministerial Conference on SMEs: Key Issues Paper,,SME and Entrepreneurship Papers, No. 7. Publishing, Paris. [Online] Available at:

http://dx.doi.org/10.1787/90c8823c-en. [Accessed October 20, 2018]

OECD, 2017. *Small, Medium, strong. Trends in SME Performance and Business conditions.* Publishing, Paris [Online] Available at: http://dx.doi.org/10.1787/9789264275683-en. [Accessed November 14, 2018]

OECD (2016), Job Creation and Local Economic Development 2016, OECD Publishing, Paris. [Online] Available at:

http://dx.doi.org/10.1787/9789264261976-en. [Accessed September 5, 2018]

OECD, 2013. *Triple Helix Partnerships for Innovation in Bosnia and Herzegovina*, OECD, Paris, [Online] Available at: www.oecd.org/investmentcompact/Triple%20Helix%20English% 20Version.pdf. . [Accessed November 22, 2018]

OCDE, GIZ, 2016. *Supporting SME competitiveness in the eastern partner countries. Recommendations for Georgia's SME Development Strategy 2016-2020*. [Online] Available at: http://www.oecd.org/eurasia/competitiveness-programme/eastern-partners/Recommendations_for_Georgia_SME_strategy.pdf. [Accessed November 2, 2018]

Papiashvili, T., Ciloglu, I.,2017. *SMEs in Georgia: Does definition matter?* International Journal of Economics, Commerce and Management, UK, Vol. V, Issue 12, p. 236-245. [Online] Available at: http://ijecm.co.uk/wp-content/uploads/2017/12/51214.pdf. [Accessed November 12, 2017]

Papiashvili T., Ghlonti G., Koberidze K., 2015. *Is entrepreneurship education a gate to startup? A case study in Georgia*. International Journal of Economics, Commerce and Management. UK, Vol. III, Issue 11, p. 276-284. [Online] Available at: http://ijecm.co.uk/wp-content/uploads/2015/11/31119.pdf, [Accessed November 29, 2017]

Rupeika-Apoga, R., Saksonova, S.,2018. *SMEs' Alternative Financing: The Case of Latvia*. *European Research Studies Journal,* Volume XXI, Issue 3, p.43-52

Sahut, J-M and Peris-Ortiz M., 2015. *Small Business, Innovation, and Entrepreneurship*. [Online] Available at: https://www.researchgate.net/profile/Jean-Michel_Sahut/publication/258165369_Small_business_innovation_and_entrepreneurship/links/5541e6610cf2718618dcbe2f/Small-business-innovation-and-entrepreneurship.pdf. [Accessed September 29, 2018]

Saksonova S., Papiashvili T., Rupeika-Apoga R., 2017. *FDI Attraction: Comparative Analysis of the Baltic States and Georgia*, International Journal of Economics & Business Administration (IJEBA), vol. 5, issue 3, pages 81-93

Small Business Act for Europe, 2008 . [Online] Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52008DC0394&from=EN. [Accessed October 14, 2010]

Šebestová, J., Petra Krejčí, P., Petr Šiška, P.,2018. *"Be or Not To Be": A Dilemma of Business Policy Support on a Regional Level*, Central European Business Review, 7(1):3-13

Socio-Economic Development Strategy of Georgia – Georgia 2020, 2014. [Online] Available at: https://www.adb.org/sites/default/files/linked-documents/cps-geo-2014-2018-sd-01.pdf. [Accessed September 24, 2015]

Tsuruta, D. (2017). SME policies as a barrier to growth of SMEs . RIETI Discussion Paper Series 17-E-046https://www.rieti.go.jp/jp/publications/dp/17e046.pdf

U.S. Census Bureau, 2016. Annual Survey of Entrepreneurs. [Online] Available at: https://www.census.gov/programs-surveys/ase.html. [Accessed November 5, 2018]

Wapshott, R., Mallett, O., 2018. *Small and medium-sized enterprise policy: Designed to fail?* Environment and Planning C: Politics and Space, 36(4), pp. 750-772

Wiśniewska M., Tarczyńska A.S., Papiashvili T., 2015. *The quality of the entrepreneurial attitudes among the students of the Faculty of Management at the University of Gdañsk. The pilot study*. Finance and Management. University of Gdansk, Poland. Vol. 13, No. 2, p.121-132.

World Bank Group. Doing Business 2017. Equal Opportunity for All. [Online] Available at: http://www.doingbusiness.org/~/media/WBG/DoingBusiness/Documents/Annual-Reports/English/DB17-Report.pdf. [Accessed March 2, 2017]

World Economic Forum , 2017. The Global Competitiveness Report (2017-2018). Geneva. World Economic Forum , 2017. [Online] Available at: http://www3.weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E2%80%932018.pdf. [Accessed December 12, 2018]

PIE STATUTORY AUDIT MARKET CONCENTRATION: EVIDENCE FROM LATVIA

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Abstract. The reform of EU audit legislation was adopted by the Council of the EU in April 2014. The legislation consists of an audit Directive and an audit Regulation. The Directive applies to all statutory audits; the Regulation contains specific requirements for the statutory audits of public-interest entities (PIEs). The Regulation aims both at enhancing audit quality and at promoting competition in the audit market. Mandatory rotation, together with the incentives for joint audit and tendering, as well as the prohibition of certain non-audit services to audit clients - requiring *de facto* that another audit firm provides these services - are examples of measures that should make the market more dynamic and ultimately less concentrated. The **purpose of this study** is to assess the concentration levels in the market for statutory audits of PIEs in Latvia. The methods of the research are systematic, logical and comparative analysis, analysis of secondary data, as well as expert method. Data on market shares is analyzed using the four firm concentration indicators. The principle results of the study provide evidences about the high level of Latvia's PIE audit firms/networks market concentration, the dominant share of non-audit revenue in total revenue for the 6 biggest market players, the auditing oligopoly in the PIE market, the impact of the EU audit reform on the auditor-client relationships in the banking sector. Based on the findings and results of the study, the authors propose a set of recommendations aimed to make the Latvian audit market *more transparent* and *less concentrated*.

Key words: *audit market, audit market concentration, audit firms, public-interest entities*

JEL code: M42

Introduction

The purpose of this study is to assess the concentration levels in the market for statutory audits of PIEs in Latvia. Why is this important? The market for audit services has high and increasing levels of concentration in many European countries (Velte and Stiglbauer, 2012). At the same time audit firms have an important role in maintaining and improving the functioning capital markets. For that reason, a substantial portion of demand in the market is mandated by law (Gerakos and Syverson, 2015) by the requirement for publicly traded firms to have audited accounts. For these reasons, the audit market is a subject of considerable attention both in the literature and from the regulators.

On a European level, a thorough reform of the audit policy was launched in 2010, spurred by the global financial crisis. The most controversial elements of the legislation finally adopted in 2014 included mandatory audit firm rotation, prohibition of non-audit services and a cap on total audit fees (Horton et al. 2017). Although the reforms were controversial, they aimed at enhancing auditors' independence and therefore the credibility of the audit.

While there is substantial literature on audit markets in developed economies, which is reviewed in Section 1, emerging markets and, in particular, Latvia have received less attention. Aizsila and Ikaunieks (2014) provide a qualitative description of the developments in audit profession in Latvia. This paper fills the gap in the literature by documenting the empirical characteristics of the market for statutory audits in Latvia (Section 2.1), measuring its concentration (Section 2.2.) and assessing the changes arising from the impact of the EU audit legislation reform in the banking sector. Section 3 concludes.

1. Literature review

The three key areas targeted by the new European legislation: (i) audit firm rotation, (ii) non-audit services and (iii) audit fees have been extensively analyzed in the literature. Bleibtreu and Stefani (2018) provide an overview of the arguments for and against mandatory audit firm rotation. On the one hand, rotation could strengthen auditor independence and decrease audit market concentration. On the other hand, it would decrease opportunities for learning, which could lower the quality of audits.

Aschauer and Quick (2018) study the effects of the rotation system and the provision of non-audit services jointly. They find that perception of auditor independence and audit quality improves when non-audit services are banned, while the rotation system does not have an unambiguous effect on these perceptions. Cameran et. al. (2016), find that in Italy, where mandatory audit firm rotation has been effective for more than 20 years, the perception of audit quality and reporting conservatism increase in the year before rotation.

The reason that the literature often relies on perceptions is that outside observes sometimes do not have information about internal measures of audit process quality. Aobdia (2018) finds that three measures of audit quality used in the literature have significant association with measures of audit quality used by auditors and regulators – (i) the propensity to restate financial statements, (ii) the propensity to meet or beat the zero earnings threshold, and (iii) audit fees.

Bell et. al. (2015) use the data from internal evaluations of audit quality in a Big 4 firm to investigate the impact of tenure of audit firms and non-audit services (NAS) on audit quality. They find that first-year audits are assessed as lower quality and that quality improves shortly thereafter, but declines for private clients as tenure becomes very long. On the other hand, for publicly traded companies, probability of high quality audit reaches a maximum with long tenure. Another approach has been tried by Elder et.al. (2015), who study government audit market in Florida, a setting where procurement policies vary, and find that rotation policies are associated with higher audit quality, though primarily due to selection of better firms rather than auditor independence.

The impact of the restrictions on the non-audit services has been considered, for example, by Ratzinger-Sakel and Schönberger (2015), who analyzed existing restrictions in France, Germany and the UK, which are similar in spirit to the ones now implemented in the EU and found that the EU-wide restrictions may not be effective or efficient.

One of the industry's arguments against the provision of non-audit services has been that it would lower the quality of audits by limiting knowledge spillovers to the audit part of the business. This had some support in the literature, for example, Krishnan and Yu (2011), conclude in favor of the idea of knowledge spillovers based on the strongly negative relationship between audit and non-audit fees in the US companies. Similarly, Knechel et.al. (2012) also support the hypothesis of knowledge spillovers based on the relationship between non-audit fees and audit lag in New Zealand. On the other hand, van Liempd et. al. (2018) find that the joint provision of non-audit and audit services is negatively associated with perceived auditor independence, although perceptions differ by stakeholder group and types of services.

Quick and Warming-Rasmussen (2015) investigate the effects of non-audit services and non-audit fees on independence perceptions of German individual investors. They conclude that while general restriction on non-audit services does not seem to be necessary, a cap on non-audit fees might be reasonable, because high non-audit fees negatively impact perceived auditor independence. There is also a question of setting the cap at an appropriate level, for example, van Liempd et. al. (2018) find the European cap too high. Hohenfels and Quick (2018) echo this conclusion – in their study of German listed firms, they find that higher levels of NAS fees negatively affect asset quality and that a cap on NAS fees imposed by the EU fails to prevent this impairment.

Thus, one can see that a rich literature exists on the key controversies of the EU audit reform. Before insights from this literature can be applied to Latvian circumstances, however, one first needs to understand the key characteristics of the market for audit services in Latvia, particularly for statutory audits of PIEs. This is the topic of the next section.

2. Empirical results and findings of research

2.1. Features and structure of the PIE audit firms market in Latvia

According to the register held by the Ministry of Finance of the Republic of Latvia, there were 13 firms of certified auditors auditing PIEs in 2017 (MF, n.d.). The analysis of the financial statements of these firms and their associates enables the authors compiled a list of the 8 biggest PIE audit players for fiscal year (FY) 2017.

The results in Table 1 indicate that the total turnover of Latvian audit firms/networks auditing PIEs increased from almost 38 million euros in 2016 to over 41 million euros in 2017. Of that amount, 85.5 percent was earned by the entities comprised within the Big Four – *Ernst &Young* (EY), *Deloitte, KPMG, PricewaterhouseCoopers* (PwC). Compared to 2016, their combined market share declined by 0.9 percentage point. These results provide evidence that the PIE audit market in Latvia remains highly concentrated. Concerns emanating from the high concentration include a lack of choice, a lack of innovation, higher audit fees, conflicts of interest, a lack of independence, a systemic risk if one Big Four firm should fail, and, above all, poor-quality audit reducing the credibility and reliability of audited financial statements for the world's largest companies (EC, 2016).

Apart from the Big Four member firms, Latvia's PIE audit firms also include the entities that belongs to 3 other global networks – *Grant Thorton*, *Nexia*, *BDO*. Their aggregated turnover was amounted to 4 million euros in FY 2017 (as compared to 2016, it increased by 0.48 million euro). Only one local firm (*Potapoviča un Andersone* SIA) with the turnover of 0,9 million euros was able to get close to the turnover of the global networks in 2017. Information about the Top 7 audit firms/networks revenue by service line is provided in Table 2.

Table 1

Latvian PIE audit firms/networks' market share for turnover in FY2016- 2017

Rank	Firm/network	Year end	Net turnover, MEUR			Market share		
			2017	2016	Change	2017	2016	Change
1	Ernst & Young Baltic	30.06.	11.44	10.84	0.6	27.7%	28.6%	-0.9
2	Deloitte[1]	31.12.	8.96	7.93	1.03	21.7%	20.9%	0.8
3	KPMG Baltics	30.09.	7.94	7.43	0.51	19.2%	19.6%	-0.4
4	PwC[2]	30.06.	6.99	6.53	0.46	16.9%	17.2%	-0.3
-	The Big 4 total	-	35.3	32.73	2.57	85.5%	86.4%	-0.9
5	Grant Thorton Baltic	30.06.	1.56	1.29	0.27	3.8%	3.4%	0.4
6	Nexia[3]	31.08.	1.5	1.36	0.14	3.6%	3.6%	-
7	Potapoviča un Andersone	30.09.	0.91	0.77	0.14	2.2%	2.0%	0.2
8	BDO[4]	31.12.	0.88	0.81	0.07	2.1%	2.1%	-
9	Others	-	1.12	0.9	0.22	2.7%	2.4%	0.3
-	TOTAL	-	41.3	37.86	3.44	100%	100%	-

Source: authors' calculations based on Latvian audit firms' and their associates' annual reports for FY 2017

It emerged that the financial statements of Latvia's PIE audit firms and their associates do not include disclosure regarding: (i) revenues by business lines; (ii) services provided to the audited clients. The study also found that among the 13 audit players only nine firms created and published the transparency report for FY 2017. Of that 9 firms, only six firms disclosed information about: (i) revenues from the statutory audit of PIEs; (ii) revenues from permitted NAS to

[1] *Deloitte Latvia* SIA and *Deloitte Audits Latvia* SIA

[2] *PricewaterhouseCoopers* SIA and *PricewaterhouseCoopers Information Technology Services* SIA

[3] *Nexia Audit Advice* SIA and *CBB konsultaciju birojs* SIA

[4] *BDO Latvia* AS and *BDO Audit* SIA

audited entities. Since only six audit firms from the Top 8 disclosed all relevant information[5], the analysis of the level of *non-audit to audit fees* ratio in Latvia was carried out only regarding the Top 5 PIE audit firms (see Table 3).

Table 2

The top 7 Latvian PIE audit firms/networks revenue in 2017, by service line

	2017					Change vs 2016			
Firm/network name	**Total fee income**	**Audit fee**		**Non-audit fee**		**Audit fee**		**Non-audit fee**	
	TEUR	**TEUR**	**%**	**TEUR**	**%**	**TEUR**	**%**	**TEUR**	**%**
EY	11 441	3 890	34%	7 551	66%	683	21.3%	-83	-1.1%
Deloitte	8 964	2 960	33%	6 004	67%	-125	-4.1%	1 162	24.0%
KPMG	7 943	3 337	42%	4 606	58%	-287	-7.9%	802	21.1%
PwC	6 990	3 239	46%	3 751	54%	532	19.7%	-71	-1.9%
The Big 4 total	35 338	13 426	38%	21 912	62%	803	6.4%	1 810	9.0%
Grant Thorton	1 566	457	29%	1 109	71%	n/a	n/a	n/a	n/a
Nexia	1500	738	49%	762	51%	68	10.1%	70	10.1%
Potapoviča …	911	804	88%	107	12%	147	22.4%	-3	-2.7%
TOTAL	39 315	15 464	39%	23 851	61%	n/a	n/a	n/a	n/a

Source: authors' calculations based on Latvian audit firms' transparency reports for FY 2016 and 2017)

Among the Big Four entities working in Latvia, *Ernst &Young Baltic* SIA has the largest market share. In the year ended 30 June 2017, the firm earned net turnover of more than 11 million euros, having strong year-to-year increase of 600 thousand euros (EY, 2017, p.19; EY, 2016, p.21). As Table 2 shows, the bulk of Ernst &Young's revenues comes from providing of *non-audit services* (NAS). Additionally, the firm reported over 2 million euros in *non-audit* revenues earned from audit clients in FY 2017 (see Table 3). Their *non-audit to audit fees* ratio for FY 2017 was the highest out of the Big Four audit firms.

The second largest share in the market is held by the firms that belong to *Deloitte* network. The total turnover for this firms increased from 8 million euros in 2016 to 9 million euros in 2017. This increase was achieved only due to the record growth in revenues from *non-audit services* (see Table 2). It should be noted that the data on Deloitte's *non-audit fees* earned *from audited clients* are available for *Deloitte Audits Latvia* SIA only (Deloitte, 2018, p.12), since the consulting firm *Deloitte Latvia* SIA does not disclose the revenue sources.

Table 3.

The top 5 Latvian PIE audit firm's revenue from audited clients in 2017

Firm name	**Audit fee, TEUR**	**Non-audit fee from audited clients, TEUR**	**Non-audit/ audit fees ratio, %**
Ernst & Young Baltic	3 890	2 069	53.2%
Deloitte Audits Latvia	2 960	3	0.1%
KPMG Baltics	3 337	733	22.0%
PwC	3 239	794	24.5%
The Big 4 total	13 426	3 599	26.8%
Grant Thorton Baltic	457	1.5	0.33%
TOTAL	13 883	3 600.5	25.9%

Source: authors' calculations based on Latvian audit firms' transparency reports

Among the largest Latvian PIE audit firms/networks, KPMG *Baltics* SIA was ranked third. Compared with 2016, its net turnover increased by 0.51 million euros and reached to 7.9 million euros in the year ended 30 September 2017 (KPMG, 2018, p.31; KPMG, 2016, p. 32). The firm demonstrated the second largest increase in total fees from *non-audit*

[5] They do not comply with the requirements regarding the transparency report (BDO Audit, Nexia Audit Advice).

services. At the same time, KPMG's revenues from *non-audit services* to audited clients equalled only 22 percent of their audit fees in FY 2017 (see Table 3).

The fourth position in the Latvian PIE audit firms service market is occupied by the firms that belong to *PwC* network. In the year ended 30 June 2017, their total turnover increased by 0.46 million euros to 7 million euros. They are far distant from the next largest audit firm in Latvia, that is *Grant Thorton Baltic* SIA. *PwC* demonstrated the highest share of audit revenue in total revenues among the Big Four firms in Latvia (see Table 2). *PwC*'s revenue from *non-audit services* to audited clients was 24.5 percent of the audit fee income received by the firm in 2017 (PwC 2017, p. 34). The figure does not include the possible provision of *non-audit services* to such clients by *PwC IT Services* (maximum per 184 thousand euros).

The results in Table 4 indicate that the total revenues from statutory audit of Latvian PIEs and entities belonging to a group of undertakings whose parent company is a PIE amounted to 4,6 million euros in 2017. Of that amount, 98.3 percent (4.5 million euros) was earned by the Big Four. Among the Big Four entities working in Latvia, *KPMG Baltics* SIA has the largest PIE statutory audit market share – 39%. The second largest share in the market is held by *PwC* SIA – 34%. The third position in the Latvian PIE audit service market is occupied by *Ernst & Young Baltic* SIA.

Table 4.

Latvian firm's revenue from PIE statutory audits in 2017

Rank	Firm name	Audit fees from PIE clients, TEUR	Market share, %
1	KPMG Baltics	1 787	39%
2	PwC	1 577	34.3%
3	Ernst & Young Baltic	907	20%
4	Deloitte Audits Latvia	246	5%
-	The Big 4 total	4 517	98.3%
5	Others	78	1.7%
	TOTAL	4 595	100.%

Source: authors' calculations based on Latvian audit firms' transparency reports

Summarizing, in Latvia, the Big Four represented almost 85.5 percent of the aggregated turnover of the networks or firms auditing PIEs in FY 2017. Based on audit fees, the four-firm concentration ratio for PIE clients was even higher – 98.3%.

2.2. Concentration of audit firms by PIE category

Starting from 1 of January 2017, the following companies are defined as PIEs for audit purposes under Latvian *Audit Service Act* [*Revīzijas pakalpojumu likums*]: (i) financial institutions: credit institutions, investment fund management companies, alternative investment fund managers, insurance companies, branch of a non-Member State insurer, reinsurance companies, branch of a non-Member State reinsurer or private pension fund; (ii) companies with transferable securities listed on EU regulated markets (The Audit… 2001).

The following table illustrate how many Latvian entities fell under each category defined as a PIE in 2017. The table also include information about their statutory auditors.

Table 4

Information about PIE statutory audit market in Latvia (based on data of FY2017)

	2017			Change vs 2016		
	Big Four	**Others**	**Total**	**Big Four**	**Others**	**Total**
Number of entities in each category defined as PIEs, including:						
(a) Listed companies	10	15	25	1	-3	-2
(b) Non-financial corporate bond issuers	5	7	12	1	-1	-
(c) Commercial banks	16	-	16	-	-	-
(f) Investment funds	12	2	14	3	1	4
(d) Insurance undertakings	5	1	6	-	-	-
(e) Pension funds	6	-	6	-	-	-
TOTAL	54	25	79	5	-3	2

Source: authors calculations based on Latvian PIEs' annual reports for FY 2017

As Table 5 shows, of all Latvian entities falling under the new definition of a PIE, the largest number in 2017 were listed companies – 25 out of 79. They followed commercial banks (16), investment fund managers (14) and non-financial corporate (NFC) bond issuers (12). In addition, there were 6 insurance undertakings and 6 private pension fund managers in Latvia in 2017. It can be observed from Table 4 that, in 2017, the Big Four had consolidated its dominant position in the number of Latvian entities falling under the new definition of a PIE. The Big Four auditors cover 100% of PIEs in the banking sector and pension funds sector, whereas have the smallest share in the number of listed companies and NFC bond issuers. However, in terms of clients' size the Big Four firms achieved a 95 percent of the Latvian listed companies' market capitalization and almost 89 percent of Latvian NFC bonds outstanding at the end of 2017 (see Tables 5 and 6).

Table 5

Audits of Latvian listed companies: share based on audited clients' market capitalization at the end of 2017

	2017			Change vs 2016		
	Big Four	**Others**	**Total**	**Big Four**	**Others**	**Total**
Number of clients	10	15	25	1	-3	-2
Market cap[6] MEUR	1 204.4	61.7	1 266.1	450.3	11.2	461.5
Share	95.1%	4.9%	100.0%	1.4	-1.4	-

Source: authors' calculations based on Nasdaq Baltic data base (Nasdaq Baltic, 2017a) and PIEs' annual reports for 2016-2017

Table 6

Audits of Latvian NFC bond issuers: share based on audited clients' bonds outstanding at the end of 2017

	2017			Change vs 2016		
	Big Four	**Others**	**Total**	**Big Four**	**Others**	**Total**
Number of clients	5	7	12	1	-1	-
Amount[7] MEUR	194.2	25.0	219.2	-46.9	2.2	-44.7
Share	88.6%	11.4%	100.0%	-2.7	2.7	-

Source: authors' calculations based on Nasdaq Baltic data base (Nasdaq Baltic, 2017) and PIEs' annual reports for FY 2017

It should be clarified, therefore, that the Big Four consolidated share in Latvian PIE statutory audit market varied from a concentrated oligopoly among companies with listed securities to monopoly among commercial banks.

[6] As of December 29, 2017

[7] As of December 29, 2017

2.3. Impact of the changes arising from the EU Audit reform in the banking sector

The following table (Table 7) provides data on audits of the Latvian commercial banks in 2017. As Table 7 shows, in 2017, *KPMG Baltics* SIA continued to have the largest audit market share in Latvia's banking sector by the number of banks (8 out of 16) as well as their assets value (11.2 billion euros, with a 41% market share at the end of 2017). PwC was the second-largest provider of statutory audit to Latvian banks – its clients were five credit institutions with the combined assets of 5.34 billion euros (a 19.6% market share). The third position based on client number, was taken by *Ernst & Young Baltic* working with the 2th largest *Luminor Bank* (former *DNB Bank* and *Nordea Bank* AB Latvia Branch*)* and the 10th largest *Regionala investiciju banka*. The fourth spot was occupied by *Deloitte Audits Latvia* SIA which every year since 2000 has been the auditor of Latvia's largest *Swedbank*. Compared with 2016, the main changes in the sector were associated with the transition of *Nordea Bank's* Latvian branch to DNB Bank, the deposit outflow from KPMG's clients and the rotation of auditor of *Regionala investiciju banka.*

Table 7

Audits of Latvian commercial banks:
share based on audited clients' total assets at the end of 2017

		2017			Change vs 2016		
Rank	**Auditor**	**Number of clients**	**Total assets,[8] billion EUR**	**Share of the total assets,%**	**Number of clients**	**Total assets, billion EUR**	**Share**
1	KPMG Baltics	8	11.2	41.2%	-	- 0.9	- 6.2
2	PWC	5	5.34	19.6%	-1	- 0.56	- 3.5
3	Ernst & Young Baltic	2	5.33	19.6%	1	3.13	11.0
4	Deloitte Audits Latvia	1	5.33	19.6%	-	0.03	- 1.3
	Total	16	27.2	100.0%	-	1.7	-

Source: the authors based on the FLA (FLA, 2018) and Latvian banks' annual reports for FY 2017

The following table provides statistics on number of Latvian commercial banks and its market shares (% of total assets) in different categories of audit tenure at the end of 2017.

Table 8

Information on audit tenure among Latvian commercial banks (December 2017)

	2017		Change vs 2016	
Length of tenure	**Number of banks**	**Total assets market share, %**	**Number of banks**	**Total assets market share, %**
15 – 19 years	5	48.15%	-1	-6.85
10 -13 years	3	20.4%	1	18.4
5 - 9 years	3	11.55%	2	2.55
1 - 4 years	5	19.9%	-2	-14.1
Total	16	100.0%	-	-

Source: the authors based on the FLA (FLA, 2018) and Latvian banks' annual reports for FY 2017

As Table 8 shows, at the end of 2017, almost half of the banks' assets in Latvia were owned by five credit institutions that had not changed auditors for 15 -19 years. They will be forced to rotate their audit firms in the short term. Compared with 2016, the number of banks in these group decreased by one bank (*Regionala investiciju banka*) but their share of the total assets decreased by 6.85 percentage points due to the transfers of *Nordea Bank's* Latvian branch assets to *DNB Bank*.

[8] As of December 29, 2017

Another 20 percent of the banks' assets belonged to three credit institutions the auditors of which had been the same for 10-13 years. They required to have a tender process when considering either the selection of a new auditor or the reappointment of the existing auditor. Compared with 2016, the number of banks in these group increased by one bank (the 2th largest *Luminor Banka*).

Only one-fifth of all banking sector assets belonged to five credit institutions that rotated the auditors during the previous 4 years. Therefore, the new regulations would appear to be likely to cause significant disruption to the audits of leading commercial banks in Latvia.

Starting from 29 November 2016, Latvian credit institutions should disclose, in the notes to their statutory accounts, the remuneration for services provided by the statutory auditor in each of the following categories: (i) audit of the bank's annual accounts and consolidated accounts; (ii) other assurance services; (iii) tax advisory services, and (iv) other non-audit services (FCMC, 2006).

The study found out that the number of Latvian commercial banks fully comply the disclosure requirement in respect of the remuneration paid for services provided by the statutory auditors reached 11 in 2017 (see Table 9). Four Latvian commercial banks with a 46% market share disclosed the remuneration only for the audit of their 2017 accounts. The largest *Swedbank* was included in this group since its audit firm (*Deloitte Audits Latvia* SIA) does not provide *non-audit services*. They are provided by *Deloitte Latvia* SIA which remuneration is formally outside the scope of Latvia's transparency requirements. However, within the EU Audit reform context, information regarding the value of these services (if they were provided during the year) is essential and need to be properly disclosed.

At the same time, it emerged that only one Latvian commercial banks (ABLV Bank[9]) with combined assets amounted to 3.7 billion euros (a 13.6% market share) at year-end 2017, did not disclose any information regarding the statutory auditor's remuneration in their annual reports.

Table 9

Information on the disclosure of auditor remuneration among Latvian commercial banks (December 2017)

	2017		Change vs 2016	
	Number of banks	**Total assets market share, %**	**Number of banks**	**Total assets market share, %**
Disclosed	11	40.62%	2	3.52
Partly disclosed	4	45.78%	1	10.38
Not disclosed	1	13.6%	-3	-13.9
TOTAL	16	100.0%	-	-

Source: the authors based on the FLA and Latvian commercial banks' annual reports for FY 2016-2017

Among the 15 banks disclosed their audit firms' remuneration, the price of auditing varied from 38 to 296 thousand euros in 2017, comprised 1.49 million euros in total. Compared to 2016, the value of all assurance services provided in Latvia's banking sector grew slightly due to the non-resident banking industry.

The EU regulation 2014 establishes that when an audit firm has been providing permissible *non-audit services* to the audited PIE for a period of three or more consecutive financial years, the total fees for such services shall be limited to a maximum of 70% of the average of the fees paid in the last three consecutive financial years for the statutory audit(s) of the audited entity and, where applicable, of its parent undertaking, of its controlled undertakings and of the consolidated financial statements of that group of undertakings (EU, 2016).

As Table 9 shows, only 11 out of 16 Latvia's banks disclosed the costs of *non-audit services* provided by their auditors. Due to the lack of disclosed information on Latvian largest banks (*Swedbank, ABLV Bank, Rietumu Banka)*, it is

[9] On February 26, 2018, ABLV Bank announced its decision on voluntary liquidation

impossible to estimate the total value of *non-audit services* provided by statutory auditors in the banking sector in 2017. The results of the study support previous findings that Latvian PIEs should encourage improvement in the disclosures regarding the services provided by the statutory audit firms and their associates (Nasdaq Baltic, 2015, 8).

Conclusions and recommendations

1. The analysis of the data on Latvian PIE audit firms/networks revenues revealed the *high level of market concentration* – the Big Four represented almost 85.5 percent of the aggregated turnover of the networks or firms auditing PIEs in FY 2017. Based on audit fees, the four-firm concentration ratio for PIE clients was over 98 percent.
2. The results of the study indicate that Latvia's PIE audit firms *are not transparent fully*. Among the 13 audit players only nine firms created and published the transparency report for FY 2017. Of that 9 firms, only two firms disclosed information about: (i) revenues from the statutory audit of PIEs; (ii) revenues from permitted NAS to audited entities. At the same time, it emerged that the financial statements of the audit firms and their associates do not include disclosures regarding: (i) revenues by business lines; (ii) services provided to the audited clients. To improve their transparency, firms auditing PIEs are recommended to strengthen the transparency reporting controls that are designed to meet the prescribed information requirements. Entities related to PIE-audit firms need to disclose in the annual reports information about revenue earned from the clients audited by their associates.
3. The analysis of the Big Four audit firms' revenues showed an increase in the share of revenue from *non-audit services* which averaged 62 percent in 2017. Also, the analysis showed that their *non-audit to audit fees* ratio averaged of less than 27 percent in 2017. However, this ratio was calculated without taking into account the data on the structure of *non-audit fee* income of *Deloitte Latvia* SIA (5,86 million euros) and *PwC IT* SIA (0,18 million euros). As for the market leader *Ernst & Young Baltic* SIA, it noted a significant economic dependence on the provision of *non-audit services* to its audit clients.
4. The Big Four auditors consolidated its dominant position in the number of statutory audits of the Latvian PIEs in 2017. They created a monopoly in the market of statutory audit of commercial banks, whereas had the smallest share in the number of listed companies and NFC bonds issuers. However, in terms of client size, the Big Four covered about 90% of Latvian listed audit market in 2017. Mandatory *rotation*, together with the incentives for *joint audit* and *tenderi*ng, as well as the prohibition of certain *non-audit services* to audit clients - are examples of measures that should make the Latvian audit market *more dynamic* and *less concentrated*.
5. The study found out that, in 2017, five out of sixteen Latvia's commercial banks had not changed auditors for 15-19 years. They will be forced to rotate their audit firms in the short term. Another three credit institutions which auditors had been the same for 10-13 years required to have a tender process when considering either the selection of a new auditor or the reappointment of the existing auditor.
6. It is apparent that Latvia's commercial banks should encourage improvement in the disclosures regarding the services provided by the statutory audit firms and their associates.
7. Future research could be extended on the current analysis by examining a wider period of time to examine the EU Audit reform impact on the market concentration and the ratio of non-audit to audit services fees.

Bibliography

Aizsila, I., Ikaunieks, R., 2014. Changes and challenges facing the audit profession in Latvia. *Procedia – Social and Behavioral Sciences*, 156, 627-632.

Annual reports of Latvian audit firms, their associates, commercial banks and other PIEs. [Online] Available at: https://www.lursoft.lv/en/register-of-companies-annual-reports. [Accessed 2 December 2018]

Aobdia, D., 2018. Do practitioner assessments agree with academic proxies for audit quality? Evidence from PCAOB and internal inspections. *Journal of Accounting and Economics*, In Press, Available at https://doi.org/10.1016/j.jacceco.2018.09.001. [Accessed 12 December 2018]

Aschauer, E., Quick, R., 2018. Mandatory audit firm rotation and prohibition of audit firm-provided tax services: Evidence from investment consultants' perceptions. *International Journal of Auditing*, 22 (2), 131-149.

Bell, T. B., Causholli, M., Knechel, R., 2015. Audit Firm Tenure, Non-Audit Services and Internal Assessments of Audit Quality. *Journal of Accounting Research*, 53(3), 461-509.

Bleibtreu, C., and Stefani, U., 2018. The Effects of Mandatory Audit Firm Rotation on Client Importance and Audit Industry Concentration. *The Accounting Review*, 93(1), 1-27.

Cameran, M., Prencipe, A., and Trombetta, M., 2016. Mandatory Audit Firm Rotation and Audit Quality. *European Accounting Review*, 25(1), 35-58. DOI: 10.1080/09638180.2014.921446

Deloitte Audits Latvia, SIA, 2017. *Transparency Report for the financial year 2016*. [Online] Available at: https://www2.deloitte.com/content/dam/Deloitte/lv/Documents/audit/Transparency_report_2017.pdf. [Accessed 2 December 2017]

Deloitte Audits Latvia, SIA, 2018. *Transparency Report for the financial year 2017*. [Online] Available at: https://www2.deloitte.com/content/dam/Deloitte/lv/Documents/audit/Transparancy%20report%20Deloitte%20Latvia%202017%20ENG.pdf. [Accessed 2 May 2018]

Elder, R. J., Lowensohn, S., Reck, J. L., 2015. Audit Firm Rotation, Auditor Specialization, and Audit Quality in the Municipal Audit Context. *Journal of Governmental and Nonprofit Accounting*, 4, 73-100.

Ernst &Young Baltics, SIA, 2016. *Transparency Report for the financial year 2016*. [Online] Available at: https://www.ey.com/Publication/vwLUAssets/Transparency_report_Latvia/$File/2016%20Transparency%20Report%20-%20Latvia.pdf. [Accessed 2 December 2017]

Ernst &Young Baltics, SIA, 2017. *Transparency Report for the financial year 2017*. [Online] Available at: https://www.ey.com/Publication/vwLUAssets/ey-transparency-report-en/$FILE/ey-transparency-report-en.pdf. [Accessed 2 December 2017]

European Commission, 2016. *Reform of the EU Statutory Audit Market*. [Online] Available at: http://europa.eu/rapid/press-release_MEMO-16-2244_en.htm?locale=en. [Accessed 2 December 2017]

Finance Latvia Association, 2018. *Quarterly report for the 4th quarter 2017*. [Online] Available at: https://www.financelatvia.eu/wp-content/uploads/2018/03/Bank-results-2017.pdf. [Accessed 2 December 2018]

Financial and Capital Market Commission, 2006. *Regulation No 46 on preparation of the annual report and consolidated annual report of credit institutions, investment brokerage companies and investment management companies.* Available in Latvian at: https://likumi.lv/doc.php?id=129249. [Accessed 28 June 2018]

Gerakos, J., Syverson, C., 2015. Competition in the Audit Market: Policy Implications. *Journal of Accounting Research*, 53(4), 725 – 775.

Grant Thorton Baltic, SIA, 2017. *Transparency Report for the financial year 2017*. [Online] Available at: https://www.grantthornton.lv/en/press/press-releases-2017/transparency-report/ [Accessed 2 May 2018]

Hohenfels, D., Quick, R., 2018 Non-audit services and audit quality: evidence from Germany. *Review of Managerial Science*, In Press, Available at: https://doi.org/10.1007/s11846-018-0306-z. [Accessed 12 December 2018]

Horton, J., Tsipouridou, M., Wood, A., 2018. European Market Reaction to Audit Reforms. *European Accounting Review*, 27(5), 991–1023.

Knechel, W. R., Sharma, D., Sharma V. D., 2012. Non-Audit Services and Knowledge Spillovers: Evidence from New Zealand. *Journal of Business Finance and Accounting*, 39 (1-2), 60-81.

KPMG Baltics, SIA, 2016. *Transparency Report for the financial year 2016*. [Online] Available at:

https://assets.kpmg.com/content/dam/kpmg/lv/pdf/Transparency-Report-2016-EN.pdf. [Accessed 2 December 2017]

KPMG Baltics, SIA, 2018. *Transparency Report for the financial year 2017*. [Online] Available at: https://home.kpmg.com/lv/en/home/about/governance/transparency-report.html. [Accessed 5 December 2018]
Krishnan, G. V., Yu, W., 2011. Further evidence on knowledge spillover and the joint determination of audit and non-audit-fees. *Managerial Auditing Journal*, 26(3), 230-247.

Ministry of Finance of the Republic of Latvia, n.d. *Register of PIE Statutory Auditors and Audit Firms*. Available at: http://www.fm.gov.lv/lv/sadalas/gramatvedibas_un_revizijas_politika/revizijas_politikas/sabiedriskas_nozimes_struktur u_zverinatu_revidentu_saraksts/ [Accessed 2 December 2018]

Nasdaq Baltic Stock Exchanges, 2015. *Review of Corporate Governance Practices in the Baltics in 2015*. [Online] Available at: http://www.nasdaqbaltic.com/files/baltic/CG%20review/Review%20of%20CG%20practices%20in%20the%20Baltics%20in%202015.pdf. [Accessed 28 June 2018]

Nasdaq Baltic, 2017. *Market Capitalization*. [Online] Available at: http://www.nasdaqbaltic.com/market/?pg=capital&lang=en. [Accessed 02.12.2018]

Nexia Audit Advice, SIA, 2016. *Transparency Report for the financial year 2016*. [Online] Available at: http://www.auditadvice.lv/files/naa_atklatibas_zinojums_2015_2016.pdf [Accessed 2 May 2018]

Nexia Audit Advice, SIA, 2017. *Transparency Report for the financial year 2017*. [Online] Available at: http://www.auditadvice.lv/files/naa_atkltbas_ziojums_2016_2017_korits.pdf [Accessed 2 May 2018]

Potapoviča un Andersone, SIA, 2017. *Transparency Report for the financial year 2016*. [Online] Available at: http://www.p-a.lv/content/uploads/2018/PA_atkl_zin_ye300916.pdf [Accessed 2 May 2018]

Potapoviča un Andersone, SIA, 2018. *Transparency Report for the financial year 2017.* [Online] Available at: http://www.p-a.lv/en/sia-potapovica-un-andersone/transparency-report/. [Accessed 2 May 2018]

PricewaterhouseCoopers, SIA, 2016. *Transparency Report for the financial year 2016*. [Online] Available at: https://www.pwc.com/lv/en/about/transparency-report-fy-16-eng.pdf. [Accessed 2 December 2017]

PricewaterhouseCoopers, SIA, 2017. *Transparency Report for the financial year 2017*. [Online] Available at: https://www.pwc.com/lv/lv/assets/TR_eng_2017.pdf. [Accessed 2 December 2017]

Quick, R., Warming-Rasmussen, B., 2015. An Experimental Analysis of the Effects on Non-audit Services on Auditor Independence in Appearance in the European Union: Evidence from Germany. *Journal of International Financial Management and Accounting*, 26(2), 150-187.

Ratzinger-Sakel, N.V.S., Schönberger, M., 2015. Restricting Non-Audit Services in Europe – The Potential (Lack of) Impact of Blacklist and a Fee Cap on Auditor Independence and Audit Quality. *Accounting in Europe*, 12(1), 61-86.

The Audit Service Act of the Republic of Latvia, dated 03.05.2001. [Online] Available at: https://likumi.lv/ta/en/en/id/20946. [Accessed 2 March 2018]

van Liempd, D., Quick, R., Warming-Rasmussen, B., 2018. Auditor-provided nonaudit services: Post-EU-regulation evidence from Denmark. *International Journal of Auditi*ng, In Press. [Online] Available at: https://doi.org/10.1111/ijau.12131. [Accessed 2 December 2018]

Velte, P., Stiglbauer, M., 2012. Audit market concentration and its influence on audit quality. *International Business Research,* 5(11), 146-161.

ACCELERATORS – CATEGORIZING A NEW FORM OF COOPERATION

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Abstract. Accelerators have helped over 6,000 start-ups, such as Airbnb and Dropbox, throughout their earliest stages. Those ventures went on to raise more than $26bn in follow-on investments (Christiansen 2017). As more and more corporates, universities, venture capitalists and others are joining the club and initiating their own accelerators in different ways and with different goals, a variety of different configurational options of accelerators exist on the market.

Most research focused on the categorization of the different types of accelerators, either by their sponsors (Cohen et al. 2018), their motivation (Pauwels et al. 2016), or their business model (Malek et al. 2014). Notwithstanding the difficult data situation about accelerator programs some authors did quantitative analyses on the effectiveness of these accelerator types. Still, there seems to be a lack of understanding to which extend configurational factors of accelerators are contributing to start-ups success (Dempwolf et al. 2014).

The aim of this paper is to establish a model of the major contributors of accelerators, which according to a literature review on open innovation studies (e.g. Cohen and Hochberg 2014; Weiblen and Chesbrough 2015; Kanbach and Stubner 2016) influence start-ups success. Further the paper wants to attribute the main configurational factors of accelerator programs, which might indicate the strength of accelerators' contribution to start-ups' success. The results of this literature review offer a definition of three main contributors of accelerators to start-up success, i.e. reputation, co-creation and networking. In addition, the most prominent configurational factors effecting these contributors are identified and explained.

Key words: *open innovation, inter-organizational collaboration, startup accelerator programs*

JEL code: M13

Introduction

Accelerators have helped over 6,000 start-ups, such as Airbnb and Dropbox, which went on to raise more than $26bn in follow-on investments (Christiansen 2017). As more and more corporates, universities, venture capitalists and others are joining the club by initiating their own accelerators in different formats and with different goals, a variety of different configurational options of accelerators exist on the market. The question arises how accelerators influence the success of their start-up participants. Is their one best configuration of accelerators that produces the most successful start-ups?

The relevance of the topic is demonstrated by the global growth of the accelerator phenomenon. According to the Global Accelerator Report 2016 (GUST 2016), more than 200 million dollars were invested into 11,305 start-ups by 579 accelerator programs globally in 2016. F6S.com, a service provider gathering start-up and accelerator data beyond the data on investments in start-ups, lists over 7,000 accelerator programs worldwide.

In general, a start-up is a growth-oriented business that is seeking for a repeatable, scalable business model, which builds on innovative products or services in an uncertain and volatile environment (Blank and Dorf 2012; Radojevich-Kelley and Hoffman 2012).

Accelerators developed as platform for open innovation connecting entrepreneurs, start-ups, venture capitalists, corporates and others to develop new ideas to a product or even growth stage (Weiblen and Chesbrough 2015). Christiansen (2014) suggests that the first of this kind of 'seed accelerator programs' has been established in the year

2005. This business accelerator, based in Mountain View California, is called 'Y Combinator' and has been established by Paul Graham, who is seen as the pioneer of accelerators. Since 2005, several accelerators have been introduced all over the world such as 500 Start-ups, Techstars and Amplify LA (Regmi et al. 2015; Kohler 2016). Accelerators represent a broad-based market response to the real and perceived need and opportunity associated with providing early stage start-ups with a well-defined set of services and network opportunities. They reduce the costs an entrepreneur faces–in time and resources–during the commercialization process. (Dempwolf et al. 2014)

Despite these numbers and the advantages mentioned above, others warn about potentially negative ramifications, such as conflicts of interest (e.g. Crichton 2014). After a qualitative study with ten corporate accelerators in Germany, Moschner and Herstatt (2017) describe the action in corporate accelerators as "facets of entrepreneurial washing similar to green-washing activities corporate social responsibility" (Moschner and Herstatt 2017, p. 3). Chesbrough's (2012) study of GE's experiment with start-ups proves that not all the links with start-ups are fructuous and that relevant relationships between large incumbent firms and start-ups need to evolve from simple links to complex relations in order to be beneficial for both parties.

These discussions highlight the importance of understanding the phenomenon of accelerators in more depth. The relationship between start-ups and the accelerator has only been investigated by a small number of researchers. So far, literature has focused mainly on the engagement of start-ups in the innovation networks of incumbent firms, where larger corporations can leverage the technological base developed by the smaller firm (Chesbrough 2006; Carlsson et al. 2011; Shane and Venkataraman 2000; Weiblen and Chesbrough 2015) or on how start-ups can benefit from open innovation adoption to enhance early-stage growth (Battistella et al. 2017). Questions about the key elements of accelerators which drive the growth of their start-up participants remain open.

The aim of this paper is to establish a model of the major contributors of accelerators, which according to a literature review on open innovation studies (e.g. Cohen and Hochberg 2014; Weiblen and Chesbrough 2015; Kanbach and Stubner 2016) influence start-ups success. Further the paper wants to attribute the main configurational factors of accelerator programs, which might indicate the strength of accelerators' contribution to start-ups' success. This is in line with recent calls for further research (e.g. Pauwels et al. 2016) to fully understand which factors do accelerators contribute to the success of their start-up participants. Therefore, the main research question to be explored in this paper is: Which contributors of accelerators on start-up success can be identified by reviewing the literature on open innovation?

The approach to answer this question is based on a literature review of open innovation theories as well as the respective existing research of other authors on accelerators. The focus is on acquiring an overview of the existing work that lays the foundation for future research and can be utilized by researchers and practitioners to access existing relevant findings. Moreover, the literature review should provide a synthesis of the results of the relevant influencing factors between accelerators and start-up participants with regard to fostering start-up development (Webster and Watson 2002). Hence, papers published on accelerators on Web of Science – Social Science Citation Index, Emerald and Elsevier's Scopus – are reviewed and analysed.

By summarizing the findings, the paper results in a new view on the contribution of accelerator programs to their participants' development. The findings contribute to the discipline of open innovation in the accelerator area and encourage further research on the success of different configurations of accelerators.

Research results and discussion

By focussing on firms at the earliest stage of development and providing them with entrepreneurial support services, accelerators derive many of their characteristics from an earlier form of open innovation collaboration called incubators.

Therefore, start-up accelerators are sometimes considered as the next generation of incubators (Carvalho and Galina 2015). However, accelerator programmes have distinguishing characteristics. Some examples of authors who defined the differentiating characteristics of accelerators from incubators are Miller and Bound (2011b), Cohen and Hochberg (2014), Pauwels et al. (2016) and Cohen et al. (2018).

Cohen and Hochberg's frequently cited paper summarized them as programs that "help ventures define and build their initial products, identify promising customer segments, and secure resources, including capital and employees." (Cohen and Hochberg 2014, p. 4) They found that accelerators typically support start-ups by means of mentors, networking sessions, and educational opportunities. In addition, start-ups often receive seed capital and office space. Accelerators typically serve **three distinct stakeholders** concurrently during this stage: (Dempwolf et al. 2014)

- New and potential start-up businesses comprising one or more entrepreneurs with rapid growth potential.
- Venture capitalists and other investors interested in funding start-ups once they emerge from the early stages of invention.
- Existing firms searching for new products or firms to acquire as part of their own business strategies.

Summarizing existing literature, Heinemann (2015) defines accelerators as programs which:

- Help early-stage start-ups through various means but at least mentorship and connections to potential investors
- Have management objectives which are often monetary
- Are fixed-term with durations of equal to or less than 12 months
- Have a cohort-based intake and process
- Have a selective application process
- Typically provide stipends
- Typically take a non-controlling amount of equity

These definitions are valuable to distinguish accelerators from other open innovation models like incubators. The next section provides a closer look into different attempts of categorizations of accelerators.

1. Categorization of accelerators

There have been many attempts with different approaches to categorize the different types of accelerators. In principle, there are two different models of accelerators, namely **generic and specialized** accelerators (Hochberg 2015). Generic accelerator programs are targeting many kinds of start-ups, in contrast to specialized accelerators, which focus on particular industries and technologies (Kohler 2016). Many accelerators see themselves as generalists or define themselves not through the underlying technology of the start-up but the industry (such as healthcare) they are operating in. (Hochberg 2015)

A second differentiating factor of accelerators is their focus on a **maturity stage** of start-ups in their product development. Gompers (1995) classifies all seed and start-up investments as early rounds. These investments are usually made in very young companies. First stage and early stage investments are classified as middle rounds because even though the firms are still relatively young, they are further developed than seed or start-up companies. Finally, second, third, expansion, or bridge stage funding is considered to be late stage financing. Previous studies have suggested that

early-stage ventures are risky and have high odds for failure (Cochrane 2005). Major drivers seem to be the level of information asymmetry and uncertainty at the early stage (Dai et al. 2012).

Thirdly, to be able to understand the different models of accelerators, Dempwolf et al. (2014) distinguish accelerators based on their founders and financiers. They derived the following four types of accelerators, i.e. **social accelerators, university accelerators, corporate accelerators, and innovation accelerators**. Other authors use simpler models and distinguish among **non-profit, public and corporate accelerators** (Cohen and Hochberg 2014).

As there exist mixtures of different types of accelerators based on their founders, their focus in stage or industries it becomes difficult to create a comprehensive model of categories. Pauwels et al. (2016) therefore propose a categorization based on the **goals and motivation of their founders**. Through a qualitative analysis of interviews and archival data, Pauwels et al. (2016) identified key design parameters of accelerators and established three different categories of accelerators, i.e.:

- **Ecosystem builder**: Creating a network of stakeholders to finally connect customers with start-ups. This model is best suited for incumbent corporations
- **Deal-flow maker**: Uncover promising start-ups for investors
- **Welfare stimulator**: Foster economic growth in a region or technological domain.

Another suggestion for a comprehensive categorization of accelerators was brought forward by Malek et al. (2014) who categorized accelerators based on their implementation of the following dimensions: strategy, governance, business model, operations and finance. From this they identified four types of accelerator capabilities: **R&D focused**, **technology enabled**, **market enabled**, and **network enabled**.

As the various different approaches for the categorization of accelerators show, the categorization is difficult and also meta-categorization (Pauwels et al. 2016; Malek et al. 2014) do not serve to best identify the configurational factors of accelerators on start-up success. Scholars (Hochberg 2015; Mason and Brown 2014) point out that each type of accelerator operates following its own goals, design logics, and innate motivations; therefore, they function differently by providing different services and contributing to the entrepreneurial ecosystem in different ways (Goswami et al. 2018).

Therefore, this paper does not decide on one of these categorizations of accelerators but attempts to find overarching factors of contribution for all accelerators. Therefore, the next section takes a closer look on the factors affecting success of accelerator participants as identified by a literature review in the open innovation literature.

2. Major contributors of accelerators

The resource-based view established by Penrose (1959) sees the application of a bundle of valuable tangible or intangible resources at the firm's disposal as a basis for the competitive advantage of a firm. In contrast, start-ups, by definition, are acting in a resource-constrained context (Wymer and Regan 2005). Hence, start-up survival and success is dependent on a combination of internal knowledge and external resources (Kask and Linton 2013; Presutti et al. 2011 Teece 2010).

According to Ronald Coase's (1937) transaction cost theory, people begin to organize their production in firms when the transaction cost of coordinating production through the market exchange, given imperfect information, is greater than within the firm. Start-ups are for two reasons contradicting this view. They are firstly acting under a limited resource and secondly the environment around them is changing fast. (Wymer and Regan 2005)

The specific of start-ups' development led to the development of open innovation theory, a term promoted by Henry Chesbrough (2003), though the idea and discussion about some consequences (especially the interfirm cooperation in R&D) date as far back as the 1960s. (Trott and Hartmann 2009) The term "Open Innovation" was referred to as "a

paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology". (Chesbrough 2003, p. xxiv)

Enabling the identification of overarching contributing factors of accelerators independent from any accelerator categories, a literature review on open innovation and start-ups and the effects of open innovation activities on start-up participants is conducted. Several recent studies (e.g. Eftekhari and Bogers 2015; Waguespack and Fleming 2009) explored how an open approach to start-up creation can benefit the start-up entrepreneurs. They examined the accelerator phenomenon from different angles with different research questions, methodologies and geographies in mind.

This paper identifies three major contributors of accelerators based on the literature review:

- **Reputation**
- **Co-Creation**
- **Networking**

Table *1* shows the most cited literature on the accelerator topic and a categorization of their findings on configurational factors of accelerators contributing to start-ups success.

Table 1

Selected literature on configuration factors of accelerators

	Reputation		Co-Creation			Networking	
	Age of accelerator	Leadership experience	Equity investment	Program length	Pilot project with customers	Alumni	Mentors
Bogers et al. 2010					x		
Clarysse and Yusubova 2014					x		x
Cohen and Hochberg 2014		x	x	x		x	x
Gonzales-Uribe and Leatherbee 2015		x					x
Goswami et al. 2018					x	x	x
Hallen, Bingham and Cohen 2013						x	x
Kanbach and Stubner 2016		x	x	x	x		
Kim and Wagman 2014	x	x					
Kohler 2016	x	x	x		x		x
Miles et al. 2017					x	x	x
Miller and Bound 2011			x		x	x	x
Pauwels et al. 2016			x	x	x	x	x

Radojevich-Kelley and Hoffman 2012							x
Salamzadeh et al. 2017				x	x	x	x
Scillitoe and Chakrabarti 2010		x					
Scott et al. 2015	x	x					
Seet et al. 2018						x	x
Waguespack and Fleming 2009	x			x			
Weiblen and Chesbrough 2015					x		
Winston-Smith et al. 2015						x	
Summe	**4**	**7**	**5**	**5**	**10**	**9**	**12**

Source: author's illustration based on literature review

The next sections describe why these three contributors were identified and which configurational factors might indicate the strength of these contributors in accelerators.

REPUTATION

According to Kohler (2016), the reputational factor for start-ups comes firstly from the competitive selection process of accelerators and is bringing them visibility and credibility. The **age of the accelerator** as well as the **experience of the leadership** team of the accelerator can benefit many start-up priorities increase the reliability of the signals to external stakeholders, e.g. investors. Kim and Wagman (2014) find that accelerators may choose to disclose only positive signals (and conceal negative signals) about its portfolio firms to benefit their start-up participants — a partial disclosure partial of which they warn VC investors from.

Accelerator management can add value in at least two different ways: they can have relevant personal knowledge and skills developed through their own direct experience in start-ups (Scillitoe and Chakrabarti 2010), and they can use their skills in the selection of the most promising start-ups for their programs. Wise and Valliere (2014) find in their research that the direct start-up experience of accelerator managers matters more than their connectedness to the ecosystem for the success of the start-ups.

Being selected by an accelerator with a highly experienced management team can boost the reputation of a start-up, as the accelerator leaders have a vested interest in new venture success, given that they often have equity in the firm (Cohen 2013). The ex-ante assessment of early-stage start-up ideas by the accelerator leadership may predict their subsequent commercialization. Although Scott et al. (2016) did not find that mentors' industry-specific and scientific expertise is a critical determinant of their collective ability to assess commercial viability. Others, like Åstebro and Elhedhli (2006) find a positive relationship between expert evaluation of an invention and its likelihood of subsequent commercialization and financial returns.

CO-CREATION

During accelerator programs start-ups experience a phase of co-creation with various partners of the accelerator program, be it corporate partners, mentors or other participants or alumni of the program. The intensity of this contributor is set out by the factors of pre-seed investment, the program length and the existence of pilot projects with corporate partners, i.e. potential users or distributors, during the program.

Most accelerators provide **pre-seed investment**, in exchange for equity stakes (or other forms like convertible notes) in participating ventures. Cohen and Hochberg (2014) quantify the average capital provided to start-ups in a ranges from $0 to $50K. According to them, in return, most accelerators take between 5 and 8 percent of equity, which is purposely below a controlling stake.

In contrast to incubators, which usually last between one and five years ((Barrow 2001), accelerator **program length** is relatively short, commonly three to six months (Weiblen and Chesbrough 2015; Cohen and Hochberg 2014). A short timeframe avoids strong dependencies between the start-up and the accelerator, encourages fast development cycles, and forces an early feedback from the market about the viability of an idea (Cohen 2014). It also may maximize the profits of an accelerator by allowing more start-ups to go through the program and by limiting the efforts spent on each start-up (Dempwolf et al. 2014). Longer relationships often lead into mutual dependencies between the agents and therefore accelerators promote quick growth or failure of a start-up (Kohler 2016).

Almost all sources specified that the duration of an accelerator program should be limited in some way with one paper even considering it "the characteristic that most clearly defines accelerator programs" (Cohen and Hochberg 2014, p. 10). In fact, having limited time to show your abilities and to learn more can be a key to start-up success (Ganamotse et al. 2017).

Start-ups can benefit from corporate partners who participate in accelerators for open innovation reasons. Start-ups need to put their products in the market as soon as possible to receive valuable feedback. Working on a product partnership with an established company conveys validation for future customer acquisition (Kohler 2016). According to Carlsson et al. (2011) start-ups take advantage of corporate partners by using their knowledge as potential future customers and users to develop and commercialize their products. Moreover, start-ups can leverage large firm's access to economies of scale and scope to develop and market products whose technological base has been developed by the smaller firm. A typical form of initiating a product partnership within an accelerator program are **pilot projects.**

Pilot projects with users, the close relationship between start-ups and users (i.e., intermediate users and end-users), is an important element of an effective open innovation model (Bogers et al. 2010). A significant component of innovation might be traced back to users (von Hippel 2005; Shah and Tripsas 2007). One way of innovating is involving lead users and collecting information about their needs. Producers can benefit from users to develop breakthrough products, which tend to have higher performance than other innovations (von Hippel 2005). User involvement can help the entrepreneur build a strong relationship with users and collect their feedback regularly, thereby increasing the chances of successful exploitation of the innovative ideas, in line with the recent notions of customer development (Blank and Dorf 2012) and the lean start-up (Ries 2011).

NETWORKING

As previously discussed and according to the resource-based view, having a solid **network** is emphasised as one of the key factors influencing the emergence and successful development of a start-up (Spender et al. 2017; Rothschild and Darr 2005). Networks are critical for the survival and growth of a small firm because they can provide access to information, advice and influence, as well as resources held by others (Kask and Linton 2013; Teece 2010; Hoang and

Antoncic 2003). Accelerator networks are comprised of members playing different roles with a variety of relationships emerging between the actors.

Firstly, there was equal agreement across all sources that **cohort-based intakes** form an essential element of accelerators. Accelerators do not take in new participants on a rolling basis, but form groups of participants, i.e. cohorts, which run through the program together. The start-ups in these cohorts of an accelerator program as well as the **alumni** get the possibility to connect with each other, benefiting from their diverse skills and helping each other in difficult situations (Cohen et al. 2018). Cohort members act as technical co-founders who help each other with solving problems, providing initial feedback on pitches, and avoiding embarrassing mistakes (Carmel and Richman 2013; Miller and Bound 2011a; Stross 2013).

Secondly, during the accelerator program, the **intense mentorship** creates a supportive peer-to-peer environment and entrepreneurial culture (Radojevich-Kelley and Hoffman 2012; Cohen and Hochberg 2014). Mentors work closely with founders, sharing their own individual experiences, connecting them with others, and working through challenges to help founder teams develop their idea or identify new opportunities (Cohen 2013; Radojevich-Kelley and Hoffman 2012).

Conclusions, proposals, recommendations

This paper establishes a categorization of the configurational factors of accelerator programs and attributes them to major contributors of accelerators to start-ups success which were derived from a literature review in open innovation theories. For start-ups, the benefits of participating in an accelerator program come mainly from the reputational effect of being selected into the cohort of the accelerator, the co-creation effect by the investment of the accelerator and the collaboration with new partners during the program as well as the networking effect from the exchang with alumni, mentors and corporate partners of the accelerator.

To conclude the main contribution of this paper are the following hypotheses that have to be empirically tested by further research:

1. Based on a literature review of open innovation theories, resource-based view and venture capital theories, three main categories of accelerators contributions to start-up success were defined.
2. The major contributors of accelerators to start-up success are reputation, co-creation and networking.
3. The reputational factor of an accelerator is mainly impacted by the age of the accelerator and the experience of the leadership of the accelerator.
4. The positive effect of the co-creational contribution of the accelerator is influenced by the accelerator's equity investment into the start-up, by the length of the program and by conducting a pilot project with potential customers.
5. The networking contribution of the accelerator is stronger the more alumni and mentors are involved.

This framework shall add a new categorization of decisive configurational factors of accelerators and their major contributors to start-up success, thereby adding to the scientific area of open innovation and accelerator research. The findings of the literature review shall enable further research on the success of the different configurations of accelerators based on the identified factors and major contributors of an accelerator.

Dempwolf et al. (2014) also highlight the fact that accelerators are in almost all cases businesses themselves which aim to be self-sustaining. Hence, not only start-ups, but also the sponsors or owners of accelerator programs want to better understand the major contributing factors of accelerators to their start-ups' success. Parent organizations of accelerators, e.g. governments, venture capitalists and corporates, can use this knowledge to provide framework conditions for new

companies so that the accelerator participants can best develop. Finally, start-ups gain a framework of accelerator types which they could participate in to potentially increase their future business success.

Bibliography

Åstebro, Thomas; Elhedhli, Samir (2006): The effectiveness of simple decision heuristics. Forecasting commercial success for early-stage ventures. In *Management Science* 52 (3), pp. 395–409.

Barrow, Colin (2001): Incubators. A realist's guide to the world's new business accelerators: Wiley.

Battistella, Cinzia; Toni, Alberto F. de; Pessot, Elena (2017): Open accelerators for start-ups success. A case study. In *European Journal of Innovation Management* 20 (1), pp. 80–111. DOI: 10.1108/EJIM-10-2015-0113.

Blank, Steve; Dorf, Bob (2012): The startup owner's manual. The step-by-step guide for building a great company. Pescadero, CA: K&S Ranch Inc. Publishers.

Bogers, Marcel; Afuah, Allan; Bastian, Bettina (2010): Users as innovators. A review, critique, and future research directions. In *Journal of management* 36 (4), pp. 857–875.

Carlsson, Sven; Duarte, Vanessa; Sarkar, Soumodip (2011): Separating the wheat from the chaff – a taxonomy of open innovation. In *European Journal of Innovation Management* 14 (4), pp. 435–459. DOI: 10.1108/14601061111174907.

Carmel, Erran; Richman, Jessica (2013): Building International Social Capital at the Startup Chile Accelerator. In *SSRN Journal. DOI:* 10.2139/ssrn.2326003.

Carvalho, Luisa Margarida Cagica; Galina, Simone Vasconcelos Ribeiro (2015): The role of business incubators for start-ups development in Brazil and Portugal. In *W Jnl of Ent Man and Sust Dev* 11 (4), pp. 256–267. DOI: 10.1108/WJEMSD-05-2015-0023.

Chesbrough, Henry (2003): The logic of open innovation. Managing intellectual property. In *California Management Review* 45 (3), pp. 33–58.

Chesbrough, Henry (2012): GE's ecomagination Challenge. An Experiment in Open Innovation. In *California Management Review* 54 (3), pp. 140–154.

Chesbrough, Henry William (2006): Open innovation. The new imperative for creating and profiting from technology: Harvard Business Press.

Christiansen, Jed (2014): The European Seed Accelerator Ecosystem. In *Accelerator Assembly*, pp. 1–8.

Christiansen, Jed (2017): Seed-DB. Available online at http://www.seed-db.com, checked on 5/27/2017.

Coase, Ronald H. (1937): The nature of the firm. In *economica* 4 (16), pp. 386–405. Available online at http://onlinelibrary.wiley.com/doi/10.1111/j.1468-0335.1937.tb00002.x/full.

Cochrane, John H. (2005): The risk and return of venture capital. In *Journal of Financial Economics* 75 (1), pp. 3–52. DOI: 10.1016/j.jfineco.2004.03.006.

Cohen, Susan (2014): What do accelerators do? Insights from incubators and angels. Available online at http://www.mitpressjournals.org/doi/pdf/10.1162/INOV_a_00184.

Cohen, Susan; Hochberg, Yael V. (2014): Accelerating startups. The seed accelerator phenomenon.

Cohen, Susan L. (2013): How to accelerate learning. Entrepreneurial ventures participating in accelerator programs.

Cohen, Susan L.; Bingham, Christopher B.; Hallen, Benjamin L. (2018): The Role of Accelerator Designs in Mitigating Bounded Rationality in New Ventures. In *Administrative Science Quarterly* 15, 000183921878213. DOI: 10.1177/0001839218782131.

Crichton, Danny (2014): Corporate Accelerators Are An Oxymoron. Available online at https://techcrunch.com/2014/08/25/corporate-accelerators-are-an-oxymoron/, checked on 12/30/2017.

Dai, Na; Jo, Hoje; Kassicieh, Sul (2012): Cross-border venture capital investments in Asia. Selection and exit performance. In *Journal of business venturing* 27 (6), pp. 666–684. DOI: 10.1016/j.jbusvent.2011.04.004.

Dempwolf, C. Scott; Auer, Jennifer; D'Ippolito, Michelle (2014): Innovation accelerators. Defining characteristics among startup assistance organizations. Available online at https://www.sba.gov/sites/default/files/rs425-Innovation-Accelerators-Report-FINAL.pdf.

Eftekhari, Nazanin; Bogers, Marcel (2015): Open for entrepreneurship. How open innovation can foster new venture creation. In *Creativity and Innovation Management* 24 (4), pp. 574–584. Available online at http://onlinelibrary.wiley.com/doi/10.1111/caim.12136/full.

Ganamotse, Gaofetoge Ntshadi; Samuelsson, Mikael; Abankwah, Ruth M.; Anthony, Tibaingana; Mphela, Thuso (2017): The Emerging Properties of Business Accelerators. The Case of Botswana, Namibia and Uganda Global Business Labs. In *Journal of Entrepreneurship and Innovation in Emerging Economies* 3 (1), pp. 16–40. DOI: 10.1177/2393957516684469.

Gompers, Paul A. (1995): Optimal investment, monitoring, and the staging of venture capital. In *The journal of finance* 50 (5), pp. 1461–1489.

Goswami, Ketan; Mitchell, J. Robert; Bhagavatula, Suresh (2018): Accelerator expertise. Understanding the intermediary role of accelerators in the development of the Bangalore entrepreneurial ecosystem. In *Strategic Entrepreneurship Journal* 12 (1), pp. 117–150. DOI: 10.1002/sej.1281.

GUST (2016): Global Accelerator Report 2016. Available online at http://gust.com/accelerator_reports/2016/global/.

Heinemann, Florian (2015): Corporate accelerators. A study on prevalence, sponsorship, and strategy. Massachusetts Institute of Technology. Available online at https://dspace.mit.edu/handle/1721.1/105309.

Hoang, Ha; Antoncic, Bostjan (2003): Network-based research in entrepreneurship. A critical review. In *Journal of business venturing* 18 (2), pp. 165–187. Available online at http://www.sciencedirect.com/science/article/pii/S0883902602000812.

Hochberg, Yael V. (2015): Accelerating entrepreneurs and ecosystems. The seed accelerator model. In *Innovation Policy and the Economy* 16 (1), pp. 25–51.

Kanbach, Dominik K.; Stubner, Stephan (2016): Corporate Accelerators As Recent Form Of Startup Engagement. The What, The Why, And The How. In *Journal of Applied Business Research (JABR)* 32 (6), pp. 1761–1776. DOI: 10.19030/jabr.v32i6.9822.

Kask, Johan; Linton, Gabriel (2013): Business mating. When start-ups get it right. In *Journal of Small Business & Entrepreneurship* 26 (5), pp. 511–536.

Kim, Jin-Hyuk; Wagman, Liad (2014): Portfolio size and information disclosure. An analysis of startup accelerators. In *Journal of Corporate Finance* 29, pp. 520–534. Available online at http://www.sciencedirect.com/science/article/pii/S0929119914001333.

Kohler, Thomas (2016): Corporate accelerators. Building bridges between corporations and startups. In *Business Horizons* 59 (3), pp. 347–357. DOI: 10.1016/j.bushor.2016.01.008.

Malek, Kourosh; Maine, Elicia; McCarthy, Ian P. (2014): A typology of clean technology commercialization accelerators. In *Journal of Engineering and Technology Management* 32, pp. 26–39. Available online at http://www.sciencedirect.com/science/article/pii/S0923474813000763.

Mason, Colin; Brown, Ross (2014): Entrepreneurial ecosystems and growth oriented entrepreneurship. In *Final Report to OECD, Paris* 30 (1), pp. 77–102.

Miller, P.; Bound, K. (2011a): The Startup Factories. The rise of accelerator programmes to support new technology ventures: NESTA.

Miller, Paul; Bound, Kirsten (2011b): The startup factories. In *NESTA. http://www. nesta. org. uk/library/documents/StartupFactories. pdf*.

Moschner, Sandra-Luisa; Herstatt, Cornelius (2017): All that glitters is not gold. How motives for open innovation collaboration with startups diverge from action in corporate accelerators. Hamburg: Hamburg University of Technology (TUHH), Institute for Technology and Innovation Management (Working Paper,

Hamburg University of Technology (TUHH), Institute for Technology and Innovation Management, 102). Available online at https://www.econstor.eu/bitstream/10419/172257/1/1007199385.pdf.

Pauwels, Charlotte; Clarysse, Bart; Wright, Mike; van Hove, Jonas (2016): Understanding a new generation incubation model. The accelerator. In *Technovation* 50, pp. 13–24. Available online at http://www.sciencedirect.com/science/article/pii/S0166497215000644.

Penrose, Edith Tilton (1959): The Theory of the Growth of the Firm: Oxford university press.

Presutti, Manuela; Boari, Cristina; Majocchi, Antonio (2011): The Importance of Proximity for the Start‐Ups' Knowledge Acquisition and Exploitation. In *Journal of Small Business Management* 49 (3), pp. 361–389. Available online at http://onlinelibrary.wiley.com/doi/10.1111/j.1540-627X.2011.00331.x/full.

Radojevich-Kelley, Nina; Hoffman, David Lynn (2012): Analysis of accelerator companies. An exploratory case study of their programs, processes, and early results. In *Small Business Institute Journal* 8 (2), pp. 54–70. Available online at http://www.sbij.org/index.php/SBIJ/article/view/136.

Regmi, Krishna; Ahmed, Syed Adeel; Quinn, Mark (2015): Data driven analysis of startup accelerators. In *Universal Journal of Industrial and Business Management* 3 (2), pp. 54–57. Available online at http://www.hrpub.org/download/20150201/UJIBM3-11603268.pdf.

Ries, Eric (2011): The lean startup. How today's entrepreneurs use continuous innovation to create radically successful businesses: Crown Books.

Rothschild, Leora; Darr, Asaf (2005): Technological incubators and the social construction of innovation networks. An Israeli case study. In *Technovation* 25 (1), pp. 59–67. Available online at http://www.sciencedirect.com/science/article/pii/S0166497203000646.

Scillitoe, Joanne L.; Chakrabarti, Alok K. (2010): The role of incubator interactions in assisting new ventures. In *Technovation* 30 (3), pp. 155–167. Available online at http://www.sciencedirect.com/science/article/pii/S0166497209001734.

Scott, Erin L.; Shu, Pian; Lubynsky, Roman (2016): Are'Better'Ideas More Likely to Succeed? An Empirical Analysis of Startup Evaluation.

Shah, Sonali K.; Tripsas, Mary (2007): The accidental entrepreneur. The emergent and collective process of user entrepreneurship. In *Strategic Entrepreneurship Journal* 1 (1‐2), pp. 123‐140. Available online at http://onlinelibrary.wiley.com/doi/10.1002/sej.15/full.

Shane, Scott; Venkataraman, Sankaran (2000): The promise of entrepreneurship as a field of research. In *Academy of management review* 25 (1), pp. 217–226. Available online at http://amr.aom.org/content/25/1/217.short.

Spender, John-Christopher; Corvello, Vincenzo; Grimaldi, Michele; Rippa, Pierluigi (2017): Startups and open innovation. A review of the literature. In *Euro Jrnl of Inn Mnagmnt* 20 (1), pp. 4–30. DOI: 10.1108/EJIM-12-2015-0131.

Stross, Randall (2013): The Launch Pad. Inside Y Combinator: Penguin.

Teece, David J. (2010): Business models, business strategy and innovation. In *Long range planning* 43 (2), pp. 172–194. Available online at http://www.sciencedirect.com/science/article/pii/S002463010900051X.

Trott, Paul; Hartmann, D. A.P. (2009): Why'open innovation'is old wine in new bottles. In *International Journal of Innovation Management* 13 (04), pp. 715–736. DOI: 10.1142/S1363919609002509.

von Hippel, Eric (2005): Democratizing innovation: MIT press.

Waguespack, David M.; Fleming, Lee (2009): Scanning the commons? Evidence on the benefits to startups participating in open standards development. In *Management Science* 55 (2), pp. 210–223.

Webster, Jane; Watson, Richard T. (2002): Analyzing the past to prepare for the future. Writing a literature review. In *MIS quarterly*, pp. xiii–xxiii.

Weiblen, Tobias; Chesbrough, Henry W. (2015): Engaging with Startups to Enhance Corporate Innovation. In *California Management Review* 57 (2), pp. 66–90. DOI: 10.1525/cmr.2015.57.2.66.

Wise, Sean; Valliere, Dave (2014): The impact on management experience on the performance of start-ups within accelerators. In *The Journal of Private Equity*, pp. 9–19.

Wymer, Scott A.; Regan, Elizabeth A. (2005): Factors influencing e‐commerce adoption and use by small and medium businesses. In *Electronic markets* 15 (4), pp. 438–453.

THE CALCULATION OF CROWDFUNDING CAMPAIGN SOCIAL MEDIA COSTS

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Abstract. Problem. More companies than ever are using crowdfunding campaigns to raise funds and test their ideas. While one of the most important success factors of a crowdfunding campaign is the usage of social media during the campaign, yet there has not been proposed a formula that could help to calculate the estimated costs of social media activities needed to successfully launch a crowdfunding campaign.

Research aim. The aim of this paper was to develop a concept for a formula that can help crowdfunding campaign creators calculate the estimated costs of social media activities during a crowdfunding campaign.

Research methods. To achieve the aim of the paper several research methods were applied: (1) Theoretical analysis to determine what social media and crowdfunding cost calculation methods are there; (2) Secondary data research method was applied to: a. Collect Kickstarter technology category campaign data; b. Collect data from Kickstarter campaign Facebook and Twitter accounts. Statistical package for the social sciences (SPSS) was used to conduct a correlation analysis and descriptive analysis of the collected data.

Main results and findings of the study. In the result of the research, a formula was developed that can help crowdfunding campaign developers calculate the estimated costs of social media activities during a crowdfunding campaign.

Theoretical and practical implications of the work. In practice, this paper can be used to calculate how much funds a crowdfunding campaign creator will have to invest in social media to increase the chance that their crowdfunding campaign will be successful. The theoretical contribution of this paper is that this paper can be used as a basis to develop a new crowdfunding cost calculation method.

Key words: *crowdfunding, social media, costs, calculation two, three*, etc.

JEL code: M31, G20

Introduction

Crowdfunding campaigns are becoming more popular worldwide due to the opportunities that they provide for small and medium-sized enterprises (SMEs). Crowdfunding campaigns can help SMEs attract the necessary funds for projects even when a project or a company do not qualify for other funding sources. Launching a crowdfunding campaign can help companies get valuable feedback from their potential customers, get important information about the demand of the product and mitigate the risks of producing a new product (Schwienbacher A., 2018; Savedi et al., 2017). SMEs can advertise their products using crowdfunding campaigns and attract new customers. SMEs even can use crowdfunding platforms to discover new emerging business ideas (Shahab et al., 2019). These and other factors are the reasons for crowdfunding campaign popularity.

One of the most important factors that can influence the success of crowdfunding campaign is the usage of social media during the crowdfunding campaigns (Agrawal et al., 2011; Davis and Webb, 2014; Marom and Sade, 2013; Younkin and Kaskooli, 2013; Colistra and Duvall, 2017). The most frequently used social media sites for crowdfunding campaigns are Facebook and Twitter (Skulme R., 2017). Effective use of social media can help crowdfunding campaigns stand out from the crowd and attract more investors and funds. Due to the frequent use of social media by companies and

the specific limitations of social media sites, to get the best results, companies need to post their information frequently and use paid advertising to reach their potential customers.

Despite the importance of the usage of social media marketing during crowdfunding campaigns there have not been developed any methods that can calculate the investments needed in social media marketing to launch a successful crowdfunding campaign.

To help SMEs attract more investors and funds, the author of this paper will create a concept of a formula that can help calculate the possible costs of social media activities during crowdfunding campaigns. This formula will help companies better prepare their crowdfunding campaigns and improve the possible outcome of a crowdfunding campaign. To create the formula, the following research methods were used: 1) Literature analysis. The literature analysis was used to create a theoretical basis for the developed formula and method and also helped to answer the following questions: 1) what kind of crowdfunding campaign cost calculation formulas have been developed; 2) what kind of social media metrics should be analysed to calculate crowdfunding campaign social media costs; 3) what kind of social media metrics should be included in the social media cost calculation formula? 2) The secondary data research method was applied to: a. Collect Kickstarter technology category campaign data so author could determine with social media account data should be further analysed; b. Collect data from Kickstarter campaign Facebook and Twitter accounts, so the most important social media metrics could be determined and the proposed formula could be tested. Statistical package for the social sciences (SPSS) was used to conduct a correlation analysis and descriptive analysis of the collected data.

Literature review

To achieve the aim of the paper, first and foremost, theoretical literature analysis was conducted. During the literature analysis, different crowdfunding campaign cost calculation methods were analysed. L. A. Buff and his collegues proposed a crowdfunding campaign calculation method for music crowdfunding campaigns. The method implies, while calculating the costs of a crowdfunding campaign, the following factors must be taken into account: reward costs, fees, taxes and contingency expenses (Buff et al., 2013). J. Recomendes suggests, that while calculating crowdfunding campaign costs crowdfunding campaign creators should take into account following costs: product design costs; prototype manufacturing costs; photography and video costs; expos, trade shows, and pounding the pavement costs; advertising costs; press release distribution costs; marketing consultant costs; crowdfunding platform fees; reward, manufacturing and fulfilment costs (Recomendes J., 2015). K. Durbenic takes only two main crowdfunding campaign costs factors into account, platform costs and marketing costs. Under platform costs, she also takes into account fees of payment processors. (Durbenic K., 2017) According to B. Carbone the most obvious cost associated with crowdfunding is the cost paid to the funding portal to host the offering, the fees are projected to range between 4-8 %. Other potential compliance costs may be associated with anti-fraud and anti-money laundering procedures that FINRA applies to broker-dealers that foreseeably will be imported into the crowdfunding system (Carbone B., 2013). Tomczak and Brem suggest that small business owners incur following crowdfunding campaign costs: 1) transaction fees; 2) project costs; 3) shipping costs; 4) fulfilment costs; 5) opportunity costs; 6) additional talent. In addition to transaction costs, fulfilment costs can reduce the profits if not budgeted properly (Tomczak and Brem, 2013).

After comprehensive crowdfunding campaign cost calculation literature review, author came to the conclusion that there are hardly any papers that concentrate on analysing costs of crowdfunding campaigns, most of the papers look at crowdfunding campaigns costs in general and do not concentrate on any specific costs that may apply during a crowdfunding campaign. Author concluded that in the proposed methods very little attention is delegated to social media marketing costs calculation despite the fact that social media marketing is one of the most important factors that can help to launch a successful crowdfunding campaign. Due to the fact that there is little to none information about social media

marketing costs calculation in crowdfunding campaigns author will take a look at general social media marketing cost calculation methods and adapt them for crowdfunding campaign social media marketing cost calculation.

In this paper, the author will concentrate only on the cost calculation of social media activities necessary to create a successful crowdfunding campaign.

There are multiple ways how to calculate a marketing budget and determine social media costs. R. H. Williams suggests that the marketing budget should be calculated in 3 steps: 1) Take 10 % and 12 % of the projected annual, gross sales and multiply each by the mark-up made on the average transaction; 2) Deduct the annual cost of occupancy (rent) from the adjusted 10 % of sales number and the adjusted 12 % number; 3) The remaining balances represent the minimum and maximum allowable ad budgets for the year (Williams R. H., 2019). L. Mintz suggests that companies that have been in the business for one to five years the marketing budget should be between 12 and 20 % from company's gross revenue or projected revenue on marketing. For those companies that have been in business more than five years and have some market share/brand equity, L. Mintz suggests allocating between 6 and 12 % of the gross revenue or projected revenue (Mintz L., 2015). J. Baadsgaard proposes that 1) companies need to identify their revenue goals; 2) define their target audience; 3) clarify their acquisition cost; 4) build their budget. (Baadsgaard J., 2016). Jean Marie Caragher suggests that there are at least two ways how to set a marketing budget for a company: 1) marketing specialist can look at the amount spent prior year afjacnd increase it or decrease it, as appropriate; 2) marketing specialist can set marketing budget accordingly to the companies goals in the upcoming year to help company achieve these goals (Caragher J., 2007). J. Krueger proposes six marketing budgeting methods: 1) percentage of previous sales. With no regard whatsoever for return on investment, companies simply recreate their spending parameters based on the previous year's level of activity. 2) arbitrary budgeting. There are several budgeting approaches that can be grouped under the "arbitrary" category. Some rely on instinct or "gut feel". Others claim they spend what thy "can afford". 3) No formal budget. When making decisions is painful and setting budgets might result in performance evaluation, tactics of "avoidance" can be used to postpone the process. 4) Matching the competition. A member of the same family as copycat marketing, this approach has been honed to near perfection by the banking community. 5) Percentage of future sales. 6) Percentage of unit sales (Krueger J., 1996). Author will use the matching the competition method as a basis for social media costs calculation formula that is developed for crowdfunding campaigns.

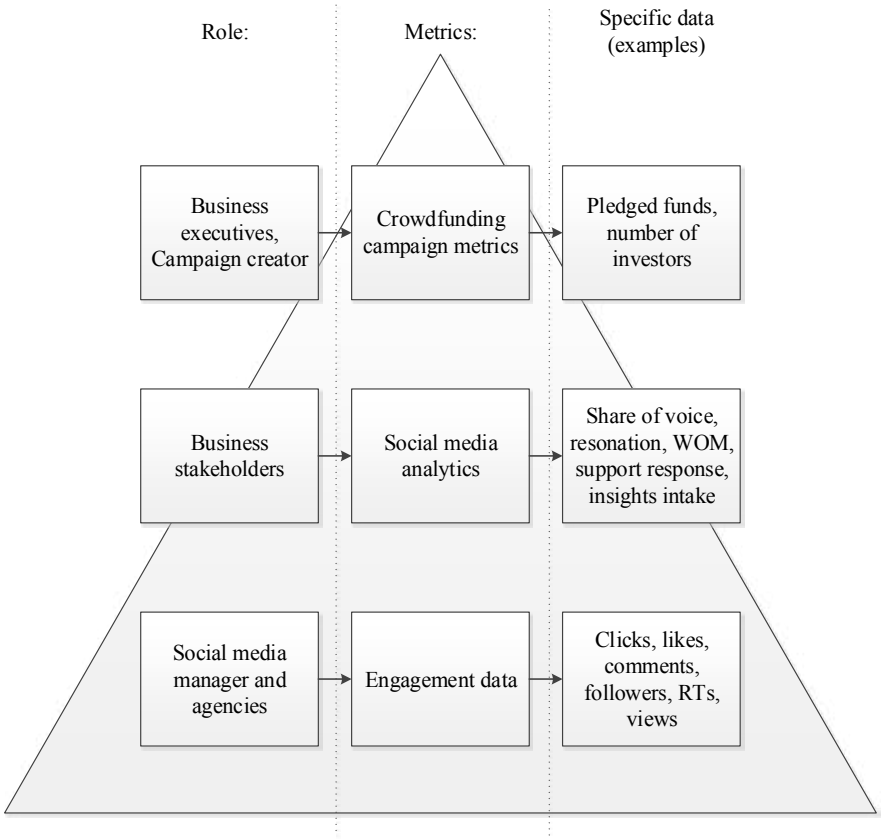
E. Mayer, CEO and owner of Social media delivered suggests that social media costs vary depending on the needs, budget and the goals of the business (Brooke P., 2017). S. X. Smith emphasizes that social media has two potential costs: hard cots (dollars spent) and soft costs (time spent by staff) (Brooke P., 2017). K. Lee proposes that while calculating social media costs three things should be take into account: 1) time, labour-costs should be multiplied by the number of hours spent over a given period; 2) social media tools, the costs of all the tools and services used in the given period should be added up; 3) advertising spend, the amount spent on social media advertising should be calculated —boosting Facebook posts, promoting tweets, etc. (Lee K., 2018).

Research results and discussion

To develop the concept of the social media cost calculation formula different social media models were also analysed.

During the analysis a conclusion was made, that social media models can be divided into five main groups: 1) adoption models; 2) strategy models; 3) approach models; 4) overview models; 5) return on investment (ROI) models (Chung and Koo, 2015; Lindsey-Mullikin and Borin, 2017; Grizan and Jurgelane, 2017; Jabeur N., Nait-Sidi-Moh A., Zeadally S., 2017).To develop the formula that can help crowdfunding campaign managers calculate the necessary social media funding to launch a successful crowdfunding campaign author used the social media return on investment pyramid model

developed by Jeremiah Owyang. This model was developed to get grip on the different measurable elements and show metrics that different involved parties are interested in. The Jeremiah Owyang social media ROI model is shaped like a pyramid, meaning, the most important metrics are on the top, while the least important metrics are at the bottom. Also, the roles of people in a company are divided similarly, the most important parties are on the top of the pyramid, the least important are at the bottom. At the top of the pyramid are business executives, that are analysing business metrics, such as revenue, reputation and customer satisfaction (CSAT). In the middle are business stakeholders that are interested in such data as a share of voice, word of mouth (WOM), support response and insights intake. And at the bottom are community managers and agencies, that analyse engagement data such as clicks, fans, followers, retweets, views, and check-ins. This model can help business executives and other interested parties help to determine the impact of social media on their business (Skulme R., 2018). The author took the model and adapted it for crowdfunding campaign analysis. Author adapted model is displayed in figure 1.



Source: author's construction based on social media ROI pyramid model

Fig 1. **Crowdfunding campaign social media ROI pyramid model**

Following changes were made to the social media ROI pyramid model, to develop the crowdfunding campaign social media ROI pyramid model. First of all, campaign creators were added next to business executives, because the term better describes the person that is in charge of the crowdfunding campaign. Then, the term "business metrics" were substituted by term "crowdfunding campaign metrics", because the term "crowdfunding campaign metrics" more precisely describes the metrics that business executives measure after and during the crowdfunding campaign creation. Also, the specific data examples were changed. The crowdfunding campaign metrics that are measured by business executives and campaign creators are pledged funds and the number of investors attracted. These two are the most important metrics of a crowdfunding campaign. The second row was left as it is, because crowdfunding campaigns also have business stakeholders who are interested in crowdfunding campaign social media data, such as share of voice, resonation, WOM and other data. So, they can measure the impact of different social media activities. Following changes were made at the

bottom, the term "community manager" was changed to "social media manager", because community managers are not used very often in crowdfunding campaigns. The engagement data of crowdfunding campaigns are mostly analysed by social media managers or by agencies that have developed the crowdfunding campaign for their clients. Metrics that are analysed in this stage are also engagement metrics, no changes were made there. Changes were made to the specific data examples of social media managers and agencies. Because of the fact, that in this paper only reward-based crowdfunding campaigns are analysed, social media managers will definitely not analyse check-ins, because there is not a place to check-in. This metric was substituted with metrics "likes" and "comments", because these metrics are one of the most important and most often analysed social media metrics by crowdfunding campaign social media managers (Skulme R., 2018).

According to authors research, the most common used social media sites for crowdfunding campaigns are Facebook and Twitter, due that author will concentrate only on these two social media sites, while creating social media cost calculation formula, but the formula can be adapted and used with other social media sites, replacing or adding social media metrics from other social media sites.

The previous mentioned social media model developed by the author was used to create a research framework, as a result, social media costs calculation formula was developed and tested. During the research author collected the following data from the Kickstarter crowdfunding campaign platform: a) funds pledged; b) number of backers; c) the amount updates campaign published; d) the amount of comments campaign received; e) how many social media sites campaign used; f) what kind of social media sites campaign used. 2) the crowdfunding campaign data in Facebook profiles were analysed, such as: a) the number of page likes; b) the number of post shares; c) the number of post comments; d) the number of post likes; e) the post type; f) the length of the post; g) the number of posts; h) type of communication. 3) the crowdfunding campaign data in Twitter profiles were analysed, such as: a) number of followers; b) number of following; c) the number of profile likes; d) number of post shares; e) the number of tweets; f) number of tweet likes; g) the type of communication. Summarized research results are displayed in table 1. Specifically, these metrics were chosen because these metrics are accessible for all interested parties, both by campaign creators and investors (Skulme R., 2017).

The crowdfunding platform Kickstarter was chosen because it is one first, one of the most popular and one of the largest reward based crowdfunding platforms in the world. Since the launch of the platform, more than 161177 campaigns have been funded, and more than 4.2 billion USD have been pledged.

The metrics mentioned in the research were chosen because of following factors: 1) these metrics are widely used by marketing specialists to analyse social media activities 2) these metrics are accessible for everyone, so the developed formula can be used in practice by many companies.

Specially developed data collection program was used to collect the data which was developed in Python (Python., 2018). The data was collected in the following steps. First of all, the Python program was used to extract data from the Kickstarter crowdfunding platform. The program scanned the Kickstarter website and extracted the campaign data. Following data was extracted: name of the campaign, duration of the campaign, profile comments, profile updates, number of social networks used by the campaign, the start and the end date of the campaign, the number of campaign authors Facebook friends, pledged amount, number of campaigns investors, campaigns currency, campaigns origin country and other data. Then the extracted data were analysed and used to determine what kind of social media sites the crowdfunding campaigns were using to promote their campaigns, and the links to these social media sites were extracted. Then the information from these social media sites, that the crowdfunding campaign was using, was extracted. After the social media information extraction, the information that was posted during the crowdfunding campaign was analysed.

For the descriptive data analysis statistical package for the social sciences (SPSS) was used to: 1) divide the collected data into groups based on the amount the crowdfunding campaign pledged; 2) calculate the minimal, maximal and mean values of the data; 3) conduct a correlation analysis and arrange collected data based on the correlation level. The stronger the correlation between the metric and pledged crowdfunding campaign amount, the higher the position of a metric within a group (IBM., 2018).

The minimal, maximal and mean values of each metric metrics that have been collected and analysed are displayed in table 1. The data is divided into groups according to the pledged amount of crowdfunding campaign. As it is visible from the data, the metrics that campaigns have to achieve to be successful differ from the amount the crowdfunding campaigns want to pledge.

Table 1

Kickstarter technology category crowdfunding campaign social media data analysis from 1. Januray 2015 till 31. December 2015

Financial aim of the crowdfuding campaign	**> 1000 USD**			**1000 USD > 10000 USD**			**10000 USD > 100000 USD**			**100000 USD > 1000000 USD**		
Metric	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Max**	**Min**	**Mean**	**Max**
Facebook												
Total post likes	0	1750	1999	0	212.06	1796	2	509.11	21087	13	444.16	2356
Total post shares	0	6666.4	666604	0	160.51	5354	0	252.01	4803	1	823.32	13858
Talking about	0	1549.6	15477	0	93.34	3510	0	135.7	3770	0	34.08	169
Page likes	0	99853.2	990471	7	6414.4	98577	0	8019.01	202188	80	8590.12	134147
Total post lenght	276	1988	7320	102	6070.34	83859	0	8929.08	363921	167	6991.84	22004
Lenght per post	60.2	150.75	281.54	42.25	191.63	1103.41	0	180.25	634.92	41.75	192.53	634.92
Total posts	1	15.7	70	1	29.6	100	1	53.85	2247	4	36.72	142
Posts per day	0.03	0.46	1.3	0.02	0.86	2.75	0.03	1.5	56.18	0.09	0.94	3.97
Twitter												
Total tweet likes	0	60.94	823	0	36.55	308	1	92.54	670	6	3731.65	71491
Followers	2	1580.13	22400	5	1468.71	16500	3	1900.43	24300	42	184933.7	3660000
Profile likes	2	1732.88	18200	0	663.18	7980	2	673.12	11800	47	1255.1	4778
Post shares	0	1094.06	14586	0	1614.93	29903	0	854.64	14663	4	3610.3	35462
Following	3	449.19	2107	0	578.02	4138	11	973.87	14800	33	804.25	2810
Likes per tweet	0	1.44	3.5	0	2.29	11	0.11	1	8.39	0.2	60.36	1191.5
Total tweets	4	1927.69	24400	4	1491.05	9552	12	1295.68	27800	47	1380.45	4405

Source: author's calculations based on the collected data from Kickstarter technology campaigns

According to authors research, the metrics displayed in table 1 are the most important social media and crowdfunding metrics that should be taken into account while calculating the potential costs of social media activities during a crowdfunding campaign.

The results in table 1 showed, that the bigger the amount that the crowdfunding campaign managers want to collect, the higher metrics the managers will have to achieve, thus more resources they will have to invest into crowdfunding campaigns.

Based on the theoretical literature analysis about social media metrics and the correlation analysis author concluded that most important Facebook and Twitter metrics, that should be used when calculating social media costs are, for Facebook: 1) total page likes; 2) shares per post; 3) likes per post; 4) posts per day. The most important Twitter metrics that should be used to calculate social media costs are: 1) likes per tweet; 2) followers; 3) profile likes; 4) shares per tweet.

Based on the author's calculations, all the Kickstarter technology crowdfunding campaigns who achieved at least the average amount of social media metrics displayed in table 1 were successful. Due that, this table or collected data using

authors approach gives companies an advantage, companies can calculate, based on similar projects, how much they will need to invest in social media activities to increase the chance that their crowdfunding campaign will be successful.

To evaluate if a crowdfunding campaign has achieved the necessary metrics following signs can be used.

X – The existing crowdfunding campaign metrics;

Y – The average value in table 1 till the maximum value in table 1.

To determine if a crowdfunding campaign needs to improve its social media metrics following approach can be used:

if X < Y, then it is necessary to make improvements;

if X > Y, then improvements are not necessary.

The developed social media metric table 1 can be used to calculate the potential social media expenses to launch a successful crowdfunding campaign. Crowdfunding campaign creator, to calculate the potential social media expenses, first of all, needs to determine how much funds crowdfunding campaign will need to pledge: 1) under 1000 USD; 2) from 1000 USD till 10000 USD; 3) from 10000 USD till 100000 USD; 4) from 100000 USD till 1000000 USD. When the necessary amount of funds for the crowdfunding campaign is determined, then table 1 or collected data using authors approach can be used to determine the number of social media metrics crowdfunding campaign needs to achieve to be successful. To calculate the necessary funds that need to be invested to achieve the social media metrics can be calculated using this formula:

(1)

$$Crowdfuding\ campaign\ social\ media\ costs = (R_1 * I_1) + (R_2 * I_2) + \cdots + (R_n * I_n)$$

, where

R_{1-8} – Table 1 social media metrics;

I_{1-8} – Costs to achieve 1 unit of social media metrics in table 1.

As mentioned before, with R are labelled social media metrics that are displayed in table 1. According to authors previously conducted research, all the Kickstarter technology crowdfunding campaigns, from the year 2015, who achieved at least the average social media metrics pledged the necessary funds to develop their campaigns (Skulme R., 2018). Because of this fact, the author strongly suggests that when calculating social media costs, crowdfunding campaign creators should calculate the potential expenses of at least the average social media metrics of similar products or service crowdfunding campaigns.

I is the costs to achieve 1 unit of social media metrics in table 1, for example, 1 unit could be 1 Facebook like, or 1 Twitter post share. The costs of 1 unit differentiate depending on the metric and product or service category. To calculate the costs of a 1 unit, crowdfunding campaign creators, can use their previous experience, social media advertising cost calculation tools and other methods.

To calculate the potential social media costs of a crowdfunding campaign, crowdfunding campaign managers should multiply the social media metric which they want to achieve, with the costs to achieve 1 unit of the social media metric. Then crowdfunding campaign managers should sum up all the different costs to achieve these different metrics. In a result, crowdfunding campaign managers will receive the full sum that they need to invest in social media so that their crowdfunding campaign success rate will increase.

Conclusions, proposals, recommendations

Following main conclusions were made during this research:

1) Social media networks have a significant impact on crowdfunding campaign success, according to: crowdfunding campaign creators, numerous articles in scientific journals and author's research;
2) The most frequently used social media sites for crowdfunding campaigns are Facebook and Twitter;
3) The main Facebook and Twitter metrics that should be used while calculating social media costs are, for Facebook: 1) total page likes; 2) shares per post; 3) likes per post; 4) posts per day. The most important Twitter metrics that should be used to calculate social media costs are: 1) likes per tweet; 2) followers; 3) profile likes; 4) shares per tweet;
4) The developed formula can help crowdfunding campaign creators to calculate more precisely crowdfunding campaign costs;
5) Achieving the Kickstarter average campaign and social media metrics listed in table 1, during a crowdfunding campaign, can help significantly improve the chances that technology crowdfunding campaign will be successful, due to the fact that all crowdfunding technology campaigns that achieved these metrics were all successful.

Following proposals are put forward from the conclusions:

1) Crowdfunding campaign creators should use social media networks to promote their crowdfunding campaigns and to communicate with their potential investors and buyers. According to the author's previous research, the best results can be achieved by using at least two social media networks Facebook and Twitter;
2) It is recommended that the developed social media cost calculation formula is used to calculate the potential costs of crowdfunding campaign social media activities, which can result in a higher rate of crowdfunding campaign success rate;
3) Crowdfunding campaign creators should use the developed approach of collecting social media data, to understand better witch social media metrics campaigns creators should improve to increase their crowdfunding campaign success rate.

In the practice, the paper can be used as an informational material for the crowdfunding campaign creators to plan and calculate crowdfunding campaign social media costs. The proposed social media costs formula can be also used during crowdfunding campaigns to calculate if the planned social media costs match the actual costs.

The theoretical contribution of this paper is that this paper can be used as a foundation for further crowdfunding cost calculation formulas and methods. This paper can also be used as a foundation to develop a crowdfunding campaign social media cost calculation method, that can be used to more precisely calculate the costs of social media during a crowdfunding campaign and increase the crowdfunding campaign success rate.

The limitations of the study. More precisely social media costs of crowdfunding campaigns can be calculate if already completed and successful crowdfunding campaign social media costs were collected and used in the formula. The collected data about social media costs could be used to precisely determine how much would it cost to achieve 1 unit of social media metrics making the proposed formula more accurate. In addition, the proposed formula can be improved, if more metrics from analysed social media sites were added, such metrics that are available only to marketing specialists of the crowdfunding campaign creators, such as reach. As well as, the proposed formula can be improved if more metrics

from other frequently used social media sites in crowdfunding campaigns were added to the formula so it could be universal.

Bibliography

Agrawal, A., Catalini, C., Goldfarb, A., 2011. The Geography of Crowdfunding. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1770375. [Accessed February 11, 2019].

Allison, T., Davis, B. C., Short J., Webb, J. W., 2014. Crowdfunding in a Prosocial Microlending Environment: Examining the Role of Intrinsic Versus Extrinsic Cues. *Entrepreneurship, theory and practice* 39 (1), pp. 53-73.

Baadsgaard, J., 2016. How to Build a Marketing Budget for 2017. *Search engine journal.* [Online] Available at: https://www.searchenginejournal.com/build-marketing-budget-2017/179278/#close

Beier, M., Wagmer, K., 2015. Crowdfunding Success: A Perspective from Social Media and E-Commerce. Fort Worth. *Thirty Sixth International Conference on Information Systems*, pp. 1-22.

Brooke P., 2015. Social Media Pricing: How much do social media management services cost? [Online] Available at: https://www.webfx.com/Social-Media-Pricing.html [Accessed 26 March, 2018].

Buff, L. A., Alhadeff, P., 2013. Budgeting for crowdfunding rewards. *MEIEA Journal* 13, pp 27-44.

Caragher, J., 2007. Manage marketing with a budget. *Business Premium Collection*, 3(6), pp. 9-11.

Carbone, B., 2013. Small business advice: Costs to consider before jumping into crowdfunding. *The Washington Post.*

Chung, N., Koo, C., 2015. The use of social media in travel information search. *Telematics and Informatics*, 32, pp. 215-229.

Colistra, R., Duvall K., 2017. Show Me the Money: Importance of Crowdfunding Factors on Backers' Decisions to Financially Support Kickstarter Campaigns, 3(4), pp. 1-12.

Đurđenić, K., 2017. Crowdfunding – Croatian legal perspective and comparison to other sources of financing. *Public Sector Economics*, 41(2), pp. 259-287.

Exclusive PRN study: Social spending is minimal, 2013. *PR News*, 69(18).

Facebook, 2018. Create an account or log into Facebook. Connect with friends, family and other people you know. Share photos and videos, send messages and get updates. [Online] Available at: http://www.facebook.com [Accessed 26 March 2018].

Freberg, K., Graham K., McGaughey, K., Freberg, L. A., 2011. Who are the social media influencers? A study of public perceptions of personality. *Public Relations Review*, 37(1), pp. 90-92.

Grizane, T., Jurgelane, I., 2017. Social Media Impact on Business Evaluation. *Procedia Computer Science*, 104, pp. 190-196.

Harmeet, K., Gera, J., 2017. Effect of Social Media Connectivity on Success of Crowdfunding Campaigns. *Procedia Computer Science*, 122, pp. 767-774.

IBM, 2017. IBM SPSS Software. [Online] Available at: http://www.ibm.com/analytics/us/en/technology/spss/ [Accessed 26 March, 2018].

Jabeur, N., Nait-Sidi-Moh, A., Zeadally, S., 2017. Crowd social media computing: Applying crowd computing techniques to social media. *Applied Soft Computing*, 23, pp. 1-28.

Kotadis, K., Tako, A. A., 2018. Facilitated post-model coding in discrete event simulation (DES): A case study in healthcare. *European Journal of Operational Research*, 266(3), pp. 1120-1133.

Krueger, J., 1996. Developing a marketing budget. *Target Marketing*, 19(10), 118.

Lindsey-Mullikin, J., Borin, N., 2017. Why strategy is key for successful social media sales. *Business Horizons*, 60(4), pp. 473-482.

Marom, D., Sade, O., 2013. Are the Life and Death of a Young Start-up indeed in the Power of the Tongue? Lessons from Online Crowdfunding Pitches.

Mintz, L., 2015. How to determine the perfect marketing budget for your company. *Entrepreneur.* [Online] Available at: https://www.entrepreneur.com/article/243790 [Accessed 26 March, 2018].

Owyang, J., 2010. Framework: The Social Media ROI Pyramid. [Online] Available at: http://www.web-strategist.com/blog/2010/12/13/framework-the-social-media-roi-pyramid/ [Accessed 26 March, 2018].

Python, 2017. Python is powerful... and fast; plays well with others; runs everywhere; is friendly & easy to learn; is Open. [Online] Available at: https://www.python.org/about/ [Accessed 26 March, 2018].

Recomendes, J., 2015. How Much Does It Cost to Run a Crowdfunding Campaign? Social Media Today. Available at: https://www.socialmediatoday.com/marketing/2015-02-26/how-much-does-it-cost-run-crowdfunding-campaign [Accessed February 11, 2019].

Sayedi, A., Marjan, B., 2017. Crowdfunding as a Marketing Tool, *SSRN Electronic Journal*. [Online] Available at: https://www.researchgate.net/publication/324661660_Crowdfunding_as_a_Marketing_Tool [Accessed 26 March, 2018].

Schwienbacher, A., 2018. Entrepreneurial risk-taking in crowdfunding campaigns. *Small Business Economics*, 51 (4), pp. 843-859.

Shahab, Y., Ye, Z., Riaz, Y., Ntim, C., 2019. Individual's financial investment decision-making in reward-based crowdfunding: evidence from China. *Applied Economics Letters*, 26(4), pp.261–266. Available at: https://www.tandfonline.com/doi/full/10.1080/13504851.2018.1464643 [Accessed February 11, 2019].

SimiliarWeb, 2018. Grow your market share with SimilarWeb's digital market intelligence platform. Compare website traffic statistics & analytics. [Online] Available at: https://www.similarweb.com/website/kickstarter.com [Accessed 26 March 2018].

Skulme, R., 2017. Facebook as a communication channel for crowdfunding campaigns. *New Challenges of Economic and Business Development – 2017*, pp. 603-612.

Skulme, R., 2017. Tehnoloģiju uzņēmumu pūļa finansēšanas kampaņu komunikāciju analīze. [Online] Available at: http://www.bvef.lu.lv/konferences-un-seminari/lu-konferences/lu-75-konference/marketings-un-logistika/ [Accessed 26 March, 2018].

Skulme, R., Praude, V., 2015. Social Media Campaign Metrics in Latvia. *Procedia - Social and Behavioral Sciences*, 213(1), pp. 628-634.

Stieglitz, S., Schallenmüller, S., Meske, C., 2013. Adoption of Social Media for Internal Usage in a Global Enterprise. *Proceedings. 27th International Conference on Advanced Information Networking and Applications Workshops*, pp. 1483-1488.

Tomczak, A., Brem, A., 2013. A conceptualized investment model of crowdfunding. *Venture Capital*, 15(4), pp. 1–25.

Twitter, 2018. From breaking news and entertainment to sports and politics, get the full story with all the live commentary. [Online] Available at: http://www.twitter.com [Accessed 26 March, 2018].

Williams, R. H., 2019. Calculating your ad budget. *Entrepreneur*. [Online] Available at: https://www.entrepreneur.com/article/54436 [Accessed 26 March, 2018].

Younkin, P., Kaskooli, K., 2013. A Crowd or a Community? Working Paper.

THE CHALLENGES FOR THE PROFESSION OF ACCOUNTANT IN THE CHANGING GLOBAL ECONOMIC ENVIRONMENT

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Abstract. Nowadays we observe dynamic growth in the global economic environment and rapid changes in information and communication technologies. These factors have a strong impact, they cause changes in the expectations of parties involved and greatly impact the conditions and competencies of any profession. Technological progress and the importance of behavioral competencies, both ethically and legally, exercising professional judgment and emotional intelligence will bring many challenges and opportunities for those who have chosen the profession of an accountant. The professional organizations of accountants are organizing different workshops and open discussions where participants exchange their experiences, share examples of best practice and the vision for the future. The purpose of the article is to explore the latest tendencies of development of the profession of accountant in the context of the changing global economic environment and to make recommendations for improving professional skills and competencies of accountants. The study is based on theoretical aspects of scientific researches that were carried out in different countries and the guidelines developed by the major professional organizations for education of the accountants, as well as on empirical research results. The study underlines the main key points regarding the skills and competencies of professional accountants – abilities to use information technologies in combination with expertise regarding accounting standards, economics, tax laws, as well as respect for professional ethics and maintaining professional competence. The challenge for professional accountants will be finding new ways to add value for their customers. During this research widely accepted quantitative and qualitative methods of economic science were applied including synthesis and logical constructive methods. The article has theoretical and practical significance, it provides recommendations which will allow to identify the directions for improvement in the education system of professional accountants.

Key words*: accountant, profession, education, competence, ethic.*

JEL code: M41, M49

Introduction

The profession of an accountant is typical representation of service industry where knowledge, skills and competencies are the core factor for surviving and success. Growing dynamic and types of changes in social, technological and market environment, like globalization, demographic changes, development in information and communication technology, together with growing importance of intellectual property, human resource management and changes in expectation of parties involved, have strong impact on conditions and requests that the accountants need to face (Cerne K., Zenzerovič R.,2007). The rapid changes in information and communication technologies rise the question regarding competencies that modern accountants should have. During the last few decades we have witnessed major macro changes in world economies. Most former socialist countries, such as Russia, former Eastern European countries and China, have taken major strides towards introducing economic reforms leading to reducing state ownership, establishing property rights, promoting private ownership and setting up financial markets. Other countries that have not undergone major political changes have begun to develop quickly into dynamic economies, such as Brazil and India. The impact of these

developments has been enhanced by the demands of globalization, evidenced in particular in the pressures exerted on transitional and emerging market economies by the World Bank, the International Monetary Fund, big international audit companies and the International Accounting Standards Board (IASB), and the demands of foreign venture capitalists and multinationals to develop accounting and financial systems similar to those used in advanced capitalist economies. In particular, these institutions have been calling for greater convergence of accounting practices around the globe with respect to financial reporting, auditing and management accounting (Ezzamel.M., Zezhong X. J., 2011).

Research in the scientific literature shows that one issue is still current: issue of harmonization of the methods of accounting and evaluation of the accounting on the international level and the question regarding the most appropriate accounting technologies to apply so that the financial reports would show the information that the users need. In addition, the professional qualification of the accountants, their knowledge, skills and competencies are the subject of many researches. The professional organizations of accountants are organizing different workshops and open discussions where participants exchange their experiences, share examples of best practice and the vision for the future.

The travel of accounting ideas from advanced capitalist economies to transitional and emerging market economies is then a fundamental research issue. Number of questions could be raised in this regard. For example, how does a national culture mediate Western accounting technologies used in transitional and emerging market economies? How do managers and accountants in companies in transitional and emerging market economies unlearn previous ways of doing things and embrace imported Western ideas? What difference does the adoption of Western accounting technologies make to the effectiveness and efficiency of adopting companies? (Ezzamel.M., Zezhong X. J., 2011).

The accounting and auditing profession operates within an environment that is changing at a rapid pace. It is the responsibility of the profession to ensure that all its representatives meet the expectations that the users of their services have of them. In order for professional accountants to remain relevant, they may have to change or adapt the services they offer to their customers. It is the responsibility of professional accounting bodies to plan for these changes to ensure that members who join the profession possess the required knowledge and skills to be relevant and to remain relevant (Wessels, P L. 2008**).** The results of the research done by Ismail Tekbas show that in the 21st century, the profession of the accountant needs a new model that is able to respond to technological changes and developments in the process of digitalization and e-transformation so that the profession of accountant is more effective. Considering technological developments and changes, this modeling should prepare the profession of the accountant for the future by rebuilding from A to Z in fields such as thought, education, culture, and technology (Tekbas, 2018). The role of higher education institutions and Universities in the development of the profession of an accountant is equally big. There are many discussions among scientists and educators about the future of accounting and about the improvements needed in the study programs of accountants in order to secure valuable and effective accounting services.

The issue of whether universities prepare 'work-ready' accounting practitioners is a perennial debate. In some countries entry to the profession via a business or accounting degree is the most common route (e.g., in Australia and in the USA), but in other countries (such as the United Kingdom) a broader range of degree programs is accepted. The comparative advantage of a university accounting program that necessarily is seeking to prepare students for diverse career paths must be a focus on the traditional objectives of creating critical, independent thinkers who can reflect upon their experiences and learn for the future. The place of accounting technical knowledge is to help provide a context for the application and practice of these skills, not to treat the technical knowledge as an end in itself. The rapid pace of change in accounting practice quickly makes such rule-based knowledge obsolete. Educators, accounting companies and Professional bodies need to reassess their approach to the appropriate development requirements for accountants after the graduation. This will require: (a) greater communication between parties in terms of the content and pedagogy of the learning programs developed, (b) transfer of strategies and expertise to facilitate a structured approach to the future

accountants, and (c) the creation of a workplace environment that enables graduates to build on and transfer acquired knowledge and skills (Howieson B. &et.all, 2014).

The purpose of the article is to explore the latest tendencies of development of the profession of accountant in the context of the changing global economic environment and to make recommendations for improving professional skills and competencies of accountants.

The study is based on theoretical aspects of scientific researches that were carried out in different countries and the guidelines developed by the major professional organizations for education of the accountants, as well as on empirical research results

During this research widely accepted quantitative and qualitative methods of economic science were applied including synthesis and logical constructive methods.

The role of professional organizations in the improvement process of the educational content of accountants

The profession of the accountant has many aspects. Accountants shape the largest amount of information in a company and play an important role in the activities of a company. This profession is highly regulated, very responsible and usually includes a wide range of topics, including but not limited to different spheres of accounting, formation of accounting policies, or even information system for companies (Subaciene R., Senkus K., 2017). In order to enhance the prestige of the profession, improve the professional qualification and the quality of services, as well as for the co-ordination of activities, the representatives of each profession already in ancient times united into professional unions. The first union for accountants was "Collegio dei Raxonati", founded in 1581 in Venice. The concept "a professional accountant" nowadays has a significantly broader meaning than it was at the beginning of the development of this profession. Today a professional accountant is a specialist who has studied economics and accounting at a higher educational institution and, perfecting one's professional knowledge, he/she has specialized either in auditing or accounting, or taxes. The significance of the profession of an accountant is proved also by the procedure for the preparation of professional accountants, developed in each economically advanced country. Nowadays the number of the national professional organizations of accountants has exceeded several hundreds; therefore, they have united into international and regional organizations. The national associations, depending on the jurisdiction of a particular country, function as independent organizations or they are supervised by a governmental structural unit. The membership in such associations may be either voluntary or mandatory. According to the professional orientation, the accountants, auditors, tax consultants unite into individual associations. There are countries where there are mixed-type associations, for example, the association of accountants and auditors or the association of auditors and tax consultants. One of the most influential and significant professional organizations of accountants is "the International Federation of Accountants" (Sneidere, 2012).

International Federation of Accountants (IFAC) is the global organization for the profession of the accountant dedicated to serving the public interest by strengthening the profession and contributing to the development of strong international economies. IFAC is comprised of over 175 members and associates in more than 130 countries and jurisdictions, representing almost 3 million accountants in public practice, education, government service, industry, and commerce. The vision of IFAC is that the global profession of the accountant would be recognized as essential for strong and sustainable organizations, financial markets, and economies. The Strategic Plan of IFAC, "Charting the Future of the Global Profession", identifies opportunities and risks for the profession within the context of the current and anticipated environment, while highlighting the unique position and economic benefits of the activities of IFAC, as well as planned activities of IFAC in response to macro trends with significant implications for the profession (IFAC,2018). In order to

secure the realization of the strategic goals, several Councils and Committees have been established at IFAC that work with the educational and developmental issues of accountants: International Accounting Education Standards Board (IAESB) un Professional Accountancy Organization (PAO) Development Committee.

The task of the IFAC PAO Development Committee is to help IFAC to achieve strong, sustainable professional organizations of accountants around the world – the most effective, efficient, and sustainable source for advancing the profession of the accountant. The committee serves as an important strategic advisor to IFAC, actively contributing to the strategic goals of IFAC and assisting with implementation. This includes increasing the understanding of, and identifying solutions to the challenges facing the development of strong PAOs as well as promoting, establishing, and strengthening PAOs in support of the public interest (IFAC,2018**).** IAESB is working since 1977 and the result of the work of this organization are the International Standards of the education of accountants (IES) that are reviewed from time to time to implement corrections according to the changing economical situation. The draft for the last changes was prepared and published for discussions in 2015.

IAESB has published a Consultation Paper, "Meeting Future Expectations of Professional Competence: A Consultation on the IAESB's Future Strategy and Priorities". It presents the proposed vision and strategy for the next five years that builds on the completion of its newly revised International Education Standards and its work to support the implementation of these standards.

By issuing this Consultation Paper, the IAESB recognizes that professional accountants are operating in an environment that is continuously changing. This has an impact on the initial and continuing professional development needs of professional accountants and the demands placed on professional accountants globally (IAESB, 2015). In contemplating how best to respond to the changing accounting education environment and the need to protect the public interest, the IAESB envisages its priority activities as follows: enhancing existing standards, developing new standards to fill identified gaps in professional accounting education, preparing material to support adoption and implementation of the IESs and facilitating thought leadership on relevant issues. Feedback was especially encouraged from IFAC Member Bodies in all jurisdictions; stakeholders in public policy, regulatory, public accounting and other relevant communities; professional accountants in business, government and academia; and employers of professional accountants (IFAC, 2015).

IFAC member bodies shall regularly review and update professional accounting education programs that are designed to achieve the learning outcomes set forth in this IES (IAESB, 2017).

It was commented by 42 different organizations from many countries in total, among others there were auditing companies, associations of certified accountants and Higher education institutions. Based on the recommendations given by these organizations, in 2015 the IES was revised and "the Handbook of International Education Pronouncements" was published. It contains the IAESB's suite of the revised and redrafted International Education Standards (IES) 1-8 as well as Framework for International Education Standards for Professional Accountants and Aspiring Professional Accountants Description of levels of proficiency. Learning Outcomes for Technical Competence includes following areas: Financial accounting and reporting, Management accounting, Finance and financial management, Taxation, Audit and assurance, Governance, risk management and internal control, Business laws and regulations, Information technology, Business and organizational environment, Economics, Business strategy and management. This International Education Standard (IES) prescribes the learning outcomes for professional skills that aspiring professional accountants are required to achieve by the end of Initial Professional Development (IPD). Professional skills are the (a) intellectual, (b) interpersonal and communication, (c) personal, and (d) organizational skills that a professional accountant integrates with technical competence and professional values, ethics, and attitudes to demonstrate professional competence**.** The Standards also include the compulsory requirements: maintenance of professional competence (CPD). CPD applies to all professional

accountants, regardless of sector or size of the organization in which they operate, because: (a) All professional accountants have an obligation to provide due care to their clients, employers, and relevant stakeholders, and are expected to demonstrate their ability to competently discharge this responsibility; (b) Professional accountants in all sectors are subject to public accountability and the maintenance of public trust; (c) The public is likely to rely on the designation and professional standing of the professional accountant. Professional accountants carry a professional designation. Lack of competence of a professional accountant has the potential to damage the reputation and standing of the professional accountant, the employer, and the profession as a whole; (d) Rapidly changing environments may impact the relevance of a professional accountant's competence; and (e) Employers recruiting professional accountants rely, to some extent, on the professional designation as proof of professional competence (IAESB,2017).

In this respectable IFAC Latvia is represented by two professional unions: the Union of Sworn Auditors of Latvia and the Association of Accountants of the Republic of Latvia. Our opinion are, the task for the professional unions of the accountants of Latvia is to cooperate with the educational institutions and to make sure that these educational standards are implemented in the educational programs.

The second important organization of accountants is "the European Accounting Association" (EAA), which unites the accounting scholars and researchers since 1977. Their main aims are to study and deal with the problems of accounting theory and to develop the guidelines for the education of accountants regarding both content and teaching methodology. At the annual congresses, organized in close collaboration with the world leading universities, there are 500–600 reports presented on the topical themes of accounting theory, taxation policy, analysis and audit. The best reports are published in the prestigious publications "European Accounting Review" and "Accounting in Europe" (Sneidere, 2012).

The EAA mission states that it aims to link together the Europe-wide community of accounting scholars and researchers, to provide a platform for a wide dissemination of European accounting studies, and to foster and improve research and teaching skills in order to ensure the development and the promotion of accounting. Past literature has stressed that relatively few educators are familiar with the activities of IAESB aimed to achieve convergence of accounting education standards around the globe (Cameran M. & Campa D, 2016).

The experts of EAA have also given their opinion regarding the document prepared by IAESB: "Consultation Paper "Meeting Future Expectations of Professional Competence: A Consultation on the IAESB's Future Strategy and Priorities". The comments suggest a reinforcement of the entry requirements that would include a proper education background, advanced levels of both some technical competences and interpersonal/communication skills as well as a very strong ethical commitment. They also recommend a more thorough development process for the continuous education of accountants, a stronger link between practitioners and academia, insights for new IESs and more effective communication strategies about IAESB activities (Cameran M. & Campa D, 2016).

To remain relevant in an environment of rapid change, professional accountants increasingly must demonstrate skills beyond today's typically-recognized competencies of accountants. International Accounting Education Standards Board recognize that today's macro-trends have direct implications for the approach of the profession of an accountant to accounting education. To ensure that the profession of an accountant can address the challenges posed by a rapidly changing environment, IFAC and the IAESB in August announced a new path forward for international accounting education. Consequently, a model is being developed based on the benefits to be realized from a comprehensive and integrated approach to international accounting education (Model). The Model will start operating by July 1, 2019.

Accounting and Information Technologies

Although the educational Standards for the accountants have been developed and elaborated, providing fundamental knowledge and skills necessary for the profession of an accountant, there is still a discussion going on about what competences and skills need to be developed further in order for the accountants to be able to offer services with additional value.

During the IFAC Professional Accountancy Organization (PAO) Development Committee meeting in New York in October of 2018, committee members, many of whom have worked for or closely with PAOs and accounting regulators at national, regional and international levels, discussed the future-ready PAO and what this means for capacity building. As a result of many discussions, the participants of the meeting came up with the following main conclusions:

Technology looms large for the future of the profession of an accountant. Instead of fearing it, PAOs should embrace it and explore how to tailor its products and services – including education – to incorporate technology and prepare members to offer value-added services. Moreover, and equally important, PAOs should be prepared to enhance the skills of professional accountants that cannot be done by technology – those that will still require human thinking and knowledge. This might include relationship management, creative thinking and problem solving and communication. Furthermore, new technologies will facilitate greater and greater cross-border interactions without even leaving the town. This means that professional accountants can more readily provide services across borders – and will need transferable skills. *PAOs should take advantage of signing and implementing mutual recognition agreements so that the competencies* and skills of professionals are well-known and established. The future is bringing new opportunities for the profession to better serve businesses, economies, nations, and push the world toward collective sustainable development goals. To be future-ready, PAOs must be prepared to think and act differently right now (White L.2018).

How can professional accountants use their skills to anticipate the future? Tom Hood talks about the top skills accountants need in this age of artificial intelligence, robotics, and machine learning. The number one skill? Empathy and relationships, with collaboration and anticipation coming as next (Hood T.2018).

Professional accountants working in business and the public sector constitute the overwhelming majority of the professions working within and beyond finance teams. The future attractiveness of the profession is very much dependent on the value these accountants create to secure interesting and expanding job opportunities and career pathways inside organizations. A golden opportunity to create new value is presented by the automation and digitalization of finance and accounting processes. The rapid reduction of manual processes particularly at the transaction and reporting levels is allowing a more significant focus on contributing directly to business decisions. Grasping this opportunity is essential if accounting is going to remain an exciting and value-added profession in the business world and in the public sector (White L.,2018).

Latvian and Lithuanian scientists are also making research about the important competences for accountants. Required competences and skills are supplemented by such competences as communication, cooperation, coordination, collaborating and knowledge in different spheres (Subaciene R. &et.all,2017).

Also in the social media, which is one of the modern technology tools, there are discussions where Latvian researchers and accounting professionals share their opinions. One of the themes of the discussion is the question whether the profession of an accountant will be replaced by the artificial intelligence.

Anton Mislevich, one of the experts of Microsoft in the area of artificial intelligence and machine-learning, in his interview with the newspaper “Diena” shares that there are many workplaces where the work could be done by machines. However, the expert is speaking more about the simpler tasks. A machine would be able to do different tasks, but there will be a need for people to train and monitor them, because “the machines are not so good in creative tasks”.

The artificial intelligence is a fast-growing area at the moment, and in the future, it will allow the companies to completely change the way of cooperation with the employees and clients, shares the Manager of the Latvian branch of "Accenture" Maksims Jegorovs at a conference about this subject. "In the same time, it needs to be stressed that the maximum gain will be made by those companies which will not replace people with technologies but instead find a way for the employees to maximize their use of the artificial intelligence for their benefit" (Vilūns R. 2016).

The Manager of the Business development of the company "Tildes Jumis" Viesturs Slaidiņš is convinced that the implementation of artificial intelligence solutions in the outsourced accounting services will reduce the amount of time spent for the routine processes. Many work tasks will be made automatic, and the accountants will only have to do the intellectual work and not entering of data. The legislation of the country is being changed and supplemented on a regular basis, therefore the accounting outsourcers have to be able to follow the changes and continue to provide quality services. It is especially challenging to those working with the clients from different spheres. If they miss changes in some declaring processes or calculations of taxes in any of the areas, they risk losing customers. In essence, accounting is a profession where you never stop learning (Sauka A.,2018).

Anda Ziemele writes: "The artificial intelligence could check if the accounting data are accurate/precise, check the most typical book entries, generate some reports or at least remind the dates when reports need to be submitted, maybe also process invoices that are received electronically without the participance of a person etc. Although many consider the artificial intelligence as something very far and out of reach, in reality it is already present in many ways in our daily lives, for example, in smart homes or smart appliances. The artificial intelligence makes our lives easier, and we must learn to work with these technologies" (Ziemele A., 2018).

The Product Development Manager of "Visma" Artūrs Ernštreits on his part thinks that "accounting will experience more and more of so-called blockchain technologies when all systems are inter-connected through single security mechanism securing that all data in all systems will be synchronized in real-time. It is the economy of the real time, where complete transparency has been achieved and where there is solution for the illegal economy. Those who will be able to change and adapt and learn the use of the new technologies will persist. A manager of financial technologies is something/somebody that will be needed. As I already mentioned before, the main limiting factor is our ability to use the technologies. In the near future there will still be need for financial management that is able to analyze and interpret data and provides support in the business decision-making process" (Ernštreits A., 2017).

Overall, we can conclude information technologies come into the daily workflow of an accountant faster and faster. They reduce the manual input of data, thus making the standard accounting functions easier, but the intellectual work will still be in the hands of the accountant: to follow the changes in legislation regarding accounting and taxes and the opportunities provided by information technologies. Accountants, who will be able to change and adapt and learn the use of the new technologies will survive and develop their own business.

Competencies of accounting professionals

After summarizing the opinions of several scientists and accounting experts mentioned in the previous chapters about the development tendencies of accounting in the 21. century and the requirements towards the profession of an accountant, the authors came to the conclusion that it would be useful to provide a deeper research about competences that are important for an accountant from the point of view of employer. According to the register of Study programs currently in Latvia there are only 2 certified study programs securing the professional education of accountants (AIC, 2018). Currently it is very crucial time for perfection of the study programs so that the programs of higher education institutions would pass the upcoming accreditation. For this research the Authors created a questionnaire and – with the goal of improving

the study program – asked the respondents to give their answers to several questions regarding the competences that the student will acquire upon graduating of this program. The questionnaire was done in December of 2018 in cooperation with the Association of Accountants of the Republic of Latvia and using their database. The modern technology was used and the questionnaire form was prepared on the Google Survey online platform; link was sent to 510 respondents – outsourcing companies of accounting services registered with the Association of Accountants of Latvia, certified professional accountants, who are Board members in the companies. 103 respondents filled in the questionnaire, therefore according to the opinion of the authors the results can be considered representative.

In the questionnaire 13 different competencies were included, and the participants were asked to evaluate and mark their significance in their opinion: fully agree (A), generally agree (B), partially agree (C), do not agree (D) and no answer (E). The participants were asked to give their opinion regarding the following 13 competencies that are formulated according to IES: 1. to select and apply the methods of processing of economical information in the analysis of economic data; 2. to be adapted to the usage of different accounting information systems; 3. to prepare the financial reports and statistical analyses for the company; 4. to apply tax rates to different types of business activities and prepare tax declarations; 5. to analyze and evaluate the results of economic activity and to foresee a possible insolvency; 6. to select and apply the methods of solving of economical disputes; 7. to analyze and evaluate the economic problems of Latvia and the perspectives in the international context; 8. to participate in the process of improving the management processes of the company; 9. to use the information systems according to the security requirements; 10. to make scientific research in the field of economics and to present the results; 11. to respect professional ethics; 12. to communicate with cooperation partners in English or in other language of EU; 13. to make sure that the requirements of occupational safety, fire safety and environmental safety legislation are observed.

The results of the questionnaire have been summarized in Table 1.

Table 1

Results of the questionnaire about the competences that are important for the profession of an accountant, %

Competences/answer options	A	B	C	D	E
1	38.8	41.7	15.5	1.0	2.9
2	65.0	27.2	6.8	1.0	
3	90.3	9.7			
4	88.3	8.7	2.9		
5	63.1	25.2	11.7		
6	18.4	28.2	43.7	8.7	1.0
7	12.6	33.0	38.8	15.5	
8	35.9	19.4	40.8	3.9	
9	53.4	29.1	14.6	2.9	
10	4.9	21.4	39.8	24.3	9.7
11	87.4	10.7	1.0	1.0	
12	35.0	37.9	25.2	1.9	
13	16.5	24.3	29.1	25.2	4.9

Source: author's calculations based on results of the empirical research

The analysis of the responses shows that the most important competences from the point of view of the employer is the ability of the accountant to prepare the financial reports and statistical reports of the company, since 90,3% of the participants have marked this option with "fully agree". Respondents considered the competency to apply tax rates to different types of business activities and prepare tax declarations, as well as respecting the professional ethics as a high priority: 88,3% and 87,4% of the participants respectively have selected "fully agree". Participants have seen the ability to adapt to the usage of different accounting information systems as a significant competency – 99% generally agree, as well as the ability to analyze and evaluate the results of economic activity and to foresee a possible insolvency – all participants generally agree (fully agree 63,1%). There are two competencies that are marked as less significant. One of them is the ability to make scientific research in the field of economics and to present the results, where 24,3% do not agree that the graduates of accounting studies should need this competency, but 9,7% of participants do not have any answer to this question. However, a remark should be added that part of participants – 21,4% generally agree and 39,8% partially agree that this competency would be significant for the graduates. These different opinions can be explained because part of the potential employers see the graduates as employees for a specific work assignments where scientific activities are not needed. Those participants who generally agree that such a competency is necessary, see the potential employee with a long-term thinking: will they be able to improve and develop their skills and competencies in the changing economical situation and technological environment. There is another competency where 25,2% of participants do not agree that it would be necessary but 4,9% of the participants do not have any answer: it is the ability to make sure that the requirements of occupational safety, fire safety and environmental safety legislation are observed. However, there needs to be a remark that development of such competences is set forth in the regulations of the Cabinet of Ministers about the content of study programs. Evaluating the results of the questionnaires in general about competences that are important for the profession of an accountant, it can be stated unambiguously that the majority of participants (75%) generally agree that the competences included in the form of the questionnaire are significant for any professional in the accounting.

According to the requirements set forth in the IES Standards, professional accountants have to continue their education and improve their professional competencies also after they graduate their study program. This is why it will be more and more significant that the employers, accounting professionals and the professors of Universities and higher education institutions are able to cooperate.

In our opinion, there is still one question to be discussed: will the fundamental theoretical knowledge and skills of the profession of an accountant be integrated in the specialty of a programmer and will there be a new profession – a programmer-accountant? Or maybe the profession of an accountant will continue to develop, improving the competences to use the opportunities offered by the Information technologies?

Conclusions

1. By summarizing the results of the research, we can conclude that rapid changes in the information technologies raise the question today about the competencies of todays accountants and about the future of this profession. Today the profession of an accountant needs a new model able to respond to technological changes and developments in the process of digitalization and e-transformation so that the profession of an accountant is more effective.

2. In the international practice IFAC and its IAESB play a huge role working with the issues of the professional accountants. They started to work actively in 1977. The result of their work are the international educational Standards for accountants (IES) that are revised from time to time to make corrections corresponding to the

tendencies of economic development. The draft for the latest modifications was prepared and offered for a discussion in 2015, and the latest publication of IES is "Handbook of International Education Pronouncements 2017". In this manual, skills and competencies for professional accountants are defined and there are requirements regarding maintenance of professional competence (CPD). CPD applies to all professional accountants, regardless of sector or size of the organization in which they operate. *The work to improve the educational standards for accountants continues*, to ensure that the profession of an accountant can address the challenges posed by a rapidly changing environment, IAESB in August of 2018 announced a new path forward for international accounting education.

3. Information technologies come into the daily workflow of an accountant faster and faster. It allows for the accounting services to be offered remotely, also to companies in other countries. Therefore, there is a significant question about replantation of the profession of an accountant so that the requirements and competencies required from the accountants would be known and understandable to everybody.

4. Automatization and digitalization of accounting will reduce the manual input of data, thus making the standard accounting functions easier, but the intellectual work will still be in the hands of the accountant: to follow the changes in legislation regarding accounting and taxes and the opportunities provided by information technologies. Empathy and relationships, collaboration and anticipation will be the competencies that accountants will need in the future.

5. Results of the empirical research allow to make a conclusion that the competences that are stated by IES are the same that the employers consider significant, including the ability to adapt to the usage of different accounting information systems.

Proposals

1. For the profession of accountant to be able to continue development, the Association of accountants or Latvia, which is a member of IFAC, needs to take the leadership in cooperation with the employers, accounting professionals and professors of higher education institutions.

2. The professors of the higher education institutions must be ready to improve the skills of professional accountants which can not be improved using technologies – skills that still are and will be requiring human thinking and knowledge. Study programs need to be improved so that they would also include management of relationships, creative thinking and problem-solving as well as communication skills.

3. The Association of accountants of Latvia in cooperation with government institutions need to find a solution regarding the professional reglamentation of accountants, so that accounting service providers would be competitive in the international environment.

Bibliography

AIC, 2018. *Akreditētie studiju virzieni un programmas.* [Online] Available at: http://www.aic.lv/portal/. [Accessed 30 November 2018]

Cameran M.,Campa D.,2016.*Comments by the European Accounting Association on the International Accounting Education Standards Board Consultation Paper 'Meeting Future Expectations of Professional Competence:A Consultation on the IAESB's Future Strategy and Priorities*.'Accounting in Europe, Vol. 13, No. 2, 295–303.

Cerne K., Zenzerović R.,2007. *Academic and professional community cooperation in function of accountants' university education improvement*. 4th International Conference Global Challenges for Competitiveness: Business and Government Perspective. Proceedings. Pula, Croatia., 213-226

Ernštreits A., 2017**.** *Esam pārāk strauji nonākuši tur, kur esam*. [Online] Available at: https://www.visma.lv/. [Accessed 30 November 2018]

Ezzamel M., Zezhong XJ., 2011. *Accounting in Transitional and Emerging Market Economies*. European Accounting Review Vol. 20, No. 4, 625–637.

Hood T.,2018. *What Top Skills Do Professional Accountants Need for the Future?* [Online] Available at: http://www.ifac.org/.[Accessed 25 November 2018]

Howieson B., Hancock P., Segal N., Kavanagh M.,Tempone I., Kent J., 2014. *Who should teach what? Australian perceptions of the roles of universities and practice in the education of professional accountants.* Journal of Accounting Education. ELSEVIER No 32, 259–275.

IAESB, 2015.*Consultation Paper, Meeting Future Expectations of Professional Competence: A Consultation on the IAESB's Future Strategy and Priorities*. Published by IFAC, 1-14

IAESB, 2017. *Handbook of International Education Pronouncements.* Published by IFAC, 1-149

IFAC,2015**.** *Consultation on the IAESB's Future Strategy and Priorities.* [Online] Available at: https://www.ifac.org/**.** [Accessed 3 December 2018]

IFAC, 2018.*About IFAC.* [Online] Available at: https://www.ifac.org/**.** [Accessed 28 November 2018]

Sauka A.,2018. *Grāmatvežu ikdienas darbā ieviesīs mākslīgo intelektu*. [Online] Available at: http://www.la.lv/. [Accessed 4 December 2018]

Sneidere R., 2012. *Good practice in the education and development of professional accountants*. Research papers. Accounting, audit, analysis: Science in the context of innovation and globalization. Vilniaus Univesiteto leidykla, 734-754

Subaciene R., Bruna I., Senkus K., Sneidere R., 2017. *Evaluation of Perception of Accountant`s Role at the Enterprise in Latvia and Lithuania.* European Research Studies Journal, Volume XX, Issue 3A,143-163

Subaciene R., Senkus K., 2017. *Accountant's profile: perception of students and practitioners.* CBU international conference on innovations in science and education. Conference proceedings March 22-24, 2017, Prague, Czech Republic, 833-839

Tekbas I., Nonwoven K., 2018. *The Profession of the Digital Age: Accounting Engineering* [Online] Available at: http://www.ifac.org/. [Accessed 3 December 2018]

Vilūns R., 2016.*Vai roboti drīzumā aizstās darbiniekus?* [Online] Available at: https://www.diena.lv/**.** [Accessed 2 December 2018]

Wessels, P L. 2008. *The identification and discussion of strategies for implementing an IT skills framework in the education of professional accountants*. Journal South African Journal of Accounting Research. Volume 22, Issue 1, 147-181

White L., 2018. *Signs on the Road to Change for Accountants in Business in a Digital Age.* [Online] Available at: http://www.ifac.org/global-knowledge-gateway. [Accessed 2 December 2018]

Ziemele A., 2018. *Vai nākotnē grāmatvedībā vairāk tiks izmantots mākslīgais intelekts*? [Online] Available at: https://www.facebook.com/iFinanses.lv/. [Accessed 2 December 2018]

ASSESSMENT OF BANK FINANCIAL HEALTH IN LATVIA

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Abstract. Financially strong, trustworthy and reliable banks form the basis of every economy and are a vital precondition for the stable economic development of every country. The financial health of banks is important for different stakeholders, including bank clients, correspondent banks, state and others. Therefore, lack of appropriate measures for bank financial health can cause a number of risks for the bank stakeholders. Traditionally the assessment of bank financial health and reliability is done by the international rating agencies as Standard & Poor's, Moody's and Fitch. These ratings are widely recognized worldwide; however, due to different reasons ratings assigned by the international rating agencies historically are not available for the majority of European banks. Besides, after the global financial crisis of 2008 the number of banks with a rating by an international rating agency has substantially decreased. Therefore, the aim of the paper is to design a model allowing to assess bank financial health using publicly available information. The proposed model is based on the analysis of financial statements data of Latvian commercial banks in the period from 2003 till 2017, key macroeconomic indicators, and aggregate statistical data of Latvian commercial banks managed by the Financial and Capital Market Commission (FCMC). The methodology is based on the design of multiple choice model *ordered logit* using eViews 7.0. The paper determines the main factors affecting the bank financial health based on the *Moody`s Investors Service Long Term Bank Deposit Ratings.* According to the developed model, the main factors involve bank assets structure, level of credit risk, profitability, bank capitalization, stability of resource base as well as macroeconomic factors, including investment and unemployment.

Keywords: *bank, financial health, financial strength, rating*

JEL classification codes: G21, G24

Introduction

Banking crises have been at the heart of both the causes and long-lasting consequences of the global financial crisis and the European debt crisis. However, these are only the most visible examples, Laeven and Valencia (2013) identified 147 banking crises over the period from 1970 to 2011. There is abundant evidence that bank distress and the resulting decline in credit provision has adverse consequences on growth (see e.g. Carlson and Rose, 2015 and Frydman et.al. (2015) for evidence from the early XX century or Iyer et al. (2015) for a recent analysis of the relationship between interbank lending and firm financing). Furthermore, Beck (2009) argues that there is strong evidence for a positive relationship between financial development and economic growth, while Creel et. al. (2015) show that financial instability (variously defined) has an adverse effect on economic growth.

Loan is the key link between banks and the broader economy. Song and Uzmanoglu (2016) provide evidence that bank financial health is relevant in liquidity provision during crises and argue that healthy banks are better positioned to provide liquidity relief to low-quality borrowers than unhealthy banks during a financial crisis. Similarly, Diamond (2001) points out that healthy banks may help providing liquidity to vulnerable firms during credit crises while unhealthy banks may inefficiently stop lending to viable borrowers. The soundness of banks also explains why bank recapitalization, which often involves significant fiscal costs, may have limited effects on the real economy. For example, Hoshi and Kashyap (2010) show that capital infusions are more effective in supporting healthy banks because unhealthy banks will tend to allocate the new capital primarily toward resuscitation efforts, instead of providing liquidity to the economy.

Therefore, banks matter; matter not only when they fail, but also when they function normally or when their financial health is impaired. Because of the importance of banks to a well-functioning economy, the banking industry is regulated all over the world. Barth et. al. (2013) document bank regulatory and supervisory policies in 180 countries and show that restrictions on bank activities have tightened in the aftermath of the financial crisis in eighty percent of the countries considered.

Diamond et. al. (2017) point to four major changes in the regulatory environment in the aftermath of the crisis. First, capital requirements were raised for all banks, especially for those with a large, global presence. Second, liquidity regulations were imposed requiring banks with less liquid assets to use more long-term funding. Third, new regulators have been created with the responsibility to look at the entire financial system with a variety of "macroprudential" tools at their disposal. Fourth, banking regulators have begun stress-testing of large banks, that is simulating the performance of their asset portfolio under a variety of macroeconomic environments. In the European Union the response to the crisis involved creating the cornerstone elements of the banking union – a single supervisory mechanism (SSM) and a single resolution mechanism (SRM). Latvian banking industry is now also part of these arrangements that aim to standardize bank supervision and treatment of failing banks across the EU.

How can one know whether these efforts have been successful? Or, to put this question in more practical terms – there are ca. 20 banks and foreign banks subsidiaries operating in Latvia, so how can a potential client understand which bank is trustworthy and which bank has questionable characteristics? Supervisory institutions such as Financial and Capital Market Commission (FCMC) and European Central Bank are responsible for ensuring that each bank is fundamentally sound, but nevertheless periodically some banks fail for different reasons, for instance Parex bank, Krajbanka, Trasta bank and ABLV. Supervisory authorities have developed their own rating systems for banks, but these methodologies are generally not available to the public. In this paper, the authors aim to develop their own financial health rating system for banks that will be publicly available and can help potential bank clients to make decision regarding bank choice. Therefore, the paper aims to design a model allowing to assess bank financial health using publicly available information. The research is based on the analysis of data in the period from 2003 till 2017.

The remainder of the paper is structured as follows. Section 1 reviews the literature on assessing bank financial health. Section 2 documents the methodology of rating system design for bank financial health proposed by the authors. Finally, Section 3 points out the main results, including the rating model, scale and assessment of Latvian banks in the period of 2013 till 2017. Conclusions and recommendations are provided in the Section 4.

1. Literature review

In this paper, bank financial health represents one of the dimensions of bank stability. Financial health is seen as the bank's ability to repay punctually its foreign and/or domestic currency deposit obligations.

The literature contains various ways to measure bank financial health relying on different statistical techniques and different variables. Most of the variables aim to proxy the dimensions of the CAMELS system introduced by the US

regulators in 1979, which focused on: Capital adequacy, Asset quality, Management quality, Earnings, Liquidity, and, since 1996, Sensitivity to market risk (Betz et al. 2014). Betz et. al. (2008) develop an early warning model for predicting distress in European banks that uses variables to proxy for each dimension of the CAMELS system: capital and tier 1 capital ratio, return on assets, cost to income ratio, return on equity and net interest margin, share of interest expenses to total liabilities, share of trading income in total income.

Another widely used proxy for bank financial health and stability in the economic literature is Z-score (Song, W., & Uzmanoglu, C. 2016). In fact, Chiaramonte et. al. (2015) argue that Z-score's ability to identify distress events in the European banking industry, is at least as good as the CAMELS variables, but with the advantage of being less data demanding.

It is also important to note the role of the broader economic environment in impacting bank financial health. The stability of the overall banking system is a large-scale counterpart to individual bank health. Macroeconomic determinants are considered to be relevant to the stability of the banking system, which means they are also relevant to health of individual banks. Many empirical studies consider macroeconomic and bank specific factors as a precursor for bank health. Claire (2004), for instance, explores the macroeconomic determinants of bank stability for the local banks of Singapore. Multiple regression analysis suggests that unemployment rate, exchange rate, aggregate demand and interest rate have a significant impact on bank stability. The same results are supported by Shijaku (2016) for Albanian banking system. Principal component approach and simple average are applied to analyse the impact of bank specific, market specific and macroeconomic indicators on the stability of 16 banks of Albania for a period of 2008–2015. Results suggest that bank specific and macroeconomic factors are found to effect bank stability in a more consistent manner as compared to market specific factors. Likewise, Madi (2016) examines the relationship of a set of micro-economic and macro-economic variables with bank stability. Recent analysis of bank stability in Latvia applying Z-Score found evidence that credit risk, liquidity risk, size, profitability, efficiency are the main bank-specific determinants of stability of banks in Latvia (Rupeika-Apoga& Zaidi, 2018; Kudinska et al., 2018). The results also highlighted the significant role of inflation and GDP growth (macroeconomic variables) in explaining bank's stability.

In general, the most accurate measurement of bank financial health can be achieved via a detailed examination of its books in an "on-site" inspection. Such inspections are a crucial part of the toolkit of any supervisory authority including the ECB in the European Union (Gren et. al., 2015). However, such inspections are costly and time consuming and cannot be repeated often enough for all banks. To supplement such inspections as well as to prioritize banks that need a more detailed analysis, supervisory authorities use off-site rating systems. Such systems can also be used by the general public including banks' clients, investors and counterparties, who are not able to inspect the bank in detail. This paper seeks to develop a ratings system and views bank financial health as a continuous concept with various ratings assigned.

The financial health of a bank is represented by rating agencies (Thalassinos& Liapis, 2011) in several financial strength levels. The most popular are Moody's, S&P's and Fitch. According to the rating agencies definitions the following levels represents the bank's financial health:

A. Banks with superior intrinsic financial strength. Typically, they will be institutions with highly valuable and defensible business franchises, strong financial fundamentals, and a very attractive and stable operating environment.

B. Banks with strong intrinsic financial strength. Typically, they will be important institutions with valuable and defensible business franchises, good financial fundamentals, and an attractive and stable operating environment.

C. Banks with adequate intrinsic financial strength. Typically, they will be institutions with more limited but still valuable business franchises. These banks will demonstrate either acceptable financial fundamentals within a stable operating environment or better than average financial fundamentals with an unstable operating environment.

D. Banks that possess modest intrinsic financial strength, potentially requiring some outside support at times. Such institutions may be limited by one or more of the following factors: a vulnerable or developing business franchise, weak financial fundamentals, or an unstable operating environment.

E. Banks with very modest/weak intrinsic financial strength, requiring periodic outside support or suggesting an eventual need for outside assistance. Such institutions may be limited by one or more of the following factors: a business franchise of questionable value, financial fundamentals that are seriously deficient in one or more respects or a highly unstable operating environment (Moody's, 2018; Fitch, 2018).

Levels below D represent junk situations or non-investments or speculative areas.

The future role of these rating agencies seems to be further expanded with and after implementation of Basle III, but nowadays there is, especially from the side of Europe, a critical position against these agencies for non-transparency in methodologies that they use and for not consistent ratings the agencies awarded before and after the financial crisis. Besides, nowadays only some banks in Latvia have a rating awarded by an international rating agency as after the global financial crisis of 2008 the number of banks with a rating has substantially decreased.

For several years now, based on the results of the analysis of bank performance and the results of performed inspections of the FCMC, the FCMC has been assessing the risks of banks by rating each bank according to its risk size and risk management quality. In 2016, the key risks identified for banking activities comprised credit risk, liquidity risk, reputation risk, strategy risk, and business risk. Particular attention was paid to the operational strategies, business models, and the earning capacity of banks. As a result of the rating assignment process, each supervised institution is assigned, for supervisory purposes, a rating from 1.0 to 4.0, where 1.0 is the highest, whereas 4.0 is the lowest rating. FCMC ratings results and methodology are not available to public, only general results that can be seen in the Table 1.

Table 1

FMCS's rating system in 2016

Rating scale	**1–2**	**2.1–3**	**3.1–4**
Number of banks:	3	12	1

Source: FCMC, 2016

The financial health of banks is important for different stakeholders, including bank clients, correspondent banks, state and others. The paper aims to assess bank financial health using publicly available information.

2. Methodology of Research

The research is based on the analysis of publicly available bank annual financial statement data published by Latvian commercial banks in the period from 2003 till 2017 as well as the key macroeconomic indicators, and aggregate statistical data of Latvian commercial banks accumulated by the FCMC. Research is limited to the publicly available economic and financial data, therefore non-financial indicators (as bank reputation, internal processes) couldn't be taken into account.

The methodology is based on the design of bank financial health assessment model. The model design comprises four steps: initial selection of indicators, choice of indicators included in the model, figuration of the rating scale, calculation of bank rating for the assessment of bank financial health.

The initial selection of indicators is done based on analysis of special economic literature, research and working papers, FCMC data, statistical information, and results of research made by the authors. As a result of analysis three groups of indicators were selected for the modelling purposes:

1. Indicators suggested by the Moody`s Investors Service methodology.

2. Indicators calculated by the Latvian financial market authority (FCMC).
3. Indicators depicting macroeconomic environment (macro indicators).

Choice of Moody`s Investors Service rating methodology explicable due to popularity of ratings assigned by the Moody`s as the majority of bank ratings in Latvia were/are assigned by the Moody's (see Table 2).

Table 2

Ratings assigned by international rating agencies to Latvian commercial banks, 2008–2017

Bank name	Moody`s Investors Service	Standard & Poor`s
a/s Trasta komercbanka	2008–2010: B2 2010–2014: B3	
a/s Latvijas Krājbanka	2008–2009: Ba2 2009: B3	
a/s Norvik Banka	2008–2011: Ba3 2011: B2	
a/s Baltic International Bank	2008–2010: B2 2010–2014: B3	
a/s Privatbank	2008–2012: B2 2012–2013: B3	
a/s Citadele	2010–2011: Ba3 2011–2013: B2 2013–2017: Ba2	
a/s Expobank	2015–2017: Ba3, B1	
a/s SEB (rating of the parent bank)	Aa3	
a/s Swedbank (rating of the parent bank)	Aa3	AA-

Source: Moody's, Standard & Poor`s

Based on the methodology suggested by the Moody`s Investors Service, we initially include in the model six groups of indicators (see Table 3).

Table 3

Selected groups of indicators for the assessment of bank financial health based on Moody's methodology

Groups of indicators	Indicators
bank size	*TA* – total assets *EQ* – the size of the paid equity capital
profitability/return	YAEA – yield on average employed assets CAIL – return on employed liabilities *NIM* – net interest margin *REP* – return on average assets (before taxes) *ROAA* – return on average assets *ROAE* – return on average equity *IE_II* – proportion between the interest expenses and income *DIV* – dividends/net profit
effectiveness of bank operations	*CIR* – cost – income ratio

Groups of indicators	Indicators
	PE_OI – payments to employees /total operational expenses
quality of bank assets	*PL_GL* – share of non-performing loans in the total loan portfolio *LLR_GL* – loan portfolio quality ratio *PL_EQLLR* – non-performing loans to shareholder equity and special provisions
bank capital adequacy	*T1R* – Tier 1 capital ratio *EQ_TA* – paid equity to total assets *CAR* – capital adequacy ratio
bank liquidity	*ANL_AD* – average net loans to average deposits *D_EQ* – deposits to equity paid *LIQ_B* – claims to credit institutions to liabilities to credit institutions

Source: made by the authors based on Moody's

Latvian financial market authority (FCMC) regularly publishes basic indicators characterizing situation in the Latvian banking sector: bank profit before taxes (*PPN_LVL*), bank equity capital to total assets (K_9), efficiency of bank financial performance (*Fin_ef*), costs to income (*Izd_Ien)*, risk-weighted assets to total assets (K_{10}), liquidity ratio (K_3), long-term loans issued to non-banks to total loan portfolio (K_6), loans issued to non-banks to total assets (K_4), loans issued to non-banks to total deposits (K_5), demand deposits to total deposits (K_7). All these indicators were initially included in the model.

As a proxy of bank external environment we have used four macro indicators: annual growth of GDP, inflation (consumer price index), total investments to GDP and unemployment rate (number of unemployed to total labour force).

Based on the analysis of scientific literature we have chosen to use the multiple choice model *ordered logit* to design the rating model. The model indicators are assessed according to the method of the maximum likelihood with the standard errors in the form of White-Huber (Solovjova, 2011).

Modelling and secondary selection of indicators is done using eViews 7.0. The initially selected three groups of indicators are included in the model as explanatory and the *Long Term Bank Deposit Ratings* assigned by the Moody's to Latvian commercial banks as dependent variable (denoted as *MR*). Therefore, the sample was formed based on the financial data of Latvian commercial banks with a Moody's *Long Term Bank Deposit Rating*. After adjustments the sample included 112 observations.

The assessment of the quality of model parameters and the choice of the best fit model was based on the following set of criteria:

- Log likelihood;
- LR index (Pseudo-R2);
- LR statistic;
- Akaike information criterion;
- Schwarz criterion.

3. Research results and discussion

Based on the assessment of the quality of model parameters, the best fit model was chosen. The model selected to be used for the assessment of bank financial health is shown in Table 4.

Table 4

Bank financial health assessment model

Dependent Variable: MR
Method: ML - Ordered Logit (BHHH)
Date: 12/27/18 Time: 10:49
Sample (adjusted): 2003 2017
Included observations: 112 after adjustments
Number of ordered indicator values: 6
Convergence achieved after 33 iterations
Covariance matrix computed using first derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
K6	-0.041924	0.008559	-4.898009	0.0000
EQ_TA	0.202006	0.043820	4.609916	0.0000
K4	0.125175	0.015444	8.105086	0.0000
PPN_LVL	0.199220	0.057106	3.488613	0.0005
K7	0.033795	0.014303	2.362828	0.0181
UNEMPLP	-0.154482	0.058662	-2.633441	0.0085
INV	0.073666	0.033454	2.202013	0.0277
Limit Points				
LIMIT_5:C(8)	8.131415	1.818424	4.471682	0.0000
LIMIT_6:C(9)	9.403681	1.809763	5.196085	0.0000
LIMIT_7:C(10)	11.39062	2.114747	5.386281	0.0000
LIMIT_8:C(11)	12.28297	2.150320	5.712159	0.0000
LIMIT_9:C(12)	15.77050	2.579157	6.114596	0.0000

Pseudo R-squared	**0.368682**	**Akaike info criterion**	**2.255907**
Schwarz criterion	**2.547175**	**Log likelihood**	**-114.3308**
Hannan-Quinn criter.	2.374083	Restr. log likelihood	-181.0987
LR statistic	**133.5358**	Avg. log likelihood	-1.020811
Prob(LR statistic)	0.000000		

Source: made by the authors

Based on the above mentioned model (see Table 4), the following Formula (1) is determined:

MR = 0.202006×EQ_TA - 0.041924×K6 + 0.125175×K4 + 0.199220×PPN_LV + 0.033795×K7 - 0.154482×UNEMPLP + 0.073666×INV (Formula 1)

Based on this bank financial health assessment model we set the bank financial health rating scale according to the limit points (see Table 5).

Table 5

Bank reliability rating model scale

Reliability category	Rating category	Rating group	Rating	Limit points	Rating description
High	Aaa	Aaa	9	≥15.77050	- the highest level of bank financial health, - the highest level of bank financial strength, - bank can fully meet it's obligations.
	Aa	Aa1, Aa2, Aa3	8	12.28297 - 15.77050	- very high level of bank financial health, - very high level of bank financial strength, - high quality of bank obligations.
	A	A1, A2, A3	7	11.39062 - 12.28297	- high level of bank financial health, - high level of bank financial strength, - relatively high quality of bank obligations.
Medium	Baa	Baa1, Baa2, Baa3	6	9.403681- 11.39062	- adequate level of bank financial health, - adequate level of bank financial strength, - medium-grade quality of bank obligations.
	Ba	Ba1, Ba2, Ba3	5	8.131415- 9.403681	- upper-medium level of bank financial health, - upper-medium level of bank financial strength, - bank obligations are a subject to relatively high credit risk.
	B	B1, B2, B3	4	<8.131415	- medium level of bank financial health, - medium level of bank financial strength, - bank obligations are a subject to high credit risk.
Low	Caa	Caa1, Caa2, Caa3	3	n.a. [1]	- low and very low level of bank financial health, - low and very low level of bank financial strength, - bank obligations are a subject to very high credit risk, - strong exposure to external disturbances.

Source: Made by the authors based on the model results and Moody's rating scale

Based on the designed model and the worked out bank financial health rating scale, we have assessed financial health of Latvian commercial banks (see Table 6).

[1] There are certain limitations in the design of the reliability rating model. Due to the use of the econometric analysis of the reliability ratings assigned by the international rating agency *Moody`s Investors Service,* the model designed is not able to determine the marginal value limits for the category of low reliability ratings (Caa) as none of the banks in Latvia is assigned a rating in this category.

Table 6

Bank financial health ratings, 2013-2017

	rating 9	rating 8	rating 7	rating 6	rating 5	rating 4	Total number of ratings
2013	3	2	0	1	4	8	18
2014	2	0	1	2	3	9	17
2015	1	2	1	0	4	8	16
2016	2	1	3	1	5	4	16
2017	2	3	1	2	2	4	14

Source: made by the authors

Based on the analysis made, the selected best model suggests use of seven indicators to assess bank financial health: bank assets structure, level of credit risk, profitability, bank capitalization, stability of resource base, investment, unemployment.

Analyzing the selected indicators, we conclude, that the model has identified five indicators characterizing bank specific risk:

- indicator of bank capital adequacy (EQ_TA)
- indicator of bank profitability (PPN_LVL)
- indicator of bank loan portfolio (K4, K6)
- indicator of bank resource base (K7)

as well as two macroeconomic indicators: investment as percentage of GDP (INV) and norm of unemployment (UNEMPLP) characterizing level of bank.

These indicators allow assessing different aspects of bank performance. The indicator of bank capital adequacy (EQ_TA) is important as an adequate level of capital creates a peculiar “pillow” that provides the bank an ability to remain solvent under changing economic conditions allowing continuing its operations and performing its functions. Nowadays, after the financial crisis and a number of bank rescues, the supervisory authorities pay an elevated attention to the issue of bank capitalization. The indicator of bank profits (PPN_LVL) characterizes the level of bank efficiency, as a decrease in profits may indicate inefficient operations of commercial bank management and problems in risk management and control; on the other hand, it may indicate overcapitalization of the bank.

Bank loan portfolio is the basis of bank operations. The indicator K_4 characterizes the degree of aggressiveness of bank's lending policy, overloaded or insufficient loan portfolio. Traditionally, lending is the main operation of commercial banks being a source of high income in times of economic growth and a reason of relatively high losses during the economic downturn. Therefore, it’s important to balance bank assets, avoiding high concentration risk that can be seen as a great challenge for bank management. Besides, the indicator K_6 characterizes the share of long-term loans in the bank loan portfolio. The maturity structure of the loan portfolio is another source of risk asking for careful management.

The indicator of bank resource base (K_7) is also very important for the assessment of bank financial health as it characterizes the level of stability of bank resource base. Demand deposits are undoubtedly a resource base for a commercial bank, raising the necessity of its management to provide stable resource base for banking operations as on one hand, demand deposits are the least expensive bank resources available to commercial banks. On the other hand, demand deposits are the most unpredictable source of bank resources bringing potential liquidity risk.

Unemployment (UNEMPLP, the percentage of job searchers among the employable population, 15–74 of age) is an important macroeconomic indicator that directly affects the financial health of the bank. Especially during the periods of

economic instability unemployment increases affecting the dynamics of such indicators as bank deposits, loans, overdue debt, increasing risks. Bank loan portfolio, its quality and profitability are especially exposed to the impact of unemployment. Moreover, investment (INV) plays a crucial role in maintaining and building up the economic potential of a country. In turn, this favourably affects the businesses, leads to an increase in GDP as well as improves the position and competitiveness of the country in the external market. Accordingly, an increase in investment in the economy is a kind of catalyst for the development of the country's economy as a whole and a guarantee that banking products and services will be demanded on the market. Thus, the volume of investments has a positive effect on the bank profitability, which is, according to the results of the study, an important component of a financially healthy bank. Besides, evaluation of macroeconomic indicators improves the efficiency of management decisions and, accordingly, strengthens the financial health of both the bank and the banking system as a whole.

4. Conclusions, proposals, recommendations

This paper aimed to develop a rating system to assess bank financial health in Latvia. Based on the analysis made, we have selected seven indicators that can be used for the assessment of bank financial health: bank assets structure, level of credit risk, profitability, bank capitalization, stability of resource base, investment, unemployment. Analyzing the selected indicators, we conclude, that the results are feasible as the selected indicators are important to assess different aspects of bank operations and management: it provides assessment of bank capital adequacy that is a precondition of bank existence, assessment of bank loan portfolio that is the main source of income for the majority of banks as well assessment of bank resource base allowing to avoid liquidity problems.

As a result of the rating determination process, each bank was assigned a rating from 4 to 9, where 9 is the highest rating, whereas 4 is the lowest rating. Ratings from 7 to 9 respond from high to highest level of bank financial health and during last five years were assigned to five banks in average. Ratings from 6 to 5 respond from medium to upper-medium level of bank financial health and during last five years were assigned to five banks in average too. The last rating level (4), is the lowest rating assigned according to our model and represents the medium level of bank financial health. This is the largest category by number of banks with an obvious tendency to decrease in 2016 that can be explained by banks active work on improving their main indicators.

The model developed by the authors can be used by potential and existing bank clients and outside observers to analyze Latvian banks in case other ratings are not available or to complement them. Besides, the model can be used by Latvian commercial banks as a control mechanism to ensure adequate financial health. Further researchcan be extended to other Baltic countries, and emerging European markets, which have received comparatively little attention in the literature.

Bibliography

Barth, J. R., Caprio, G., Levine, R. (2013), Bank regulation and supervision in 180 countries from 1999 to 2011, Journal of Financial Economic Policy, 5 (2), 111-219.

Beck, T., Mills, T., Patterson, K. (2009), The Econometrics of Finance and Growth, Palgrave Handbook of Econometrics, Vol 2, Hampshire, U.K., Palgrave, Macmillan.

Betz, F., Oprică, S., Peltonen T. A., Sarlin, P. (2014), Predicting distress in European banks, Journal of Banking and Finance, 45, 225 – 241.

Carlson, M., Rose, J. D., (2015), Credit Availability and the Collapse of the Banking Sector in the 1930s, Journal of Money, Credit and Banking 47 (7), 1239 – 1271.

Chiaramonte, L., Croci, E., Poll, F., (2015), Should we trust the Z-score? Evidence from the European Banking Industry, Global Finance Journal, 28, 111 – 131.

Claire, R.S. (2004) Macroeconomic Determinants of Banking Financial Performance and Resilience in Singapore, Monetary Authority of Singapore, Staff Paper No. 38, 1-34.

Creel, J., Hubert, P., Labondance, F., (2015), Financial stability and economic performance, Economic Modelling 48, 25-40.

Diamond, D. W., Kashyap A. K., Rajan, R. G. (2017), Banking and the Evolving Objectives of Bank Regulation, Journal of Political Economy, 125 (6), 1812 – 1825.

Diamond, D.W., 2001. Should banks be recapitalized? Fed. Reserve Bank RichmondEcon. Q. 87/4, 71–96.

Financial and Capital Market Commission (2016). Annual Report and Activity Report.

Fitch. (2018). Rating Definitions. [Online] Available at: www.fitchratings.com [Accessed 25 October 2018]

Frydman, C., Hilt, E., Zhou, L. Y. (2015) Economic Effects of Runs on Early "Shadow Banks": Trust Companies and the Impact of the Panic of 1907, Journal of Political Economy, 123 (4), 902 – 940.

Gren, J., Howarth, D., Quaglia, L. (2015), Supranational Bank Supervision in Europe: The Construction of a Credible Watchdog', Journal of Common Market Studies, 53, S1, 181 – 199.

Hoshi, T., Kashyap, A.K., 2010. Will the U.S. bank recapitalization succeed? Eightlessons from Japan. J. Financ. Econ. 97, 398–417.

Iyer, R., Peydro J-L., da-Rocha-Lopes, S., Schoar, A., (2014), Interbank Liquidity Crunch and the Firm Credit Crunch: Evidence from the 2007-2009 Crisis, Review of Financial Studies 27 (1), 347 – 372.

Kudinska M., Romānova, I., Joppe A. (2018), Capital Adequacy and Liquidity in the Context of Bank Stability: Case of Latvia. New Challenges of Economic and Business Development – 2018. International Conference, Riga, Latvia, May 10–12, 2018: Proceedings. Riga: University of Latvia, 378–386.

Laeven, L., Valencia, F. (2013) Systemic Banking Crises Database, IMF Economic Review 61 (2), 225 – 270.

Madi, M.E.S. (2016) Determinants of financial stability in UK banks and building societies-Are they different? Journal of Business Studies Quarterly, 8 (2), 78 – 89.

Moody's. (2018). Rating Symbols and Definitions. [Online] Available at: www.moodys.com [Accessed 25 October 2018]

Rupeika-Apoga, R., Zaidi, S. H. (2018) The Determinants of Bank's Stability: Evidence from Latvia's Banking Industry. New Challenges of Economic and Business Development – 2018. International Conference, Riga, Latvia, May 10–12, 2018: Proceedings. Riga: University of Latvia, 579 – 586.

Rupeika-Apoga, R., Zaidi, S. H., Thalassinos, Y. E., & Thalassinos, E. I. (2018). Bank stability: The case of Nordic and non-Nordic banks in Latvia. International Journal of Economics and Business Administration, 6(2), 39 – 55.

Shijaku, G. (2016) Banking stability and its determinants: A sensitivity analysis on methodological changes. Economic Review, 18 – 30.

Solovjova I. (2011) Problems of Creation of the Model of Commercial Bank Security Ratings System. New Socio-Economic Challenges of Development in Europe 2010. International Conference, Riga, Latvia, October 7–9, 2010: Proceedings. Riga: University of Latvia, 486 – 495.

Song, W., & Uzmanoglu, C. (2016). TARP announcement , bank health , and borrowers ' credit risk. Journal of Financial Stability, Vol.22, 22–32.

Thalassinos, J. E., & Liapis, K. (2011). Measuring a Bank ' s Financial Health: A Case Study for the, XIV(3).

THE RELATIONSHIP OF WAGE LABOR AND CAPITAL AND ITS DEVELOPMENT IN THE FORMS OF SOCIAL PARTNERSHIP

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Abstract. The interaction of labor and capital is an important factor for the success of any business of any size: from small business to large and state one. The nature of the relationship between labor and capital determines in many respects both the efficiency of production, economic growth, the increase in people's well-being, and the social and economic stability of society as a whole.

The aim of the study is to identify current changes in the relationship between wage labor and capital and to characterize their regulation through the mechanism of social partnership. The objectives of the study are the following: to identify the features of the relationship between wage labor and capital in the 20-21 centuries, to identify the main features of the social contract between the employee and the business in the new conditions of production; analyze the rate of exploitation of the employee by capital; suggest correction methods using the ideology and practice of social partnership. A number of developed countries and the Russian Federation were chosen as objects of analysis. We used the open data of the International Labor Organization (ILO), the US Bureau of Labor Statistics, the American Economic Policy Institute (EPI), the OECD, the Rosstat agency.

The study is based on a theoretical analysis of economic theory and a review of the scientific literature on this topic. Empirical data reflects the change in the relationship between labor and capital in the new conditions of post-industrialism. Statistical analysis shows that the level of exploitation in countries with a neoliberal (Anglo-Saxon) market economy is higher than in European countries of general welfare. A real negotiation process could maintain a balance between business efficiency and the protection of workers' rights. The results of the study can be used for theoretical studies as well as for predicting socio-economic changes. State institutions can use the results to improve the effectiveness of their programs in the labor market.

Keywords: *social partnership, wage labor, capital*

JEL code: A13, D63, P47

Introduction

The interaction of labor and capital is an important factor in the success of business processes of all economies of any type. Efficiency, rationality, and the conflict-free nature of this relationship largely determine economic growth, the accumulation of social wealth, the increase in people's well-being, and social and economic stability in society.

The interaction of hired labor and capital has always been the focus of classical political economy. The theoretical and methodological foundations of the interaction of labor and capital within the framework of the labor theory of value were laid down by the works of V. Petty, D. Ricardo, A. Smith, and K. Marx.

The characteristics of the interaction, primarily the amount of labor and capital and their contribution to economic growth, were studied within the framework of both neoclassical and Keynesian theories by the following economists: R. Harrod, E. Domar, R. Solow, V. Leontiev, I. Samuelson Y. Schumpeter, J. Hicks, J. Clark, A. Pigou, D. Robinson, and

others. Class analysis of the socio-economic structure of society in the new conditions of post-industrialism as well as analysis of the crisis of the theory and practice of the social welfare state can be found in the works: A. Gorts, G. Markuze, P. Glotz, J. Rifkin, R. Reich, L. Turow, A.V. Buzgalin, V.T. Ryazanov, and in the works of representatives of the theory of Social Structure of Accumulation (D. Gordon, D. Kotz, V. Lippit, M. Wolfson, P.O'Hara) and others. The work of M. Weber, G. Becker, P. Bourdieu, J. Coleman, M. Olson, F. Rose, and other authors are devoted to the evolution of labor and capital in the context of the world historical process. Not all aspects of this extremely capacious and multi-level problem have been fully investigated. The theoretical problems of labor relations and their transformation when interacting with capital in the new economic conditions remain insufficiently studied.

The purpose of the article is to analyze changes in the relationship of hired labor and capital and to characterize their regulation through the mechanism of social partnership. The objectives of the study are as follows: to identify the characteristics of the relationship between wage labor and capital in the 20th and 21st centuries; to determinate of the features of the social contract between the employee and the business in the new conditions of production; to analyse of the rate of exploitation of an employee by capital and to propose methods for their correction using the ideology and practice of social partnership. A number of developed countries and the Russian Federation too were chosen as objects of analysis. We used open data from the International Labor Organization (ILO), the US Bureau of Labor Statistics, the American Economic Policy Institute (EPI), the OECD, Rosstat and others.

The study is based on a theoretical analysis of economic theory and a review of scientific literature on this topic. Empirical data reflect a change in the relationship between labor and capital in the new conditions of post-industrialism. The analysis showed that the rate of exploitation in countries with a neoliberal (Anglo-Saxon) market economy model is higher than in European countries of general welfare, and especially in the countries of Northern Europe. A truly functioning negotiation process could maintain a balance between business efficiency and the interests of employees.

The results of the study can be used for theoretical studies and forecasting socio-economic changes. Government organizations can use the results to improve the effectiveness of the programs in the labor market. The results could help to develop recommendations for the implementation of public policies that contribute to improving the efficiency and reducing transaction costs in the labor market.

The evolution of the relationship between labor and capital

Marx made a significant contribution to the explanation of the relationship between labor and capital. He considered this relationship as the basis of the capitalist system, full of contradictions and conflicts, such that the capitalist formation develops by eliminating them. The capitalist and the worker differ in their relationship to the means of production: the first is their owner, and the second has nothing to sell except for his labor power. The first one controls the production process and extracts a profit (appropriates the surplus value created by the employee), paying the employee only part of the necessary time (not including surplus labor). These relations inevitably get the character of exploitation of the working class by the bourgeoisie (Marx K., 1967)11. Speaking about the interaction and the relationship of labor and capital, we mean the relationship of employees on the one hand and employers, owners, entrepreneurs on the other.

Social reforms in the early 20th century began because of the exaltation of the contradictions between labor and capital, since any entrepreneur is interested in his enterprise working in a social peace, without conflicts and strikes. As a result, a new balance of forces between employees and employers has developed, and the role of the state has changed. In the 1880s, Bismarck introduced state old-age pensions and medical insurance as well. In 1911, Churchill established the

[1] 'The importance of Marx's theories is ... wholly emotional' (F. Y. Edgeworth (1925) Papers relating to political economy, v.3

first large-scale system of social insurance against unemployment. Roosevelt, executing "New Deal" programs, developed a social welfare state that saved capitalism (Thurow L., 1997,11). At this time, the trade union movement was active in most developed capitalist countries and, together with large socialist parties that were also popular among the working class, fought for wage growth, for improved working conditions and social insurance. Despite the fact that active state intervention in social processes began in the 1930s, a new stage of "regulated capitalism" (ie, progressive and reformed capitalism, where large capital reached the compromise with organized labor) was established only after World War II with support of large business and because of the impending socialist alternative and the threat of a return to the Great Depression (Kotz D., 2015, Ch. 3).

Note that Marx wrote in the epoch of the emergence of joint-stock companies, when capitalists mostly managed their own companies by themself. By the 1930s, management control over the corporations was completely separated from ownership. A management institute appeared, Fordism concepts of production management were widely adopted. Scientific methods of organizing as well as stimulating and motivating labor were introduced actively. An eight-hour working day, a 48-hour working week became the rule. Social welfare and large profits became dependent on consumption, consumption in turn depended on the high wages of workers buying products, and, as a result, not only capitalists incomes, but also workers wages grew.

To harmonize the interests of managers and tof owners, various ways to encourage managers to protect and promote the interests of shareholders began to be used: participation in profits and property, various bonuses and pension supplements, that were supposed to stimulate managers not only ensure profit growth and money for shareholders, but also to feel responsibility to employees, suppliers, customers, the general public, and even the environment. Thanks to that a social (implicit) contract was formed, according to which the workers received an annual wage increase, almost life-long employment was guaranteed to 'white-collars' (managers and highly skilled intellectuals). Temporary layoffs were limited to 'blue collars' mainly (highly skilled and skilled physical labor) to maintain the profitability of companies and to maintain performance of employees at a satisfactory level. Under these conditions, corporate social activities are formed, which by the 70s will embodied to the concept of corporate social responsibility (CSR) (Social policies of the state and business, 251-260). CSR also acts as a way in which society observes how well business activity meets ethical, social and environmental standards. Strict requirements regarding money laundering, financial transactions with persons suspected of terrorist activities, etc. are put forward. Social obligations are imposed on business including monitoring and public non-financial reporting systems.

In a post-industrial economy, socio-economic changes in the structure of society (which are usually defined in relation to property, wealth, activities) lose their importance and are replaced by national characteristics and differences in culture, religion and lifestyle (which depend on the consumption pattern in the market). Social movements are becoming less distinguishable; the importance of political parties is reduced. The "class" analysis becomes politically incorrect, the emphasis shifts to the study of "racial, ethnic, nationality, as well as gender and sexual orientation" (Davis J., 2000, 4).

The influence of globalization processes on the labor market during this period is contradictory. On the one hand, it leads to an increase in the efficiency of the economy, the spread of new technologies, an increase living standards of the population, an unprecedented reduction in the level of poverty (primarily due to China). On the other hand, globalization provokes excessive differentiation of incomes, enhance migration flows, contributes to the emergence of technological unemployment (a situation where due to the development of technology and widespread automation the number of jobs is reduced, restructuring and even closing of local productions) which leads to low employment high unemployment, stagnation (Spiridonova N., 2016).

It seemed that Karl Marx was wrong and the contradiction between labor and capital disappeared (leveled), that the problem of exploitation was resolved in the conditions of active socialization of capital and the established forms of social partnership, an implicit social contract and the development of the general welfare economy. Wages, incomes and the rate of their redistribution remained unchanged at steady rates of economic growth and increase in labor productivity. However, by the end of the 20th century, income inequality began to grow rapidly. For example, in the 80s, the entire increase in wages for men was given to top 20% of the workforce, and 64% of this increase was accounted for only one top percent. By the end of 1994, real hourly wages for ordinary workers fell by 14%, real weekly wages by 19%, while real GDP per capita grew by 33% (Thurow L.,1997.28,, 31; 342), with a constant increase in labor productivity in USA. According to the US Bureau of Labor Statistics, the productivity of 45 out of 58 service industries grew from 1987 to 2016. The median long-term growth in labor productivity across all 58 industries was about 1.7% per year. At the same time, the share of financial corporations profits in the profits of the entire corporate sector of the United States increased from 10% in the 1950s to 40% on the eve of the global financial and economic crisis of 2007–2009. The share of gross value added (GVA) of financial corporations in the total GVA of the US corporate sector as a whole increased from 4–5% in the 1950s to 14% just before the global crisis of the 2000s [Kotz D., 34–35]. According to the estimates of the American Economic Policy Institute (EPI), the remuneration of CEOs of the largest US companies increased from 1978 to 2017 by 979%, and the salaries of employees — only by 11.2%; the difference between the first and second was 20 times in 1965 and 312 times in 2017 (the S&P 500 index grew by only 637% in the same period). (EPI). In Russia, the private gas-producing company Novatek increased remuneration to its top managers in the first half of 2018 by 48% (up to 2.1 billion rubles (about $33,49 million)), and Transneft - by 36% (up to 895 million rubles (about $14,27 million)), and Gazprom by 69%, Lukoil - more than 8 times compared with the same period last year2.

International economic organizations of the United Nations, the World Bank and the ILO have noted a decline in wage growth rates everywhere in the world and especially in developed countries, while GDP is growing and unemployment has been falling there in recent years. For example, in 2017, the average wage in the world increased by 1.8 percent only. This is the lowest growth rate since 2008. In the industrialized countries of the G20, these rates are even lower than the world ones: the incomes of workers increased by only 0.9% in 2016 and by 0.4% in 2017. There are countries that had positive growth rates for 2008–17 (South Korea (15%), Germany (11%), USA, France (5–9%)) and those where real wage growth fell or remained close to zero (Italy, UK, Japan) (GlobalWageReport 2018) among the countries with developed economies. Possible explanations of this phenomenon, proposed in the economic literature, are the following: transition to more capital-intensive industries, higher capital intensity within industries, uncertainty in economic prospects, increased global competition (preventing enterprises from increasing wage costs), more and more diverse forms of employment (due to technology), reducing the bargaining power of workers, union density and collective bargaining coverage (see, for example, GlobalWageReport 2018, p15). But how can one explain the growing gap between the wages of workers, employees and remuneration of directors, corporate profits?

One explanation can be offered on the basis of qualitative changes in the productive forces in developed economies in the late 20th and early 21st centuries. The scientific and technological revolution, as well as the information and organizational, ensured the rapid development of production, business, science and management. The means of labor, the objects of labor and the production relations themselves are changing. Mechanical, industrial means of labor are being replaced by automated systems, there is a robotization of machinery and equipment. Unlimited resources (for example, information or renewable energy sources) replace non-renewable resources and limited objects of labor. The labor resources — labor, as an appendage of a machine, a mechanism — are being replaced by its perception as a creative labor,

[2] According to quarterly reports of companies

the concepts of "human capital" and "creative capital" arise. This, in turn, causes a change in production relations (Buzgalin A. 2018, 15). There are new forms of organization of wage labor — temporary ones: borrowed labor, outsourcing, outstaffing. There is a change in the social structure of society, for example, a new stratum is emerging: the prekariat class [Standing G., 2011]. A new, more rigid social contract between owners and employees is being formed as a result of development of various forms of intellectual property, managerial know-how, informational, "post-fordist" and "toyotist" production technologies, network forms of work organization.

In the former implicit social contract that developed after World War II, large-scale businessmen paid employees an effective wage, which prompted them to work hard, improve their skills, and cooperate with the entrepreneur. In the new conditions of post-industrial development, without the political threat of socialism and the economic threat of strong trade unions, effective wages were no longer needed (Thurow L., 1997, 35). The main motivation of the employee now became the fear that he would be thrown into the economy of declining real wages and rising unemployment. Companies, using temporary hired labor, received cost reduction and greater flexibility in the choice of labor in the labor market. G. Standing indicates that 700,000 temporary employees work for the Swiss agency Adecco, and the Japanese recruitment agency Pasona daily sends a quarter of a million people to work on short-term contracts (Standing G.,2011, p. 32–33, 38, 65-67). The same trends in the development of the labor market in a network economy are fully consistent with the current Russian realities.

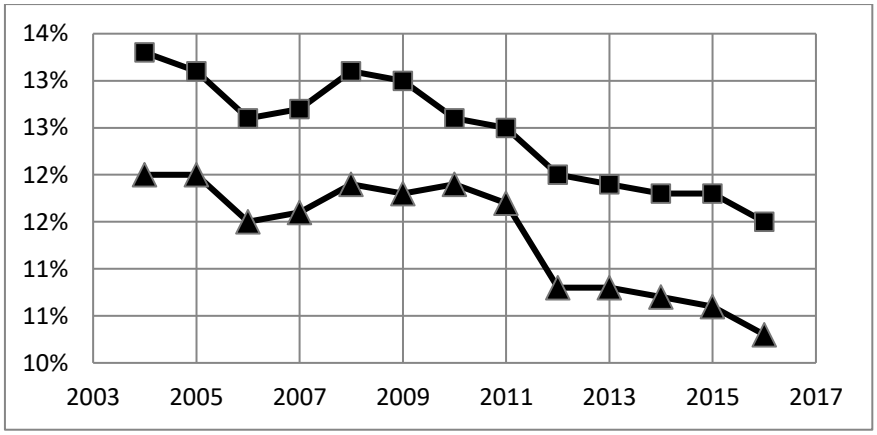
Workers began to receive lower wages, in fact, did not have paid leave, days off, additional benefits, sickness benefits, professional growth prospects and were in a state of constant risk and uncertainty. (Thurow L., 1997, 36-37; 11.94) A vicious circle formed where the fear of unemployment and labor exploitation reinforce each other. The remote workplace factor exacerbates the decline of trade unions (Standing G. 2011, p. 74–76, 141–142). The trade unions could not yet adapt to the work in the new conditions in order to protect and represent the interests of workers of different types of employment and labor organization. The social basis of trade unions is changing and they lose their role and influence in many developed countries. For example, in the United States, the number of union members has decreased significantly over the past quarter century; they comprise less than 11% of private sector workers (35% in 1954). In the EU (2014), the average percentage of unionized workers is 22%, with the overwhelming majority in the Nordic countries (Finland - 79%, Denmark - 77%), from one quarter to one third in Italy (33% in 2009), the UK (28%) and Canada (29.4%), less than one-fifth in Germany (19.9%) and Japan (19.8%).

The rate of exploitation of the employee by capital in modern conditions

Standard theories of determination of the remuneration of employees of an enterprise, as a rule, ignore the preferences and possibilities of discretionary actions on the part of its various participants. In a Neoclassical Economy (assuming Factor Returns based on marginal resource productivity), labor exploitation is virtually impossible under perfect competition as the company reaches equilibrium when marginal revenue equals the price of the good, and wages equals marginal labor profitability (Daniel III, Coldwell, 2006). Exploitation is possible only with imperfect competition (monopsony, monopoly). In the classic case of a competitive labor market, workers' remuneration, with the same qualifications, performing the same work under the same conditions, is determined by the aggregate demand and supply of the labor market and does not depend on the characteristics of a separate enterprise. Neither workers (trade unions) nor employers can significantly change the established equilibrium wage, as this will lead to the getaway of labor to competitors. However, the classic model of perfect competition, common in labor economics, is only an ideal construction and does not correspond to reality and empirical research (Ashenfelter O. and Pencavel J. (1969)). In this case, it is important how much the share of owner of factor of production in total income corresponds to the contribution that this factor makes to income. This removes the contradiction in the approach to pay for labor if there is perfect competition

and if it is monopolistic. If a separate producer controls a significant part of the supply on the market, this does not mean that its payment for factors will be certainly exploitative (when income is less than the contribution of the factor), even if it is "forced". The neoclassical theory of labor exploitation is expanded by defining net exploitation when the wage level is less than the marginal factor of labor input (= product of marginal income). We understand the exploitation as a disproportion between the income of the owner of the factor and the contribution that this factor contributes to the income of the company. Net exploitation is also possible with high wages. For example, in the case of an economically profitable innovation firm, one should expect low exploitation and high wages, at least temporarily (Daniel III, Coldwell 2006). Note that in this concept, we adhere to Marx's technical, scientific view of exploitation rather than normative, moral, according to influential commentators (Arnerson R., 1981; Cohen G., 1979, 2008; Samuelson P., 1971; Wolff J., 1999). Let us also pay attention to the fact that an increase in the creative component of labor motivation does not allow us to speak about the elimination of exploitation, in our opinion. The expansion of creative activity in society leads not to overcoming exploitation, but to an increase in the complexity of its definition. (for example: Kim T., 2016)

Many researchers note that the rate of exploitation of an employee by capital has increased in modern conditions (Bourdieu P., 1998, 94; Thurow L., 1997). The decline in real wages, as well as increased income inequality, can also be largely explained by an increase in the rate of exploitation of labor. (Zafirovski M., 2003). In recent years, American labor in relation to capital has been subjected to a "domination regime of a new type, based on the creation of a universal and permanent state of insecurity, aimed at forcing workers to submission, to accept exploitation" (Bourdieu P., 1998, 85). The USA has one of the lowest levels of unionization among developed countries; the density of trade unions and the share of workers collectively in America are constantly decreasing (see fig. 1).



Source: author's construction based on ILO 2018 a

Fig. 1 **The share of union members (triangles) and the share of workers protected by collective agreements (squares) as a percentage of the total number of employees in the United States.**

There are several different approaches to quantifying the rate of exploitation of labor. Three of them, which are used most often, can be considered the main methods: classical (Marxist), marginalist and macroeconomic. According to the classical approach, the rate of exploitation E is the ratio of the profit P extracted from the commercial enterprise to the sum of the wages of its employees W:

$$E_1 = \frac{P}{W}$$

In the marginalist approach, the ratio of profit growth when changing labor force invested in the cost of the final product (for example, hiring or firing one employee) requires calculating:

$$E_2 = \frac{dP}{dW}$$

The results of these two methods will be the same if P = kW (k is a constant), i.e. if profit is linearly dependent on wages. But if the goal of the business is maximum profit and the enterprise is well organized and stable, E_2 should be much less than E_1. A well-organized enterprise is at its maximum relative to the use of labor (as well as all other resources), so any change in conditions will only lead to a decrease in profits.

Consider an example based on the data of the report of the company Zeiss Group for 2017/20183. Wages and salaries, total social security and pension costs amounted to 1,983,913 k €, and Consolidated profit / loss — 535,029 k €. The rate of exploitation E_1 is 535/1984 = 27%.

If we compare the data of reports 2016/2017 and 2017/2018, then ΔP = (535-561) = -26 k € (profit decreased), and ΔW = (1984-1937) = 147 k € (salaries and other payments employees increased), and therefore E2 = -18%. What could be interpreted as follows: the company hired 2364 new employees, who not only didn't bring her additional profit, but also generated losses.

The rate of exploitation for small and medium-sized enterprises in Germany can be estimated using open sites for buying and selling businesses. For example, the well-known portal dub.de can be used, which indicates not only the area of activity and the number of employees, but also Gesellschaftergehaltin (shareholder's salary) in some cases. Since in Germany the variation in the level of wages of workers is insignificant, it is not difficult to estimate the total wages of all workers for an enterprise in a certain field of activity (for example, using gehalt.de). According to our calculations, the rate of exploitation E1 ranges from 10% to 60%, but as a rule lies in an even narrower range — 12-20%.

Let us estimate the macroeconomic rate of exploitation E3 for the economies of different countries using open published data calculated on the basis of the 2008 international SNA. Russia announced the start of the 2008 SNA application in 2013, some countries did it a little earlier, others a little later, and in general, this approach can give us data for 6 years (2012 - 2017), which will allow us to track their dynamics (see Table 1-3). The macroeconomic approach assesses the rate of exploitation for the economy as a whole and represents the ratio of the profits as a share of GDP to the total wages paid by employers to employees for work done in an accounting period as a share of GDP (income approach)[4]:

$$E_3 = \frac{P\ (\%\ GDP)}{W\ (\%\ GDP)}$$

Table 1.

Rate of exploitation of some economies practicing the Anglo-Saxon model for 2012-2017

Country	2012	2013	2014	2015	2016	2017
UK	76%	76%	80%	79%	80%	78%
USA	79%	79%	80%	78%	76%	76%
Canada	76%	76%	78%	72%	75%	77%

Source: author's calculations based on OECD, 2019

[3] author's calculations based on https://www.zeiss.com/content/dam/corporatenew/annualreport/2017_18/download/international/annual_report_2017-18_long_version.pdf

[4] Indicators D1 and B2G_B3G were used.

Table 2.

Rate of exploitation of in some socially oriented market economies for 2012-2017

Country	2012	2013	2014	2015	2016	2017
Germany	79%	78%	79%	78%	78%	77%
Sweden	67%	66%	67%	70%	68%	68%
Denmark	67%	67%	68%	67%	66%	67%
Switzerland	66%	66%	66%	64%	64%	64%

Source: author's calculations based on OECD, 2019

The rate of exploitation in countries with a neoliberal (Anglo-Saxon) market economy model is higher than in European countries of general welfare and than in northern europe especially (see also Zafirovski M., 2003). From this point of view, state-corporate forms of market regulation demonstrate greater efficiency in the regulation of social and labor relations than non-interference capitalism.

Table 3.

Rate of exploitation of in some developing countries and in former socialist countries for 2012-2017

Country	2012	2013	2014	2015	2016	2017
Turkey	215%	212%	207%	202%	176%	193%
Romania	169%	179%	170%	173%	155%	149%
Colombia	176%	174%	169%	158%	164%	n/a
Poland	137%	137%	136%	138%	131%	126%
Chech	121%	121%	127%	129%	124%	118%
Hungary	92%	94%	97%	104%	97%	96%
Russia	93%	87%	82%	94%	88%	89%
South Africa	95%	92%	89%	86%	84%	84%
Estonia	94%	94%	90%	83%	79%	81%

Source: author's calculations based on OECD, 2019

The formation and development of a market economy in Russia and several other countries of Eastern Europe led to a noticeable deterioration in the position of workers around the world. The need to take care of the external attractiveness, social competitiveness of the "universal consumption society" had disappeared, the influx of labor migrants from former socialist countries has complicated the struggle for the rights of workers even in developed capitalist countries (Hazans M., 2016; Spiridonova, N., Sudova T. (2018)). Violations of labor rights in Russia and the CIS countries, such as delayed and non-payment of wages, sending people on unpaid leave, mass dismissals of workers, create unfavorable precedents for workers around the world.

In the Russian Federation and other Eastern European countries, the formation of a market economy, the formation of classes of entrepreneurs and hired workers, the initial capital accumulation processes ensure together a high rate of exploitation than in developed economies. For example, over the past five years (2012-2017) rate value is 149-179% in Romania, 126-169% in Poland, 118-129% in the Czech Republic, 82-94% in Russia (see Table 3).The desire of entrepreneurs and new owners to realize only their own economic interests, as well as the reduction of legal instruments

of state influence on the behavior of business entities, the limited amount of rights for employees to participate in managing the organizations lead to a sharp increase in income differentiation of the population, a decrease in the level and quality of life, to aggravation social tension in society. In the Russian Federation, the Russian system of social partnership workers cannot fully realize even the rights to participate in the management of the organization, which are enshrined in the legislation of the Russian Federation, since the mechanisms and guarantees for their practical implementation are not regulated by law or by agreements in the field of social partnership.

The key tools for resolving the contradiction could be the CSR institute and, as a result, solving social problems in the interests of labor collectives: first of all, fair remuneration, ensuring expanded reproduction of labor, then developing practical tools of the social partnership system at all levels of government, and finally improvement of the legal regulation of the social partnership system in Russia. A real negotiation process could maintain a balance between business efficiency and employee security. But in the absence of proper and balanced state and other social regulation, such a market gives employers virtually unlimited freedom to exploit workers, especially given the different "bargaining power", the asymmetric influence of capital and labor.

Conclusions, suggestions, recommendations

1. As a result of the social reforms of the 20th century, a new balance of forces between employees and employers has developed, and the role of the state has changed. A new stage of "regulated capitalism" has been formed - progressive reformed capitalism, where big business made the main compromise with organized labor. Due to this, an implicit social contract was established, according to which the workers were provided with annual wage growth, stable employment of "white collar workers" in the presence (though only in the capitalist metropolitan countries) of continuous economic growth and the formation of a consumer society. Under these conditions, an institution of CSR is being formed, which is implemented through the mechanism of social partnership, whose ideology was finally approved during this period.

2. At the end of the 20th century, income inequality began to grow sharply. The international economic organizations of the United Nations, the World Bank, and the ILO note a slowdown in the growth of wages in the world, and especially in developed countries, despite the fact that GDP growth has resumed and unemployment has decreased in recent years there. At the same time, there is a gap between the reduction of wages of workers and employees and the growth of remuneration of directors, the growth of corporate profits. From the number of possible explanations for this phenomenon, we draw attention to the qualitative changes in the productive forces in developed economies at the end of the 20th at the beginning of the 21st centuries, the change in the forms of employment and the role of Trade Unions, which largely determined the change in the degree of labor exploitation by capital.

3. The analysis of the rate of exploitation shows that the rate of exploitation in countries with a neoliberal (Anglo-Saxon) model of a market economy is higher than in European countries of general welfare. A new, more rigid social contract between owners and employees is being formed as a result of development of various forms of intellectual property, managerial know-how, informational, "post-fordist" and "toyotist" production technologies, network forms of work organization. The level of exploitation indicates the state of balance (or disbalance) of the interests of capitalists and employees. A sharp shift of the indicator towards one side or the other does not contribute to the sustainable development of countries without a doubt.

4. The formation and development of a market economy in Russia and several other countries of Eastern Europe led to a noticeable deterioration in the position of workers around the world. The need to take care of the external attractiveness, social competitiveness of the "universal consumption society" had disappeared, the influx of labor migrants from former socialist countries has complicated the struggle for the rights of workers even in developed capitalist

countries. Violations of labor rights in Russia and the CIS countries, such as delayed and non-payment of wages, sending people on unpaid leave, mass dismissals of workers, create unfavorable precedents for workers around the world.

5. There are no doubts that a number of factors, such as: the ideology and practice of social partnership, the increased participation of workers in enterprise management, the protection of labor rights, the emergence and expansion of trade unions, universal suffrage, the development of a system of social guarantees, the emergence of the idea of unconditional basic income , general socialization and humanization of production relations are capable to smooth (level off) the contradictions between labor and capital.

Bibliography

Arnerson, R. J. (1981) What's Wrong With Exploitation? Ethics, 91, 202–227

Arnold, D. G. (2003) 'Exploitation' and 'the sweatshop quandary': Exploitation by Alan Wertheimer; The Sweatshop quandary: Corporate responsibility on the global frontier by Pamela Varley. Business Ethics Quarterly, 13, 243–256.

Arnold, D. G. (2010) Working Conditions: Safety And Sweatshops. In G. G. Brenkert & T. L. Beauchamp (Eds.), The oxford handbook of business ethics. New York: Oxford University Press.

Ashenfelter O. and Pencavel J.(1969) american trade union growth, 1900–1960. The Quarterly Journal of Economics, v. 83, № 3, pp. 434-448

Bourdieu, P. (1998) Acts Of Resistance: Against The Tyranny Of The Market. New York, New Press

Bureau of labor statistics, Productivity and Costs by Industry Selected Service, Retrieved Aug 20, 2018, from https://www.bls.gov/news.release/prin2.htm

Buzgalin, A.V. (2018) Late capitalism and its limits: the dialectic of productive forces and production relations (on the 200th anniversary of the birth of Karl Marx), Questions of political economy, v2, p.10-38 [in Russian]

Cohen, G. A. (1979) The Labor Theory Of Value And The Concept Of Exploitation. Philosophy & Public Affairs, 8, 338–360.

Cohen, G. A. (2008) More On Exploitation And The Labour Theory Of Value. Inquiry, 26, 309–331.

Daniel III, Coldwell (2006) Pure Neoclassical Exploitation and the Level of Wages. American Journal of Economics and Sociology, v. 49, pp. 21-34.

Davis J.E. Introduction: Social Change and the Problem of Identity // Identity and Social Change / Ed. by J.E. Davis. New Brunswick. L.: Transaction Books, 2000.

Economic policy institute (EPI, 2018) [Online] Available at: http://www. epi.org. [Accessed 16.10. 2018]

Gorz , A. (2004) Wissen, Wert und Kapital. Zur Kritik der Wissensökonomie, Zürich: Rotpunktverlag

Hazans M (2016) Migration Experience Of The Baltic Countries In The Context Of Economic Crisis. In Kahanec M, Zimmermann KF (eds.), Labor Migration, EU Enlargement, and the Great Recession (pp. 297-344). Springer Berlin Heidelberg

International Labour Organisation (ILO, 2018a) Global Wage Report 2018/19. What lies behind gender pay gaps? Geneva: ILO

International Labour Organisation(ILO, 2018b) Trade union density rate (%),[Online] Available at: http:// www.ilo.org/ilostat/ [Accessed 16.10. 2018]

Kanaeva, O.A. (Ed.) (2017) Social policy of the state and business: a textbook for undergraduate and graduate programs, Moscow, Yurait [in Russian]

Kim, T. W. (2016) Gamification Of Labor And The Charge Of Exploitation. Journal of Business Ethics,152 (1), 27-39

Kotz, D.M. (2015) The Rise And Fall Of Neoliberal Capitalism, Cambridge: Harvard University Press.

Kotz, D.M. The Rise and Fall of Neoliberal Capitalism, Cambridge: Harvard University Press, 2015.

Marx, K. (1967) Capital, v. 3. New York, International Publishers

OECD, 2019. OECD Productivity Statistics. [Online] Available at: http://www.oecd.org. [Accessed 16.01. 2019]

Samuelson, P. A. (1971) Understanding the Marxian Notion of Exploitation: A Summary of the So-Called Transformation Problem between Marxian Values and Competitive Prices. Journal of Economic Literature 9 (2), p. 399–431

Snyder, J. (2010). Exploitation And Sweatshop: Perspectives And Issues. Business Ethics Quarterly, 20, 187–213.

Spiridonova, N. (2016) Social Policies Of The State In The Context Of Globalization, New Challenges of Economic and Business Development, Riga, University of Latvia, p. 728-736

Spiridonova, N., Sudova T. (2018) Migration of Human Capital as a Factor of Sustainable Development: a Survey. New Challenges of Economic and Business Development –2018: Productivity and Economic Growth, Riga: University of Latvia, p. 672- 684

Standing, G. (2011) The Precariat. The New Dangerous Class. Bloomsbury Academic, p. 336

Thurow , L. (1996) The Future of Capitalism: How today's economic forces shape tomorrow's world, Morrow; Stated First Edition edition

Wolff, J. (1999) Marx And Exploitation. The Journal of Ethics, 3, 105–120.

Zafirovski, M. (2003) Measuring and Making Sense of Labor Exploitation in Contemporary Society: A Comparative Analysis, Review of Radical Political Economics, p. 462-484.

Zwolinski, M. (2007) Sweatshops, Choice, And Exploitation. Business Ethics Quarterly, 17, 689–727.

Zwolinski, M. (2012) Structural exploitation. Social Philosophy and Policy, 29, 154–179.

THE ASPECTS OF COMPETENCY IN THE CONTEXT OF EDUCATION SITUATION IN LATVIA

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Abstract. Competency approach is a useful tool for various organisations and, in particular, academic institutions in order to develop qualitative education programme based on the up-to-date skills and behaviours that are currently required from employees. The goal of the research was to identify the main aspects of competencies in the field of higher education in Latvia as a result of which it would be possible to determine the possibilities for competency approach development. The research methods used are as follows: literary review, document analysis, data processing methods, statistical analysis and case study.

The results of the analysis showed that competency-based approaches evolve in academic environment, the development of competency approach influenced significantly the form of study programmes at the University of Latvia, Faculty of Business, Management and Economics. On average, problem solving, communication and information skills of people in Latvia are at an appropriate level while digital and software skills are averagely lower than average in the EU. The results of the research can be applied in the academic field by developing educational programmes that would be based on today's crucial key competencies.

It was concluded that regardless of current difficulties in the field of education, knowledge of foreign languages is a competitive advantage of people of Latvia. Support should be provided to the digital and software skills. As well it is essential that institutions of higher education understand the aspects of competency, because they have to adapt their study process implementation according to new legislation related to competency approach.

Key words: *competency, higher education, competency-based approach, core competencies, skills*

JEL code: I23, J24

Introduction

Nowadays, the competency approach is widely used in both academia and business in order to ensure the competitiveness of learners and businesses in a rapidly changing environment. It is essential to analyse competency approach with the aim to improve its' application in practice. The goal of the research is to identify the main aspects of competencies in the field of higher education in Latvia as a result of which it would be possible to determine the possibilities for competency development in Latvia. To achieve the objective of the research, first, the concept of competency will be defined, then different theoretical aspects of competencies will be identified, the situation of education in Latvia will be analysed as well as a case study will be conducted at the Faculty of Business, Management and Economics of the University of Latvia which uses the competency-based approach in the development of educational programmes. The research methods used in this research are as follows: literary review, document analysis, methods of data processing, statistical analysis and case study.

There is a wide-ranging discussion in literature about the importance of acquiring competencies, but there is still no agreement on what competencies are actually about (Barth et al., 2007). Competencies can be defined as the mobilisation

of knowledge, actions and emotions used to create value (Bendassolli et al., 2016). Rieckmann (2012) defined competencies as the interplay of knowledge, capacities, skills, motives and affective dispositions. Professional competency is specified as the degree to which employees can apply their professional knowledge, skills, motivations and traits to specific working conditions (Kane, 1992). It includes high-level skills such as critical thinking, teamwork, communication and ongoing training (Litchfield et al., 2002). Cognitive, emotional and psychomotor fields play an important role in professional development (Ko, 2012).

The United Nations Industrial Development Organisation (2002) defines competency as a combination of knowledge, skills and behaviour that are practiced for self-improvement. Competencies are the proven ability to responsibly and autonomously use one's knowledge, skills and abilities in a variety of situations, for instance, in work, study, professional and personal development (Chiru et al., 2012).

According to the terminology of the Council of the European Union, competency is a compilation of knowledge, skills and attitudes, where:

- Knowledge is facts and figures, concepts, ideas and theories that have already been identified and support understanding of a particular field or topic;
- Skills are defined as the ability and capacity to perform certain processes and use existing knowledge to achieve results;
- Attitude is described as a person's willingness and intention to act or respond to an idea, person or situation (The Council of the European Union, 2018).

1. Theoretical aspects of competency

Competency models are a useful tool in various organisations and academic programmes to identify the skills and behaviours that are necessary in workplaces. A competency model describes a combination of specific knowledge, skills, special features, motivation, interpersonal relationships, and other personality traits that are required to effectively fulfil responsibilities within an organisation (Kane, 1992; Perdue et al. 2000; Skorková, 2016). Competencies are one of the most important factors in workplaces; therefore, it is essential to have proper understanding of the actual workplace competency requirements in order to develop these key career competencies. The level of professional skills can be assessed by monitoring the specific behavioural skills that are related to work efficiency and which can be improved and enhanced through training and development. Professional competency should also include higher-level skills such as critical thinking and long-term learning resources (Litchfield et al., 2002). The content of the required professional competencies can be integrated into the curriculum providing training for competent professionals to meet different societal demands (Ko, 2012).

Unlike a learning culture that uses a traditional learning approach with strong knowledge acquisition, competency-based education focuses on the students' ability to develop not only important knowledge but also the skills, values and attitudes that are required to address complex issues the learners will face in their future personal and professional careers (Barth et al., 2007; Lambrechts et al., 2013). Factors influencing the effective learning and expression of a student's full creative potential are diverse and include student intelligence, abilities, personality, motivation, cognition and age as well as educational institutions and family environment, courses, faculty, teaching methods, supportive atmosphere and social climate (Ko, 2012). These factors usually contribute to learning. Pinquart, Juang and Silbereisen (2003) concluded that important variables for success in the workplace include student self-efficacy and job satisfaction; therefore, universities should improve the development of the students' self-realisation to help them successfully move to a workplace. So learning strategies and effective learning affect the academic performance and learning outcomes of students.

The Council of the European Union pays special attention to the identification of competencies. Three challenges have been identified based on competency-oriented education, training and learning in the context of lifelong learning: use of different teaching methods and contexts; support for teachers and other educational staff; and assessment and validation of competency development (The Council of the European Union, 2018). The European Council's recommendations include eight key competencies: literacy competency; multilingual competency; mathematical competency and competency in science, technology and engineering; digital competency; personal, social and learning to learn competency; citizenship competency; cultural awareness and expression competency; entrepreneurship competency.

Literacy competency is the ability to identify, understand, express, create, and interpret concepts, feelings, facts and opinions both orally and in writing as well as the ability to use visual, sound/audio and digital materials in all disciplines and contexts. It includes reading and writing skills as well as understanding of oral information. People need to be able to communicate both in writing and orally and adapt their communication to the situation. Multilingual competency includes the ability to appropriately and effectively use different languages for communication. Mathematical competency is the ability to develop and apply mathematical thinking and insight in order to solve a range of problems in everyday situations. Competency in science refers to the ability and willingness to explain the natural world using knowledge and methodology employed, including observation and experimentation, in order to identify questions and draw evidence-based conclusions. Competencies in technology and engineering are applications of that knowledge and methodology in response to perceived human wants or needs. Competency in science, technology and engineering implies the use of such knowledge and methodology implementing an individual’s wishes and needs. Digital competency involves the confident, critical and responsible use of and engagement with digital technologies for learning, at work, and for participation in society. Personal, social and learning to learn competency is the ability to reflect upon oneself, effectively manage time and information, work with others in a constructive way, remain stable and manage one’s own learning and career opportunities. Citizenship competency is the ability to act as responsible citizens and fully participate in civic and social life based on the understanding of social, economic, legal and political concepts and structures as well as global developments and sustainability. Competency in cultural awareness and expression involves having understanding of and respect for how ideas and meaning are creatively expressed and communicated in different cultures through art or other cultural forms. It involves understanding of how to develop and express one’s own ideas, feelings or role and place in society in a variety of ways and contexts. Entrepreneurship competency refers to the ability to act upon opportunities and ideas transforming them into values for others. It is based on creativity, critical thinking and problem solving, taking initiative and perseverance and the ability to work collaboratively in order to plan and manage projects that are of cultural, social or financial value (The Council of the European Union, 2018). Many problem-solving techniques are taught at large universities and companies with the aim to promote ideas and enhance creativity (Bertoncelli et al., 2016). It is important to emphasize that entrepreneurship competencies are considered to be of a higher level, including personality traits, skills and knowledge, and can therefore be perceived as the entrepreneur's overall ability to succeed in the job. Using the competency-based approach, the main advantage is that it enables one to explore business features with a long-term impact and closer links with the organisational activity. The six key areas of the entrepreneurship competency are as follows: opportunity competencies, relationship competencies, conceptual competencies, organising competencies, strategic competencies, and commitment competencies (Man et al. 2002).

In general, the competency-based approach is essential because it can effectively improve employee and organisational performance, and has a positive impact on creating genuine competitive advantage in organisations (Carroll, McCrackin, 1998; van Birgelen et al., 2008). It should be noted that the core competencies of a modern workplace include soft skills and hard skills (Alsabbah and Ibrahim, 2013). Both types of skills are taken into account to

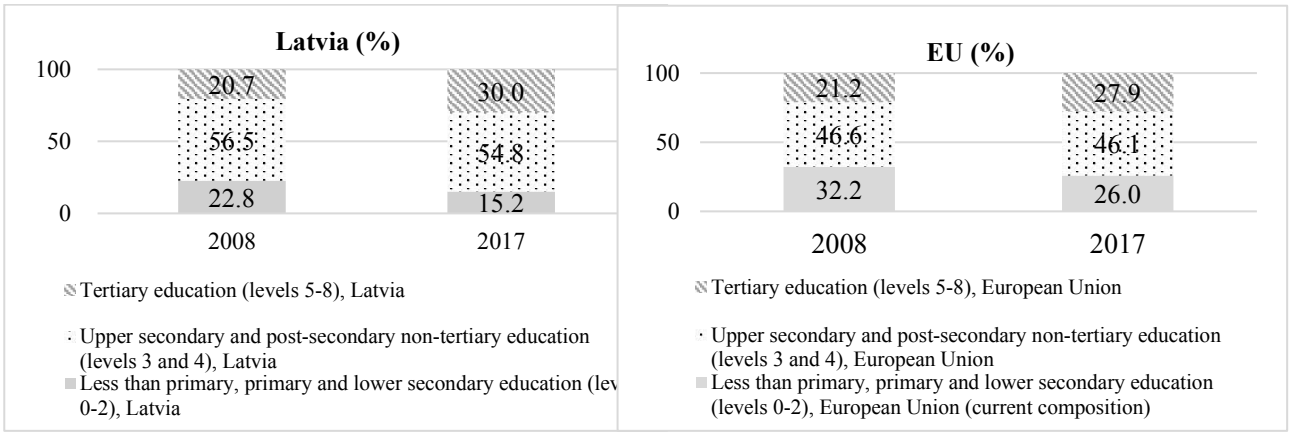
ensure success and organisational efficiency. Soft skills are defined as the interpersonal, human or behavioural skills required to use technical skills and knowledge in the workplace (Weber et al. 2009; De Villiers, 2010). They are often related to emotional skills, and play a greater role in personal behaviour and human relationships management (Renwick and MacNeil, 2002; Rainsbury et al., 2002). Studies have demonstrated a significant importance of soft competencies for successful work (Snyder et al., 2006; Coll and Zegwaard; 2006; Alsabbah and Ibrahim, 2013). Whereas hard skills are skills related to specific technical knowledge and tasks, and such hard skill components as critical thinking and problem solving are important to successfully do the job (Alsabbah and Ibrahim, 2013).

By summarising this section, nowadays the competency-based approach plays an important role in both business and academic sectors. Competencies are a very broad concept influenced by many factors. And, as mentioned above, education and professional qualifications also have a positive impact on professional competencies. Therefore, the educational situation in Latvia will be analysed in the next section.

2. Analysis of the situation in the education field and competency factors in Latvia

Over the last 10 years, the total number of educational institutions in Latvia has decreased by 187 units (an 11% decrease). In the academic year 2017/2018, there were 54 higher education institutions and colleges in Latvia, 46 vocational education institutions, 775 general education schools and 642 pre-school educational institutions. The greatest relative decrease was observed in the number of vocational education institutions, and only the number of pre-school educational institutions increased (Central Statistical Bureau of Latvia, 2018). Analysing the number of students, it can also be concluded a declining trend. In the academic year 2008/2009, there were 495 794 students in Latvia, whereas in the academic year 2017/2018 – 421 809. So, in a 10-year period, the number of students decreased by 73 985 or 14.9%. In general, the number of educational institutions was decreasing not as fast as that of the students. Also, the number of inhabitants in Latvia decreased significantly over the last 10 years (by 11%). In the academic year 2017/2018, there were 81 602 students of higher education in Latvia (a 34.9% decrease over the last 10 years). But the number of universities decreased by 10%. These data shows that there is a significant decrease in the number of students in Latvian higher education institutions and colleges since the number of students drops much faster than the number of universities. In Latvia, there are 28 528 vocational education institution students (a 26.5% decrease over the last 10 years). In the academic year 2017/2018, there were 215 053 schoolchildren in Latvia (a 13.8% decrease over the last 10 years) and 96 626 children in all pre-school educational institutions (a 17.6% increase over the last 10 years) (Central Statistical Bureau of Latvia, 2018). So the positive trend is only the number of pre-school institutions and the number of children therein.

According to the composition of population of Latvia by education level, it can be concluded that in 2017 the highest proportion of people or 54.8% in Latvia had secondary education or vocational qualification which, according to the European Qualifications Framework (EQF), corresponds to levels 3-4. In 2008, this figure was 56.5%. Over the last 10 years, the proportion of people with primary education significantly decreased – from 22.8% to 15.2% which is also associated with a decrease in the birth rate in the country (Eurostat, 2018; Central Statistical Bureau of Latvia, 2018). On the other hand, the proportion of people with tertiary education which corresponds to levels 5-8 according to the EQF increased by 9.3% (from 20.7% to 30%). In total, 30% of the population with higher education is a considerable number. On average, the European Union (EU) has a fairly similar distribution, but in 2017 – 26% of the population had less than primaty or primary education which is by 10.8% higher than in Latvia, 46.1% had secondary education or vocational qualification which is by 8.7% lower than in Latvia, and 27.9% – higher education (please see Fig.1).

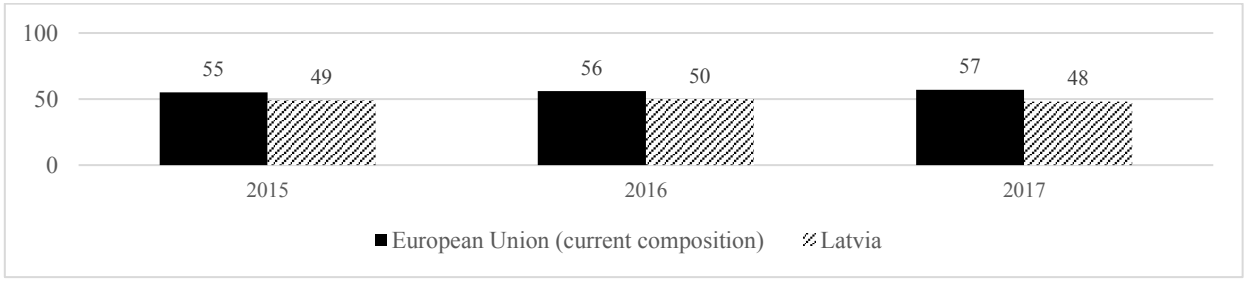


Source: authors' construction based on Eurostat data

Fig. 1. **Population by educational attainment level in Latvia and EU (15-64 years), percentage of individuals**

The quality of education is also influenced by expenditure on education. According to the data of the Central Statistical Bureau of Latvia, from 2010 to 2015, expenditure on education increased in Latvia on a regular basis amounting to EUR 1473.4 mln in 2015 of which the largest part or 88.1% was state expenditure on education, but by 2015 the 2008 amount of EUR 1,573.5 mln was not reached. In 2015, state expenditure on education accounted for 5.3% of GDP (Central Statistical Bureau of Latvia, 2018).

Digital skill statistics characterises digital competencies as one of the key competencies defined by the EU Council. According to official EU statistics, a smaller proportion of people in Latvia have basic or above basic overall digital skills than in the EU (please see Fig.2). In 2017, 48% of Latvia's population had basic or above basic general digital skills, while in the EU this indicator reached 57%. In the 2015-2017 period, the change of this indicator was small − within 1-2 percentage points. In addition, in 2017, 49% of Latvia's population had basic or above basic software skills, whereas in Europe this proportion was 60% (Eurostat, 2018).

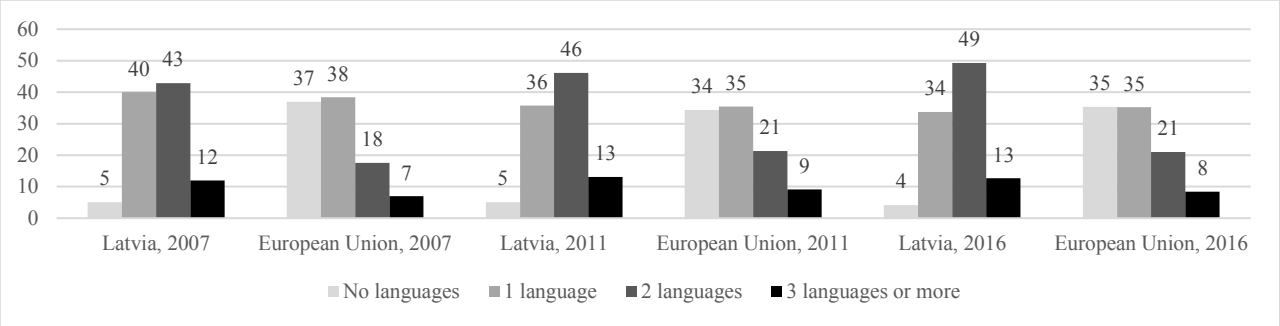


Source: authors' construction based on Eurostat data

Fig.2. **Individuals who have basic or above basic overall digital skills in 2015-2017 (percentage of individuals)**

As it has already been mentioned before, multilingual competency includes the ability to effectively and appropriately use different languages, and is also one of the core competencies of the EU Council. According to the data of the year 2016, the majority of Latvia's population (49.3%) knew two foreign languages, and this proportion increased by 6.4% over the last 10 years. 33.7% knew one foreign language and 4.2% knew only their mother tongue. 12.7% knew at least three foreign languages which is an important share, and since 2007 it has increased by 0.7% (Eurostat, 2018). Compared to the EU average data, in 2016, the majority or 35.3% of EU population did not know any foreign language, 35.2% knew one foreign language, 21% knew two foreign languages, and 8.4% knew at least three foreign languages (please see Fig.3). In Latvia, foreign language knowledge is broader than that in the EU. Such significant differences are related both

to the historical and geographical situation in Latvia. Therefore, the multilingual competency is a competitive advantage of Latvia.



Source: authors' construction based on Eurostat data

Fig.3. **Number of foreign languages known in Latvia and EU in 2007, 2011 and 2016 (Percentage of individuals)**

Similarly, according to the data of the year 2017, in Latvia communication (64% of individuals who have above basic communication skills), information (73% of individuals who have above basic information skills) and problem solving (64% of individuals who have above basic problem solving skills) skills are well advanced exceeding the EU average level (Eurostat, 2018).

In the following section, an example of a particular educational institution applying the competency-based approach - the Faculty of Business, Management and Economics of the University of Latvia - will be investigated according to the case study method.

3. Application of the competency-based approach at the Faculty of Business, Management and Economics of the University of Latvia – Case study

Within the framework of the research, the methods of document analysis and case study were applied, and five bachelor study programmes implemented at the Faculty of Business, Management and Economics of the University of Latvia (FBME) were analysed. The authors analysed the annexes of diplomas, accreditation documentation, competency descriptions in programme development documentation, published descriptions on official website of the University of Latvia as well as programme study results mentioned in the e-study environment of the University of Latvia. Totally were examined 107 pages of documents related to the competency descriptions. Documentation of the FBME's course and programme descriptions was developed in accordance with The Cabinet of Ministers Regulations No. 322 'Regulations on the Classification of the Latvian Education' adopted in Riga on 13 June 2017. The Regulations define the classification of education in Latvia, including descriptors of knowledge, skills and competencies corresponding to the levels of the Latvian Qualifications Framework (LQF) (Cabinet of Ministers of Latvia, 2017). As in the research were analysed bachelor study programmes corresponding to the LQF level 6, the authors reviewed the descriptors of the knowledge, skills and competencies corresponding to this level which were determined by Cabinet Regulations No. 322 (Please see Table 1).

Table 1

Descriptors of knowledge, skills and competencies corresponding to LQF level 6 (Cabinet of Ministers of Latvia, 2017)

LQF level	Knowledge (knowledge and understanding)	Skills (ability to use knowledge, communication, general skills)	Competency (analysis, synthesis and evaluation)
6	Basic and specialised knowledge of the relevant scientific field or profession, understanding of their key concepts and regularities; critical understanding of this knowledge.	Ability to carry out professional, artistic, innovative or research activities, formulate and analytically describe information, problems and solutions in their field of science or profession, to explain and reasonably discuss them; ability to independently structure one's learning, show a scientific approach to problem solving, take responsibility and initiative, work individually, in a team or manage other people's work, make decisions and find creative solutions.	Ability to independently acquire, select and analyse information and use it, make decisions and solve problems in the relevant scientific field or profession, demonstrate understanding of professional ethics, evaluate the impact of one's professional activity on the environment and society, and participate in the development of the relevant professional field.

Thus, according to Latvian legislation, the knowledge, skills and competencies to be acquired are determined separately in the results of each educational level, but, according to the EU Council's recommendations, competency is a combination of knowledge, skills and attitudes. The EQF level results determined by knowledge, skills, responsibility and autonomy are presented in Table 2. In the context of the EQF, knowledge is described as theoretical and/or factual; skills are cognitive, which include logical, intuitive and creative thinking, and practical applications that involve the use of methods, materials, tools and instruments; responsibility and autonomy is the student's ability to independently and responsibly apply knowledge and skills (European Commission, 2018).

Table 2

Descriptors Defining Levels in the European Qualifications Framework (EQF) (European Commission, 2018)

EQF level	Knowledge	Skills	Responsibility and autonomy
The learning outcomes relevant to level 6	Advanced knowledge of a field of work or study, involving critical understanding of theories and principles	Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study	Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups

Within the framework of the research, the FBME's bachelor study programmes analysed are as follows: Accounting, Analysis and Audit; Economics; Financial Management; International Economics and Commercial Diplomacy; International Economic Relations. The document analysis explored the competencies of mentioned programmes as set out in diploma supplements, FBME's documentation, and published materials. Based on the analysis of the mentioned texts, a summary of competencies to be acquired under the programmes was developed (please see Table 3).

The results of the analyzed FBME's study programmes were divided into three blocks in accordance with The Cabinet of Ministers Regulations No. 322 'Regulations on the Classification of Education in Latvia'. According to the FBME's documentation: knowledge is defined as a systematic set of information or conclusions characterised by breadth, depth, awareness, operability; skills are the ability to apply knowledge, communication, general skills in the exercise of a task or

Table 3

Summary of the FBME's Programme Competencies

Programme	Summary of competencies to be acquired
Accounting, Analysis and Audit	*Hard competencies:* - Preparation of specific accounting documents and reports; - Application of modern information technologies in accounting data processing; - Preparation, analysis and evaluation of the results of a company, identification of problems and preparation of proposals; - Risk assessment and application of audit methods and techniques in practice; - Ability to practically show comprehensive professional knowledge and skills in solving topical issues in accounting, auditing and taxation. *Soft competencies*: - Creative, problem-solving attitude to work; - Ethical attitude towards colleagues, partners, clients and other people; - Ability to show initiative and take responsibility; - Careful attitude to the environment and nature; - Desire for continuous development and improvement.
Economics	*Hard competencies:* - Company cost and tax calculations, budgeting and financial reporting, bookkeeping; - Analysing and evaluating the company's financial position and efficiency, offering solutions to improve performance; - Knowledge of the possibilities of banking services, exchange rate changes and currency risk reduction; - Development of the company's internal control systems and application of audit methods; - Orientation in investment portfolio design and management; - Use of econometric modelling and mathematical methods, interpretation of results as well as application of forecasting methods; - Applying theoretical knowledge in solving practical tasks to improve the performance of an enterprise as well as in decision making; - Ability to independently analyse and evaluate the economic processes taking place in the country, the internal and external environment of business and its development tendencies both in Latvia and in the world in general; - Ability to identify changes in social and economic environments and their processes, and to make independent decisions about current economic and business problems; *Soft competencies:* - Understanding the importance of professional ethics, assessing the impact of one's professional activities on the environment and society.
Financial Management	*Hard competencies:* - Knowledge of banking, financial and investment planning and management, state budgeting, financial and tax issues; - Knowledge of corporate finance and accounting issues, financial risk assessment and insurance issues; - Business and institutional accounting, planning, financial and economic analysis, decision making; - *Intellectual competencies*: to solve professional issues and problems using the theoretical basics and skills acquired, to continue own further education and improve professional qualification; - *Academic competencies*: to evaluate and use in one's professional field statistical and mathematical methods, practical approaches to solving financial management problems, to acquire, select and process information and to use the latest research and achievements of the economic sector in one's practical activities, to carry out creative, research and educational work in economics. - *Practical competencies*: to apply the acquired theoretical knowledge and practical skills in solving financial management problems, risk management, to make and substantiate decisions in the field of professional competence, to work independently and in a team, to develop and implement projects. *Soft Competencies:* - Respect for professional ethics.
International Economics and Commercial Diplomacy	*Hard competencies:* - Analysis and forecast of international economic processes; - Understanding the role of commercial diplomacy in international trade and financial transactions; - Ability to navigate the global economic environment and make informed decisions in the context of global competition; - Applying theoretical knowledge and skills to issues and problems related to international economics and business diplomacy. *Soft Competencies:* - Ability to participate in international negotiations, contracting, defending national or corporate interests; - Understanding the importance of professional ethics, assessing the impact of one's professional activities on the environment and society.
International Economic Relations	*Hard competencies:* - Application of the acquired theoretical knowledge in international economic relations issues, their analysis, finding the optimal solution of problems and forming the image of an organisation; - Knowledge of international law, policy and modern international economic processes; - External communication departments, external relations departments of organizations and personnel management capabilities; - Ability to assess and compare different situations in the field of international economic relations at national, organisational and business level, to assess their potential consequences, including legal consequences.

Source: authors' construction based on FBME documentation, published information of the University of Latvia

profession; competence is the ability to apply knowledge and skills in the usual/changing situation, the ability to act ethically when working in the professional field. Each programme identifies job opportunities and potential positions after graduation allowing a potential student to immediately assess his or her career opportunities.

The analysis showed that the understanding of knowledge, skills and competences at the faculty in question is uniform. The wording of obtainable competencies in the FBME's documents drawn up at different times is similar but not identical which is explained by the fact that their characteristics are updated according to the requirements and market trends. In some situations, competencies were identified as skills or knowledge related to the fact that skills and knowledge are part of the competencies and naturally overlapping. In the Financial Management programme, there is a specific distinction between intellectual, academic and practical competencies. Similarly, the study programmes identify soft and hard competencies; the soft competences are less mentioned than hard competencies, and they are not mentioned in the International Economic Relations programme. Both specific competencies characteristic of a particular programme and the general ones are identified. Specific skills are related to the EU-defined mathematical competency and competency in science, technology and engineering. The programmes also emphasise digital competency, personal, social and learning competency, citizenship competency and entrepreneurship competency related to creativity, critical thinking and problem solving with the aim of planning and managing projects. Less emphasis is placed on the competency of cultural awareness and expression related to the specificity of the direction of the faculty analysed. Programme learning outcomes do not mention multilingual, literacy skills that are generally acquired at primary and secondary school levels. Particular emphasis is placed on the importance of professional ethics which is in line with the description of competencies contained in The Cabinet of Ministers Regulations No. 322 as well as on the attitude developed in several programmes which is part of the competencies. Emphasis is placed on the competencies related to problem solving and critical thinking, and communication skills are determined through the ability to participate in discussions.

In general, in creating the results of the programmes, the FBME follows the requirements of Latvian legislation and updates them in line with trends. It is positively assessed that the FBME's concepts of competencies, knowledge and skills are specifically defined as these terms have several definitions and can be understood differently depending on the context. Therefore, they should always be defined so that programme directors understand these concepts equally. The FBME uses competence-based education that focuses on the students' ability to develop not only important knowledge but also the skills, values and attitudes that are required to address complex issues that students will face in their future personal life and professional career. Thus, the FBME adapts to the development of the competency-based approach.

Conclusions, proposals, recommendations

The research conclusions are as follows:

1. In general, the individual's competencies have a significant impact on performance and job satisfaction, and the use of the competency-based approach has significant advantages over the traditional learning approach.
2. The European Council pays special attention to the identification of competencies defining and developing eight key competencies. All core competencies are related to the ability to undersand, express information and ideas, adapt to the circumstances, appropriately and effectively use knowledge in order to solve a range of problems in everyday situations and draw evidence-based conclusions as well to fully participate in civic and social life. They are related to the application of knowledge and skills in response to perceived human wants or needs.
3. Over the last 10 years, the total number of educational institutions and students in Latvia has decreased. The greatest relative decrease was observed in the number of vocational education institutions, and only the number of pre-school educational institutions and the number of children therein increased. In general, the number of educational institutions decreased not as fast as that of the students.
4. On average, problem solving, communication and information skills of people of Latvia are at an appropriate level while digital and software skills are averagely lower than average in the European Union.

5. Regardless of current difficulties in the field of education, knowledge of foreign languages is a competitive advantage of Latvia's people in the international market.

6. According to normative acts of Latvia competencies are related to the ability to demonstrate understanding of professional ethics, evaluate the impact of one's professional activity on the environment and society, but in official documents of the European Union competency is related to analysis, synthesis and evaluation.

7. It is essential that higher education institutions understand the aspects of competency because they have to adapt their documentation and study process implementation according to new legislation related to the competency-based approach. Development of the competency-based had a significant impact on the form of study programmes and course descriptions at the FBME.

8. The FBME implements competency-based education that focuses on the students' ability to develop not only important knowledge but also competencies related to problem solving, critical thinking and communication skills. The analysed FBME programmes particularly emphasize the importance of professional ethics, highlight the importance of responsibility and perfection in line with EU guidelines but rarely define the resulting attitude as part of competencies.

9. The FBME competencies defined in programmes descriptions are more focused on hard skills rather than on soft skills. Both types of skills should be taken into account to ensure organisational efficiency.

10. In the FBME programme descriptions are included mathematical competency and competency in science, technology and engineering. The programmes also emphasise digital competency, personal, social and learning competency, citizenship competency and entrepreneurship competency. Less emphasis is placed on the competency of cultural awareness and expression related to the specificity of the direction of the faculty analysed. Programme learning outcomes do not mention multilingual and literacy skills.

11. As skills and knowledge are part of the competencies, the competencies naturally overlapped with skills or knowledge in the FBME programme descriptions.

The research recommendations are as follows:

1. In Latvia support should be provided to the digital and software skills that are less developed than the average in the European Union.

2. As entrepreneurship competencies are considered to be of a higher level, and can be perceived as the entrepreneur's overall ability to succeed in the job, these group of key competencies should be studied in detail in further research.

3. Educational institutions of Latvia should develop basic and above basic digital and software skills that are averagely lower than average in the European Union.

4. The FBME should pay more attention on soft skills, cultural awareness and expression, values and attitudes development that are required to address complex issues.

5. The FBME should examine the possibility to include the multilingual competency in the competencies to be acquired under the programmes, thus developing this competitive advantage.

6. The research carried out covers one faculty of higher education institution which limits the generalisation of conclusions on the use of the competency-based approach in educational institutions. Further research should develop the scope of the study by comparing the experience of several Latvian higher education institutions in applying the competency-based approach in the study programmes of different levels with that of other Baltic States. Content analysis method should be used for comparing the same programme descriptions of differenet universities to make conclusions about strengths and weaknesses of study programme descriptions in particular academic institution. This way, it would be possible to arrive on conclusions on best practice.

Bibliography

Alsabbah, M. Y. A., Ibrahim, H.I., 2013. *Employee Competence (Soft and Hard) Outcome of Recruitment and Selection Process.* American Journal of Economics, 3(5C): 67-73.

Barth, M., Godemann, J., Rieckmann, M., Stoltenberg, U., 2007. *Developing Key Competencies for Sustainable Development in Higher Education*. International Journal of Sustainability in Higher Education, Vol. 8 No. 4, 416-430.

Bendassolli, P.F., Borges-Andrade, J.E., Gondim, S.M., Makhamed, Y.M., 2016. *Performance, Self-regulation, and Competencies of Entrepreneurs in Brazilian Creative Industries*. Brasil: Psicologia: Teoria e Pesquisa Vol. 32 n. esp., 1-9.

Bertoncelli, T., Mayer, O., Lynass, M., 2016. *Creativity, Learning Techniques and TRIZ.* Procedia CIRP, 39, 191–196.

Cabinet of Ministers of Latvia, 2017. Regulation on the Classification of the Latvian Education. [Online] Available at: https://likumi.lv/doc.php?id=291524 [Accessed 27 November 2018]

Carroll, A., McCrackin, J., 1998. *The Competent Use of Competency-Based Strategies for Selection and Development.* Performance Improvement Quarterly, 11, 45-63.

Central Statistical Bureau of Latvia, 2018. *Education Statistics.* [Online] Available at: www.csb.gov.lv [Accessed 11 November 2018]

Chiru, C., Ciuchete, S.G., Lefter (Sztruten), G.G. and Paduretu (Sandor), E., 2012. *A Cross Country Study on University Graduates Key Competencies. An Employer's Perspective.* Procedia - Social and Behavioral Sciences 46, 4258 – 4262.

Coll, R. K., Zegwaard, K. E., 2006. *Perceptions of Desirable Graduate Competencies for Science and Technology New Graduates.* Research in Science & Technological Education, Vol. 24, Issue 1, 29-58.

De Villiers, R. 2010. *The Incorporation of Soft Skills into Accounting Curricula: Preparing Accounting Graduates for Their Unpredictable Futures.* Meditari Accountancy Research, Vol. 18, No. 2, 1-22.

European Commission. *Descriptors Defining Levels in the European Qualifications Framework (EQF).* [Online] Available at: https://ec.europa.eu [Accessed 27 December 2018]

Eurostat, 2018. *Education and Training Statistics.* [Online] Available at: https://ec.europa.eu/eurostat [Accessed 7 November 2018]

Kane, M.T., 1992. *The Assessment of Professional Competence.* Evaluation and the Health Professions 15, 163–182.

Lambrechts, W., Mula, I., Ceulemans, K., Molderez, I., 2013. *The Integration of Competences for Sustainable Development in Higher Education: An Analysis of Bachelor Programs in Management.* Journal of Cleaner Production, Vol. 48, 65-73.

Litchfield, R.E., Oakland, M.J., Anderson, J., 2002. *Promoting and Evaluating Competence in On-line Dietetics Education.* Journal of the American dietetic association 102, 1455–1458.

Ko, W.H., 2012. *A Study of the Relationships among Effective Learning, Professional Competence, and Learning Performance in Culinary Field.* Journal of Hospitality, Leisure, Sport & Tourism Education 11, 12–20.

Ko, W.H., 2012. *The Relationships among Professional Competence, Job Satisfaction and Career Development Confidence for Chefs in Taiwan.* International Journal of Hospitality Management, Vol. 31, Issue 3, 1004-1011.

Man, T.W.Y., Lau, T., Chan, K.F., 2002. *The Competitiveness of Small and Medium Enterprises - A Conceptualization with Focus on Entrepreneurial Competencies*. Journal of Business Venturing, 17, 123–142.

Perdue, J., Ninemeier, J., Woods, R. 2000. *Competencies Required for Club Managers.* The Cornell Hotel and Restaurant Administration Quarterly, 41(2),79–85.

Pinquart, M., Juang, L.P., Silbereisen, R.K., 2003. *Self-efficacy and Successful School-to-work Transition: Alongitudinal Study*. Journal of Vocational Behavior, 63, 329–346.

Rainsbury, E., Hodges, D. L., Burchell, N., & Lay, M. C., 2002. *Ranking Workplace Competencies: Student and Graduate Perceptions.* Asia-Pacific Journal of Cooperative Education, 3(2), 8-18.

Renwick, D., and MacNeil, C.M., 2002, *Line Manager Involvement in Careers*, Career Development International, Vol. 7, No.7, 407-414.

Rieckmann, M., 2012. *Future-oriented Higher Education: Which Key Competencies Should Be Fostered through University Teaching and Learning?* Futures 44 (2), 127-135.

Skorková, Z. 2016. *Competency Models in Public Sector.* Procedia - Social and Behavioral Sciences 230, 226 – 234.

The Council of the European Union, 2018. *Council Recommendation on Key Competences for Lifelong Learning.* Brussels, 1-29.

Snyder, L. A., Rupp, D. E., Thornton, G. C., 2006. *Personnel Selection of Information Technology Workers: The People, the Jobs, and Issues for Human Resource Management.* J. J. Martocchio (Ed.), Research in personnel and human resources management, Vol. 25, 305-376.

The University of Latvia, 2018. *Information about Study Programmes.* [Online] Available at: www.lu.lv [Accessed 29 December 2018]

United Nations Industrial Development Organization, 2002. *UNIDO Competencies: Strengthening Organizational Core Values and Managerial Capabilities.* Vienna, Austria: UNIDO, 1-25.

van Birgelen, M. J. H., Wetzels, M. G. M., van Dolen, W. M., 2008. *Effectiveness of Corporate Employment Web Sites: How Content and Form Influence Intentions to Apply.* International Journal of Manpower, 29(8), 731-751.

Weber, M. R., Finley, D. A., Crawford, A., Rivera, D., 2009. *An Exploratory Study Identifying Soft Skill Competencies in Entry-level Managers.* Tourism and Hospitality Research, Vol. 9, 4, 353-361.

THE EVALUATION OF THE IMPACT OF STATE SUPPORT AND CORPORATE INCOME TAX EXEMPTIONS ON THE FINANCIAL CONDITION OF SOCIAL ENTERPRISES

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Abstract. Social enterprises take rather small part of all legal entities, although they play an important role of social economy of any country. The enterprises involve in different activities and active social life the most vulnerable part of the society, make opportunities for the disadvantaged to be involved in the process of the creation of the economic value. According to their status, social enterprises have corporate income tax exemptions and may apply for the state support in Lithuania. These tools help to reduce the operating ineffectiveness and improvement of financial condition of social enterprises. The latest political discussions initiated several governmental decisions, which reduced the level of state support and exemptions of corporate income tax for social enterprises under opinion, that such enterprises may misuse the status of social enterprises and accordingly the other tools of state incentives. Therefore, such amendments may change the position of social enterprises and raise the need to evaluate their impact on the financial condition of social enterprises.

The purpose of the research is to evaluate the impact of state support and corporate income exemptions for social enterprises on the financial condition of social enterprises. The object of the research involves data of balances sheets and income statements of social enterprises, the information on the state support for the period of 2013 – 2017. The legislation analysis, the inductive and deductive methods, the methods of systematisation, comparison and summary of information were used for the research.

The research results show, that the reduction of corporate income tax exemptions would not make a significant impact on the financial condition for most social enterprises, as they would be able to apply corporate tax exemptions for small enterprises. Although the reduction of the state support may limit opportunities to develop business of social enterprises and to reduce the employment of disadvantaged population.

Key words: *social enterprises, financial condition of social enterprises, state support and corporate income tax exemptions for social enterprises, Lithuania*

JEL code: M20, M48

Introduction

The policy and public debate is increasingly highlighting the contribution of social enterprises to tackling socio-economic challenges – such as rampant unemployment and increased inequalities – often in innovative and sustainable ways at the local, regional and global levels. Social enterprises provide the opportunity to disadvantaged persons (individuals) to integrate or re-integrate into the labour market while contributing more generally to building cohesive and creative societies (OECD, 2017). Therefore, a social enterprise is an operator in the social economy whose main objective is to have a social impact rather than make a profit for their owners or shareholders. It operates by providing goods and services for the market in an entrepreneurial and innovative fashion and uses its profits primarily to achieve social objectives. It is managed in an open and responsible manner and, in particular, involves employees, consumers and stakeholders affected by its commercial activities (European Commission, 2011).

It may be agreed with Raišienė A. G., Urmanavičienė A. (2015), who state, that social business is becoming increasingly important in the modern - day society. The public sector bodies alone are no longer capable of effectively solving a part of the social issues in fields of education, health care, sanitation, environmental care, human rights protection and others. Thus, social business becomes indispensable as the latter is becoming increasingly more prepared and capable of offering the most effective and acceptable means of tackling the issues encountered by social policies (Raišienė A. G., Urmanavičienė A., 2015). Although Greblikaitė J., Gerulaitienė N., Žiukaitė Ž., Garcia-Machado J. J. (2017) provide the opinion, that social economy and social enterprises are congruent part of overall economy, although authors conclude, that social economy organizations produce goods and services with a clear social mission and have these ideal-type characteristics and objectives: 1) The mission is services to members and communities and non-profit oriented; 2) Autonomous management is independent of government/ public authorities; 3) Democratic control by membership; 4) People have priority over capital; 5) Participation, empowerment, individual, and collective responsibility and solidarity (Greblikaitė J., Gerulaitienė N., Žiukaitė Ž., Garcia-Machado J. J., 2017). Social enterprise is recognized as an alternative for sustainable development, as it balances social aspects with economic prosperity (Lee P., Seo Y.W. 2017). As much as various authors determine social enterprises as commercial organisations, they emphasise their priority - to seek social purposes and provide opportunities for disadvantaged. However, such enterprises meet challenges of lower effectiveness. Girlevičienė L., Stanikūnas R. A. (2015) consider, that individuals with physical or mental disabilities not always are able to take care of their personal and social lives and exercise their rights. In difficult economic situations and general unemployment, the integration of persons with disabilities into the labour market is a major problem, while the work for any person is a necessity. Any person with disabilities trying to compete in the labour market faces quite high demands: education, profession, work experience, age, level of work ability, disability. In order to solve the employment problems of the disabled persons, there is a need for permanent, active, integrated activities, which should involve as many stakeholders as possible: state, municipalities and social partners (enterprises). Authors state, that the state must make the possibilities for persons with disabilities who are able and willing to work to have a work (Girlevičienė L., Stanikūnas R. A., 2015).

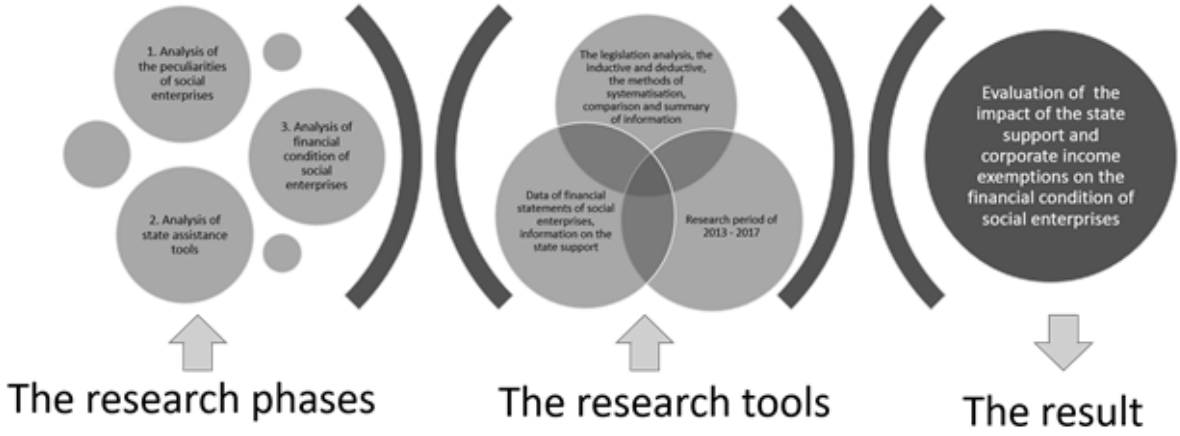
Generally, countries apply different tools of assistance for social enterprises at state level, the Economic and Social Committee of Europe has emphasized the importance of promoting social business in both the EU and EU Member State level. Although, the amount of relevant scientific research considering the conditions of the effectiveness of the activities of social enterprises, the adequacy of the management tools etc. is rare and undoubtedly insufficient (Raišienė A.G., Urmanavičienė A., 2015). Furthermore evaluating social enterprises is very important for both the enterprises themselves and the government, since grants from the government or institutions highly depend on their performance (Lee P., Seo Y.W. 2017). The analysed aspects of social enterprises highlight the need of the evaluation the financial condition of social enterprises and the impact of the state assistance tools for their financial condition.

The purpose of the research is to evaluate the impact of the state support and corporate income exemptions on the financial condition of social enterprises. The object of the research involves data of balances sheets and income statements of social enterprises, the information on the state support for the period of 2013 – 2017. The legislation analysis, the inductive and deductive methods, the methods of systematisation, comparison and summary of information were used for the research.

Research results and discussion

1. Research methodology

Figure 1 presents the methodology of the research carried out in several phases for the evaluation of the impact of state assistance on the financial condition of social enterprises. The first phase provides results of analysis of the environment of social enterprises and their status. During the second phase, state assistance tools were analysed. The third phase includes analysis of financial condition of social enterprises and the significance of the impact of the state support and corporate income exemptions on the financial condition of social enterprises.



Source: author's construction

Fig. 1. **The structure of research methodology of the evaluation of the impact of the state support and corporate income exemptions on the financial condition of social enterprises in Lithuania, 2013-2017**

The research was carried out on the basis of the analysis of financial statements of social enterprises, the information obtained from of the Lithuanian Labour Exchange on different types of state support provided for social enterprises for the period of 2013-2017. The total amount of social enterprises in 2017 was 189 (The Lithuanian Labour Exchange, 2018). For the research purpose selection criteria of having status of social enterprise during the whole research period was set. 99 social enterprises met the criteria and were selected for the research. Financial statements of selected social enterprises for period of 2013 – 2017 were provided by Credit Bureau "Creditinfo".

2. Analysis of the peculiarities of social enterprises and state assistance tools in Lithuania

Social enterprises operate in the economics of any country as legal entity, meet similar challenges of the social, political, economic environment as other entities do, although those enterprises have some peculiarities. Firstly, the business model of social enterprises is primarily focused on addressing social and (or) environmental issues. Secondly, the relationship with the suppliers, employees and customers of social enterprises is founded on mutual benefit and sustainable results, whereas the costs are estimated only after the social objectives of the enterprise are achieved. Furthermore, with regards to the interaction with the market and other subjects operating within the market, the industrial activities of social enterprises are aimed at creating a market for hybrid services and goods, whilst maintaining a capability of successfully competing with traditional business entities. Lastly, the operations of social enterprises are aimed at both making profit and addressing social and (or) environmental issues (Urmanavičienė A., Čižikienė J., 2017).

The legal forms of social enterprises in different countries show that they typically share certain features, such as operating in specific fields deemed of public interest by the state and the community, being constrained in the distribution

of profits and in most cases are bound by an asset-lock provision, and being required to have participative governance and democratic management. The profit distribution and participative governance criteria exist specifically to ensure that social enterprises achieve their mission of producing positive social impact (OECD/EU, 2015).

Raišienė A.G., Urmanavičienė A. (2015) research results show, that in the recent scientific discourse social enterprises are classified as the fourth sector of emerging hybrid organizations. The organizations which belong the latter sector combine elements of profit, non-profit and public sector organizations. Social enterprises must reconcile various forms of organizations due to they face a considerable amount of new and complex challenges such as the selection of the legal form, financing, management of human resources etc. Social or, in other words, hybrid organizations cannot be managed in a uniform manner as their types differ, consequently requiring different and distinct management (Raišienė A.G., Urmanavičienė A., 2015). As organizations with both social and financial objectives, social enterprises face an imperative to manage their performance in both domains, and to also establish their legitimacy in financial and social terms to multiple stakeholders (Lall S. 2017). Social enterprises are very much diversified since they operate in many different industry fields, including financial services, commercial services, agriculture, health and social services, with different organizational structures and connections with other profit and non-profit organizations. Besides, leaders of social enterprises must often answer for different needs from different funders, beneficiaries, authorities, and other relevant actors (Arena M., Azzone G., Bengo I. 2015).

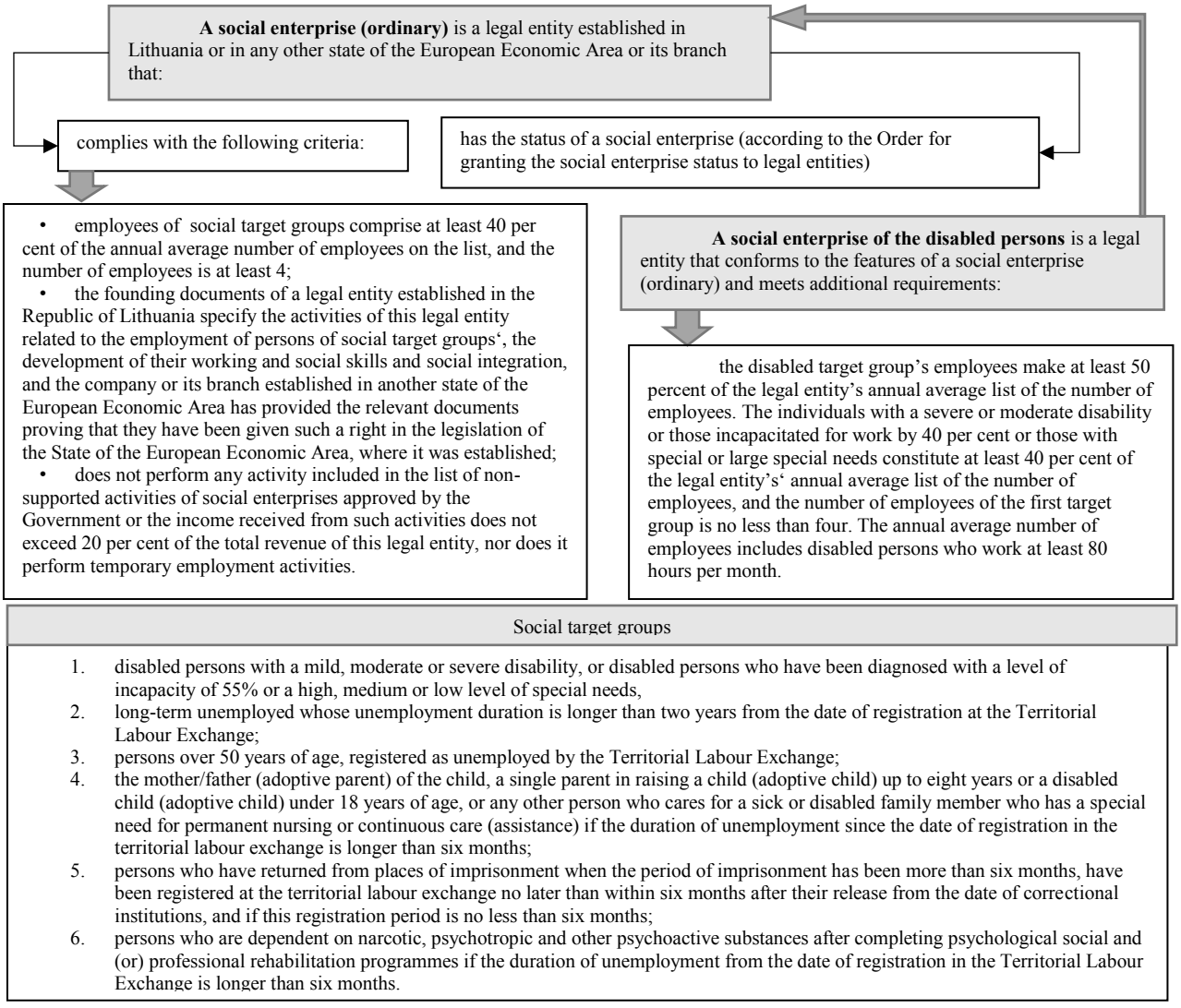
The majority of entities that follow the principles of social entrepreneurship are relatively small and their financial and work - force resources are limited. Such organisations usually lack financial resources to recruit employees with experience in both traditional and social business. Therefore, social enterprises must attract, provide incentives for and rely on persons who are willing to sacrifice in order to implement their social mission and who agree on working for an accordingly smaller payment or without a remuneration at all (Urmanavičienė A., Čižikienė J., 2017).

Access to finance is key throughout social enterprises' life cycle. Depending on their development stage, social enterprises derive financing from a combination of resources, ranging from subsidies and debt instruments to equity, patient capital and impact investments. Legal frameworks bring clarity by defining the nature, mission and activities of social enterprises. By granting them recognition and visibility, they help policy makers support social enterprises through different levers (including fiscal measures), and they help funders and investors understand the benefits of providing funds to social enterprise (OECD/EU, 2017). Due to increasing public pressure to help address far-reaching societal problems, many corporations were forced to adopt behavioural patterns meant to fulfil the perceived social responsibility. Whereas not-for-profit organizations faced pressure to increase their overall efficiency and accountability, and to find new sources of funding. This subsequently led the non-profit organizations to adopting tools such as strategic planning and quantitative program evaluations, and engaging in commercial activities to complement revenues from donations and subsidies. The charity and business organizational forms, which historically evolved on separate tracks, have thus increasingly been mixed, causing the emergence and development of hybrid organizations, which combine aspects of both of the aforementioned organizational forms. Social enterprises pursue the dual mission of achieving both financial sustainability and social purpose; therefore, the regarded enterprises do not fit into the conventional categories of private, public or non-profit organizations (Raišienė A. G., Urmanavičienė A., 2017).

Social enterprises in the Republic of Lithuania are regulated under the Law of social enterprises, issued on 1 June, 2004, No IX-2251. The law stipulates that the purpose of social enterprises is to employ persons who have lost their professional and general employability, are inactive economically, unable to compete on the labour market on equal terms, to encourage their return to the labour market, to reinforce their social integration and to reduce social exclusion

(Subačienė, R., Budrionytė, R., Mačerinskienė, A., Tamulevičienė, D. 2019). The legal requirements for social enterprises and their types are presented in Figure 2.

Greblikaitė J., Gerulaitienė N., Žiukaitė Ž., Garcia-Machado J. J. (2017) analysed social enterprises in Lithuania and concluded, that Lithuanian social enterprises development trends at the end of 2016 were as following: there were 158 social enterprises, of which 66 - social enterprises, employing people with disabilities (social enterprise of the disabled persons). The number of social enterprises in the years 2006-2016 shows increasing trends in Lithuania.



Source: Subačienė, R., Budrionytė, R., Mačerinskienė, A., Tamulevičienė, D. 2019.

Fig. 2. Types and requirements of social enterprises in Lithuania

In 2011 the number of social enterprise of the disabled persons decreased till 36, but after that the number of those enterprises in Lithuania was increasing progressively. During the period 2006-2016 number of social enterprise of the disabled persons could be characterized by continuous growth as employers had the opportunity to employ people with disabilities and use of the various categories of State assistance. In 2016 the number of social enterprise of the disabled persons reached 97. The increasing number of social enterprises shows that employment conditions, social integration and training of social skills are getting better. 63,3 percent of the main activities of all social enterprises are related to the provision of various services (consultancy, catering, computer maintenance, cleaning services, printing services, etc.). The main activities of the majority of social service enterprises are cleaning services (25%), consulting (10%), packaging (9%), auxiliary construction and finishing (7%), health promotion (6%). 67,83% of employers working in social

enterprises are employed in social service enterprises (the majority of employed people are with special needs or have limited work capacity). 36,7% of social enterprises work is related to production (sewing and textile products, food products, furniture, paper products, etc.). The major part of manufacturing social enterprises is mainly related to sewing and textiles (17%), furniture production (12%), food production (10%), paper production (5%). 32,17% of people working in social enterprises are employed in manufacturing social enterprises. The fact that most social enterprises operate in the field of provision of services is the reason that most people with disabilities can't work physically or are with a big possibility for risk (Greblikaitė J., Gerulaitienė N., Žiukaitė Ž., Garcia-Machado J. J. 2017).

Social enterprises are highly dependent upon the grants, typically provided by the government or institutions. Consequently, it often leads to poor financial independence. In particular, young social enterprises are likely to make efforts to secure grants. On the other hand, enterprises with stabilized operations tend to seek financial independence from the grants (Lee P., Seo Y.W., 2017). Grants are the most powerful means for supporting social enterprises, and are typically provided by the government or institutions. Grants received by social enterprises take the form of government, corporate, and parent institution grants, as well as general donations (Lee P., Seo Y.W., 2017).

According to their special status, social enterprises in Lithuania may receive the state support: partial compensation of wages and social insurance contributions; a subsidy for the creation or adaptation of workplaces for disabled workers and the purchase or adaptation of their work equipment; a subsidy for training staff belonging to social target groups. Social enterprises of disabled persons may apply for additional state support: subsidy for adaptation of working environment, manufacturing and rest premises; subsidy for additional administrative and transport expenses; subsidy for the expenses of an assistant. For research purposes, social enterprises (ordinary) and social enterprises for disabled persons will be generally called as social enterprises and will not be analysed separately. The dynamics of the state support for social enterprises and their number is presented in Table 1.

Table 1

State support for social enterprises (including support from state budget and European social fund) in Lithuania, 2013 - 2017

Year	Number of social enterprises	Compensation of administration expenses, Eur	Subsidy for the expenses of an assistant, Eur	Partial compensation of wages and social insurance contributions, Eur	Subsidy for creation of workplaces, Eur	Subsidy for transport expenses, Eur	Subsidy for adaptation of workplaces, Eur	Subsidy for adaptation of working environment, Eur	Subsidy for training staff, Eur	Total amount of support Eur
2013	134	890	88173	12320625	272 981	47 700	11 360	0	12 639	12754369
2014	141	832	87994	15049043	400 767	50 303	5 931	0	0	15594871
2015	148	944	0	16498926	1 164 967	40 763	7 700	38 491	540	17752331
2016	158	1 025	99223	21758556	1 197 571	31 037	0	29 979	26 513	23143904
2017	189	533	96549	25923545	2 850 812	23 093	0	31 498	0	28925031

Source: The Lithuanian Labour Exchange, 2018

It should be noted, that the state support is provided from two sources: state budget and European social fund. The fund supports subsidy for the expenses of an assistant and partial compensation of wages and social insurance contributions. Support from the state budget made around 44 % of total support amount in average during the analysed period. The biggest part of total support amount made partial compensation of wages and social insurance contributions – in average 94 % during the analysed period. State support for creation of working places varied from almost 2 % to almost 10 % and in average made around 5 % of total amount of state support for social enterprises. Other types of the state support did not exceed 1 % in average during analysed period. Total amount of state support for social enterprises was increasing during the last five years in average by 4042916 Eur or almost 23 % per year. The biggest increase of state

support for social enterprises may be noticed in 2016 by more than 30 %. Such tendency might influenced political discussions on state support tools for social enterprises and the changes of Law on corporate income tax and Law on social enterprises (Subačienė, R., Budrionytė, R., Mačerinskienė, A., Tamulevičienė, D., 2019).

Greblikaitė J., Gerulaitienė N., Žiukaitė Ž., Garcia-Machado J. J. (2017) provided the results of analysis of the social enterprises activity in Lithuania, which presented the improving situation but also disclosed the problems and challenges for such business. According to their opinion, boost of social economy in the EU countries disclosed a lot of possibilities, but otherwise it has been a challenge for some countries, including Lithuania. Social enterprises are supported by state implementing social and economic policy. But despite potential they could expose, especially in problematic rural areas, the situation remains complicated as environment analysis revealed. Authors concluded, that the difficulties remain in legal, economic, and social environment for prosperous development of social enterprises. Lack of appropriate legislation, tax burden, bureaucracy, financial difficulties in SMEs, social climate in the country are just some of them. The latest data expose interest of business to become social, especially in rural areas because their situation is more difficult than in towns in terms of unemployment and activity development (Greblikaitė J., Gerulaitienė N., Žiukaitė Ž., Garcia-Machado J. J. 2017)

3. Evaluation of the financial condition of social enterprises

The most popular tool for the analysis of financial condition or the performance of any legal entity is financial analysis, it has several types with the most popular relative analysis, which is based on financial ratio analysis. According to Ježovita A. (2015) ratio analysis is used by three main groups: (1) managers, who use ratios to help analyse, control, and thus improve their company's operations; (2) credit analysts, including bank loan officers and bond rating analysts, who analyse ratios to help judge a company's ability to repay its debts; and (3) stock analysts, who are interested in a company's efficiency, risk, and growth prospects. Author states, that technics of financial statements analysis are tool usually used for processing original data available within accounting system into logical relationships that gives more comprehensive and concrete information about business operations of the company. Main advantage of financial ratios is their simplicity in calculation and application (Ježovita A., 2015). Social enterprises as any other legal entity are interested of results of ratio analysis by the same users. Although Vimrova H. (2015) provides the opinion, that a traditional financial analysis tools are associated with the number of shortcomings, they are often the target of justified criticism, but they also represent a source of motivation which challenges all critics to a continued and most likely never-ending process of innovation and development of new and improved tools for measuring the financial performance of companies (Vimrova H., 2015). However, the traditional ratio analysis is still popular and is used as the main tool for the analysis of financial condition. Though, the social purpose of the social entrepreneur creates greater challenges for measuring performance than the commercial entrepreneur who can rely on relatively tangible and quantifiable measures of performance such as financial indicators, market share, customer satisfaction, and quality (Austin J., Stevenson H., Wei-Skillern J., 2006). And it may be agreed with the opinion of Arogyaswamy B. (2017), who states, that using all these ratios and numbers could make the assessment cumbersome and firms typically compromise by choosing a subset of these measures. For the evaluation of the financial condition of social enterprises classical main financial ratios where selected, which are presented in Table 2.

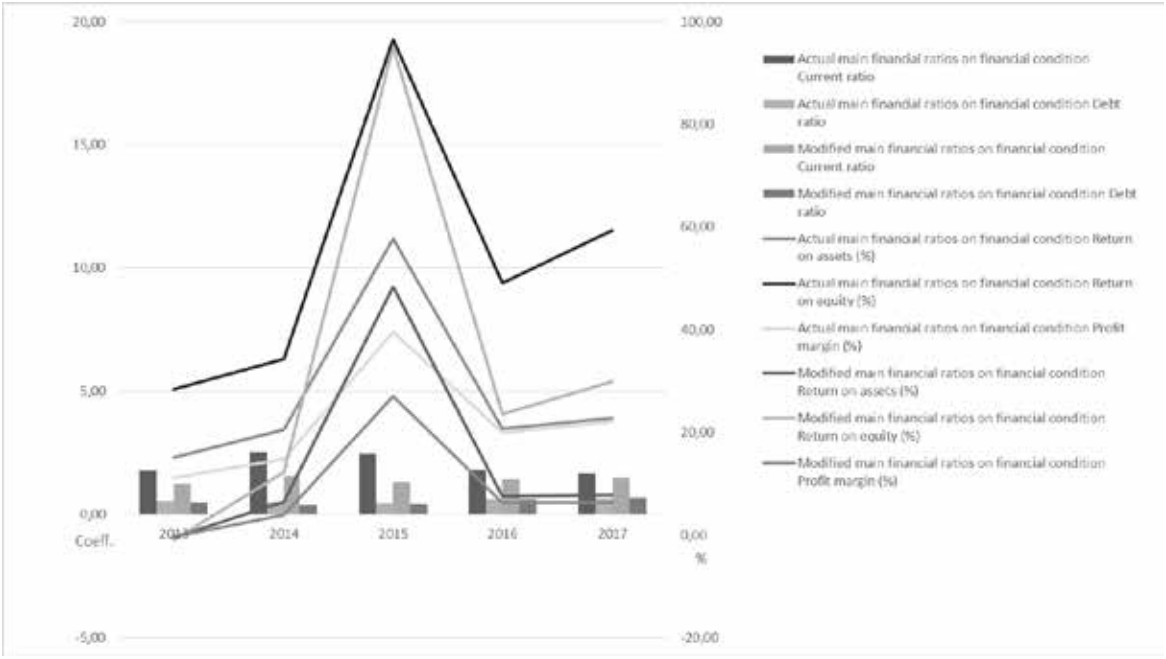
Table 2

Main financial ratios for evaluation of financial condition of enterprise

No.	Ratios	Calculation formula	Evaluation level	
			Unsatisfactory	Bad
1.	Current ratio	$\frac{Current\ assets}{Current\ labilities}$	<1.2	<1.0
2.	Debt ratio	$\frac{Total\ liabilities}{Total\ assets}$	>0.7	>1.0
3.	Return on assets (%)	$\frac{Net\ profit}{Total\ assets}$	<8	negative
4.	Return on equity (%)	$\frac{Net\ profit}{Owners\ equity}$	<1	negative
5.	Profit margin (%)	$\frac{Net\ profit}{Sales\ revenue}$	<5	negative

Source: author's construction based on Mackevičius, J., Giriūnas, L., Valkauskas, R. 2014; Mackevičius, J., Šneidere, R., Tamulevičienė, D. 2018; Tamulevičienė D. 2016.

For evaluation of financial condition of social enterprises two stages research was conducted: the first stage includes the analysis of actual main financial ratios, which do not reflect the impact of state support; in the second stage, calculation of the main financial ratios was modified by elimination of the state support. Profit before taxes were used for calculation of profitability ratios, as profit of social enterprises was taxed by 0 % rate from 2009, but the incentive was repealed from 2018. Elimination of the state support included such items of financial statements: sales revenue (direct impact on profit (loss) before taxes); amounts receivables/cash (direct impact on total assets); grants and subsidies (direct impact on total liabilities). The results of the research are presented in the Figure 3.



Source: author's calculations based on Lithuanian Labor Exchange, 2018; Database of Credit Bureau "Creditinfo", 2018.

Fig. 3. **Real and modified main financial ratios of social enterprises in Lithuania, 2013 - 2017**

The results of the research show, that the state support is significant for social enterprises in Lithuania and makes an impact on the financial condition of social enterprises. Although, analysed ratios have not reached unsatisfactory level, but values of current ratio and debt ratio decreased accordingly by 31 % and 7 % in average. Modified profitability ratios decreased even more: in average return on assets decreased by 49 % during analysed period, return on equity – by 40 % and profit margin – by 60 %. Generally, total amount of the state support made in average around 70 % of profit before taxes during the analysed period and fluctuated from 32 % in 2015 to 102 % in 2013.

The Law on corporate income tax (Lietuvos Respublikos pelno mokesčio įstatymas…, 2017) determines general terms of corporate income tax as well as some incentives for particular types of activity, micro enterprises, public companies etc. Standard corporate income tax rate is 15 % in Lithuania. Although enterprises whose turnover for the fiscal period is less than 300,000 Eur and less than 10 employees and meet the control conditions of other enterprises may pay 5% of corporate income tax. Apart from that, non-profit entities whose revenue from commercial activities for the fiscal period does not exceed 300,000 Eur, part of the profit, which consists of 7,250 Eur, is taxed by 0% rate of corporate income tax, and the remaining part of the taxable profit - by the tax rate of 15%. When calculating the income of commercial activity, non-profit entities do not include income, which is directly allocated to meet the public interest activities. The exemptions for non-profit entities have taken effect since 2010 (Subačienė, R., Budrionytė, R., Mačerinskienė, A., Tamulevičienė, D., 2019).

Subačienė, R., Budrionytė, R., Mačerinskienė, A., Tamulevičienė, D. (2019) for recalculation of corporate income tax for social enterprises applied several options of possible corporate income tax payments: corporate income tax calculated as 15% of the profit, adjusted corporate income tax calculated according to tax exemptions, for enterprises with the appropriate amount of turnover and number of employees, and public entities. Authors concluded, that over the period under analysis, social enterprises could have paid almost 1 900 000 Eur of corporate income tax per year if social enterprises did not apply corporate income tax incentive for social enterprises (0 %). Nevertheless, if social enterprises do not apply tax exemptions for the social enterprises, they might apply corporate income tax exemptions for enterprises with the appropriate amount of turnover and the number of employees, or exemptions for public entities. The recalculation of the adjusted corporate income tax according to the exemptions show that on average more than 1 600 000 Eur of corporate income tax per year would be paid.

Subačienė, R., Budrionytė, R., Mačerinskienė, A., Tamulevičienė, D. (2019) research results show, that possible adjusted corporate income tax payments carried out by social enterprises would comprise on average around 0.03% of the state income of corporate income tax during the period under analysis. This percentage may be evaluated as insignificant and unable to make a significant impact on the state budget's revenue of corporate income tax. On average the total amount of the state support for social enterprises comprised 0.16% of the state budget during the period of 2013-2017. Over the analysed period the total amount of state assistance for the state budget covered on average 0.18 %, with the lowest level of 0.09 % in 2013 and the highest – 0.34 %. in 2017. Authors concluded that in terms of state budget of Lithuania, the value of corporate income tax exemptions and state support is not significant.

Girlevičienė L., Stanikūnas R. A. (2015) provided the opinion, that social enterprises that employ disadvantaged do not have many chances to survive in the market without state support. And the state support for such enterprises means not only the employment of disabled workers but also the promotion of small business. Besides, the state benefits from the support for small business as it not only increases employment, but also promotes a more competitive market, tackles other social and economic problems. Authors state, that state support for labour costs is a good impetus for disadvantaged. Disabled person, who is working, gain more self-confidence, which helps to realize that disability is not an essential obstacle to employment. The working disabled person is given the opportunity to develop or restore his / her ability to

work, professional competencies and the ability to participate in the labour market as well as acquiring new professional knowledge, skills and abilities, which encourages further interest in the chosen profession and the willingness to return to the labour market. In addition, society learns how to be tolerant, interact with persons with disabilities, do not underestimate their abilities and opportunities, helps them to integrate into the labour market. Equally, persons with disabilities having started to work and receive income return to community life, and not only improve their lives, but also the quality of life of their families (Girlevičienė L., Stanikūnas R. A., 2015).

Conclusions, proposals, recommendations

1. Social enterprises are important although specific part of economics of any country. They seek to combine commercial and social purposes, perform in different industries, have different legal forms, different organizational structures and stakeholders. In Lithuania social enterprises mostly are small entities and 63 % of social enterprises are involved in service industries as provision of services is easier to perform for people with disabilities.

2. Evaluation of financial condition of social enterprises results show, that the fluctuation level of analysed modified main financial ratios, which were recalculated for the elimination of state support, have not reached unsatisfactory level, but values of current ratio decreased in average under analysed period by 31 %, debt ratio - 7 %, return on assets - by 49 %, return on equity – by 40 % and profit margin – by 60 %. Generally, total amount of the state support made in average around 70 % of profit before taxes during the period of 2013-2017. It may be concluded, that the state support is significant for social enterprises in Lithuania and makes an impact on the financial condition of social enterprises as the state assistance, including state support and corporate income tax exemptions, made only on average 0.18 % of the state budget.

3. The direction for further researches of social enterprises may be related with the evaluation of the relationship between level of state assistance for social enterprises, employment of disabled persons, the level of their salaries, financial condition and performance results. As at state level state assistance for social enterprises is not significant, although at enterprise level and even personal level of employees, such assistance is very important and may help for social enterprises expand their activity as well as employment of persons with disabilities.

Bibliography

Arena M., Azzone G., Bengo I. 2015. Performance Measurement for Social Enterprises in *Voluntas: International Journal of Voluntary & Nonprofit Organizations*. Vol. 26 Issue 2, 649-672. [Online] Available at: http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=5&sid=87bfb101-1810-4b13-b312-74601ccf4a9c%40sessionmgr104 [Accessed 03 January 2019]

Arogyaswamy B. 2017. Social entrepreneurship performance measurement: A time-based organizing framework in *Business Horizons*, Volume 60, Issue 5, 603-611. https://doi.org/10.1016/j.bushor.2017.05.004. [Online] Available at: https://www.sciencedirect.com/science/article/pii/S0007681317300629 [Accessed 12 January 2019]

Austin J., Stevenson H., Wei-Skillern J. 2006. Social and commercial entrepreneurship: same, different, or both? in *Entrepreneurship: Theory and Pratice Journal*, Vol. 30, No. 1, 1-22. [Online] Available at: https://ac.els-cdn.com/S0080210716302357/1-s2.0-S0080210716302357-main.pdf?_tid=f675581e-a2a4-4353-ae8e-d7fb181455b3&acdnat=1547285711_0e1967700402579be6131a8fb2b1bda3 [Accessed 12 January 2019]

Database of Credit Bureau "Creditinfo". 2018. Information provided under special request.

Doherty B., Haugh H., Lyon F. 2014. Social Enterprises as Hybrid Organizations: A Review and Research Agenda in *International Journal of Management Reviews*, Vol. 16, 417–436. DOI: 10.1111/ijmr.12028. [Online] Available at: https://onlinelibrary.wiley.com/doi/epdf/10.1111/ijmr.12028 [Accessed 12 January 2019]

European Commission, 2011. *Internal Market, Industry, Entrepreneurship and SMEs. Social enterprises*. [Online] Available at: http://ec.europa.eu/growth/sectors/social-economy/enterprises_en [Accessed 28 December 2018]

Girlevičienė L., Stanikūnas R. A. 2015. Valstybės pagalbos įtaka Lietuvos neįgaliųjų užimtumui (The Impact of the State Aid on Disabled People's Employment in Lithuania) in *Lietuvos ekonomikos augimo ir stabilumo strateginės kryptys*. National Scientific-Practical Conference, Vilnius, Lithuania, October 22, 2015: Proccedings. Vilnius: Vilnius University, 256-266. Open Access. ISBN: 9786094596131. [Online] Available at: http://talpykla.elaba.lt/elaba-fedora/objects/elaba:15227722/datastreams/MAIN/content. [Accessed 27 December 2018]

Greblikaitė J., Gerulaitienė N., Žiukaitė Ž., Garcia-Machado J. J. 2017. Social economy: the potential and challenges of social enterprises in Lithuania in *European integration studies: research and topicalities*, No. 11, p. 53-64. ISSN: 1822-8402 ; DOI: 10.5755/j01.eis.0.11.18916. [Online] Available at: http://eis.ktu.lt/index.php/EIS/article/view/18916/9045. [Accessed 27 December 2018]

Ježovita A. 2015. Accounting Information in a Business Decision-Making Process – Evidence from Croatia in *Zagreb International Review of Economics & Business,* Vol. 18, No. 1, pp. 61-79. DOI: 10.1515/zireb-2015-0004. [Online] Available at: https://hrcak.srce.hr/index.php?show=clanak&id_clanak_jezik=204955http://hrcak.srce.hr/index.php?show=clanak&id_clanak_jezik=204955 [Accessed 12 January 2019]

Lall S. 2017. Measuring to Improve Versus Measuring to Prove: Understanding the Adoption of Social Performance Measurement Practices in Nascent Social Enterprises in International Society for Third-Sector Research, Voluntas (2017) 28: 2633–2657, DOI 10.1007/s11266-017-9898-1 [Online] Available at: http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=1&sid=eccfdc84-c3c3-4716-8916-cb90257038a4%40sessionmgr102 [Accessed 03 January 2019]

Lee P., Seo Y.W. 2017. Directions for Social Enterprise from an Efficiency Perspective in *Sustainability* 2017, 9(10), 1914; https://doi.org/10.3390/su9101914. [Online] Available at: https://www.mdpi.com/2071-1050/9/10/1914 [Accessed 03 January 2019]

Lietuvos Respublikos pelno mokesčio įstatymas (the Law on Corporate Income Tax of the Repubic of Lithuania) 20 December, 2001, No IX-675 under amendments as to 07 December, 2017. 2017. [Online] Available at: https://www.e-tar.lt/portal/lt/legalAct/TAR.A5ACBDA529A9/OOOxbMuoLg [Accessed 12 January 2019]

Lithuanian Labor Exchange. 2018. Information provided under special request.

Mackevičius, J., Giriūnas, L., Valkauskas, R. 2014. *Finansinė analizė=Financial analysis*. Vilnius: Vilniaus universiteto leidykla.

Mackevičius, J., Šneidere, R., Tamulevičienė, D. 2018. Complex Analysis of Company Bankruptcy Forecasting: Theoretical Insight in *Sabiedrība. Integrācija. Izglītība : starptautiskās zinātniskās konferences materiāli, 2018.gada 25.-26.maijs. III daļa: Speciālā pedagoģija , sociālā pedagoģija, inovācijas valodu izglītībā = Society. Integration. Education : proceedings of the scientific conference*, May 25th - 26th, 2018. Vol. VI: Economics and Public Administration. Rēzekne : Rēzeknes Tehnoloģiju akadēmija, 316-329. [Online] Available at: http://journals.ru.lv/index.php/SIE/article/view/3425/3258 [Accessed 12 January 2019]

OECD/EU, 2015. *OECD Employment Policy Papers: Social Entrepreneurship - Social Impact Measurement for Social Enterprises*. DOI: https://dx.doi.org/10.1787/5jrtpbx7tw37-en. [Online] Available at: https://read.oecd-ilibrary.org/employment/social-entrepreneurship-social-impact-measurement-for-social-enterprises_5jrtpbx7tw37-en# [Accessed 28 December 2018]

OECD/EU, 2017. *Boosting Social Enterprise Development: Good Practice Compendium*. DOI: https://dx.doi.org/10.1787/9789264268500-en. [Online] Available at: https://read.oecd-ilibrary.org/industry-and-services/boosting-social-enterprise-development_9789264268500-en# [Accessed 28 December 2018]

Raišienė A. G., Urmanavičienė A. 2015. Social enterprises as hybrid organizations development trends in *SOCIN 2015: international interdisciplinary conference on social innovations "Social Innovations : theoretical and practical insights 2015"*, p. 27. [Online] Available at: http://socin2015.mruni.eu/wp-content/uploads/2016/02/socin_2015_revised.pdf. [Accessed 27 December 2018]

Raišienė A. G., Urmanavičienė A. 2017. Mission drift in a hybrid organization: how can social business combine its dual goals? in *Ekonomski vjesnik = Econviews. Osijek : Sveučilište J.J.Strossmayera u Osijeku*, vol. 30, iss. 2, p. 301-310. Open Access. ISSN: 0353-359X. [Online] Available at: http://talpykla.elaba.lt/elaba-fedora/objects/elaba:25584045/datastreams/MAIN/content. [Accessed 27 December 2018]

Situation in labour market / Lithuanian Labour Exchange. 2018. [Online] Available at: http://www.ldb.lt/EN/INFORMATION/LABOURMARKET/Pages/situation_review.aspx. [Accessed 14 January 2019]

Subačienė, R., Budrionytė, R., Mačerinskienė, A., Tamulevičienė, D. 2019. Social Enterprises: Evaluation of the Impact of State Support and Corporate Income Exemptions on the State Budget of Lithuania in *the International Journal Entrepreneurship and Sustainability Issues* ISSN 2345-0282 2019 Vol. 6, No. 3, 1156-1171. https://doi.org/10.9770/jesi.2019.6.3(7). [Online] Available at: http://jssidoi.org/jesi/article/276

Tamulevičienė D. 2016. Methodology of Complex Analysis of Companies' Profitability in *the International Journal Entrepreneurship and Sustainability Issues* ISSN 2345-0282 2016 Vol. 4 No 1, 53-63. https://doi.org/10.9770/jesi.2016.4.1(5). [Online] Available at: http://jssidoi.org/jesi/article/87 [Accessed 12 January 2019]

Urmanavičienė A., Čižikienė J. 2017. The challenges of managing voluntary work in social enterprises in *Forum scientiae oeconomia. Dąbrowa Górnicza, Wydawnictwo Naukowe WSB*, vol. 5, no. 3, p. 89-100. ISSN: 2300-5947 ; DOI: 10.23762/FSO_vol5no3_17_6. [Online] Available at: http://wsb.edu.pl/container/Wydawnictwo/Forum%20Vol5-3-2017/6..pdf. [Accessed 27 December 2018]

Vimrova H. 2015. Financial Analysis Tools, from Traditional Indicators through Contemporary Instruments to Complex Performance Measurement and Management Systems in the Czech Business Practice in *Conference: 16th Annual Conference on Finance and Accounting (ACFA) Location: Prague, CZECH REPUBLIC Date: MAY 29, 2015,* Book Series: Procedia Economics and Finance Volume: 25, 166-175. https://doi.org/10.1016/S2212-5671(15)00725-X. [Online] Available at: https://www.sciencedirect.com/science/article/pii/S221256711500725X?via%3Dihub [Accessed 03 January 2019]

EFFECTS OF SPECIAL ECONOMIC ZONES POLICY IN POLAND – A SURVEY OF EMPIRICAL STUDIES

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Abstract. In 2018 the Polish government announced a new law on investment incentives which will substitute the present special economic zone (SEZ) regime. The latter has been in operation since 1994 and was intended to correct some market imperfections at regional level. This change may suggest that SEZs have not met the expectations of politicians or that the future investment policy will need different tools.

The aim of this paper is to evaluate whether SEZs were attractive for investors and what was their impact on the Polish economy. The effectiveness of SEZ policy will be assessed on the basis of comparative analysis of empirical studies which were conducted by Polish and foreign researchers. Most of such publications are available only in Polish. As a result of the language barrier, SEZ policy achievements and failures in Poland are much less known internationally than their records in China and other developing countries.

The empirical studies on Polish SEZs differ together with methods, sources of data and periods covered. Due to the lack of data (e. g. on production, exports or technical progress), most studies were devoted to the impact on jobs and investment, i. e., to the static effects. Majority of them were descriptive, not based on any theoretical framework. Their results show that, generally speaking, SEZ effects were positive. However, researchers who verified them formally, either with statistical or econometric methods, did not provide conclusive results. To a large extent methods used in them determined the answers which were obtained.

Further studies are important for a reliable evaluation of investment incentives, especially of their indirect impact on the economy. Also the estimates of costs of incentives are usually neglected by researchers. The results of such studies could help in shaping a more rational investment policy.

Key words: *Special economic zones, Poland, investment incentives*

JEL code: F21, L52, R11

Introduction

Special economic zones (SEZs) are tools of investment policies which play a central role in modern industrial policies (UNCTAD 2018). SEZs have been used for years by countries at different development levels, in various forms and to achieve different objectives (e. g. Farole, 2011; Aggarwal, 2012; Cirera, Lakshman, 2014; Tao *et al*., 2016). There are over 4,000 SEZs worldwide (The Economist, 2015). Leaving their functional differences aside, they have two things in common: firstly, they are geographic areas, secondly they offer special, usually more attractive conditions for investing and doing business (UNCTAD 2018, ADB 2015). Their efficiency in the implementation of policy goals depends heavily on the institutional context and is one of the issues debated by international experts (ADB 2015; Farole, Akinci, 2011). The opinions whether they are successful or not are based on empirical investigation of SEZs performance. The methods used in such research are controversial and add extra arguments to these discussions.

SEZ regime in Poland is celebrating 25 years of existence in 2019 but in 2026 it will be put to an end and substituted by the new law on investment incentives introduced in 2018. So it may be a good time to summarize the contribution of

SEZs to economic development as it may explain the government's decision. In particular it is worth knowing to what extent SEZs have achieved the policy goals which have been assigned to them since 1994.

The aim of this paper is to evaluate whether SEZs were attractive to investors and what was their impact on the Polish economy. The conclusions are drawn on the basis of a comparative analysis of empirical studies which were conducted by Polish and foreign researchers. The scope of examination is limited to the research published after 2010 as the earlier work on SEZ performance[1] could not duly consider the impact of two exogenous factors: (1) changes in the institutional environment caused by Poland's accession to the EU in 2004 and (2) macroeconomic instability resulting from the crisis 2008-2009. The first publications were mostly in Polish and purely descriptive. As a result of the language barrier, SEZ advantages in Poland are much less known internationally than their records, e. g., in China and other developing countries. However, due to the specificity of Polish solutions, the findings are not directly comparable with those for other SEZ schemes.

The paper is organized as follows. In the next section we provide a brief presentation of SEZ regime in Poland and their position in the economy. In the third and fourth sections we compare, respectively, the results of descriptive and formal studies on SEZs performance. The last section concludes.

SEZ regime in brief

According to the Act on SEZs (Ustawa…, 1994, 2015) zones were established to "accelerate economic development of a part of the country's territory". To achieve the general objective, they were supposed to attain some individual goals: to develop certain industries and modern technologies, boost exports, encourage more competitive production, better exploit the existing industrial assets and natural resources as well as to create new jobs. A zone itself was defined as a "distinguished and uninhabited" part of Poland. So from a legal point of view zones could be created in any region, irrespective of its level of development and prosperity of inhabitants. However, initially they were intended to "mitigate structural unemployment" in selected areas (Ministerstwo Gospodarki i Pracy, 2005). The problem emerged as a consequence of the introduction of market reforms (Balcerowicz 1992) as a result of which many enterprises in traditional branches of industry went bankrupt.

The programme started with 17 zones but in 2001 some were phased out and others merged. Since then we have had 14 zones with subzones almost all over the country. This is due to the fact that zones are delineated in a legal sense. Hence, the plots are often dispersed, located in various voivodeships (provinces), sometimes several hundred kilometres away from each other, e.g. a zone headquartered in the south-east administers a sub-zone in the north-east of the country. In this regard, the Polish scheme differs from "classic" geographically delimited zones established in China or in other developing countries (Zeng 2015). Functionally, it is rather similar to *enterprise zones* designed to alleviate spatial disparities within cities in some developed countries (e.g. Kolko and Neumark, 2009; Gobillon et al., 2010, Briant et al., 2015).

The second specificity of the SEZ scheme in Poland stems from the fact that they do not enjoy any legislative autonomy that would allow them to compete for capital. Everywhere investors are supported by the same package of incentives and are subjected to similar performance requirements and administrative procedures (see Table 1 below). It has several operational consequences. Firstly, the differences in the total value of available incentives between SEZs result from the EU regulations on State aid ceilings which are regionally diversified. Since January 2018, they range between 10% and 50% of costs eligible for aid. The ceilings may be increased by 20 p.p. for small enterprises and by 10 p.p. for medium-sized ones. Secondly, the remaining differences in the support level between the zones are hard to

[1] They are referred to by Siudak, Wątorek (2011) pp. 6-7.

measure. Their ability to attract investors depends on the professionalism, initiative, and the attitude of zone managing companies (ZMCs) and local authorities to business. Thirdly, backed by the local authorities the ZMCs may implement the centrally designed SEZ policy in diverse ways. Thus, the overall interests may be dominated by particular benefits of smaller communities.

Table 1

Incentives and requirements in SEZs

Incentives	Procedures and requirements
CIT and PIT exemptions from profits gained in SEZ Fully developed investment plots Developed technical infrastructure Assistance during the start-up period (legal, organisational, in recruiting workers, searching for suppliers etc.) Property tax exemption granted (eventually) by local and regional authorities	Getting an investment permit (drafting a letter of intent, placing a bid, purchasing tender specifications, negotiations) Minimum level of employment, of investment value and of share of own capital Payments to ZMC (for ZMC's operating costs, maintaining zone infrastructure, promotion outlays, auditing investors etc.) Operating in the zone for at least 5 years (large investors) and 3 years (SMEs) Paying back the aid (with interest) if the permit terms and conditions are not fulfilled Not relocating production from other places in the European Economic Area

Source: Own compilation

The third characteristic of the SEZ regime in Poland is related to the package offered to investing enterprises (Table 1). Some researchers (Trzciński et al., 2016) even argue that due to the requirements that have to be fulfilled, business environment in SEZs may be really less attractive than outside of it. It is rather unusual compared with equivalent schemes in other countries. The amount of State aid offered has to be balanced against much more red tape, less flexibility for choosing the area of business, higher requirements for investment projects, limited choice of plots or more time consuming administrative procedures. Although at first sight these impediments do not look too severe, in fact, they constitute an effective selection mechanism for enterprises. By the end of 2017, there had been granted 4,036 permits altogether to invest in SEZs but almost 42% lost their legal status. Thus, only less than 60% of the permits got translated into actual economic operations. From the social point of view it is a deadweight loss of resources, if only of those spent on administrative procedures.

SEZs became quite important particularly for manufacturing, as services were generally excluded from the scheme. According to data from Table 2, they have plots (sub-zones) in one third of counties (urban and urban-rural) and in every fifth town. They are present in every voivodeship[2]. Zones play relatively the most significant role as a location for FDI, particularly in automotive industry. In fact, 80 per cent of capital invested in SEZs belongs to foreigners. Owing to their activity, the zones' share in the total employment was smaller than in fixed assets. It suggests that investment projects in SEZs were more capital intensive than in the total manufacturing sector.

Table 2

SEZs and the Polish economy by the end of 2017 - some indicators

Area of SEZs (all industrial areas = 100)	18.2
Number of counties with SEZ plots (all counties without rural =100)	33.1
Number of towns with SEZ plots (all towns =100)	19.7
Investment stock in SEZs (gross fixed assets in manufacturing = 100)	16.2
FDI in SEZs (FDI stock in manufacturing = 100)	33.7

[2] On 31 XII 2016 there were: 16 voivodships, 314 poviats (districts), 66 cities with poviat status and 2478 counties (gminas): 303 urban (of which 66 counties that are also cities with poviat status) 1559 rural and 616 urban-rural (Statistical ... 2017).

FDI in motor vehicles industry in SEZs (gross fixed assets in motor vehicles industry = 100)	37.2
Employed persons in SEZs (in manufacturing = 100)	13.2
Total tax exemptions in SEZs (domestic debt of State Treasury = 100)	3.9

Source: own compilation based on data from: Informacja o realizacji ustawy o specjalnych strefach ekonomicznych Stan na 31 grudnia 2017 r., Ministerstwo Przedsiębiorczości I Technologii, Warszawa 2018; Statistical Yearbook of the Republic of Poland, Statistics Poland, Warsaw 2017; Zagraniczne inwestycje bezpośrednie w Polsce i polskie inwestycje bezpośrednie za granicą w 2017 roku, Narodowy Bank Polski, Warszawa 2018.

Descriptive studies

The establishing of SEZ, an instrument of economic policy previously unknown in Poland, obviously stirred interest among many researchers. They started with descriptive studies focused on experiences of all the zones but also on individual cases. The authors tried to find out the degree of attainment of the principal goal and some detailed objectives set by the legislator for the zones. Their choice was dictated by the availability of data about the outcomes of investors' activities and the performance of zone managing companies. Data came mainly from annual reports published since 2005 by ministries dealing with the economy.

As we have mentioned above, the principal reason why politicians decided to use the SEZ format was the wish to accelerate growth in areas suffering from exceptional hardships triggered by the market reform. Most authors, who wanted to find out if and how well the zones met the expectations, analysed data from ministerial reports. In fact, the latter were showing the *ex post* attractiveness of SEZ to entrepreneurs, without discussing the condition of hosting areas. Streams of inflowing investment, newly created jobs, and the occupancy of investment plots served as performance measures. All of them were growing systematically almost from the onset of the experiment, although reflecting different dynamics. Acceleration was reported after Poland's EU accession and then there was some slowdown over the years of global economic crisis 2008-2009. That provided foundations for generally positive evaluation of the role SEZ played in the Polish economy (Chodakowska 2010; Wiszczun, 2010; Czempas, 2013; Jarosiński, Maśloch 2016; Ajchel, 2016). However, the credibility of such evaluation was rather limited. Firstly, all these assessments were based on absolute values. Having no reference point, any growth is welcome and is interpreted as a measure of success. Secondly, zone's successes might translate differently into the development of the host area, so some researchers were drawing attention to, e.g., the quality of investment efforts in zones often insufficient to modernise the economy of a particular region (Kolczyński, 2010). Others would highlight that, against legislator's intentions, zones performed better as incentives to start businesses in more developed regions of the country rather than in poorer ones (Golik, Kątnik 2014) and failed to compensate for low investment attractiveness of voivodeships (Lizińska, Bielska-Marks 2013).

A more convincing approach was used by Ambroziak (2015). He calculated coefficients of correlation between the investment stock in SEZs and parameters reflecting the development of individual voivodeships (value of fixed assets in industrial enterprises, number of enterprises, and unemployment rate) and between the number of jobs created in zones and the unemployment rate in voivodeships. Research period covered 10 years of Poland's EU membership. Obtained dependences were usually strong and, generally, coincided with expectations suggested by the new economic geography. Almost in all cases, the number of jobs and the value of investment in zones negatively correlated with the unemployment rate in voivodeships. At the same time, the value of these investment projects positively correlated with the value of fixed assets and the number of enterprises, that is, variables which reflect the intensity of business activity. Thus, we may assume that SEZ stimulated economic growth in voivodeships. On top of that, the coefficients suggest that the impact in poorer regions may be weaker than in better developed ones. That would mean that the main goal of introducing SEZ in Poland has not been accomplished. The conclusion concurs with results obtained by Golik, Kątnik (2014) and Lizińska, Bielska-Marks (2013).

Primary data, which help reveal qualitative effects of SEZ operations at regional level, are a valuable supplement to secondary data. An extensive study based on information from questionnaire-based interviews was carried out in 2009 by Siudak, Wątorek (2011) who covered 17% of enterprises from all the SEZ. Analyses of answers encouraged the authors to check whether there are any substitution, idle gear, enclave, and crowding out negative effects emerging as consequences of assistance schemes offered to investors[3]. Substitution effect consists in the relocation of a business from an area not covered by any aid scheme to the zone. In such case we should consider net contribution of zone's incentives. Idle gear effect emerges when investors select a given region as a place for their business irrespective of preferences offered in the zone. As a result, State aid is spent ineffectively. An enclave effect takes place when investors do not develop cooperation links with local enterprises but they rely on their previous business partners. Under such circumstances, the zone will never become a growth pole. These three effects, confirmed by the authors, imply social costs that are most probably immeasurable. They did not reveal any alleged crowding out effect, that is, a situation when enterprises become more competitive because they benefit from State aid and they take market away from operators from outside of the zones.

Amongst numerous detailed objectives set for the zones, special place was assigned to creating new jobs and, consequently, reduce unemployment which at the outset of transformation increased in the country on average from 6.5% in 1990 to 14.9% in 1995, and 17.6% in 2005 (GUS 2015) with very clear territorial differentiation. Publications focused on the labour market confined themselves to analysing absolute values from these reports and highlighted positive role of zones in creating new jobs (Zasępa 2010, Szczebiot-Knoblauch et al. 2014, Golik, Kątnik-Prokop 2014) with one reservation, however, that zones in provinces with high unemployment rates performed less positively (Lizińska, Marks-Bielska 2013).

On the other hand, Ambroziak (2015) examined how employment, which was increasing in the zones, impacts labour markets in voivodeships. Yet, the relationship is not a straightforward one because each of the fourteen zones has got sub-zones in more than one voivodeship which may host several zones. The analysis has shown that over the period 2004-2013 in zones located in less affluent voivodeships the number of created jobs was the smallest in absolute terms as well as per one investment project. These voivodeships were also the most sensitive to the 2008-2009 crisis. At the same time, the cost of creating a single job (expressed in the amount exempted from tax) was usually lower in poorer voivodeships than in the richer ones. Thus, against the assumptions of the Act, richer voivodeships received more resources from the government. It was partly due to the structure of their projects, which on average were more capital intensive than in less developed regions.

Comparisons of average values between voivodeships do not reflect internal differentiation of their labour markets resulting, e.g., from employment opportunities offered by metropolises and uneven spatial distribution of sub-zones. This is why at a lower level of administrative division we may better assess local impact of enterprises on the labour market. Surely poviats are less differentiated with respect to that. Cicha-Nazarczuk and Nazarczuk (2016) investigated how unemployment rate would have evolved between 2007 and 2014 in poviats hosting sub-zones without new jobs created by investors. In the basic scenario, which took account of only newly created jobs, unemployment rates were on average higher, depending on the year, by 2.2-2.8 pp. Obviously, the impact measured in this way turned out to be the most meaningful in poviats, in which investment stock in zones were very high (in extreme cases indicators reached 10-19 pp.). Strangely enough, calculations do not reveal the impact of the systematically decreasing imbalance in the labour market resulting from substantial emigration and economic recovery following Poland's EU accession. In fact both factors made unemployment rate increasingly smaller.

[3] To start with, however, they gave rise to reservations *vis-à-vis* the entire system (Kryńska 2000).

More detailed observations of the role played by zones are discussed by Siudak, Wątorek (2011). They took the results of a questionnaire-based study covering 2411 employees of enterprises in all economic zones. Analyses of responses indicate that 29.6% of respondents decided to take up these jobs because there was no other employment opportunity available while favourable financial conditions motivated only 14.7% of respondents. On average, as many as 45% of people recruited to work in the zones came from other companies, usually external to the zone; 40% were unemployed and to the rest of the people in the sample it was the first job ever. On the one hand, competition created by zones weakened other employers. On the other hand new jobs created in the zones not necessarily increased the total working population in a given area. Often the outcome boiled down to the change of a job. The latter could be socially beneficial if at the same time the added value and remuneration were also increasing. However, it was true of only every seventh respondent. Moreover, zones, in which the share of workers originating from other employers was the highest also the least contributed to the absorption of the unemployed. That may mean there was a mismatch between offered and needed skills. The study also revealed a number of other occurrences that are not visible in statistical data, which encourage to reflect on simple assessment of the role of the zones in local labour markets: (1) worsening perspectives for the development of the service sector caused by workers moving to manufacturing industries in the zones; (2) simple and little innovative production, (3) low percentage of employees with higher education (28.4%) employed mostly in Polish companies which invested only about 20% of total capital; (4) employment which does not grow above the level attained at the moment of launching the investment project.

Although SEZs were not established to bring profits to the state budget in return for support to investors, such problem naturally stirred researcher interest. As advantages Siudak, Wątorek (2011) list revenue from VAT and PIT paid by enterprises and people working in the zones to the state budget and to the local self-government, social insurance (ZUS) premiums and savings on unemployment benefits. On the side of costs we can find tax allowances (CIT and property tax), costs of construction and modernisation of infrastructure for investors and tax allowances to zone managing companies. Due to changes taking place in the economy, to be able to perform necessary calculations several assumptions had to be adopted as to, e.g., the number of unemployed, salaries and wages, benefits or social insurance premiums. Calculations have shown that the balance of costs and benefits to public finances over the period 1996-2008 was positive in each zone. Overall, for the country the balance total was plus PLN 18.7 bn. This amount is not final as some data (State aid, income from VAT) concerned the years 2002-2008, not the entire period.

Similar assessment was carried out by Lichota (2016). On the side of benefits he additionally took account of premiums paid to the National Health System (PL: NFZ) and savings on premiums that did not have to be paid to the social insurance for unemployed people. His calculations cover the period running between 1996 and 2012 and are based on author's assumptions and simplifications that have not been fully explained to the reader. Net balance was in this case estimated as plus PLN 65.5 bn, i.e., some times more than Siudak, Wątorek (2011). Similarly big differences can be observed in individual items. For instance, income from VAT, according to Lichota (2016), was higher than PLN 61 bn while according to Siudak, Wątorek (2011) it reached PLN 14 bn. Such differences cannot be explained by either longer time frame of the analysis or increases in VAT rates in 2011.

Other calculation method was used by Nazarczuk (2014). Firstly, besides VAT income he considered amounts paid back to entrepreneurs from the budget, which turned out to be higher that VAT paid. Negative balance total means cost to public finances while in both previously discussed cases VAT income was the major item on the side of benefits. In this approach, major benefits to the budget came from people employed in the zones: premiums paid to the social insurance and to the National Health System plus personal income tax. Secondly, based on data available for 77% of employers, the author calculated budget revenue generated by PLN 1 of State aid paid in the zones. Over the years 2006-

2012 in the option taking account of all costs and benefits, the multiplier was 3 and it was increasing from 2006 until 2010.

When drawing conclusions from the above three studies we need to bear in mind that they are not based on complete data and differ with respect to the method and scope of analyses. Final estimates concur and demonstrate that the central budget "profits" from supporting investors in SEZ. Calculations do not consider indirect effects to public finance (visible, e.g., in business partners from outside of the zone or in other companies owned by the investors). Nevertheless, a question arises if, with such scale of benefits in mind, SEZ should not be extended to cover all of the country territory.

Statistical and econometric studies

Descriptive studies cannot reveal causal effects between SEZ operations and their outcomes at national, regional or local levels. There are few ways to see them. One of the most popular would be to compare the actual situation, with the zones, to a hypothetical situation if they did not exist. This intellectual exercise is called "the counterfactual problem". To perform it one may use several methods which allow evaluating the impact of programs and policies on various actors (Gertler et al. 2016).

Ambroziak (2016) conducted such counterfactual evaluation using *difference-in-differences* method to check the impact of tax exemptions in SEZs on the economic performance of poviats in 2005-2013. To this end he distinguished two groups: experimental one, i.e., units in which zones operate and a control group, i. e. units representing parameters similar to experimental group, but hosting no zones within their territories. Because of big spatial differences in economic development, in both groups he identified 7 categories of poviats based on GDP per capita in a given voivodeship. Then he compared the average gross value of fixed assets (GVFA) per company in 2013 to that in 2005 in each category in the experimental group and in the control group. He assumed that higher investments in zones may attract new operators, so changes in this indicator will reflect changes in economic activity within the area. Analogous comparison was carried out based on unemployment rates. Results of calculations have demonstrated that the poorest poviats located in less developed voivodeships, which host SEZs reported the highest increases in GFVA per firm compared to poviats without SEZ. In richer poviats, results were quite opposite: GFVA indicator increased in units from the control group. Similarly, the biggest decreases in unemployment rate were observed in the poorest poviats, in which State aid intensity in SEZs was the highest. In richer poviats their presence had little or no effect on the improvement of labour market situation. Generally speaking, the study provided evidence that SEZs played a much greater role in the development of the weakest rather than better developed areas of the country.

Ambroziak, Hartwell (2018) used a method and sample identical to those used by Ambroziak (2016), but, on top of that, besides GFVA indicators per firm and the unemployment rate, they estimated the number of operators active in poviats from the control and experimental groups. Besides they formulated hypotheses regarding the effects of SEZs in Poland based on the ideas of agglomeration theory. The estimates confirmed that there is no statistically significant evidence that SEZs have led to important increases in investment stocks in regions where they were located except for the least and lesser developed poviats. They also confirmed that unemployment rate was lowered only in the most-lagging poviats and due to jobs created in SEZs themselves, i.e. there were no spillover effects in the neighbourhood areas. The assessment with respect to the number of economic operators was similar: over the period covered by the study, in poviats with SEZs no more new enterprises emerged than in the control group. On the contrary, they reported even a smaller number of new businesses. It only suggests that zones are enclaves, where investors continue cooperation with their old partners and fail to seek links with local business. That is why, as highlighted by the authors, zones are not a universal solution that would stimulate local growth and their effectiveness strongly depends on the economic performance of a concrete poviat.

The first econometric study of effects of SEZs to Poland was conducted by Jensen, Winiarczyk (2014) using panel methods within the *difference-in-differences* approach. The analysis covered both poviats and communes and the period from 1995 until 2011 or shorter depending on the availability of data. It considered more variables than other surveys (employment, invested amount, including FDI, number of businesses, income, and condition of the environment). To evaluate the impact of SEZ, the authors introduced a dummy variable, which in regression equations distinguished between poviats and communes hosting SEZs and those which do not. The method assumes that SEZs are homogenous while they differ with respect to the size (area, capital resources, number of projects) meaning individual SEZs have different impact potential. Results of the estimation suggest that SEZs have not been very effective when it comes to the creation of new jobs, but they have been successful in business creation mainly through attracting the FDI. Other effects turned out to be either negligible (as to the impact on wages and income) or simply negative (environmental impact). Summing up, conclusions are not very optimistic as to the role the zones play in overcoming the problems of lagging regions in Poland.

Instead of counterfactual approach Ciżkowicz et al. (2016) used spatial panel models with data about companies in SEZs in all poviats over the period 2003-2012 (ca. 30,000 observations). Models explain the impact of the zone on the employment and entrepreneurship in the host poviat, changes generated in the neighbouring poviats and effects that "come back" to the host poviat. In such approach, the size of investment and employment in SEZ is an independent variable. Estimates suggest their strong positive impact on the labour market. One hundred jobs in the zone generate 72 jobs in the host poviat and 137 jobs in the neighbouring poviats. These numbers, especially the last one, seem surprisingly high. Thus we may analyse whether "multiplier effects" would have emerged at a similar scale if employment in SEZ started to decrease. Spillover investment effects are also positive but weaker: projects in SEZs only slightly contribute to additional projects in the host poviat. At the same time there is no investment pull and push effect, which, according to the authors, may result from technological advantage of enterprises in the zone. They are selected due to the requirements that have to be met in order to obtain investment permit.

The *difference-in-differences* method was used by Jensen (2018) together with panel data deployed in estimation. She examined 3,829 communes (towns and cities included) from the experimental and control groups in the years 1995-2014. Thus the sample consisted of country communes, sparsely populated, and big metropolis. Unlike Ciżkowicz et al. (2016) interested in purely economic effects, she paid more attention to institutional aspects, more concretely to the impact of changes in SEZ policy on employment in regions suffering from high unemployment. Due to these changes, over time SEZs were expanded with increasingly more areas that had no problems with unemployment but were attractive to investors. Such decisions were promoted by local authorities as well as ZMCs. Inclusion of areas from other communes into the zones gradually levelled out differences in their impact on employment in the experimental group, which the author referred to as a "negative spillover effect over time" (p. 887). Her estimates suggest that investment in SEZs on average increased the employment in the host commune by 60% in the period covered by the study. These estimates are more moderate than those in Ciżkowicz et al. (2016) but still seem high. Perhaps the reason is that they concern a lower level of territorial aggregation (a commune instead of poviats) and are limited to direct effects, i.e., do not take into account the induced impact of SEZs on the neighbouring communes.

Trzciński et al. (2016) used a number of research methods to study the impact of zones on employment in communes in the years 2004-2014. Analytical framework was based on the policy impact evaluation approach (Gertler et al. 2009) in combination with theory based evaluation (White 2009). In quantitative survey they applied counterfactual approach by statistically adjusting the control group to the experimental one based on secondary data. The latter were supplemented with the analysis of primary data collected in questionnaire-based interviews from 98 enterprises operating in various SEZs. Qualitative part consisted of individual in-depth interviews with seven experts dealing with SEZ. Differently from

Jensen (2018) the analysis did not cover all communes but only the ones, in which investment projects actually had taken place over the period 2005-2010. It allowed taking account of real effects which emerged with some delay, not just investors' declarations. Major conclusion is opposite to Jensen (2018): (1) SEZ do not reduce unemployment in host communes. However, (2) despite the fact, employment in host communes increases (probably SEZ restrict migration tendencies to neighbouring communes or/and attract labour force from these communes, i.e., there is a substitution effect); (3) the presence of SEZ does not translate into higher wages or income per inhabitant in a commune; (4) host communes report increasing population of only small businesses (10-49 workers). Therefore it seems that SEZ are neither established in areas desperately in need of state intervention nor are they the main incentive for investors (idle gear effect).

Conclusions

SEZs in Poland differ from solutions applied in other countries: they are not geographically distinguished parts of territory, they are closely controlled by the state and are attainable only to the best investors who meet the most stringent criteria.

Possibilities to examine the effects to the economy triggered by SEZs are limited by the availability of statistical data. This is why most evaluations focus on labour market trends and investment operations. Other parameters, such as the size of the output, exports and imports, technical advancement or capacity utilisation rate remain practically unknown.

Descriptive studies, which began to appear shortly after SEZs were established, are the most numerous and published mainly in Polish. Initially, most of them analysed indicators informing about newly created jobs, inflow of capital, and land development in zones. Assessments based on them were in general positive. Ambiguities started to emerge when authors tried "relativizing" indicators, assessing consequences for the host territories (voivodeships), more broadly reaching for descriptive statistics methods, and using primary data collected from questionnaire-based studies. The latter provided information about qualitative effects of the presence of zones for the growth of economy, which are difficult to quantify. Researchers agreed only that the government "makes profit" on SEZ, i.e., that public finance receives more from the production launched in the zones than it had to pay out under State aid schemes.

Recently, studies have started to emerge that make reference to theory and rigorously use advanced statistical and econometric methodology. Periods covered by analyses have got extended and, above all, researchers began to assess the impact exerted by SEZ on the host territories. This aspect was considered at lower level of territorial aggregation (poviats, communes). It is important in the light of uneven distribution of zones within voivodeships whose development is internally diverse. Almost all studies were carried out using the counterfactual approach in combination with *difference in differences* analysis and focused on basic changes on the labour market. Yet, conclusions are not unambiguous. When it comes to poviats, some authors argued that zones were helping poorer units relatively more than richer ones but the impact was minor. According to other researchers, zones strongly contributed to the creation of new jobs in host poviats and in poviats neighbouring them. Results of studies on communes reveal similar extreme outcomes.

The above review leads to the following observations. Firstly, SEZs surely did not exert similar impact on economic growth and reduction of unemployment in Poland. Their efficiency differed depending on the local economic and social circumstances and concrete effects were ambiguous. Secondly, advanced computing methods are intellectually inspiring but do not necessarily produce results that would be more convincing than less complicated means. Thirdly, to better learn about the role of SEZs, we need to use complementary quantitative and qualitative methods.

The research on Polish SEZs concentrated on labour market and investment level. Further studies should turn to other important issues like the impact exerted by SEZs on innovation and on Poland's participation in international value chains. We also cannot be sure why some zones were more successful than others, e. g. in balancing labour markets or attracting businesses. The role of ZMCs and local authorities in SEZ policy is another promising problem for investigators.

Bibliography

ADB, 2015. *How Can Special Economic Zones Catalyze Economic Development?* Asian Economic Integration Report, Manila.

Aggarwal A., 2012., *Social and Economic Impact of SEZs in India*, Oxford University Press, Oxford.

Ajchel M., 2016. Preferencyjne opodatkowanie działalności gospodarczej na terenie Specjalnych Stref Ekonomicznych, *Annales H - Oeconomia* http://oeconomia.annales.umcs.pl, s. 518-527.

Ambroziak A.A., 2015. The E• ects of Granting State Aid in Special Economic Zones after Poland's Accession to the European Union, in: *Selected Aspects of Functioning of Poland in the European Union. The Balance of Ten Years of Membership*, Wojtkowska-Łodej G., Bąk H. (editors), Warsaw School Of Economics Press, Warsaw.

Ambroziak, A. A., 2016. Income Tax Exemption as a Regional State Aid in Special Economic Zones and Its Impact upon Development of Polish Districts. *Oeconomia Copernicana*, 7(2), 245-267.

Ambroziak A. A. & Hartwell Ch. A., 2018. The impact of investments in special economic zones on regional development: the case of Poland, *Regional Studies*, 52:10, 1322-1331, DOI: 10.1080/00343404.2017.1395005

Balcerowicz L., 1992. 800 dni. Szok kontrolowany, Polska Oficyna Wydawnicza "BGW", Warszawa.

Briant A., Lafourcade M. and Schmutz B., 2015. Can Tax Breaks Beat Geography? Lessons from the French Enterprise Zone Experience, *American Economic Journal: Economic Policy*, 7(2), pp. 88–124.Zeng 2015

Chodakowska J., 2010. Specjalne strefy ekonomiczne jako konkurencyjny instrument interwencjonizmu gospodarczego, Acta Universitatis Lodziensis Folia Oeconomica 243, s. 19-33.

Cicha-Nazarczuk M. & Nazarczuk J.M., 2017. Oddziaływanie specjalnych stref ekonomicznych na sytuację na rynku pracy, *Studia Prawno-Ekonomiczne*, s. 173-185.

Cirera X. & Lakshman R., 2014. The impact of export processing zones on employment, wages and labour conditions in developing countries, *3ie Systematic Review* 10. London: International Initiative for Impact Evaluation (3ie).

Ciżkowicz P., Ciżkowicz-Pękała M., Pękała P. and Rzońca A., 2016. The effects of special economic zones on employment and investment: spatial panel modelling perspective, *Journal of Economic Geography*, pp. 1–35, doi:10.1093/jeg/lbw028

Czempas J., 2013. Działalność specjalnych stref ekonomicznych, *Wiadomości Statystyczne*, czerwiec, s. 57-70.

Farole T. & Akinci G. ,Editors, 2011. *Special Economic Zones Progress, Emerging Challenges, and Future Directions*, The World Bank, Washington.

Farole T., 2011. *Special Economic Zones in Africa Comparing Performance and Learning from Global Experience*, The World Bank, Washington.

Gertler, P. J., S. Martinez, P. Premand, L. B. Rawlings, and Ch. M. J. Vermeersch, 2016. *Impact Evaluation in Practice*, *second edition*. Washington, DC: Inter-American Development Bank and World Bank. doi:10.1596/978-1-4648-0779-4

Golik D., Kątnik J., 2014. Funkcjonowanie Specjalnych Stref Ekonomicznych w Polsce, w: *Polityka gospodarcza w okresie transformacji i kryzysu*, redaktorzy naukowi Barteczek A., Rączaszek A., Katowice, s. 180-193.

Informacja o realizacji ustawy o specjalnych strefach ekonomicznych Stan na 31 grudnia 2017 r., Ministerstwo Przedsiębiorczości i Technologii, Warszawa 2018 [Information on the implementation of the law on special economic zones. Warsaw: Ministry of Entrepreneurship and Technology].

Jarosiński K., Masloch G., 2016., The Impact of Special Economic Zones on the Level of Socio-Economic Changes of Polish Regions, *Warsaw Forum of Economic Sociology* 7:2(14) Autumn, p. 115-137.

Jensen C., 2018. The employment impact of Poland's special economic zones policy, *Regional Studies*, 52:7, 877-889, DOI: 10.1080/00343404.2017.1360477

Jensen, C., Winiarczyk, M., 2014. *Special economic zones—twenty years later*. CASE Network Studies and Analyses No 467/2014, Centrum Analiz Spoleczno-Ekonomicznych, Warszawa.

Kolczyński M., 2010. Funkcjonowanie Katowickiej Specjalnej Strefy Ekonomicznej w świetle koncepcji strategicznego rozwoju regionu, w: Innowacyjne i społeczne oddziaływanie specjalnych stref ekonomicznych i klastrów w Polsce, redakcja naukowa Kolczyński M., Wojtasik W., Towarzystwo Inicjatyw Naukowych, Katowice

Kolko J. and Neumark D. 2009. Do Some Enterprise Zones Create Jobs, *NBER Working Paper Series*, No. 15206.Gobillon et al., 2010,

Kryńska E. (red.), 2000. *Polskie specjalne strefy ekonomiczne - zamierzenia i efekty*, Wydawnictwo Naukowe Scholar, Warszawa.

Lichota W., 2016. Efektywność finansowa specjalnych stref ekonomicznych w Polsce, *Gospodarka Narodowa*, nr. 1, s. 99-130.

Lizińska W., Bielska-Marks R., 2013. Efekty funkcjonowaniae specjalnych stref ekonomicznych w Polsce w kontekście realizacji celów ich tworzenia oraz wykorzystywanej pomocy publicznej, Optimum, nr. 2, s. 92-105.

Ministerstwo Gospodarki i Pracy, 2005. *Specjalne strefy ekonomiczne stan na dzień 31 grudnia 2004 r.* Warszawa, marzec. [Ministry of the Economy and Labour, Special economic zones as per 31 December 2004, Warsaw, March].

Nazarczuk J. M., 2012. Efektywność pomocy publicznej udzielonej w specjalnych strefach ekonomicznych w Polsce, w: *Efektywność pomocy publicznej w specjalnych strefach ekonomicznych w Polsce*, R. Kisiel, W. Lizińska (red. naukowa), UWM w Olsztynie, Olsztyn, s. 113-128.

Siudak P., Wątorek B., 2011. *Specjalne strefy ekonomiczne w Polsce w latach 1995–2009*, Państwowa Wyższa Szkoła Zawodowa im. Witelona w Legnicy, Legnica 2011.

Statistical Yearbook of the Republic of Poland, 2015, 2017. Statistics Poland, Warsaw 2015, 2017.

Szczebiot-Knoblauch L., Lizińska W., Kisiel R., 2014. Intensywność technologiczna inwestycji i efekty funkcjonowania specjalnych stref ekonomicznych, w: *Polityka gospodarcza w okresie transformacji i kryzysu*, redaktorzy naukowi Barteczek A., Rączaszek A., Katowice, s. 194-204.

Tao, Y., Yuan, Y. and Li, M., edited by Kapoor, K. and Mollinedo C. 2016. *Chinese Special Economic Zones: Lessons for Africa*, AEB, Vol. 7, Issue 6.

The Economist, 2015. Special economic zones. Political priority, economic gamble, April 4th.

Trzciński R., Stasiowski J., Konieczna-Sałamatin J., Skórska P., Bienias S., Weremiuk A., 2016. Raport końcowy. *Wpływ specjalnych stref ekonomicznych na zatrudnienie*, https://www.kozminski.edu.pl/fileadmin/wspolne_elementy/Jednostki/RAPORT_SSE.pdf

UNCTAD, 2018. *Investment And New Industrial Policies*, World Investment Report 2018.

Ustawa z dnia 20 października 1994 r. o specjalnych strefach ekonomicznych (1994), Dz. U. Nr. 123 poz. 600 i Dz. U. z 2015 r. poz. 282 [Act on Special Economic Zones, Polish Official Journal of 1994, No. 123, item. 600 and of 2015 item 282].The Economist, 2015

Ustawa z dnia 20 października 1994 r. o specjalnych strefach ekonomicznych (1994), Dz. U. Nr. 123 poz. 600 i Dz. U. z 2015 r. poz. 282 [Act on Special Economic Zones, Polish Official Journal of 1994, No. 123, item. 600 and of 2015 item 282].

White H., 2009. *Theory-Based Impact Evaluation: Principles And Practice*, The International Initiative for Impact Evaluation (3ie).

Wiszczun E., 2010. Oddziaływanie Specjalnych Stref Ekonomicznych (SSE) na rozwój społeczny i gospodarczy regionu, w: *Innowacyjne i społeczne oddziaływanie specjalnych stref ekonomicznych i klastrów w Polsce*, redakcja naukowa Kolczyński M., Wojtasik W., Towarzystwo Inicjatyw Naukowych, Katowice.

Zagraniczne inwestycje bezpośrednie w Polsce i polskie inwestycje bezpośrednie za granicą w 2017 roku, *2018.* Narodowy Bank Polski, Warszawa 2018.

Zasępa B., 2010. Efekty i skutki oddziaływania specjalnych stref ekonomicznych w obszarze rynku pracy ze szczególnym uwzględnieniem katowickiej SSE, w: *Innowacyjne i społeczne oddziaływanie specjalnych stref ekonomicznych i klastrów w Polsce*, redakcja naukowa Kolczyński M., Wojtasik W., Towarzystwo Inicjatyw Naukowych, Katowice.

EVALUATION OF THE POSITION OF THE SUBJECT OF CONTROLLING IN MEDIUM-SIZED COMPANIES

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Abstract. Introduction of the controlling system helps to improve the functionality of companies and the process of decision making as well as to increase the company's value. For the system of controlling to fully implement its functions, the subject of controlling must be defined; i.e. determine who is responsible for the introduction and functioning of the system and the implementation of strategic and operational tasks in the company. The aim of the study is to analyse and evaluate the position of the subject of controlling in medium-sized companies based on the features of subject's actions activity level and level of institutionalization. When the subject of controlling based on the subject's actions activity level was studied, the aim was to examine when might medium-sized companies apply the passive controlling and when the active controlling. Based on the level of institutionalization feature the possibilities of application of self-controlling, institutional controlling and outsourcing/co-sourcing in medium-sized companies were evaluated. The position of the subject of controlling in medium-sized companies was defined after carrying out an analysis of scientific sources, an expert evaluation and a survey of medium-sized companies. The results of the study revealed that taking the number of employees in a medium-sized company and its scope of activity into account, the subject of controlling can be considered as: 1) active controlling which has to be realized through institutional controlling by developing controlling services within finances department; 2) passive controlling which has to be realized through self-controlling by allocating some or all the functions to managers.

Key words: *the subject of controlling, institutionalization of controlling, controlling in medium-sized companies, active controlling, passive controlling*

JEL code: M49

Introduction

Introduction of the controlling system helps to improve the functionality of companies and the process of decision making as well as to increase the company's value. However, this system is more necessary for medium-sized and large companies rather that the small ones because the difficulties of management decisions usually increase as the company and its organizational and production structures grow. For the system of controlling to fully implement its functions, the subject of controlling must be defined; i.e. determine who is responsible for the introduction and functioning of the system and the implementation of strategic and operational tasks in the company. Many authors (Hahn & Hungenberg, 2001; Horváth, 2011; Falko, 2008; Perović, Nerandzis & Todorović, 2012; Zoni, 2007; Weber & Schäffer, 2008, ect.) have studied the issues of the subject of controlling in large companies. Meanwhile, the issue of the subject of controlling in medium-sized companies has been studied only in a narrow and ambiguous way. The issues of the need for a controlling institution in medium-sized companies, identification of the position of a controlling institution in medium-sized companies' organizational structure and choosing between active and passive controlling are especially widely debated.

The aim of the study is to analyse and evaluate the position of the subject of controlling in medium-sized companies based on the features of subject's actions activity level and level of institutionalization. In this study it was

carried out an analysis of scientific literature, methods of information classification, comparison, elaboration and generalization, expert evaluation method, a questionnaire survey of medium-sized companies.

1. Evaluation of the position of the subject of controlling in medium-sized companies: theoretical background

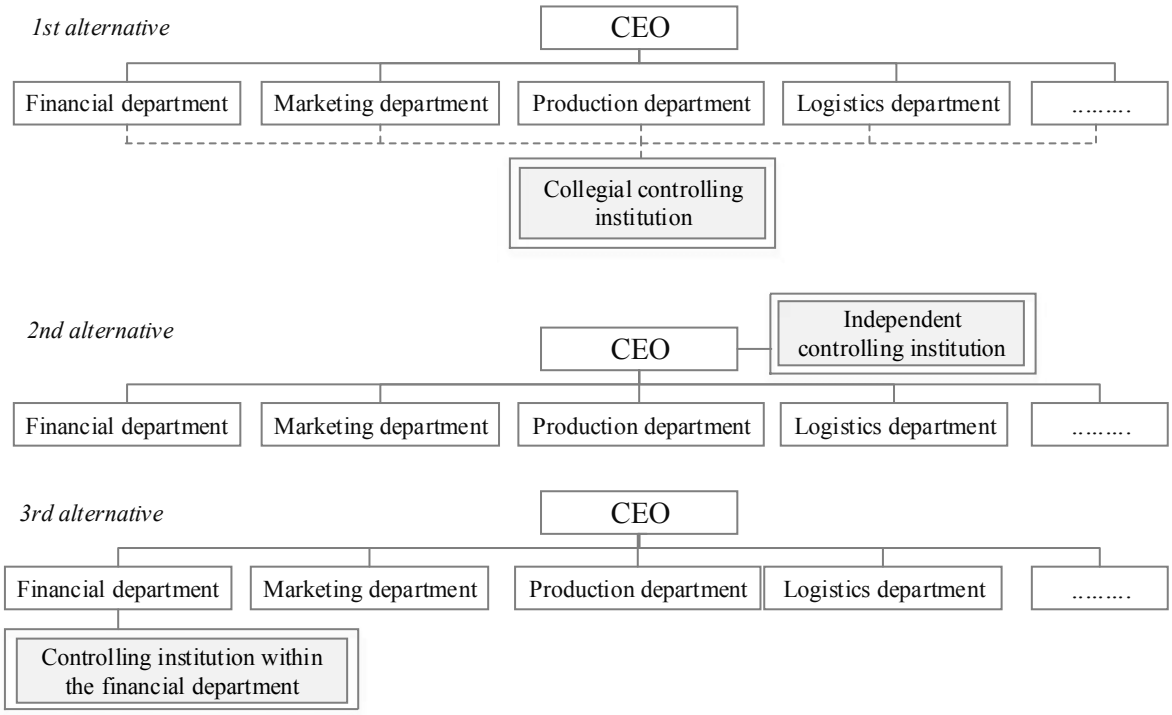
The controlling system comprises different, however interconnected, subsystems and their elements whose interaction helps to make optimal decisions (Tamulevičienė, 2016). The most important subsystems of a controlling system are strategic and operational controlling. The goals of a company can be achieved only through both of them (Rickards, 2005; Śliwczyński, 2011; Gleißner, Helm & Kreiter, 2013, etc.). In order for strategic and operational controlling to function efficiently, it is important to define other subsystems of a controlling system: object, subject, functions, process, methodology and instruments. Composition and contents of the elements of these subsystems may vary depending on the company's size. The factor of the company's size is of crucial significance when determining the elements of a subject subsystem of a controlling system, i. e. defining who in the company is responsible for introduction and management of a controlling system. Depending on whether the company is small, medium-sized or large, the position of the controlling subject may vary within the company and the system functions may be attributed to different employees.

The following two features describing the subject define the position of a controlling subject in a company the most clearly: 1) level of activity of the subject's actions and 2) level of institutionalization. On the basis of the first feature the subject of controlling may be assessed as active or passive controlling. As Kalinina (2012) notes, active controlling is understood as continuous and constant actions of controlling experts and managers by carrying out the functions and tasks attributable to controlling. If the tasks are carried out occasionally or only once, then controlling is considered passive. Taking the number of objects managed by the controlling system as well as its scope and objective, which is often expressed through creation of company's value, into account, it can be concluded that only active controlling can fully ensure efficient functioning of the system. It is especially important to medium-sized and large companies where the scope of functions and tasks attributable to a controlling system is larger and can be realized only through their constant execution. However, small companies, after evaluating the ratio of costs and benefits of a controlling system, can successfully apply passive controlling as well, especially if such companies realize controlling functions through self-controlling rather than through institutional controlling.

Categories of institutional controlling and self-controlling are related to second feature of controlling classification on the basis of subjects which is the level of institutionalization of controlling. In development of institutional controlling, the functions and tasks of controlling are carried out in a special structural unit of the organization – controlling department – where controllers work. Meanwhile in the case of self-controlling, the functions and tasks of controlling are reintegrated into the management system, i. e. all or some of the functions are allocated to the managers. The level, method and form of institutionalization of controlling raise numerous questions both for scientists and practitioners. Various aspects of institutionalization of controlling were studied by Dimov & Iliev, (2010); Horváth, (2011); Mann & Mayer, (2000); Osmanagić - Bedenik, (2015); Perović et al., (2016); Perović, Bojanić & Todorović-Dudić, (2017); Pietsch, (2003); Reichmann, (2011); Rickards, (2005); Sestanj-Peric & Kukec, (2013); Vuko & Ovjan, (2013); Weber & Schäffer, (2008); Lichtarev, (2011) and others. These authors were seeking to answer the following questions through scientific and empirical studies: when is it appropriate to develop a controlling institution within a company; in which part of an organizational structure it is supposed to be; what should be the level of decentralization

of the institution; what is the optimum number of controlling department employees; what problems are solved through self-controlling; is it appropriate to realize controlling tasks using external services, etc.

There was hardly any debate on the first question among the scientists. Horváth, (2011); Mann & Mayer, (2000); Reichmann, (2011); Rickards, (2005); Weber & Schäffer, (2008); Falko, (2008); Todorović-Dudić, (2015); Perović et al. (2016) and other researchers state that a need for a controlling institution with at least one employee is relevant in medium-sized companies already. However, this issue is especially important in large companies and corporations because there is a need to solve complex issues of organizational structure, departments' centralization/decentralization, distribution of functions and others. Because of this reason, the abovementioned authors related their further studies to analysing controlling institution of large companies, developing recommendations for schemes of organizational structure, determining the optimum number of employees of a controlling service, etc. Meanwhile, the issue of the institutionalization of controlling in medium-sized companies has been studied only in a narrow and ambiguous way. One of the most significant issues related to this question is identification of a controlling institution position in the organizational structure of medium-sized companies. Three alternatives are usually applied to solve this issue: 1) collegial controlling institution; 2) independent controlling institution; 3) controlling institution as part of the financial department (see fig.1).



Source: compiled by the author

Fig. 1 **The position of the controlling institution in a company's organizational structure**

A collegial controlling institution is made up of representatives of several different departments (financial, sales, manufacturing, etc.) who regularly gather to solve certain issues, which are usually separate cases. As Horváth (2011) notes, the functions and tasks of such institution may differ depending on the type of solution of the problem; for instance, initiation and implementation of new investment (innovative) projects, determination of causes of variances from budgetary indicators, analysis of causes for supply disruptions, etc. Even though such controlling institution has advantages (distinctive experiences of employees representing it; no need to create a new position; no problem integrating the controlling institution to the organization structure), yet, due to its passive nature, it can be

recommended to medium-sized companies in exceptional cases only: when the number of the employees is close to that of a small company (with 50 or a little bit more employees) and every additional position is related to increased costs which may be relatively higher than potential benefits; when the level of diversification of the production is low; when the situation of the company in the market is very stable. However it is important to take into account the fact that due to division of responsibility such institution might face an issue when seeking to fully realize the controlling system functions. Thus the objective of the system – to increase the company's value in the long run – can only be partially achieved.

On the other hand, this alternative is also possible in the cases when the company is deliberately restructuring its processes towards self-controlling in order to distribute all controlling functions among managers and other employees of different departments. In this case the controlling might even become active if the functions and tasks are carried out constantly rather than only occasionally. This idea was especially advocated by Pietch & Scherm (Pietsch & Scherm, 2001; Pietsch, 2003), creators of the concept of *controlling oriented towards reflection*. The authors proposed to distinguish controlling as a separate management function and transfer all tasks to executives or managers and gradually relinquish any type of controlling institution. However even in this case the issue of dividing the responsibility remains and it might influence the quality of the final system result.

Second form of a controlling institution is an independent controlling department, which is under the direct authority of the director general, or supervisory board and it is recommended for large or medium-sized companies owned by a group of shareholders rather than single person. In this case the controlling system works as a direct mediator between shareholders and managers. Weber & Schäffer, (2008); Lichtarev, (2011) considers this method of institutionalisation as especially favourable to these companies because that is exactly where the conflict of interests of these two groups shows up and it should be absorbed by the controlling system. According to the authors, the aim of the owner is maximisation of efficiency of the company's activity expressed through the size of the company's value, capitalization, market share growth and other indicators. Meanwhile managers often seek personal gain, even though they are responsible for increasing owners' prosperity. Therefore, a controlling institution in such companies ought to be an independent unit, working alongside managing staff and limiting managers' actions so they could not make decisions in sake of their own wellness (Tamulevičienė & Subačienė, 2017). Taking the level of the conflict of interests into account, Perović, Nerandzis & Todorović, (2012) suggests to respectively develop a centralized or decentralized independent controlling service. In the first case, all controlling functions and tasks are concentrated in the central controlling unit, whereas in the second case they are distributed to lower (local) controlling departments. Establishment of an independent controlling service is expensive and time-consuming process requiring not only vast financial resources but exceptionally highly qualified human resources as well, and it also might provoke a conflict between controlling service and managers as well as other employees due to a different approach towards problem solving or distribution of functions and responsibility. However, despite these drawbacks, it is appropriate for large and – in some cases – medium-sized companies to establish an independent controlling service because the benefits resulting in the increase of the company's value outweigh the incurred costs.

The third alternative for institutionalisation of controlling is related to integration of controlling system into the financial department by establishing a new position of controller (or several controllers responsible for different areas or implementation of different functions). Karmiskij et al., (2002, p.150) underline that "medium-sized companies ought to use exactly this alternative because it is too much of a luxury to have an independent controlling service for such companies." Reichmann, (2011); Perović, Nerandzis & Todorović, (2012) also note that in medium-sized companies the subject should be realized within the financial department. Todorović-Dudić, (2015) adds that these companies could establish separate positions of a financial controller and a business controller. Such positioning of the subject subsystem

of a controlling system is advantageous to medium-sized companies because: 1) there is no need to reorganize the organizational structure, only to redistribute functions among current and/or new employees if the qualification of current employees is insufficient for implementation of controlling functions; 2) tasks are carried out constantly rather than occasionally thus ensuring that the level of achieved strategic and operational goals is going to increase uninterruptedly; 3) responsibility for the sought result is attributed to a particular employee thus increasing the quality of work; 4) the data, necessary for implementation of functions, are obtained more quickly and are of higher quality because they are developed and processed in the same department.

It is important to mention one more aspect. Besides the already discussed method of institutionalisation of controlling – controlling institution within the company –, the researchers of the controlling subject suggest using outsourcing and co-sourcing services as an alternative for implementation of controlling functions. As Dimov & Iliev, (2010) note, outsourcing in a controlling system is understood as implementation of all or some of the functions related to the corporate management by external specialists, i.e. controlling functions to be fully or partially assigned to a specialized company or external consultant; while co-sourcing means establishment of controlling bodies within the company, and, in some cases, involvement of experts from specialized companies or an external consultant to be involved. According to the authors, various organizations prefer to use outsourcing and co-sourcing. These organizations are both small and medium-sized companies, which do not have enough funds available to establish their own department, and certain large companies. However, empirical studies show that the majority of medium-sized companies tend to have a controlling institution within the company. Problems of institutionalisation of controlling functions implementation in small and medium-sized Croatian companies were researched by Sestanj-Peric & Kukec, (2013). The authors revealed that 56% of medium-sized companies have a controlling service with a single employee. The rest of the surveyed medium-sized companies either purchase external services or distribute the functions among managers and accountants. Empirical studies in Serbian medium-sized and large companies revealed that 31% of surveyed companies use external experts' services for implementation of controlling services and achievement of objectives (Perović, Bojanić & Todorović-Dudić, 2017). The companies claim that the reason for such a relatively high indicator is the lack of qualified specialists in the Serbian market because there are only two universities in the country that train them. Another feature that the study revealed is that external experts' services are mostly used by domestically owned companies. Whereas foreign companies establish controlling institution of one kind or another. Vuko & Ovjan, (2013) had similar insights about the surveyed Croatian companies. According to the authors, almost all surveyed foreign companies have a controlling department, in contrast to 68% domestic companies that have a controlling department. Vuko & Ovjan, (2013) also studied changes of return on asset (ROA) and return on equity (ROE) profitability ratios in companies where controlling system functions are implemented by a controlling institution within the company or companies that purchase external controlling services. The results of the study show that in the first case profitability ratios were higher than in the second case; therefore the researchers assumed that a controlling system works more efficiently in those companies where the controlling system functions are carried out by controllers working in the company.

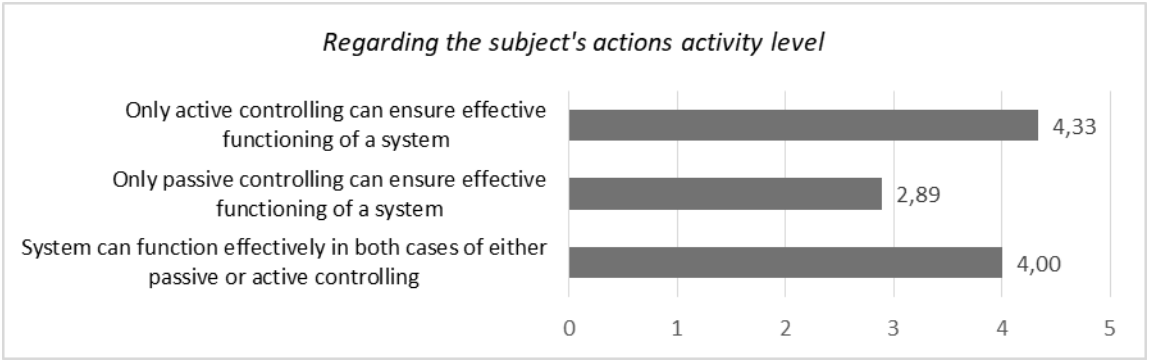
Taking the results of the studies and advantages of having a controlling system within the company into account (company employees are familiar with the internal organization of the company and branch specificities of the business; habits and experience gained remain in the company; company management can use the division as a 'ground' for professional growth and career development of the future management staff), it is recommended to consider active controlling as the controlling subject in medium-sized companies and allocate the controlling system functions to a controlling service within the company by eliminating the possibility of purchasing external controlling services.

2. The methodology and study results of expert evaluation

In order to evaluate the validity of the recommendation on the position of the subject of controlling in medium-sized companies, an empirical study was carried out using the expert evaluation method. Expert evaluation is a procedure that allows to harmonise opinions of different experts and make a mutual decision (Augustinaitis et al., 2009). The expert evaluation was carried out using the scale estimation method, and the sample size was selected by non-probability sampling technique by integrating purposive (judgement) and convenience sampling methods. Taking into account the sample size recommended in literature (Pranulis & Dikčius, 2012; Tidikis, 2003; Augustinaitis et al., 2009), nine experts were selected for the expert evaluation. To process and analyse the data of expert evaluation, statistical functions of Microsoft Excel software, based on descriptive statistics methods, were applied.

Expert evaluation of the controlling subject position in medium-sized companies was carried out by experts submitting a list of statements that was prepared on the basis of two features describing the subject: 1) the level of subject's actions activity: active controlling and passive controlling; 2) the level of institutionalization: self-controlling, institutional controlling and purchasing of external controlling services (see Annex 1). Experts were asked to express their agreement / disagreement with the submitted statements of the 5-point Likert scale, where 1 means that an expert completely disagrees with the statement; 2 – disagrees; 3 – neither agrees nor disagrees; 4 – agrees and 5 – completely agrees.

After evaluating the experts' opinion on the subject actions activity level, it is seen that experts tend to neither agree nor disagree with the statement that only *passive controlling* ought to be applied in medium-sized companies, when controlling tasks and functions are carried out occasionally or only once (mean – 2.89; mode and median – 3) (see fig.2). Whereas, 8 out of 9 experts agreed or completely agreed that *active controlling* would function most effectively in medium-sized companies, when tasks and functions are carried out constantly and without interruption (mean – 4.33; mode and median - 5). It is worth noting that experts also agreed with the statements that both *active and passive controlling* can be developed in medium-sized companies, taking the number of employees in medium-sized company, its scope of activity, and other conditions into account (mean – 4, bimodal mode – 3 and 5; median – 4).



Source: compiled by the author

Fig. 2. **Results of evaluation of agreement with the statements regarding subject's action activity level**

This result shows that experts had a clear stance when two alternative options were presented to choose from: a possibility of applying either passive or active controlling. However, after medium-sized companies were offered a possibility of applying both alternatives, experts' opinion became less categorical. After evaluating the fact that the number of employees and the scope of activity in medium-sized companies can differ significantly, the experts agreed that a company could choose both passive and active control at their own discretion.

When analysing the results of the expert evaluation regarding the level of the subject's institutionalization, it can be seen that experts expressed the greatest support to the statement that controlling system in medium-sized companies should be realized through *institutional controlling*, when functions and tasks of controlling are implemented in a special structural unit – the controlling department (mean – 3.67, mode and median – 4) (see fig.3).

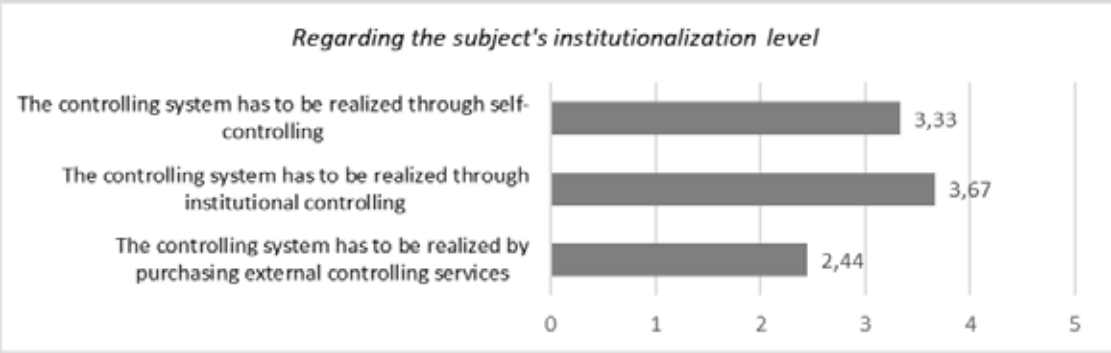


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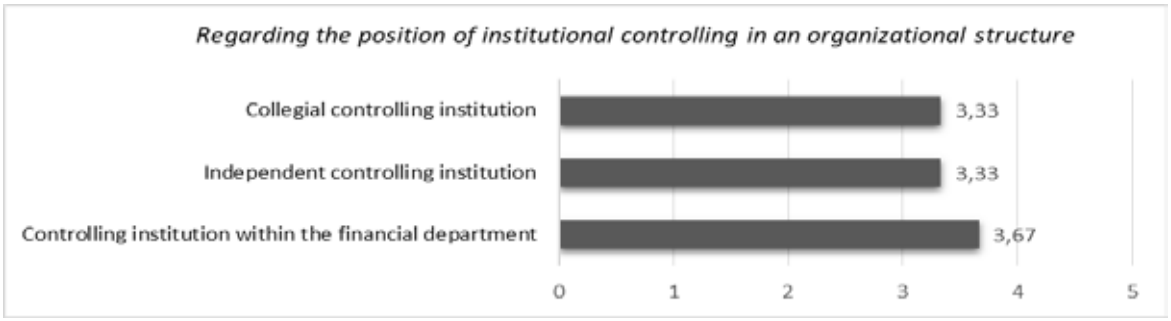
Fig. 3. **Results of evaluation of agreement with the statements regarding subject's institutionalization level**

Yet, some experts also support the view that the controlling system in medium-sized companies can be realized through *self-controlling* by reintegrating the functions and tasks of controlling into the management system (mean – 3.33, mode and median – 4). After conducting a correlation analysis, a strong direct relation between application of passive controlling and self-controlling in medium-sized companies was determined (correlation coefficient 0.784). I.e. those experts who agreed with the statement that self-controlling is a more acceptable form also tended to accept the possibility of applying passive controlling in medium-sized companies, and vice versa. An analogous result can be noticed in evaluating the relations between active controlling and institutional controlling as well, where the correlation coefficient reaches 0.816. Taking the estimated average score and the frequency of recurrence of the answer "agree" into account, it is appropriate to propose to the medium-sized companies to introduce a controlling system not only through institutional controlling but through self-controlling way as well.

Taking the correlation coefficients into account, it is appropriate to link *the passive controlling with the self-controlling* and *the active controlling with the institutional controlling*, since a strong direct relationship between these elements has been determined, i.e. the controlling system would function more efficiently by combining these aforementioned elements. The third alternative – purchasing external controlling services – did not receive experts' support. One expert agreed that the controlling system in medium-sized companies should be realized by purchasing external controlling services from consulting companies, five experts did not have a clear opinion and three experts completely disagreed.

The other two groups of statements were related to determination of the subject's position in a company's organizational structure if the alternative to use institutional controlling was approved and with controlling realization means if the purchasing external controlling services alternative was approved (see fig. 4 and 5).



Source: compiled by the author

Fig. 4. **Results of evaluation of agreement with the statements regarding institutional controlling in the organizational structure**

The analysis of the scientific sources revealed that the controlling system in medium-sized companies would function most efficiently through institutional controlling by developing controlling institution within financial department. Since the experts supported the institutional control approach, it was necessary to evaluate whether there is a reasonable suggestion for medium-sized companies to organize a controlling institution within the financial department.

The experts were asked to express the level of agreement with these alternatives: 1) collegial controlling institution; 2) independent controlling institution; 3) controlling institution within the financial department. The latter alternative attracted slightly more approval compared to others (mean – 3.67, mode – 5; median – 4). Thus one may assume that the suggestion to establish a new position of a controller (or several controllers responsible for different areas or implementation of different functions) within the financial department of medium-sized companies is reasonable. Average rating of the level of approval for development of collegial institution and independent institution in medium-sized companies, is the same and equals to 3.33. However, in the first case, the opinion “disagree” was the most common in the variation row (mode - 2; median - 3), whereas in the second case it was "neither agree, nor disagree" (mode - 3, median - 3). One expert also expressed the opinion that “in the case of a collegial institution, the responsibility would be eliminated, so the reason of the suggestion to establish such institution is questionable”. Taking the statistical values of expert evaluation and an expert’s expressed opinion into account, a suggestion to realize controlling functions through institutional controlling by developing controlling institution inside the financial department is reasonable.

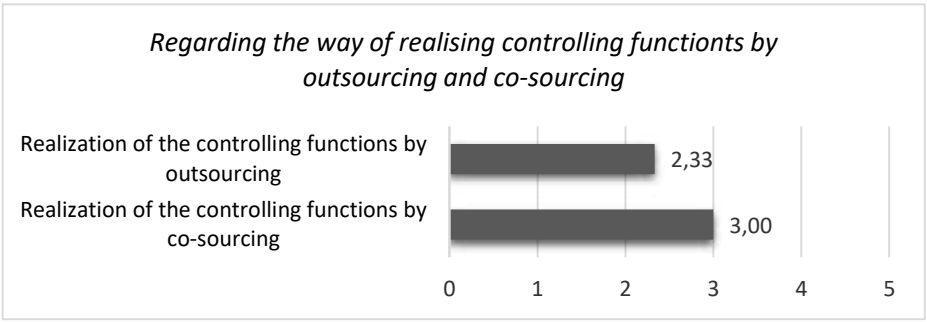


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Fig. 5. **Results of evaluation of agreement with the statements regarding the purchase of external controlling service functions outsourcing and co-sourcing**

Experts also disapproved the ways of purchasing controlling services from external consulting companies. The average level of approval for the option that the controlling system in medium-sized companies has to be realized through *outsourcing*, when all or some controlling functions are purchased from external consultancy firms, equals 2.33 (mode - 2, median - 2). The experts expressed a slightly higher level of support to the *co-sourcing*, when a controlling institution is established within the company for performing key tasks, but in some cases some of the controlling services are outsourced (mean – 3, mode – 3; median – 3). Such expert evaluation results make sense, as the assessment of subject' level of institutionalization did not express support for this alternative, and experts did not tend to accept the proposed means of outsourcing.

3. The methodology and study results of the Lithuanian medium-sized companies' questionnaire survey

In order to determine what is the practical approach towards the position of controlling subject in medium-sized companies, a survey of Lithuanian medium-sized companies' managers, senior accountants, senior financial officers and other specialists in charge was carried out. The objective of the survey is to determine to whom it is appropriate to allocate the controlling system functions in Lithuanian medium-sized companies to implement them as efficiently as possible. After evaluating the objective and type of the study, a written survey method was selected and the respondents were contacted using means of communication (internet).

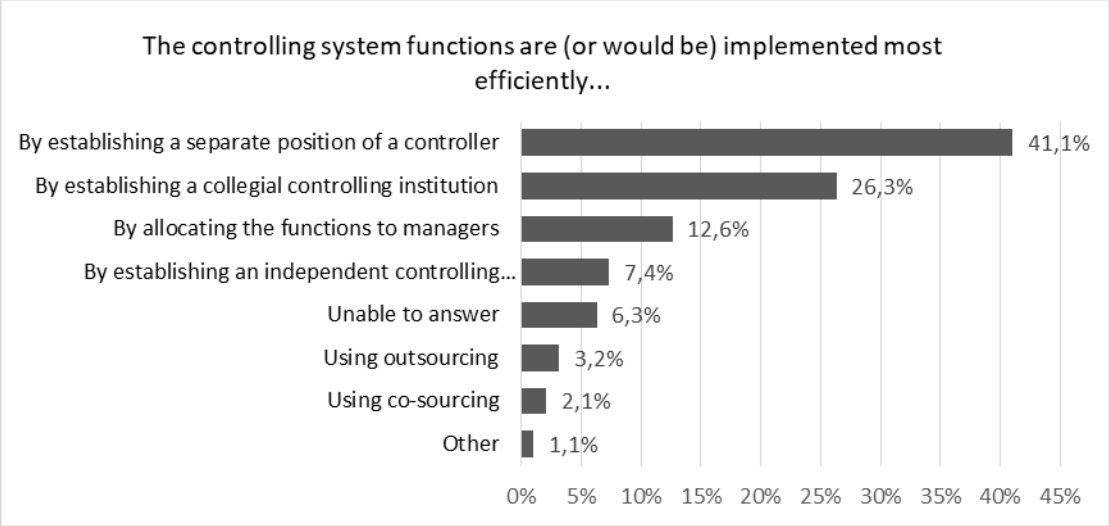
When carrying out a questionnaire survey it is important to determine the sample size and choose a proper sampling method. Since the object of the study is evaluation of the controlling subject position in Lithuanian medium-sized companies, the population consists of all medium-sized companies operating in Lithuania. According to the definition provided in the Law on the Development of Small and Medium-sized Businesses of the Republic of Lithuania (2017), a medium-sized company is a business that meets the conditions laid out in the article 3 of the law: 1) the number of employees is below 250; 2) financial data corresponds to at least one of the following conditions; a) annual revenue does not exceed 50 million EUR, b) carrying value of the assets does not exceed 43 million EUR. At the beginning of 2017, there were 2,425 companies that met these conditions. Knowing what the population is, the sample size may be estimated and on the basis of its study results one can make deductions on the population as a whole. When estimating the sample size, a 5% margin of error is usually selected. However, knowing that only managers and top level experts were supposed to take part in the study and it is often problematic to reach them, the margin of error was increased to 10%. According to Kardelis (2016), in order to determine the sample size one has to take the aim of the study into account and determine how accurately they want to prove the statement. Accuracy of 10% is sufficient in order to evaluate the trends of assessment of the controlling subject position in Lithuanian medium-sized companies.

After identifying the necessary number of respondents, a method of their selection was determined. Taking the specific nature and sample size of the study into account, the group of respondents was selected by applying simple random sampling method, i.e., all randomly selected medium-sized companies were surveyed without distinguishing them based on any features (type of activity, legal form, etc.). The studied group was chosen by selecting the surveyed companies from the prepared list of Lithuanian medium-sized companies by following a certain pattern. If the population is 2,254 companies and the sample is 93 companies then every 27th company should be surveyed. However, the possibility that not all respondents may agree to take part in the survey was taken into account. Then, even if a small portion of the results were not received, the margin of error would increase even more. Therefore every 20th company was surveyed and the number of respondents increased to 123 respectively. The questionnaire is uploaded to the online surveying website http://www.manoapklausa.lt/. A request to fill out the questionnaire and a link to it were e-mailed to

the companies. The survey was conducted in April–May 2018. 95 respondents took part in it. On the basis of the prepared methodology of the study, 123 surveys were sent out; 77% of them were completed.

During the questionnaire survey, the respondents were asked to give their opinions on the controlling system subject. Managers and experts of medium-sized companies had to show to whom it is appropriate to allocate the controlling system functions so they would be implemented as efficiently as possible (see Annex 2).

As it can be seen from figure 6, 41% of the respondents indicated that a controlling system would function as efficiently as possible if a separate position of a controller (or several controllers responsible for different areas or implementation of different functions) was established within the financial department (see fig.6). It corresponds to a recommended controlling subject position with the medium-sized companies controlling system. More than one fifth of the respondents indicated that the system would function as efficiently as possible if a collegial controlling institution comprised of representatives of several different departments (financial, sales, production, etc.) was established. And only 12.6% think that the controlling system functions may be reintegrated to the management system, i.e. by allocating some or all functions to managers, heads of departments, other experts. Meanwhile, as a result of expert evaluation, it was identified that this method should be acceptable to medium-sized companies. Taking this evaluation into account, the recommendation on the subject position in medium-sized companies was expanded by offering the self-controlling method as an alternative. On the other hand, expert evaluation showed disapproval of establishment of collegial controlling institution. However, as the results of the survey show, companies tend to establish such institution.



Source: compiled by the author

Fig. 6. **Evaluation of controlling subject position**

In order to explain such contradiction, a more detailed analysis of this issue was carried out based on three sections: 1) based on the companies' activity area; 2) based on the level of decentralization and 3) based on the controlling system application experience. After evaluating the results based on the companies' activity area, no clear trends were noticed: controlling subject distribution is similar among manufacturing, retail, services and mixed-activity companies. Analysis of the results based on the level of decentralization highlighted the fact that 58% of decentralized companies (or 31% of all companies) selected establishment of a separate position of a controller; 22% of decentralized companies (or 11.6% of all companies) indicated that it is appropriate to allocate the functions to managers. The majority of centralized companies (42.2% of centralized companies or 20% of all companies) selected the case of a collegial controlling institution. Other answers of centralized companies were distributed among the rest of possible

choices, among them outsourcing and co-sourcing. The choice "unable to answer" was selected exclusively by centralized companies as well. Summarizing the results based on this feature, one may assume that it makes sense to suggest supplementing the subject subsystem with a self-controlling element because decentralized companies, where this system works the most efficiently, indicates the method of reintegration of controlling functions to the management system as the second alternative after establishment of a separate position of a controller. This assumption is supported even more by the analysis of the controlling subject position in a company based on the feature of the controlling system application experience. Out of 39 companies that selected the answer that the controlling system functions should be implemented by a separate controller within the financial sector, 19 were already applying the controlling system, 15 were planning to apply the system in the future and only 5 do not have a controlling system and are not planning to apply it. Out of 12 companies that selected the self-controlling method answer, 10 were fully or partially applying a controlling system and 2 were planning to apply it in the future. The collegial institution option was mostly selected by those companies which are only planning to create a controlling system in the future, therefore their assessment is subjective due to a lack of experience.

Summarizing the results of the empirical study on the controlling subject position assessment, it is noteworthy that both the experts and medium-sized companies' managers prefer the alternative of the active institutional controlling within the financial department. However, at the same time they agree that taking the number of employees of a medium-sized company and its scope of activity into account, passive controlling, which has to be realized through self-controlling, may also be applied.

Conclusions

The factor of the company's size is of crucial significance when determining a subject of a controlling system Depending on whether the company is small, medium-sized or large, the position of the controlling subject may vary within the company and the system functions may be attributed to different employees. The following two features describing the subject define the position of a controlling system subject in a company the most clearly: 1) level of activity of the subject's actions and 2) level of institutionalization.

Analysis of scientific sources revealed that it is appropriate to apply active institutional controlling when developing a controlling institution within the financial department in a medium-sized company. Such positioning of the subject subsystem of a controlling system is advantageous to medium-sized companies because: 1) there is no need to reorganize the organizational structure, only to redistribute functions among current and/or new employees if the qualification of current employees is insufficient for implementation of controlling functions; 2) tasks are carried out constantly rather than occasionally thus ensuring that the level of achieved strategic and operational goals is going to increase uninterruptedly; 3) responsibility for the sought result is attributed to a particular employee thus increasing the quality of work; 4) the data, necessary for implementation of functions, are obtained more quickly and are of higher quality because they are developed and processed in the same department.

Expert evaluation of the controlling subject position in companies revealed that experts agree that it is appropriate to develop active institutional controlling in medium-sized companies by realizing it through institutional controlling within finances department. However, experts note that taking the number of employees of a medium-sized company and its scope of activity into account, passive controlling, which has to be realized through self-controlling, may also be applied. Managers, accountants and financiers of the surveyed medium-sized companies confirmed that a controlling system would function as efficiently as possible if a separate position of a controller (or several controllers responsible for different areas or implementation of different functions) was established within the financial department.

Bibliography

Augustinaitis, A.; Rudzkienė, V.; Petrauskas, R.A.; Dagytė, I.; Martinaitytė E.; Leichteris E.; Malinauskienė E.; Višnevska V. & Žilionienė I., 2009. *Lietuvos e. valdžios gairės: ateities įžvalgų tyrimas*. Vilnius: MRU.

Dimov, O. & Iliev, P., 2010. Controlling – a modern system of management and control. *Economics and Organization*, 7(2), p. 253-262.

Falko, S.G., 2008. *Kontrolling dla rukovoditelei i specialistov*. Moskva: Finansy i statistika.

Gleißner, W.; Helm, R. & Kreiter, S., 2013. Measurement of competitive advantages and market attractiveness for strategic controlling. *Journal of Management Control*, 24, p. 53-75.

Hahn, D. & Hungenberg, G., 2001. *Planung und Kontrolle - Planungs - und Kontrollsysteme - Planungs - und Kontrollrechnung*. Wiesbaden: Gabler.

Horváth, P., 2011. *Controlling.* München: Vahlen.

Kalinina, N.M., 2012. Integrirovannyj kontrolling: nauchnyje predposylki pojavlenija i razvitija. *Ekonomicheskije nauki. Fundamentalnyje issledovanie*, 11, p. 765-769.

Kardelis, K., 2016. *Mokslinių tyrimų metodologija ir metodai.* Vilnius: Mokslo ir enciklopedijų leidybos centras.

Karmiskij, A.M; Olenev, N.I; Primak, A.G.; Примак, А. Г. & Falko, S.G., 2002. *Kontroling v biznese.* Moskva: Finansy i statistika.

Lichtarev, L.J., 2011. Sistematizacija opredelenija termina „kontroling". *Ekomomicheskije issledobanije,* 2. Available at: http://www.cfin.ru/management/controlling/systematization.shtml [Accessed 10 January 2019].

Mann, R. & Mayer, E., 2000. *Controlling for beginners*. Allied Publishers Pvt., Ltd.

Osmanagić - Bedenik, N., 2015. The challenge of controlling. *International Journal of Industrial Engineering and Management*, 6(4), p. 153-163.

Perović, V.; Bojanić, R. & Todorović-Dudić, A., 2017. Challenges and dilemmas of controlling in the Republic of Serbia. *Challenges in Modern Corporate Governance, FINIZ*. International Conference, Belgrade, Serbia, December 1, 2017. Conference paper. University Singidunum, p. 70-77. https://doi.org/10.15308/finiz-2017-70-77.

Perović, V.; Nerandzis, B. & Todorović, A., 2012. Controlling as a useful management instrument in crisis times. *African Journal of Business Management,* 6(6), p. 2101-2106.

Perović, V.; Osmanagić - Benedik, N.; Bojanić, R. & Todorović - Dudić, A., 2016. Recent situation of controlling in Serbia and comparison with its implementation in Croatia. *Auditor. Journal for Theory and Practice*, XIX (76), p. 39-48.

Pietsch, G. & Scherm, E., 2001. Utochnenije soderzhanija kontrollinga kak funkciji upravlenija i ego podderzhki. *Problemy i praktiki upravlenija*, 3, p. 21-26.

Pietsch, G., 2003. *Reflexionsorientiertes Controlling*. Springer-Verlag.

Pranulis, V.P. & Dikčius, V., 2012. *Rinkodaros tyrimai. Teorija ir praktika*. Vilnius: Vilniaus universiteto leidykla.

Reichmann, T., 2011. *Controlling: concepts of management control, controllership and ratios*. Berlin: Springer.

Rickards, R., 2005. Management perspectives on problems in controlling and cost accounting. *Investment Management and Financial Innovations*, 3 p. 109-127.

Sestanj-Peric, T. & Kukec, S.K., 2013. Institutional aspects of controlling in SME's in Northwest Croatia. *Economic and Social Development.* Book of Proceedings of the 2nd International Scientific Conference, Paris, France, 5th April 2013, p. 1504-1513.

Śliwczyński, B., 2011. Operational controlling – a tool of translating strategy into action. *Scientific Journal of Logistics*, 7(5), p. 45-59.

Tamulevičienė, D. & Subačienė, R., 2017. Systematization of functions of controlling as a management system oriented towards increasing value: theoretical framework. *ЭТАП*, 5, p. 67-76.

Tamulevičienė, D., 2016. The indicator systems and the suitability of their application in controlling department activity. *New Challenges of Economic and Business Development – 2016*. International Conference, Riga, Latvia, May 12–14, 2016. Proceedings. Riga: University of Latvia, p. 801-816.

The Law on the Development of Small and Medium-sized Businesses of the Republic of Lithuania, 2017. Nr. VIII-935. Available at: https://www.e-tar.lt/portal/lt/legalAct/a615fb20e1fe11e68503b67e3b82e8bd [Accessed 15 January 2019].

Tidikis, R., 2003. *Socialinių mokslų tyrimo metodologija*. Vilnius: Lietuvos teisės universitetas.

Todorović-Dudić, A., 2015. Controlling between autonomy and heteronomy. *International Journal of Industrial Engineering and Management*, 6 (4), p. 171-177.

Vuko, T. & Ovjan, I., 2013. Controlling and business efficiency. *Croatian Operational Research Review,* 4, p. 44-52.

Weber, J. & Schäffer, U., 2008. *Introduction to controlling.* Stuttgart: Schaffer - Poeschal Verlag.

Zoni, L., 2007. Controller involvement in management: an empirical study in large Italian corporations. *Journal of Accounting & Organizational Change*, 3(1), p. 29-43.

THE IMPACT OF DIGITALIZATION ON THE SUCCESS OF BUSINESS INTERNATIONALIZATION RELATING TO GERMAN SMALL AND MEDIUM SIZED FINTECHS

Ann-Kathrin Teltz, University of Latvia

Abstract. The increasing globalization and new business processes caused through digitalization have changed the economic environment for small and medium sized enterprises. Awareness of market chances, rising competitive constraints and the need to follow industrial customers to foreign markets, stimulates the interest of enterprises becoming international. But many of the small and medium sized enterprises lack the internal resources needed therefore and also the adaptation to new processes due to the digitalization. To have a successful internationalization process the framework conditions for the corporation, regarding to different aspects like available recourse and the degree of digitalization seems to be crucial. Small and medium sized enterprises from the FinTech branch looks on the surface fully adapted to the digital processes and with this, best conditioned for an international market entry. But have a look in detail, beside the origin digital products and services they offer, the internal processes often lack due to the requirements digitalization needs. The purpose of this research is to figure out the impact of digitalization on the success of business internationalization relating to German small and medium sized FinTechs. For the theoretical background, a literature research of the classical market entry strategies and a conceptual delimitation of small and medium sized German FinTechs should give an overview. For the empirical part, an online survey in 2018 among all German FinTechs was done. In a second step different experts on this field will be consulted to estimate the significance of the survey results and to validate the hypothesis. Therewith a triangle of research: theory, quantitative primary research and qualitative study will be achieved.

Key words: *Digitalization, Business Internationalization, Small and Medium Sized Enterprises, FinTechs*

JEL code: F23, O30

Introduction

According to the German Mechanical Engineering Industry Association the internationalization is the biggest growth driver for the German economy (VDMA 2016). The awareness for the importance for small and medium sized enterprises to internationalize forced through increasing globalization and changing economic environment e.g. through digitalization is omnipresent (Faix et al. 2013). Therefore, entering foreign markets for small and medium sized enterprises is as important as for large scaled enterprises. Even though there are some exceptional examples of small and medium sized enterprises which have successfully adapted to these changes, often small and medium sized enterprises lack the internal resources needed for the entry into and development of foreign markets. The degree of small and medium sized enterprises acting in foreign markets is significant smaller than the number of internationalized large scaled enterprises (Schumpeter 1997). Reasons therefore could be, that small and medium sized enterprises have different specifically structural and internal problems related to their size which distinguished them from large scaled enterprises and which requires other market entry modes and market entry strategies than these ones the literature keep on hand for large scaled enterprises

(Adenäuer 2009). But the chances new markets give, the rising competitive constraints caused though international acting companies in the domestic market as well as the need to follow industrial customers to foreign market, stimulates the interest of small and medium sized enterprises becoming international (Faix et al. 2006). To have a successful internationalization process the framework conditions of the corporation, regarding to different aspects regarding the availability of recourse, internal administrative processes or the degree of business digitalization are crucial (Berman 2012). In combination with the digitalization the term “Industry 4.0” increasingly appears. Regarding Berger there is a strong need to reaction because of the so-called “fourth industrial revolution” and with this the adaption to the needs of “Industry 4.0” (Berger 2014). Henning and Johannes define it as “a new level of value chain organization and management across the lifecycle of products (Kagermann et al. 2013). Small and medium sized enterprises from the FinTech branch looks on the surface fully adapted to the digital processes and the requirements the forth industrial revolution comes with and with this also best conditioned for an international market entry. Per definition, the term “FinTech” itself is a portmanteau of the term "financial technology". What it covers are technology-driven financial innovations that bring forth new financial instruments, services or intermediaries (Deutsche Bundesbank 2018). The purpose of this research is to figure out the impact of digitalization on the success of business internationalization relating to German small and medium sized FinTechs. The research question was developed because when having a look in detail, beside the origin digital product and service FinTech companies offer, it seems that the internal processes often lack due to the requirements digitalization needs. This contradiction could result from a deficit of knowledge and awareness of the chances and new business opportunities offered by digitized business and internal administrative processes, which then leads to a poor ability to change and react to economical digitalization change (German Federal Ministry of Economic Affairs and Energy 2015). To proof the hypotheses an online survey among all German FinTech enterprises in 2018 was done. In this survey business success, degree of digitalization and degree of internationalization were asked.

1. Theoretical Background

1. Literature Research

When it comes to the question if it would benefit a company to trade international or entering foreign markets the existing literature held in hand different theories developed over the last 250 years. Beginning with David Hume in his approach from 1758 "Of the Balance of Trade" which is a first exposition of an economic model. Followed by Adam Smith with his approach “The Wealth of Nations” (Krugman und Obstfeld 2008). The frame for all the theories regarding the focus of going international are the “New Institutional Economics” against the background of “International Business”. The focus of the “New Institutional Economics” is to analyse institution and their economic exchange and thereby builds the theoretical framework for all theories regarding the terms of internationalization and market entry strategies (Kieser 1994). In the following there is a rough overview about the most important International Trade Theories and Market Entry Strategies in the field of International Business and New Institutional Economics.

There are gaps in literature regarding the special characteristic of small and medium sized enterprises and their needs within the different theories of internationalization (O'Donnell et al. 2011). The present theories were only focused on big companies, multinational enterprises and global player and less focused on small and medium sized enterprises and their special requirements. This leads to disadvantages for small and medium sized enterprises regarding the entering of foreign markets. And additional all of the presented theories are developed in a time before digitalization has played a role in companies’ decisions making. Therefore, in a first step there should be an overview about these gaps between the existing international trade theories and the needs of small and medium sized enterprises.

Table 1

International Trade Theories in the Field of International Business and New Institutional Economics

International Trade Theories			
	Author	**Description**	**Missing Consideration of Small and Medium Sized Enterprises' Special Needs**
Absolute Cost Advantage	Smith 1776	A country should specialize in, and export commodities in which it had an absolute advantage (Ingham 2009).	Owner of small and medium sized companies tend to regard only a few firms as true competitors and this identification process is based mainly upon their own perceptions of cost advantages (O'Donnell et al. 2011).
Industrial Location Theory	Weber & Behrens 1929	Figures out, the location factors where costs of raw materials and final product are at a minimum (Weber 1998).	Lack of knowledge to compare due fewer and less educated employees and managers.
New Trade Theory	Krugman 1970	Assumption of diminishing returns to scale and using protectionist measures to build up a huge industrial base will allow to dominate the world market (Dixit und Norman 2011).	Smaller company size leads to disadvantages in internal scale effects.

Source: Authors Creation, based on the Sources mentioned in the Table

To gain a complete overview about the existing literature and the gaps regarding the consideration of the special needs of small and medium sized enterprises and after having a look at the existing literature regarding international trade theories in the field of international business and new institutional economics the literature research was undertaken in the field of the strategies for foreign market entries.

Table 2

Market Entry Strategies in the Field of International Business and New Institutional Economics

Market Entry Strategies			
	Author	**Description**	**Missing Consideration of Small and Medium Sized Enterprises' Special Needs**
Foreign Direct Investment Theory	O'Sullivan 2004	Defined as a company from one country making a physical investment into building a factory in another country (O'Sullivan und Sheffrin 2004).	Though competition in the new markets caused through fewer financial resources than bigger companies.
Transaction Cost Theory	Commons, Coase, Williamson 1931	Transaction costs show the costs of participating in a (foreign) market (Bain 1971).	Though competition in the new markets caused through fewer financial resources than bigger companies.

Internalization Theory	Rugman 1981	Figures out, if internalization of transactions has higher efficiency as transaction by an external partner (Rugman und Collinson 2008).	Lack of knowledge to compare and it is harder to get in contact with external partners for a small and medium sized company.
Growth of Firm Theory	Penrose 1959	A firm's existing human resources provide an inducement to expand and a limit to the rate of growth. The firm's rate of growth is limited by the growth of knowledge within it (Penrose 1959).	Growth of knowledge depends on human resources which are harder to get in a smaller company with less resources.
Eclectic Paradigm	Dunning 1979	Ownership, Location and Internalization Model: three categories of advantages for foreign market entry (Dunning 1979).	Ownership-specific advantages include access to resources and know how is probably fewer existent
Resource Based View	Wernerfelt, Birger, 1984	Basis for the competitive advantage. Identify the firm's potential key resources for foreign market entry (Galbreath 2005).	Less financial resources, human resources and less skilled employees than large scale enterprises.

Source: Authors Creation, based on the Sources mentioned in the Table

To sum up the most mentioned missing considerations in the theories (beside that digitalization is due to the fact it was not on market in this way to the time the theories were developed) a lack of resources in different ways like human resources as well as financial resources are important missing points that disadvantages the need of small and medium size enterprises. But also, the knowledge which is tied to the owner of the enterprises is an aspect that is not considered in the theories.

2. Definition of the Terms "Small and Medium Sized Enterprises" and "FinTechs"

There are qualitative and quantitative criteria which defined what a small and medium sized enterprise characteristic looks like in comparison to a large-scale enterprise. Quantitative aspects of the term mostly relate to the size of the company (Adenäuer 2009). To scale this size often the turnover and the number of employees, the so-called headcount, is used. Also, the total of balance sheet could be used to classify the size of a company. Different institution has its own approach about the demarcation the characteristics for a classification in small and medium sized enterprises. For example, the German Commercial Code has an approach about this (§267 HGB). In §267 HGB it is mentioned that two of three of the values headcount (up to 250), turnover (up to 32,12 Million Euro) and total of balance sheet (up to 16,06 Million Euro) must fit to the classification of company sizes. Any number surmounting one of the indicators define a company as a large-scale enterprise. Main characteristic of the qualitative criteria is the unity of property and management. But also, flat hierarchies, personal relationships and others regarding to the corporate environment are criteria for the qualitative perspective (Reinemann 2011).

Table 3

Authors Differentiation of the Term "Small and Medium Sized Enterprises"

Step 1	
Quantitative Criteria	**Description**
	- Headcount up to 249 full time equivalent - Turnover up to 50 Million Euro - Total of Balance Sheet up to 43 Million Euro
Step 2	
Qualitative Criteria	**Description**
Equity	- Autonomous company in regards to the unity of equity
Management	- Manager is majoritarian owner, responsible person and decisionmaker
Organization	- Flat hierarchies and high flexibility in organizational structure
Finance	- Small equity ratio
Products	- Small product range or even customized products
Logistics	- Simple logistics

Authors Creation, in dependence on European Commission 2017 and Statistisches Bundesamt 2017

The German Bundesbank define Fintechs as a technology-enabled financial innovation and with this it is a segment of the financial system. The term itself is a portmanteau of the term "financial technology". What it covers are technology-driven financial innovations that bring forth new financial instruments, services or intermediaries (Deutsche Bundesbank 2018). Fintech products can be consumer or business solutions, back office applications or different ways of performing core functions of traditional financial intermediaries (such as lending, payments or asset management). In the narrower sense of the term, fintech is often used to describe the businesses providing such technology-enabled financial innovations (Deutsche Bundesbank 2018). What all descriptions of the product range of FinTechs have in common is the point that their services and products are digital, consumer and business can buy them online, use them online or at least digital at their computers as a software. These players carve out, automate and rearrange parts of the value-added chain of traditional financial intermediaries (Nießner und Jartschuk 2018).

Research Results and Discussion

1. Methodology and Research Question

After the theoretical framework the guidance to the empirical part of this work follows. The focus of this promotional thesis got three aspects. First the international business market entry, second the digitalization of internal business and third the target group of small and medium sized enterprises of the financial sector, in detail the so called FinTech companies. The derivated research question behind this is: "Would a high degree of digitalization benefit small and medium sized enterprises like FinTechs by internationalize their businesses successfully?" The methodological literature suggests the use of qualitative research by case studies for theory development; whereas quantitative research is used for theory testing (Eisenhardt und Graebner 2007). As a result of this, for international business research, as in this work, quantitative researches are mainly being undertaken in mode of an online survey among all German FinTech Companies. Of cause a disadvantage of quantitative research is that it may force the objects into categories, also it cannot go into much depth about subjects and issues. For this reason, after the quantitative research a qualitative research in mode of an expert interview, also undertaken by an online survey, follows to test the findings and valid the hypotheses. Consequently, the empirical part of this approach is a two-step research setting. To investigate the cause and effect and interpret the results of the research to valid the theory, it requires a hypothesis. The author of this approach uses the theoretical

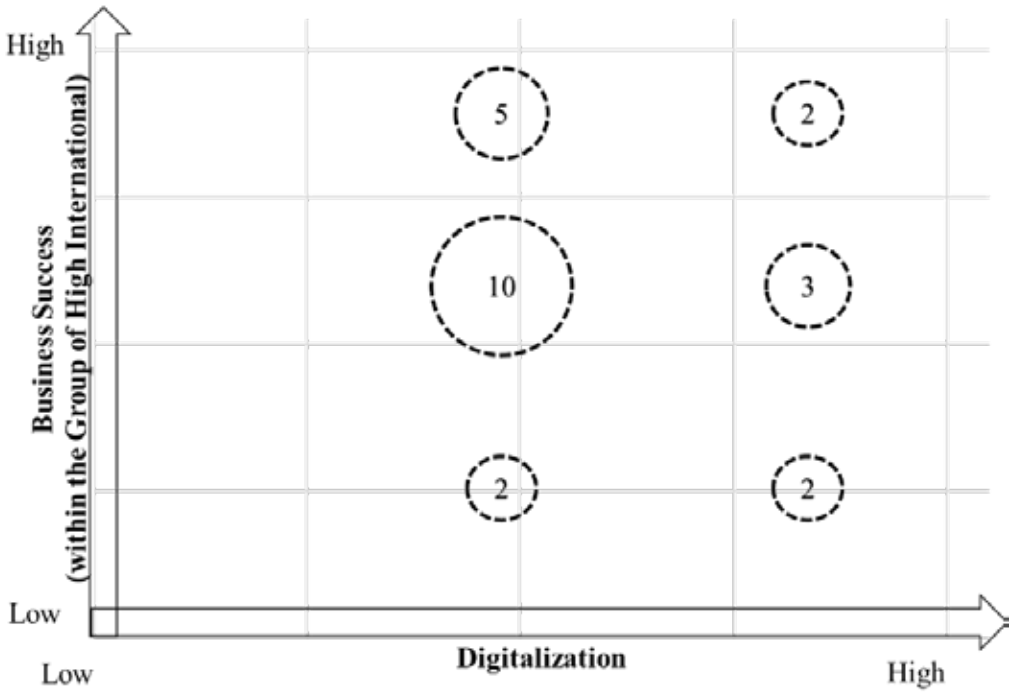
generalizability of a hypothesis by generalizing the findings in the context of the extant theorizing. So that the reader can make inferences about extrapolating the findings to other settings (Polit und Beck 2010): The hypothesis in this approach is:

H_0 = The higher the degree of business digitalization of internal administrative processes, the higher the degree of international business success of a small and medium sized enterprise.

In statistics, a population is a set of similar items which is of interest for the research question. A subset of the population is a statistical sample. This sample is chosen to represent the population in a statistical analysis. The ratio of the size of this statistical sample to the size of the population is called a sampling fraction. If a sample is chosen properly, characteristics of the entire population that the sample is drawn from can be estimated from corresponding characteristics of the sample (Pratt et al. 1996). In this research approach the population are all enterprises in Germany which are defined as small and medium sized. The amount of these enterprises is estimated for 2018 with nearly 3.45 Million (Institut für Mittelstandsforschung 2018). A sub concept of a population that shares one or more additional characteristics is called a subpopulation. A complete sample is a set of objects from a parent population that includes all such objects that satisfy a set of well-defined selection criteria (Pratt et al. 1996). Descriptive statistics may yield different results for different subpopulations. Similarly, one can often estimate parameters more accurately if one separates out subpopulations (Yates et al. 2002). In this work the number of sampling units of subpopulation was 289 in May 2018 which is a capable number of objects for the research to undertake a full census. The dependent variable regarding the main hypotheses is a high degree of international business success. In this case the business success was measured by sales growth over the last five years and the return on sales, also over the last five years. The degree of internationalization was measured by the degree of trading activity and the number of different market entries like branches, licensees or joint ventures. The independent variable is the degree of internal administrative digital processes. This was measured by the number of different digitalization tools the company use like cloud usage for data storage, internet communication or digital workflows for approvals and also their frequency of use were asked.

2. Results

To answer the research question, if a high degree of digital processes within a German small and medium sized FinTech is an indicator for a high international business success, the combination of the two degrees “digitalization” and “internationalization” were compared to the degree of business success. First as a requirement for this, all companies were picked out which have a high degree of internationalization. Then the digitalization degree of those high international active group was analyzed with the degree of business success. The results are drawn in a matrix and could be found below.



Source: Authors creation

Figure 1: **Number of German FinTechs in 2018 in the Compared Degrees "Digitalization" and "International Business Success"**

What could be derivate from the figure is, that a medium degree of digitalization within the group of high internationalized companies only results in a medium degree of business success. But when having a look at the next largest group which is directly above the described group (high internationalized as a requirement, medium digitalization as the independent variable and high business success as the dependent variable) the tendency of the positive correlation between high internationalized, medium digitalized leads to high business success.

Largest group are the companies with a medium degree of digitalization and a medium degree of business success within the group of medium to high degree of internationalization. Possible reasons therefore could be found by comparing the single results from the correlation analyses of "internationalization" to "business success" as well as "digitalization" to business success" before combine them in the before drawn figure of correlation between "internationalization" and "business success" to "digitalization". What could be found in the results is, that on the one hand a low degree of digitalization leads to a low degree of business success and a low degree of internalization leads to a low degree of business success as well and on the other hand, a medium degree in digitalization leads to a medium to high degree of business success. And on the one hand internationalizations supports business success, but most companies with a high degree of business success only had a medium degree of digitalization. One factor that might help explain this trend is that for being international (as in this case were only medium to high degree of internationalized companies were displayed) a precondition is to use digitalization tools like data or software storage in a cloud to ensure that every employee have access to the same information and software independent from where and when the employees needs them. But on the other side cloud usage costs additional to the maybe still existing manual paper-based data storage and the server operating system onsite the national company. Or that the foreign market asks for using digitalization tools in the area of ERP-Systems or travel- / fleet-management to interact with suppliers or the government and the company is not that familiar with the usage of this and this paralyses the intern processes and make them slow and inefficient. Regarding to the communication via internet the big advantage of "Skype" or "Whats app" and similar products is, that they allows to phone and write nearly with no additional costs for the tools but with costs in hardware to ensure the employee can use the tools, like smartphones or tablets and a second factor that possible decreases the business success rate is, that digital

information contrary to written down paper based information could more easily get lost by deleting them. And this lost information could paralyses the internal processes of the enterprise.

Conclusions

The aim of this research was to figure out if digitalization of internal administrative processes got an impact on the success of business internationalization. Target group were German small and medium sized FinTechs. For this in a first step a literature research of the classical market entry strategies and international trading theories were conducted. Also the authors develops an own term for the definition of a small and medium sized FinTech company because for both term "small and medium sized company" as well as "FinTech" there are no clear definitions in the existing literature. The results of the literature research show that there is a gap in the existing literature regarding the theories and strategies for foreign market entries and the internationalization of business of the special needs of small and medium sized companies in comparison.

What could be found in the results of the only survey among the German FinTech companies is, that on the one hand a low degree of digitalization leads to a low degree of business success and a low degree of internalization leads to a low degree of business success as well and on the other hand, a medium degree in digitalization leads to a medium to high degree of business success. And on the one hand internationalizations supports business success, but most companies with a high degree of business success only had a medium degree of digitalization. Possible interpretations for this could be with a higher degree of digitalization at the moment more costs come with for the company and sometimes, depending on the skills of the employees, as well a slower internal workflow process. Both would have negative consequences to the return of sales and with this on the international business success.

Bibliography

Adenäuer C., 2009. Jahrbuch zur Mittelstandsforschung: Barriers to SME Access to Promotion of Foreign Trade and Investment Some evidence from Germany.

Bain S., 1971. Barriers to new competition: Their character and consequences in manufacturing industries.

Berger, R., 2014. Industry 4.0 - The new industrial revolution: How Europe will succeed. 2014. https://ac.els-cdn.com/S2351978917304730/1-s2.0-S2351978917304730-main.pdf?_tid=a96d8226-c168-11e7-a679-00000aacb35e&acdnat=1509804272_a1cfc18b7767109a3844893080393491, accessed November 2017.

Berman J., 2012. Digital transformation: Opportunities to create new business models. *Strategy & Leadership* 40, no. 2 (2012): 16–24.

Deutsche Bundesbank, 2018. Annual Report 2017. Deutsche Bundesbank, 2018. https://www.bundesbank.de/Redaktion/EN/Downloads/Bundesbank/TCBC/annual_report_2017.pdf?__blob=publicationFile.

Dixit, K., and Norman, D., 2011. *Theory of international trade: A dual, general equilibrium approach*. Welwyn: J. Nisbet, 2011.

Dunning, J., 1979. Towards an Eclectic Theory of International Production: Some Empirical Tests. *Journal of International Business Studies* 11, no. 1 (1979): 9–31.

Eisenhardt, M. and Graebner, E., 2007. Theory Building From Cases: Opportunities And Challenges. *Academy of Management Journal* 50, no. 1 (2007): 25–32.

European Commission, 2017. SMEs in the European Union generate half of the intra-EU trade in goods. With a slightly higher share for imports. European Commission. http://ec.europa.eu/eurostat/documents/2995521/8467294/6-21112017-AP-EN.pdf.

Faix, W., Kisgen, S. and Heilmann, S., 2013. *Globalisierungsmanagement deutscher Unternehmen: Gründe, Zielregionen, Formen, Hindernisse, Erfolgsfaktoren*. 1st ed. Stuttgart: Steinbeis-Stiftung, 2013.

Faix, W., Lau, A., Schulten, A., Zywietz, T. and Kisgen, S., 2006. *Praxishandbuch Außenwirtschaft*. 1st ed. s.l.: Gabler Verlag, 2006. http://gbv.eblib.com/patron/FullRecord.aspx?p=748454.

Galbreath, J., 2005. Which resources matter the most to firm success?: An exploratory study of resource-based theory. *Technovation* 25, no. 9 (2005): 979–987.

German Federal Ministry of Economic Affairs and Energy, 2015. *Erschließen der Potenziale der Anwendung von 'Industrie 4.0' im Mittelstand,* 2015.

Hunt, E., 2002. *History of economic thought: A critical perspective*. 2nd ed. Armonk, NY: Sharpe, 2002.

Ingham, B., 2009. *International economics: A European focus*. Harlow: Financial Times Prentice Hall, 2009.

Institut für Mittelstandsforschung, 2018. Die IfM-Statistiken. Institut für Mittelstandsforschung, 2018. https://www.ifm-bonn.org/statistiken/.

Kagermann, H., Wahlster, W. and Helbig, J., 2013. Recommendations for implementing the strategic initiative Industrie 4.0: Securing the future of German manufacturing industry. *Plattform Industrie 4.0, no.* 4, 2013.

Kieser, A., 1994. Why Organization Theory Needs Historical Analyses: And How This Should Be Performed. *Organization Science* 5, no. 4 (1994): 608–620.

Krugman, P. and Obstfeld, M., 2008. *Internationale Wirtschaft: Theorie und Politik der Außenwirtschaft*. 7th ed. München: Pearson Studium, 2008.

Nießner, S.; Jartschuk, A., 2018: Fintechs. Technology enabled financial innovations. Hg. v. Deutsche Bundesbank. Berlin. https://www.bundesbank.de/Redaktion/EN/Standardartikel/Tasks/Banking_supervision/fintechs.html?nsc=true&https=1&https=1&https=1, zuletzt geprüft am 10.06.2018.

O'Donnell, A., Gilmore, A., Carson, D., Cummins, D., 2011. Competitive advantage in small to medium-sized enterprises. In: *Journal of Strategic Marketing* 10 (3), p. 205–223.

O'Sullivan, A. and Sheffrin, S., 2004. *Economics: Principles in action*. Princeton, N.J.: Recording for the Blind & Dyslexic, 2004.

Penrose, E., 1959 *The theory of the growth of the firm*. 4th ed. Oxford: Oxford University Press, 1959.

Polit, D. and Beck, C., 2010. Generalization in quantitative and qualitative research: Myths and strategies. *International journal of nursing studies* 47, no. 11 (2010): 1451–1458.

Pratt, J., Raiffa, H. and Schlaifer, R., 1996. *Introduction to statistical decision theory*. 2nd ed. Cambridge Mass. u.a.: MIT Press, 1996.

Reinemann, H., 2011 Mittelstandsmanagement. Einführung in Theorie und Praxis. 1. edt. Schäffer-Poeschel Verlag.

Rugman, A. and Collinson, S., 2008. The Regional Nature of Japanese Multinational Business. *Journal of International Business Studies* 39, no. 2 (2008): 215–230.

Schumpeter, J., 1997. *Theorie der wirtschaftlichen Entwicklung*. 4th ed. Berlin: Duncker & Humblot, 1997.

Statistisches Bundesamt, 2017: Sonderauswertung des Unternehmensregisters. im Auftrag des IfM Bonn. Wiesbaden. https://www.destatis.de/DE/Startseite.html.

VDMA 2016. "Mechanical Engineering Industry Association.".

Weber, A., 1998. *Alfred-Weber-Gesamtausgabe*. Marburg: Metropolis-Verl., 1998.

Yates, D., Moore, D. and Starnes, D., 2002. *The practice of statistics*. 2nd ed. New York, Basingstoke: W.H. Freeman; Palgrave Macmillan, 2002.

TURNOVER RATIOS AND PROFITABILITY RATIOS CALCULATION METHODS: THE BOOK OR AVERAGE VALUE

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Abstract. The scientific literature of the turnover ratios and profitability ratios calculation offers to use book or average value of balance sheet calculation methods. Different schools of financial analysis nowadays offer many variations of the ratio calculations and even though the components of ratio formulas change, the meaning stays the same.

The aim of this research is to analyze the turnover and profitability ratios, to study the different methods of calculation, based on different schools of financial analysis and empirical research results, and to create proposals for companies for the use of these methods for financial analysis.

The authors of this paper are using the international scientific literature, articles and research papers that help to study the measures of turnover and profitability ratios. For the empirical research, to compare the results using the book or average value of balance sheet calculations the authors have used the data from the annual statements of Latvian companies from different industries over a six-year period. In the research the authors have applied quantitative and qualitative research methods of economics such as the mathematical and the statistical methods, the ratio analysis, the graphical method, logically – constructive methods.

The result of done research shows that differences exist between using the book and average value calculation for turnover ratios and profitability ratios, but quantitative research during six-years period shows that results are uniform and parallel.

Key words: *ratios, analysis, book or average value*

JEL code: M41, M49

Introduction

Financial analysis is broadly used by the companies to determine the financial results and performance. Financial analysis plays an important role when measuring corporate performance and financial management of the company. The financial aspect of the business activity of an enterprise firstly appears in the speed of turnover ratios. One of the important components of financial analysis of the company used by investors and creditors are profitability ratios of assets and equity. Profitability ratio of assets (ROA) indicates how profitable a company is relative to its total assets and illustrates competitiveness. Profitability ratio of equity (ROE) measures the ability of the company to generate profits from its shareholders' investments in the company.

Most of the authors of the scientific literature offer to use average instead of book value for profitability and turnover ratio calculation. Different schools of financial analysis nowadays offer many variations of the ratio calculations and even though the components of ratio formulas change, the meaning stays the same.

The aim of this research is to analyze the turnover and profitability ratios, to study the different methods of calculation, based on different schools of financial analysis and empirical research results, and to create proposals for companies for the use of these methods for financial analysis.

The paper consists of two parts: theoretical, where the variation of ratios calculation is described and the authors offer abbreviations for Latvian users for fast and convenient application, and practical, where the authors compare book or average methods calculation in practice, based on nine large scale Latvian manufacturing companies from different industries, whose shares are quoted at the Baltic exchange, over a six-year period.

The following research can be used not only for the main financial analyzes users, but also in financial science.

The research tasks are as follows:

- to analyze the turnover and profitability interpretations by different schools of financial analysis, to choose the most popular turnover ratios interpretations from fourteen researchers of financial analysis from American, British, Russian, German and French schools;
- to offer the most commonly used and user friendly the turnover and profitability ratios interpretations;
- to propose an option of turnover and profitability ratios abbreviation that could be used conveniently by financial analyses users in Latvia;
- based on the scientific literature, to compare the book and average value of calculation of the turnover and profitability ratios;

After having analyzed fourteen scientific sources of different financial analysis schools, the authors of this research offer the most widespread turnover and profitability ratio interpretations and the use of ratio abbreviations for more convenient calculations.

The result of done research shows that differences exist between using the book and average value calculation for turnover ratios and profitability ratios, but quantitative research during six-year period shows that results are uniform and parallel.

As for the conclusions, turnover and profitability ratios calculation can be used as the book or average value, as based on the authors research the results are the same, but the authors offer to use the book value because it is the same exact as average value, but less time and data consuming.

Theoretical approaches of calculation book or average value for turnover and profitability ratios

Accounting statements reflect events that happened in the past, but they also provide clues about what's really important - what's likely to happen in the future. The asset management, and debt ratios covered thus far tell us something about the firm's policies and operations.

Based on previous research carried out by the authors where large and medium-sized Latvian companies were selected in different types of fields of activity, the most commonly used turnover ratios have been revealed and analyzed.

Assets turnover ratios show how effectively the firm is managing its assets. Activity or turnover ratios are measures of efficiency and, generally, the higher the better. Typically, the numerator is an operating measure such as sales (revenues) or cost of goods sold and the denominator is a balance sheet measure such as inventory or receivables. Thus, operating flows are measured against asset and other levels. Time series trends and comparisons to other companies are useful to spot red flags or potential opportunities (Giroux G., 2003).

The authors chose the most frequently used turnover and profitability ratios, where book or average value can be used, and analyzed those in the theoretical part as well as made empirical calculations.

The authors of this paper offer definitions for each explorer ratio:

Accounts receivable turnover ratio shows the proportion of accounts receivable needed for a given sales volume, which indicates if the receivables are being collected in a timely manner.

Inventory is frequently the largest component of a company's working capital; in such situations, if inventory is not being used up by operations at a reasonable pace, then the company has invested a large part of its cash in an asset that may be difficult to liquidate in short order (Bragg S. M., 2007).

Accounts payable turnover reveals if payments are being made in a timely manner. A low turnover ratio means that either payment terms are very long or payables are not being paid on time (Bragg S. M., 2014).

Fixed assets turnover ratio, which is the ratio of sales to net fixed assets, measures how effectively the firm uses its plant and equipment (Brigham E.F., 2016).

In the Table 1. and 2. the authors summarized fourteen scientists' turnover and profitability ratio interpretations – book or average value, terminology formulating the difference in the way of ratio calculation. This was based on the financial analyses of: American, British, Russian, German and French schools.

Table 1

Summary of Different Financial Analyses Schools of the Terminology Use the Turnover Ratios, the Book or Average Value

Nr.	Authors/ Financial Ratios Terminology	CFA Institute USA	CIA Institute USA	Dybal S. V.	Sheremet A. D. Negashev E.V.	Giroux G.	Richard Z.	Kovalov V. V.	Bernstein L.	Bragg S.	Brigham E.	Helfert E.	Higgins R.	Palepu K.	Jefimova O. V.
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1.	*Accounts Receivable Turnover Ratio*														
1.1.	Sales					X							X	X	
1.2.	Net Sales				X		X			X	X	X			
1.3.	Net Credit Sale								X						X
1.4.	Accounts Receivable								X	X		X	X	X	
1.5.	Total Revenue	X	X	X				X							
1.6.	Average Accounts Receivable	X	X	X	X	X	X	X			X				X
2.	*Inventory Turnover Ratio*														
2.1.	Sales														X
2.2.	Net Sales			X	X				X			X			
2.3.	Costs of Goods Sold	X	X	X	X	X	X	X		X	X	X	X	X	X
2.4.	Inventory						X			X			X	X	
2.5.	Average Inventory	X	X	X	X	X		X	X		X	X			X
3.	*Accounts Payable Turnover Ratio*														
3.1.	Cost of Goods Sold	X	X	X			X	X					X	X	X
3.2.	Sales					X									
3.3.	Net Sales				X						X	X			
3.4.	Total Purchases								X	X					
3.5.	Accounts Payable						X			X		X	X	X	
3.3.	Average Accounts Payable	X	X	X	X	X		X	X		X				X
4.	*Fixed Assets Turnover Ratio*														
4.1	Sales					X			X		X		X	X	X
4.2.	Net Sales			X	X		X	X		X		X			
4.3.	Total Revenue	X	X												
4.4.	Fixed Assets						X			X	X	X			
4.5.	Average Fixed Assets	X	X	X	X	X		X	X				X	X	X

Source: author's construction based on CFA Institute USA, 2017, CIA Institute USA, 2016, Dybal S.V., 2009, Giroux G.,2003, Kovalov V.V., 2016, Bernstein L.,2000, Bragg S., 2014, Brigham E., 2016, Helfert E., 2010, Higgins R. 2016, Palepu K., 2007, Richard Z., 2000, Jefimova O. V. 2002, Sheremet A.D. and Negashev E.V., 2013.

Comparing different variations of calculations in Table 1, the authors have concluded: that American and Russian schools of financial analyses terminology are similar, but British, German and France schools differ, of its standards in use GAAP (Generally Accepted Accounting Principles) or IFRS (International Financial Reporting Standards).

The simplest turnover calculation is to divide the period-end inventory into the annualized cost of sales. One can also use an average in the inventory level that are likely to occur on any specific period-end date (Bragg S. M., 2014).

Note that sales occur over the entire year, whereas the inventory figure is for one point in time. For this reason, it might be better to use an average inventory measure. If the business is highly seasonal or if there has been a strong upward or downward sales trend during the year, it is especially useful to make an adjustment (Brigham E.F., 2016).

We will also look at the profitability ratios, which reflect the net result of companies' financing policies and operating decisions.

Profit is the most important criterion for evaluating commercial firms for investment decisions. The most significant predictor of firm market valuation is profitability and the likelihood of continuous profit growth. Thus, the future existence and success of corporations depends on this analysis (Giroux G. 2003).

Consequently, there are several profitability ratios that consider different aspects of earnings performance.

Profitability ratios, which give an idea of how profitably the firm is operating and utilizing its assets. Satisfactory liquidity ratios are necessary if the firm is to continue operating. Good asset management ratios are necessary for the firm to keep its costs low and thus its net income high (Brigham, E.F., 2016).

Profitability ratios combine the asset and debt management categories and show their effects on *Return on Equity*. Finally, market value ratios tell us what investors think about the company and its prospects. All of the ratios are important, but different ones are more important for some companies than for others.

Return on Equity (ROE) this calculation is used by investors to determine the amount of return they are receiving from their capital investment in a company.

Return on Assets (ROA) a company is deemed efficient by investors if it can generate an adequate return while using the minimum amount of assets to do so (Bragg S. M., 2014).

As the size of equity changes in time, it is necessary to choose a way of its calculation which can be:

- calculation for data on its state for concrete date (the end of the period);
- determination of average size for the period.

It is simple to notice that for profitably the working enterprise the second option provides more good result (it, as a rule, appears also more exact as to some extent reflects process of formation of profit during the analyzed period).

In the analysis it is necessary to adhere to the chosen way of calculation to provide an opportunity for profitability indicators in dynamics (Jefimova O.V., 2002).

Table 2

Summary of Different Financial Analyses Schools of the Terminology Use the Return on Equity and Return on Assets Ratios, the Book or Average Value

Nr.	Authors/ Financial Ratios Terminology	CFA Institute USA	CIA Institute USA	Dybal S.V.	Sheremet A. D. Negashev E.V.	Giroux G.	Richard Z.	Kovalov V.V.	Bernstein L.	Bragg S.	Brigham E.	Helfert E.	Higgins R.	Palepu K.	Jefimova O. V.
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1.	*ROE Return on Equity Ratio*														
1.1.	Net Profit		X	X			X	X	X		X	X		X	X
1.2.	Operating Profit	X			X										
1.3.	Net Income					X				X			X		
1.4.	Equity							X			X		X	X	X

Nr.	Authors/ Financial Ratios Terminology	CFA Institute USA	CIA Institute USA	Dybal S.V.	Sheremet A. D. Negashev E.V.	Giroux G.	Richard Z.	Kovalov V.V.	Bernstein L.	Bragg S.	Brigham E.	Helfert E.	Higgins R.	Palepu K.	Jefimova O. V.
1.5.	Average Equity	X		X	X		X		X						
1.6.	Average Shareholders' Equity		X			X									X
1.7.	Total Equity									X					
1.8.	Shareholders' Investment											X			
1.9.	Average Shareholders' Investment											X			
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
2.	*ROA Return on Assets Ratio*														
2.1.	Net Income					X							X	X	
2.2.	Net Profit	X	X	X	X					X	X	X			X
2.3.	Net Profit + Interest						X	X	X						
2.4.	Total Assets				X			X		X	X		X	X	
2.5.	Average Total Assets	X	X	X		X	X		X			X			X

Source: author's construction based on CFA Institute USA, 2017, CIA Institute USA, 2016, Dybal S.V., 2009, Giroux G.,2003, Kovalov V., 2016, Bernstein L.,2000, Bragg S., 2014, Brigham E., 2016, Helfert E., 2010, Higgins R. 2016, Palepu K., 2007, Richard Z., 2000, Jefimova O. V., 2002, Sheremet A.D. and Negashev E.V., 2013.

In Table 1 and 2, where the researchers have analyzed fourteen scientific sources, it can be concluded that, the most appropriate comparison is the average balance sheet measure for the denominator. The operating measures occur over the fiscal period.

From Tables 1 and 2 the authors of this paper conclude that there is a different terminology formulation, which is connected with different applications of standards Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS).

Comparing fourteen scientific sources in Tables 1 and 2, in Table 3 the authors offer to use the popular ratios in the most widespread interpretation, which can be used as in book as well as in average value ratio calculations.

Table 3

The Turnover and Profitability Ratios Calculation Methods: The Book or Average Value

Nr.	Ratios		Book Value	Average Value
1	$\mathbf{A_1}$	**Accounts Receivable Turnover**	Net Sales / Accounts Receivable **A_1= NA / DP Atl**	Net Sales / Average Accounts Receivable **A_1= NA / DP vid Atl**
2	$\mathbf{A_2}$	**Inventory Turnover**	Net Sales / Inventory **A_2 = NA / K Atl**	Net Sales / Average Inventory **A_2 = NA / K vid Atl**
3	$\mathbf{A_3}$	**Accounts Payable Turnover**	Cost of Goods Sold / Accounts Payable **A_3 = PPRI / Kr Atl**	Cost of Goods Sold / Average Accounts Payable **A_3 = PPRI / Kr vid Atl**
4	$\boldsymbol{A_4}$	**Fixed Assets Turnover**	Net Sales / Fixed Assets **PA = NA / P Atl**	Net Sales / Average Fixed Assets **PA = NA / P vid Atl**
5	$\mathbf{R_1}$ ***ROA***	**Return on Assets %**	Net Profit/ Assets x 100 **R_2=NP/ A x 100**	Net Profit/ Average Assets x 100 **R_2=NP/ A vid x 100**

6	**R_2** ***ROE***	**Return on Equity %**	Net Profit/ Shareholders' Equity x100 **R_1=NP / PK x 100**	Net Profit/ Average Shareholders' Equity x100 **R_1=NP / PK vid x 100**

Source: table made by the authors of this paper

A_1 *– Accounts Receivable turnover;* ***A_2*** *- Inventory Turnover;* ***A_3*** *– Accounts Payable Turnover;* ***A_4*** *– Fixed Assets Turnover;* ***NA*** *– Net Sales;* ***DP Alt-*** *Accounts Receivable;* ***PPP -****; Trade Receivable;* ***UI -*** *Accrued Income;* ***K Atl*** *– Inventory;* ***PTII*** *- Non - Current Assets Held for Sale and Discontinued Operations;* ***PPRI*** *- Cost of Goods Sold;* ***Kr Atl -*** *Accounts Payable;* ***PPD*** *- Trade Accounts Payable;* ***US -*** *Accrued Liabilities;* ***P Atl*** *- Fixed Assets;* ***IĪ -*** *Investment properties;* **R_1** *- Return on Equity;* **R_2** *- Return on Assets;* **NP** *- Net Profit;* **PK** *- Shareholders' Equity;* **A** *– Assets;*

In Table 3 the authors have made the abbreviation for turnover and profitability ratios to provide more convenience for Latvian users.

As to the suggestion of which method – book or average, is more exact and if significant differences between the calculated results using two variations, the authors of this paper will discuss in the next chapter.

Turnover and profitability ratios calculation – book or average value

For empirical study the authors analyzed the financial statements of nine Latvian companies, whose business orientation is manufacturing. Profitability, ROA *Return on Assets,* ROE *Return on Equity,* and turnover ratios, which are described in Table 3 *Accounts Receivable Turnover, Inventory Turnover, Accounts Payable Turnover, Fixed Assets Turnover,* were calculated from balance sheets and income statements in the period of 2012-2017 for each company. In total 324 ratios were calculated (the six ratios for each company) using book value and 324 using average value.

The authors for the empirical analyzes have chosen nine manufacturing companies which are quoted at the *Nasdaq Baltic* exchange of different spheres: pharmaceuticals, telecommunications equipment, alcoholic beverages, ships, train's equipment, glass fiber and vehicle components. *AS Grindex, AS Olainfarm, AS SAF Tehnika* are in Baltic Main List of exchange and other are in Baltic Secondary List: *AS Valmieras stikla škiedra, AS Rīgas elektromašīnbūves rūpnīca, AS VEF Radiotehnika RRR, AS Rīgas kuģu būvētava, AS Latvijas balzams, AS Ditton pievadķēžu rūpnīca.* The *Baltic Main List* of the exchange demand from companies consolidated reports, but for Baltic Secondary List allowed be prepared according to local accounting standards. That's why *AS VEF Radiotehnika RRR, AS Rīgas kuģu būvētava, AS Ditton pievadķēžu rūpnīca* reports were made by Latvian accounting standards.

Due to the limited amount of information that can be incorporated in this article, the authors show only one ratio calculation per group from the whole large-scale research – book or average turnover and profitable ratios calculation.

In Table 4 and Table 5 the authors show the results of *Accounts Receivable Turnover Ratio* and *Return on Equity* ratio comparing book and average value calculation.

For a lot of companies selling on credit is an important part of working capital.

Table 4

Accounts Receivable Turnover Ratio Calculation - Book or Average Value

Production enterprise	AS Grindex	AS Olainfarm	AS SAF Tehnika	AS Valmieras stikla šķiedra	AS Rīgas elektromašīnbūves rūpnīca	AS VEF Radiotehnika RRR	AS Rīgas kuģu būvētava	AS Latvijas balzams	AS Ditton pievadķēžu rūpnīca	Performance indicators modification
Nr.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
2012	2,75	2,50	7,67	7,70	19,32	5,43	55,38	111,76	1,85	Net Sales/Accounts Receivable
	3,10	*3,08*	*6,41*	*8,00*	*9,88*	*3,99*	*65,02*	*106,21*	*2,60*	*Net Sales/Average Accounts Receivable*
	-0,35	***-0,58***	***1,27***	***-0,30***	***9,44***	***1,44***	***-9,64***	***5,55***	***-0,75***	***Difference***
2013	3,14	2,40	5,10	7,00	10,00	36,24	14,42	112,26	1,23	Net Sales/Accounts Receivable
	3,03	*2,40*	*6,06*	*8,09*	*12,66*	*8,00*	*12,85*	*115,05*	*1,24*	*Net Sales/Average Accounts Receivable*
	0,11	***0,01***	***-0,95***	***-1,09***	***-2,65***	***28,24***	***1,57***	***-2,79***	***-0,01***	***Difference***
Nr.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
2014	2,28	3,04	6,36	9,28	14,38	6,69	9,94	49,62	3,31	Net Sales/Accounts Receivable
	2,21	*3,01*	*5,34*	*8,97*	*11,79*	*10,53*	*6,42*	*60,82*	*3,09*	*Net Sales/Average Accounts Receivable*
	0,06	***0,03***	***1,02***	***0,32***	***2,59***	***-3,84***	***3,52***	***-11,19***	***0,21***	***Difference***
2015	1,77	3,17	12,87	14,58	8,21	0,82	12,20	117,98	9,09	Net Sales/Accounts Receivable
Nr.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
	1,85	*3,17*	*8,62*	*14,65*	*6,64*	*5,74*	*12,54*	*70,36*	*3,74*	*Net Sales/Average Accounts Receivable*
	-0,08	***0,01***	***4,25***	***-0,07***	***1,57***	***-4,92***	***-0,34***	***47,62***	***5,35***	***Difference***
2016	2,32	3,01	11,21	11,96	11,04	1,24	13,02	83,33	5,16	Net Sales/Accounts Receivable
	2,26	*3,20*	*12,17*	*12,40*	*11,81*	*8,68*	*12,73*	*98,71*	*6,93*	*Net Sales/Average Accounts Receivable*
	0,05	***-0,19***	***-0,96***	***-0,43***	***-0,76***	***-7,43***	***0,29***	***-15,38***	***-1,77***	***Difference***
2017	3,25	3,36	21,33	17,32	57,41	5,01	30,05	71,17	7,12	Net Sales/Accounts Receivable
	3,07	*3,19*	*20,82*	*19,19*	*24,13*	*7,00*	*12,81*	*77,94*	*5,24*	*Net Sales/Average Accounts Receivable*
	0,17	***0,18***	***0,51***	***-1,87***	***33,28***	***-1,99***	***17,23***	***-6,77***	***1,88***	***Difference***

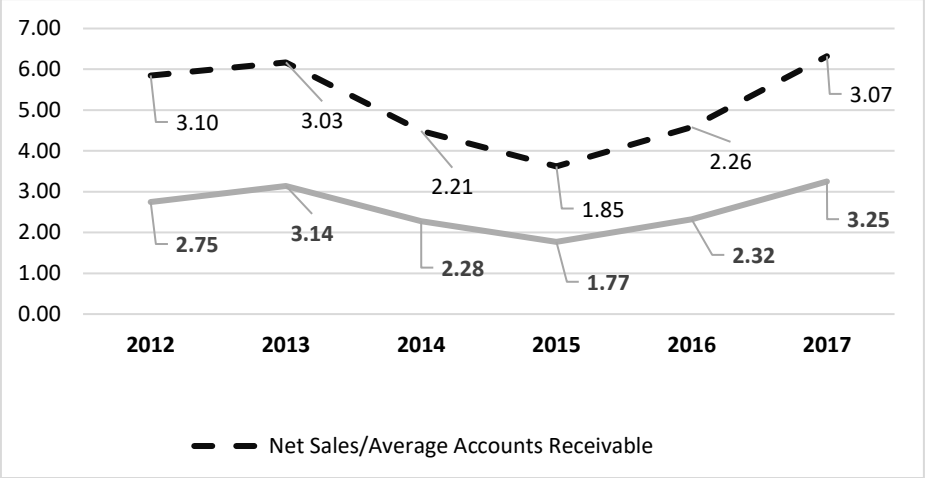
Source: author's calculations based on Nasdaq Baltic data

From Table 4 the authors can suggest that difference between *Accounts Receivable Turnover Ratio* book and average value calculation exist and sometimes the difference is quite huge, it can depend on several reasons:

- seasonable reasons;
- the sales volume, with growth of sales volume the debit debt grows;
- conditions of settling with buyers and customers, the more preferential terms of calculations are provided to buyers, the remainder of a debit debt are higher;
- the creditor's policy of debt collection, the more active the enterprise in collecting debt, the less its rest.

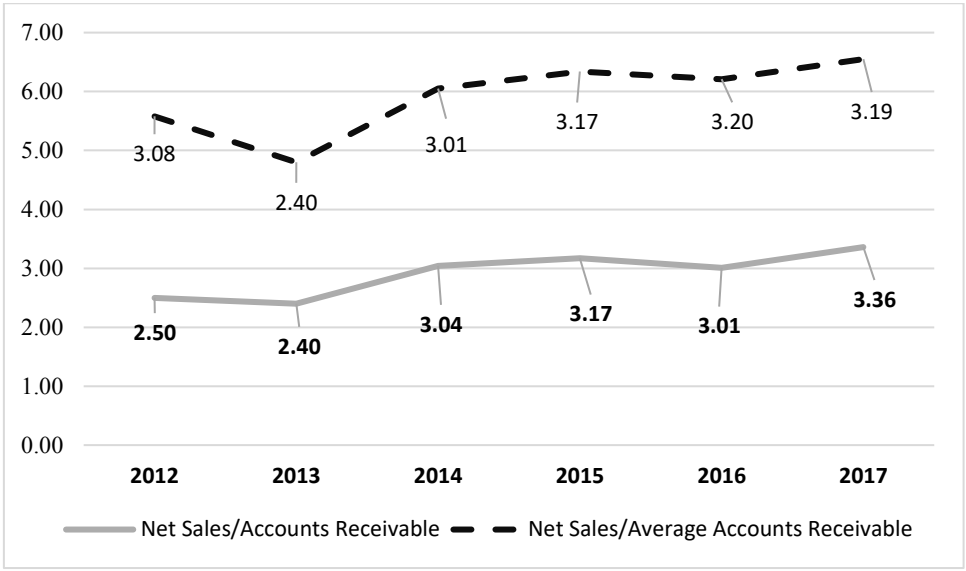
The difference between book and average accounts receivable are observed in *AS VEF Radiotehnika RRR* in year 2013 is 28,24, the *Average Accounts Receivable* was 36,24, but book value 8,00, this indicates that perhaps the company changed conditions of selling on credit. While analyzing the data from *AS Latvijas balzams* the authors suggest that either the growth sales volume has increased or the company does not practice selling on credit.

From the compared data, the authors have concluded that the average value calculation is more favorable in some cases for the financial analysis than the book value, the results are bigger.



Source: author's calculations based on Nasdaq Baltic data

Fig. 1. **AS "Grindex" Accounts Receivable Turnover Ratio- Book or Average**



Source: author's calculations based on Nasdaq Baltic data

Fig. 2. **AS "Olainfarm" Accounts Receivable Turnover Ratio– Book or Average**

In Figure 1 and 2 the authors analyzing the tendency of *Accounts Receivable Turnover Ratio* calculations comparing book and average value. AS Grindeks and AS Olainfarm are both medical product manufacturers.

Analyzing Table 4, AS Grindeks and AS Olainfarm, *Accounts Receivable Turnover Ratios* show that a difference between book and average accounts receivable is observed, but if analyzing the trends of calculation results of the last six years, the same ratios show the same trends of change.

Capital investors (shareholders) make in the investments in the enterprise for the purpose of receiving profit on investments, therefore from the shareholders' point of view the most important assessment of efficiency of investment of capital is the return of it.

As the size of equity changes with time, it is necessary to choose a way for measuring it, which can be:

- calculation of data at a certain date (end of the period);
- determination of the average size for the period.

It is easy to notice that for profitably of the working enterprise the second option provides better results (it, as a rule, appears also more exact as to some extent it reflects process of formation of profit during the analyzed period).

In the analysis it is necessary to adhere to the chosen way of calculation to provide an opportunity for profitability indicators in dynamics (Jefimova O.V., 2002).

Return on Equity calculation is used by investors to determine the amount of return they are receiving from their capital investments in a company. This is a commonly used measure, but can be misleading, as discussed under the Cautions section.

A management team that is eager to increase a company's return on equity can easily do so by incurring new debt and using these funds to buy back stock. Although the amount of equity is thereby reduced, making the ratio more favorable, the company also has an obligation to pay back the debt and related interest. An overly zealous pursuit of this approach can result in such a large debt load that a small downturn in sale will not allow it to pay off the debt, possibly ending in bankruptcy. An astute investor should combine this ratio with an analysis of how much debt a company has incurred, as well as its interest cost (Bragg S.M., 2007).

Table 5

Return on Equity Ratio Calculation (ROE) - Book or Average Value (%)

Production enterprise	AS Grindex	AS Olainfarm	AS SAF Tehnika	AS Valmieras Stikla Šķiedra	AS Rīgas elektromašīnbūves rūpnīca	AS VEF Radiotehnika RRR	AS Rīgas kuģu būvētava	AS Latvijas balzams	AS Ditton pievadķēžu rūpnīca	**Performance indicators modification**
Nr.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
2012	10,29	27,50	8,23	8,43	56,13	7,23	0,65	8,02	0,04	Net Profit/Shareholders' Equity
	10,85	*31,45*	*8,19*	*8,71*	*77,97*	*6,97*	*0,65*	*8,36*	*0,04*	*Net Profit/Average Shareholders' Equity*
	-0,56	***-3,95***	***0,04***	***-0,28***	***-21,84***	***0,27***	***0,00***	***-0,34***	***0,00***	***Difference***
2013	8,69	20,56	-0,20	10,70	19,45	13,54	-0,21	7,18	0,56	Net Profit/Shareholders' Equity
	9,09	*22,49*	*-0,20*	*11,14*	*26,97*	*9,87*	*-0,21*	*7,54*	*0,56*	*Net Profit/Average Shareholders' Equity*
	-0,39	***-1,93***	***0,00***	***-0,43***	***-7,51***	***3,66***	***0,00***	***-0,35***	***0,00***	***Difference***
2014	-3,29	15,46	1,15	14,02	0,23	-19,52	-3,53	10,04	-47,64	Net Profit/Shareholders' Equity
	-0,77	*16,75*	*1,15*	*14,88*	*0,23*	*-16,62*	*-3,46*	*10,56*	*-37,72*	*Net Profit/Average Shareholders' Equity*
	-2,51	***-1,29***	***-0,01***	***-0,85***	***0,00***	***-2,90***	***-0,06***	***-0,52***	***-9,92***	***Difference***
2015	-0,79	16,47	10,72	10,42	-1,03	13,67	0,71	8,49	-468,64	Net Profit/Shareholders' Equity
	-0,79	*17,94*	*11,24*	*10,76*	*-1,15*	*2,46*	*0,71*	*8,69*	*-138,75*	*Net Profit/Average Shareholders' Equity*
	0,00	***-1,48***	***-0,51***	***-0,34***	***0,12***	***11,21***	***0,00***	***-0,20***	***-329,89***	***Difference***
2016	7,83	10,09	7,88	10,00	1,12	128,35	0,54	7,76	10,68	Net Profit/Shareholders' Equity
	8,15	*10,48*	*7,84*	*9,96*	*1,12*	*429,64*	*0,54*	*8,31*	*10,74*	*Net Profit/Average Shareholders' Equity*
	-0,32	***-0,39***	***0,04***	***0,04***	***-0,01***	***-301,29***	***0,00***	***-0,55***	***-0,05***	***Difference***
2017	9,96	9,70	14,02	8,91	1,87	226,11	-1,01	8,24	59,63	Net Profit/Shareholders' Equity
	10,41	*9,70*	*14,42*	*9,33*	*1,95*	*-1016,44*	*-1,00*	*8,59*	*84,96*	*Net Profit/Average Shareholders' Equity*
	-0,45	***0,00***	***-0,40***	***-0,42***	***-0,08***	***1242,56***	***-0,01***	***-0,35***	***-25,33***	***Difference***

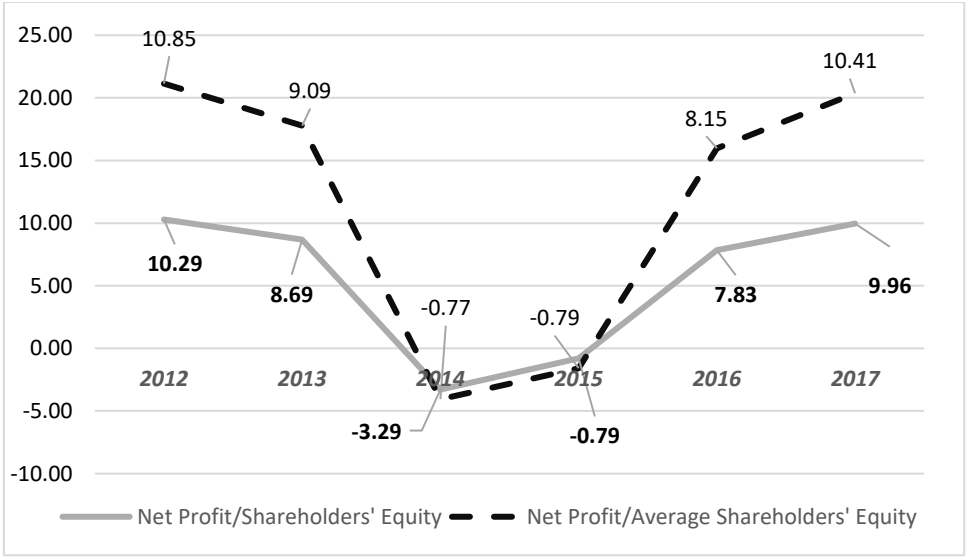
Source: author's calculations based on Nasdaq Baltic data

In Table 5 the authors analyze *Return on Equity* book or average value of calculation.

Analyzing the trends of Return on Equity (ROE) calculations, the authors can conclude, that using book or average value calculation for ROE in some cases it can be difference 0,00, like *AS Ditton pievadķēžu rūpnīca.* But in some cases, there can be a significant difference between using book or average value, as *AS VEF Radiotehnika RRR* in 2017-year analyses. But in most examples in Table 5 *Average Shareholders' Equity* is higher than the book value *Shareholders' Equity*.

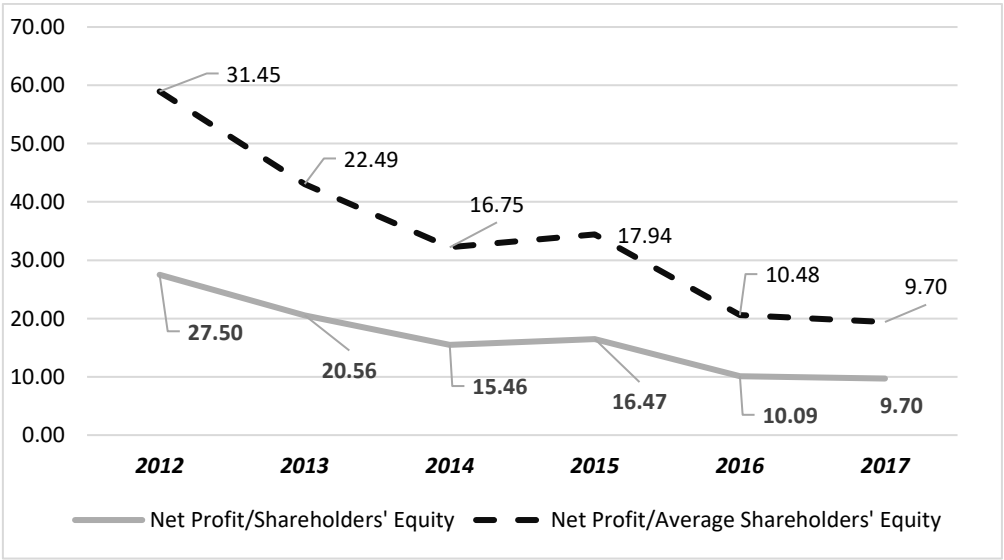
It means that using the average methods of calculation the results of the ratios of ROE are higher than book value methods.

In Figure 3 and 4 the authors show various book or average *Return on Equity* ratios calculation trends, to conclude which method is more exact. If it is reasonable to use average value methods instead book value methods, the tendency of both methods is parallel, which can be the reason to choose book value instead of average calculation method. Book value method ratios calculation is less expensive and saves time.



Source: author's calculations based on Nasdaq Baltic data

Fig. 3. **AS "Grindex" Return on Equity (ROE) - Book or Average value (%)**



Source: author's calculations based on Nasdaq Baltic data

Fig. 4 **AS "Olainfarm" Return on Equity (ROE) - Book or Average value (%)**

From AS "Olainfarm" or AS" Grindex" calculation of *Return on Equity* results, the authors conclude – the trend of ratios book or average calculation methods are parallel, what confirms in Figures 3 and 4 ratios analyzes for six years.

Conclusions

The theoretical and practical results of this research can be useful not only for main financial analyses users: shareholders, investors, management, but also in the scientific World of financial analysis. The first part of this paper is theoretical, where more theoretical problems of terminology and calculation methods analyses are described. In the second part of the paper the authors compare data, of nine Latvian manufacturing companies of different areas of industry – to check differences between book and average methods calculation.

While analyzing the results of the current research, authors have come to the following conclusions:

1. To analyze the turnover interpretations by different schools of financial analysis the authors suggest using various terminology for the same ratios as different terminology is used in different countries to describe the same thing, same with GAAP or IFRS standards, theoretical material for the ratios′ calculation should be carefully interpreted. The authors offer to use IFRS standard for the terminology for ratios as it is user friendly for the local Latvian users.
2. After empirical analyzes of fourteen scientific sources of main schools of financial analyses, the authors of this research suggest to use the most popular interpretation of four Turnover Ratios: *Accounts Receivable, Inventory, Accounts Payable and Fixed Assets,* and two Profitability Ratios: *Return on Assets (ROA) and Return on Equity (ROE).* The authors have chosen these basic ratios, to compare book or average methods calculation, as these are the most common ratios being used by large and medium sized companies in Latvia, according to previous research.
3. Studying scientific literature and articles of the theoretical guidelines for the turnover and profitability ratios calculations the authors have decided to offer coefficient abbreviations of formulas for convenient use for the Latvian users of daily financial analyses - theoretical material for the ratio′s calculation should be carefully interpreted.
4. Studying scientific, literature of the theoretical guidelines, of fourteen researchers, for turnover and profitability ratios calculation, the authors conclude, that most of the analyzed scientific sources offer to use the average value of ratios calculation.
5. In the second part of this research the authors calculated and compared all of the analyzed ratios, but due to size limitations of this research paper - show only *Accounts Receivable Turnover* and *Return on Equity Ratio* empirical results of Latvian manufactory company′s calculations. The average value results calculation in most cases are higher than the book value.
6. Based on the empirical analyses, where nine Latvian, manufacturing companies - large and medium size, were analyzed during a six-year period, the authors have concluded, that the tendency between book and average methods of ratios calculations are different, but the results of trends, during this period are parallel.

Proposals

1. The authors propose to use book value ratios methods of calculation, to save time and resources.
2. To continue the current research and to carry out empirical analyses of different industries in Latvia. In the perspective research the authors offer the matrix for the main financial analyses′ users: shareholders, investors and management for difference industries of Latvian large and medium sized companies, for more exact and operational data analyzes.

Bibliography

Bernstein, L.A., 2000. *Analysis of Financial Statements.* Fifth Edition, New York: McGraw-Hill.

Bragg, S.M., 2007. *Financial Analysis. A Controller's Gui1.de.* Second Edition, John Wiley & Sons, Inc.

Bragg, S.M., 2007. *Business Ratio and Formulas a Comprehensive Guide.* Second Edition, John Wiley & Sons, Inc.

Bragg, S.M., 2014. *Financial Analysis, Business Decision Guide.* Second Edition, John Wiley & Sons, Inc.

Brammertz W. and others., 2009. Unified Financial Analysis. John Wiley & Sons, Ltd.

Brigham, E.F., 2016.Fundamentals *of Financial Management.* Thirteenth Edition, South-Western.

CFA Level I Schweser Study Notes 2017. Book 3- *Financial Reporting and Analysis.* Kaplan Inc.

CIA Institute USA, 2017. *Analysis and Interpretation of Data.* Exam Preparation HOCK International.

Da-Hsien Bao, Jooh Lee and George Romeo,2010. Comparisons on selected ratios between IFRS and US GAAP companies. *Journal of Financial Reporting and Accounting,* Vol 8. No 1, pp.22,34.

Giroux, G., 2003. *Financial Analysis. A User Approach.* John Wiley & Sons Inc.

Helfert, E.A.,2010. *Financial Analysis Tools and Techniques. A Guide for Managers.* New York: McGraw-Hill Inc.

Higgins, R.C., 2016. *Analysis for Financial Management.* Eleventh Edition, New York: McGraw-Hill Inc.

International Financial Reporting Standards http://www.ifrs.org/issued-standards/list-of-standards/ [03.12.2018].

IFRS and US GAAP: similarities and differences https://www.pwc.com/us/en/cfodirect/assets/pdf/accounting-guides/pwc-ifrs-us-gaap-similarities-and-differences-2017.pdf [05.12.2018].

Palepu K.G. & Healy P.M., Bernard V.L., Peak E., 2007. *Business Analysis and Valuation.* IFRS Edition., Thomson.

Дыбаль, С.В., 2009.*Финансовыйанализвконцепцииконтроллинга*. Монография. СПб.: Бизнес-пресса.

Ефимова О.В., 2002. *Финансовый анализ.* 4-е издание, М.: Бухгалтерский учет.

Ковалев, В.В., Ковалев,Вит.В., 2016. *Анализ баланса.* 4-е издание, Проспект.

Ковалев В.В., 2011. *Финансовый Менеджмент,* 2-е издание, Проспект.

Ришар, Ж., 2000. *Бухгалтерский учет: теория и практика*. М: Финансы и статистика.

Шеремет, А.Д., Негашев Е.В., 2013*Методика финансового анализа деятельности коммерческих организаций.* 3-еизд, перераб. идоп. М: ИНФРА-М.

Baltijas Regulated Market, 2018. *Baltic Main List*.
http://www.nasdaqbaltic.com/market/?pg=reports&lang=lv[Accessed 8 February 2019].

REGIONAL DEVELOPMENT WITH CONSIDERING FACTORS OF SUSTAINABILITY

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Abstract. In the decentralization framework held currently by local authorities of Ukraine, stimulate regional development should be carried out in order to meet the society' interests on the basis of the natural, demographic, historical and economic preconditions. It is also necessary to consider not only the limited natural resources but also the possibility of conservation and restoration of the environment.

The research aim is to the reasoning that the region's development directions should be based on determining its sustainability. The study should determine the socio-economic development of Ukrainian regions with considering sustainability. Next step is to identify the influence of the economic, ecological, social and institutional components on the sustainable development in Ukrainian regions. For future determination, the priority directions of development in the Odessa region need to show of assessment of socio-economic and sustainable development in this region.

The paper presented an assessment of the sustainable development of the Ukrainian regions, which is based on determining the sustainable development index and its components (components of quality and safety of life, indices of social and institutional, ecological, economic dimensions). There are the results of monitoring socio-economic development of Ukrainian regions with their ranking by directions "Rational Environmental Use and Quality of the Environment" and "Renewable Energy and Energy Efficiency", which are based on data on emissions of pollutants into the air, the volume of consumed fuel and energy resources, the introduction of energy-saving light sources in external lighting and other indicators.

The article obtained a conclusion that the regional development should be based on the factors of sustainability. Priorities of regional development require the estimation of the current socio-economic level of the region and the index of sustainable development of the regions. The greatest impact on the regional sustainable development in Ukraine have the ecological and social and institutional components. Odessa region is characterized by an extensive type of economic development now. But the achievement of sustainable development at the regional level is possible by ecologizing the economic activity in a region.

Key words: *regional development, sustainable development, ecological factors, etc.*

JEL code: Q01, R58

Introduction

During the last decades, Ukraine and its regions have faced significant challenges related to the accelerated development of export-oriented primary industries, the exacerbation of environmental problems, negative climatic changes, high resource-intensive production, degradation of rural areas. The principles and guidelines of sustainable development strategy aimed at achieving harmony between economic indicators of growth, stability in the social sphere and the environment. Therefore, regional development planning should be based on this strategy and take into account environmental factors.

The research questions that needs to be answered: What is regional development? Which methods do use for determination of level regional development? How these methods take into account the sustainable component? Is it possible to give examples of regional development estimation considering factors of sustainability?

The research aim is based on theoretical and methodological approaches to regional development, then Ukrainian regions are ranked and factors of sustainability are considered.

Tasks of the research:

- Study theory and methodology of regional development;
- Estimation of socio-economic and sustainable development of Ukrainian regions;
- Analysis regional development of Odessa region.

The research methods applied in the paper are based on official methodology for ranking Ukrainian regions, methodology of World Data Center for Geoinformatics and Sustainable Development, analysis of the literature and advanced papers in the field of regional development.

Theoretical approach

One of the key concepts in the study of theoretical approaches to regional development is the definition of "region". Region has its origin in the Latin regio which stems from regere, meaning 'to govern' (Cooke, P. & Leydesdorff, L.J., 2006). Analysis of existing theoretical approaches to this issue demonstrates the number of approaches to understanding the essence of the concept "region": economic, social, spatial, political system, etc. However, most domestic and foreign researchers "gravitate" to the territorial approach in defining this concept. Domestic regionalists also support the territorial approach to the interpretation of the region and consider that "the region is a certain territory within one or more states that is homogeneous according to certain criteria (economic, demographic, environmental, ethnic, social, cultural), and differ according to these criteria from other territories", at the same time these features should be characterized by unity and integrity, should be complex-forming (Dorohuntsov, S.I., et al., 2002).

In the definition of "region", as a rule, lay four conditions (Storonianska, I. Z., 2009):

- a region is a territorial entity;
- the region - is part of an integrated social and administrative system, so it should have its main features;
- the region should be characterized by a certain economic specialization;
- the region is a certain social and economic system.

In the Law of Ukraine "On Stimulating the Development of Regions" (Verkhovna Rada of Ukraine, 2005) region identified with the regional level administrative-territorial division. In modern economic and political practice, regions are the administrative-territorial units of the country (usually regions have to comply with EU guidelines on NUTS-2).

European institutions the term "region" define as "directly subordinate level after state" and select: local, district and regional levels. The Assembly of European Regions, which adopted a declaration on regionalism in 1996, considers the region as a "territorial entity, formed in accordance with the procedure established by law, is at an order lower than the state level and endowed with political self-government" (Assembly of European Regions, 1996).

Currently, there are two views on the essence of regional development. The first is that "the development of the region - a multidimensional process that is usually considered in terms of the totality of the various social and economic goals." This is understood as the mode of functioning of the regional system, oriented on the positive dynamics of the level and quality of life of the population, providing stable, balanced recreation of the social, economic, resource and ecological potential of the territory". According to the second, "under it should be understood any, not necessarily progressive,

changes in economic and social components in accordance with scientific and technological progress, the growing influence of interregional and inter-country competition, the growing importance of public administration of macro- and microeconomic processes" (Medvid, V.Y., 2012, p.159).

Consequently, regional development is a dynamic process, a change in the internal socio-economic structure of the region in the direction of its perfection and rationalization (Maddock. C, et al, 2014, p.27). As a rule, it has a ongoing content, characterized by progressive changes and as a result should lead to the formation of the region as a sustainable spatial system that rationally uses its internal potential and harmoniously coexists with the environment.

The rapid pace of human development has aggravated the problems of environmental security in recent decades. Under the pressure of progressive changes in technology, humanity was forced to go to the cardinal steps in coordinating the activities of different in their technical level of countries. In 1992 adopted the Kyoto Protocol, which sets a quota of emission of greenhouse gases in the atmosphere. Following implementation of the requirements of the protocol in practice began to use the term "sustainable development", including on the regional level. The World Commission on Environment and Development treatise on sustainability centers on global conditions of ecology (i.e., environment), economic development (i.e., by technologies), and societal equity (Sikdar, SK, 2003, p.1929). Thus, "sustainable socio-economic development of the region is characterized by its ability to provide positive dynamics of the level and quality of life, using for this purpose the new factors and conditions, including the balanced play of economic, natural resource and economic potential localized in its territory" (Dorohuntsov, S.I., at al., 2002, p.160].

Methods

Determining the directions of regional development requires the estimation of the current socio-economic level of the region firstly. This method is to identify the most investment attractive regions and regions that need to stimulate their development.

The annual monitoring of the socio-economic development of Ukrainian regions is carried out by making estimates of the regions' rating by 12 directions (economic and social cohesion, economic efficiency, investment and innovation development and foreign economic cooperation, financial self-sufficiency, development of small and medium enterprises, efficiency of labor market, infrastructure development, renewable energy and energy efficiency, accessibility and quality of education services, accessibility and quality health services, social protection and safety, rational environmental use and quality of the environment), and calculating the total rating as a whole by all directions (Cabinet of Ministers of Ukraine, 2015).

The ecological component in the considered method is taken into account by determining the regional ratings by two directions (rational environmental use and quality of the environment, renewable energy and energy efficiency) and further consideration of these rankings in the total regional ranking.

With the aim to ensure sustainable development of regions, the next step is to determine the index of sustainable development of the regions, as well as the impact on this index of the economic, environmental and social components. This method to determine which components (economic, ecological, social and institutional) most influencing the index of sustainable development.

Methodology for evaluating and analyzing sustainable development contains a model of sustainable development, which is interdisciplinary generalization of models, known in the nature, economic and social fields of science, and

technique and application of formal statistical methods and techniques for analysis expert assessment of sustainable development (Zgurovsky, M., at al., 2013).

According to this methodology, the process of sustainable development is characterized by two main components: security and quality of human life, and generalized measure of sustainable development is defined using quaterion {Q}. Quaterion {Q} contains imaginary weighted scalar part, which describes the safety of human life and the weighted actual vector of describing the quality of life in the space of three dimensions: economic, environmental and social.

Thus, sustainable development index is a quantitative measure of sustainable development, taking into account the safety and quality of human life. For level 5 of conflict safety of life becomes apparent, and to calculate the index of sustainable development it is taken as 0.

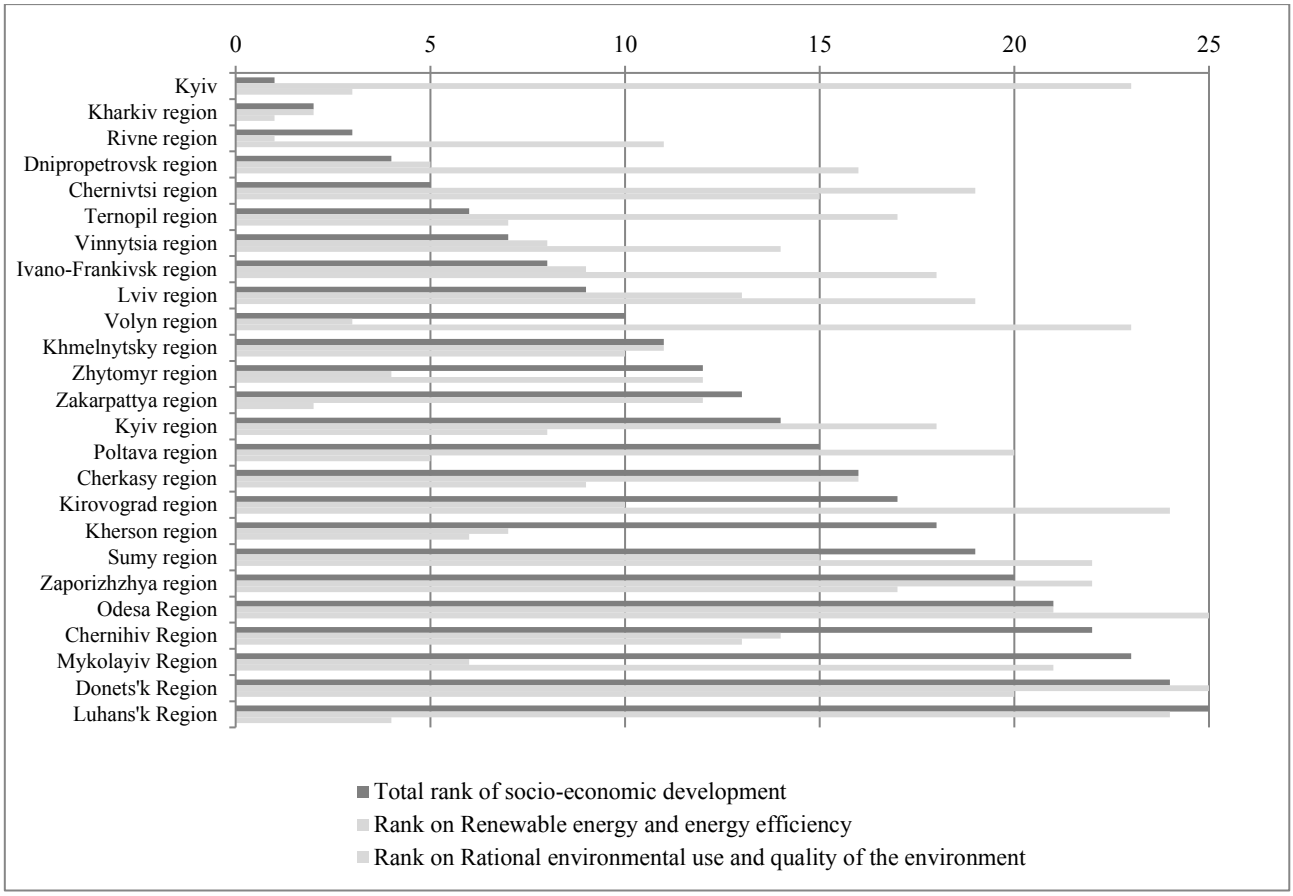
Component quality of life is integrated assessment that considers together all three dimensions of sustainable development, and thus reflects the relationship between the three inseparable spheres of society: economic, environmental and social. The degree of harmonization of sustainable development reflects a balance between the economic, environmental and social dimensions.

Component security of life is integrated assessment, which takes into account the total impact of global threats to the sustainable development of countries and country.

Research results and discussion

1. Estimation of socio-economic and sustainable development of Ukrainian regions

The results of the monitoring of the socio-economic development of Ukrainian regions in 2017 are presented in Figure 1 (Ministry of Regional Development, Construction, Housing and Utilities of Ukraine, 2017). We can conclude that there are regions-leaders in socio-economic development in Ukraine. These are the regions that occupy the first 5 positions of the rating: city Kyiv, Kharkiv, Rivne, Dnipropetrovsk and Chernivtsi regions. Regions with an average level of socioeconomic development, which occupy 6-20 positions in the rating: Ternopil, Vinnytsia and other regions. And regions with low socio-economic development, occupying positions 21-25 rating, including Odesa region.

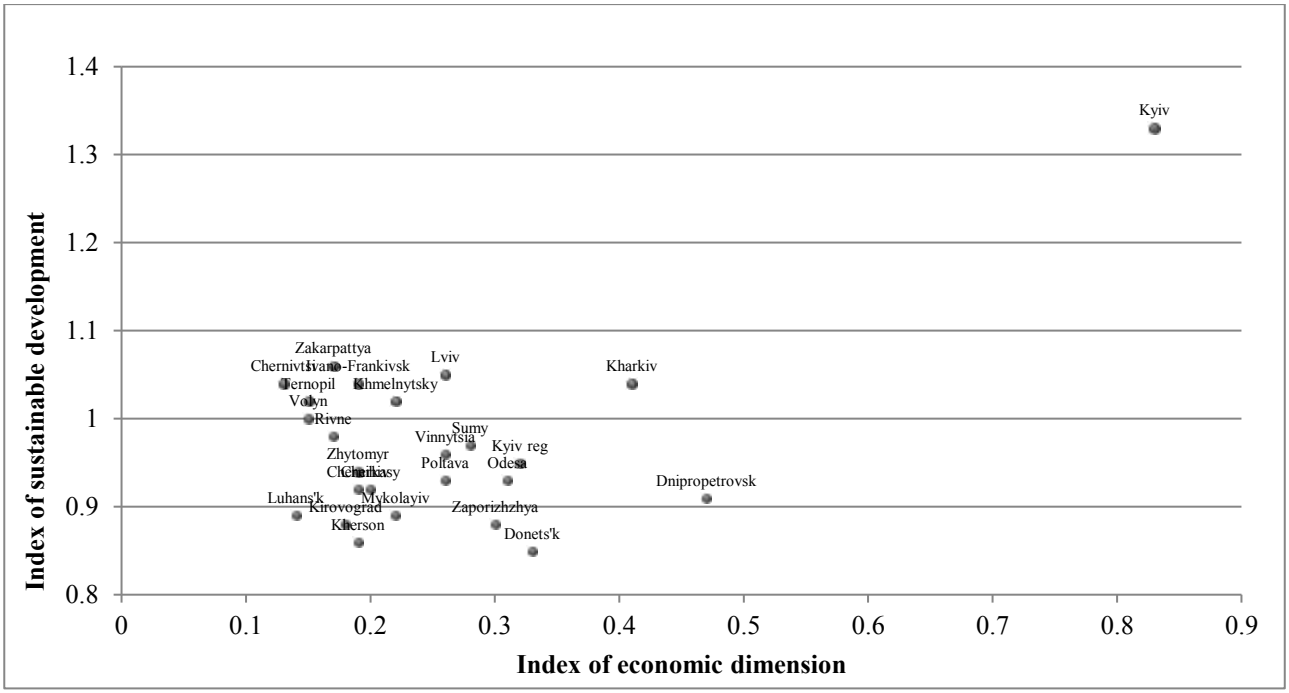


Source: created by author on base data Ministry of Regional Development of Ukraine

Fig. 1. **Results of monitoring of socio-economic development of Ukrainian regions including factors of sustainability in 2017**

Sustainability factors in this assessment are presented by ecological factors (Renewable energy and energy efficiency and Rational environmental use and quality of the environment). We can note that the total rank of the region does not correspond to the ranks ecological components. This means that these ratings don't have defining role in the estimate rating of socio-economic development of Ukrainian regions.

The estimation of sustainable development of Ukrainian regions in 2014 shows that the city of Kyiv has a leading position, due to the fact that the capital of Ukraine is the economic centre of Ukraine where all central financial institutions are concentrated (Fig. 2) (ICSU and others, 2017, WDC-Ukraine, 2014). It also displays the highest value of Index of economic dimension (0,83).



Source: created by author on base data WDC-Ukraine

Fig. 2. **Influence of the economic component on the regional sustainable development in Ukraine (2014 year)**

When comparing the average value of Index of sustainable development for Ukrainian regions except Kyiv (0,96), then possible to identify regions in which sustainable development is above average (Zakarpattya, Lviv, Kharkiv, Chernivtsi, Ivano-Frankivsk, Ternopil, Khmelnytsky, Volyn, Rivne, Sumy and Vinnytsia regions) and regions where sustainable development is below average (Kyiv, Zhytomyr, Poltava regions etc). The Donetsk region has the lowest value for this index (0,85).

The estimation of the influences of the ecological and social and institutional components on the regional sustainable development in Ukraine has shown that the highest values of the Index of sustainable development have regions with the highest values of the Index of environmental dimension and Index of social and institutional dimension (Fig. 3 and Fig. 4). The exception is the city of Kyiv with the highest value of the Index of economic dimension.

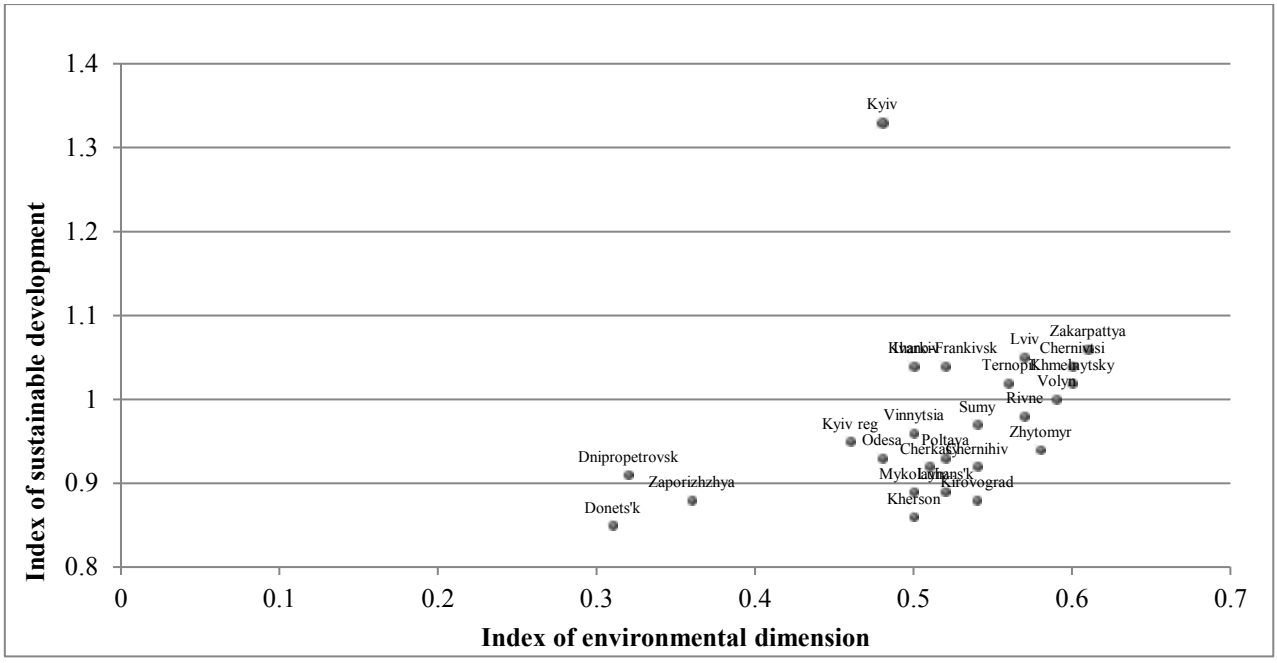


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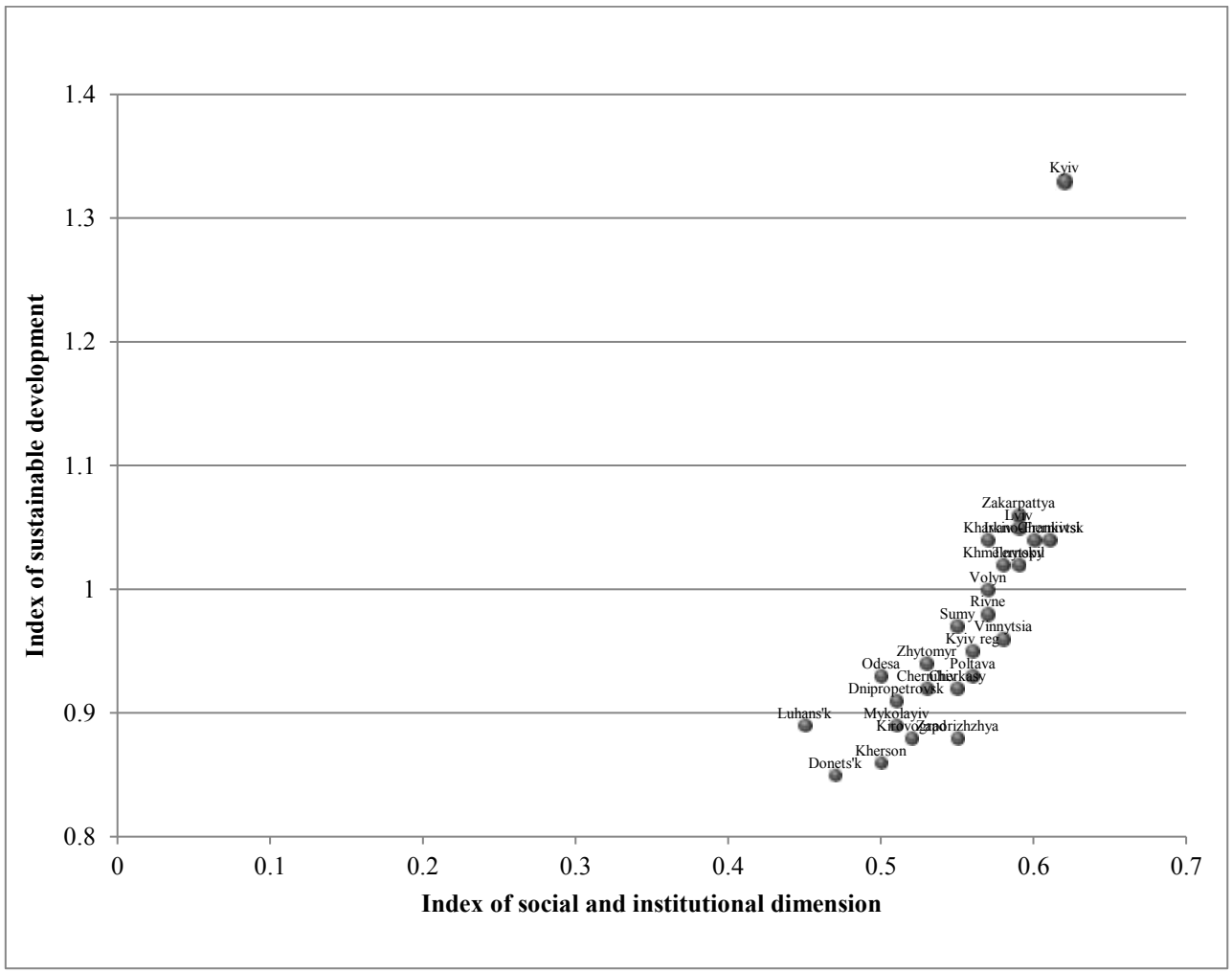
Fig. 3. **Influence of the ecological component on the regional sustainable development in Ukraine (2014 year)**



Source: created by author on base data WDC-Ukraine

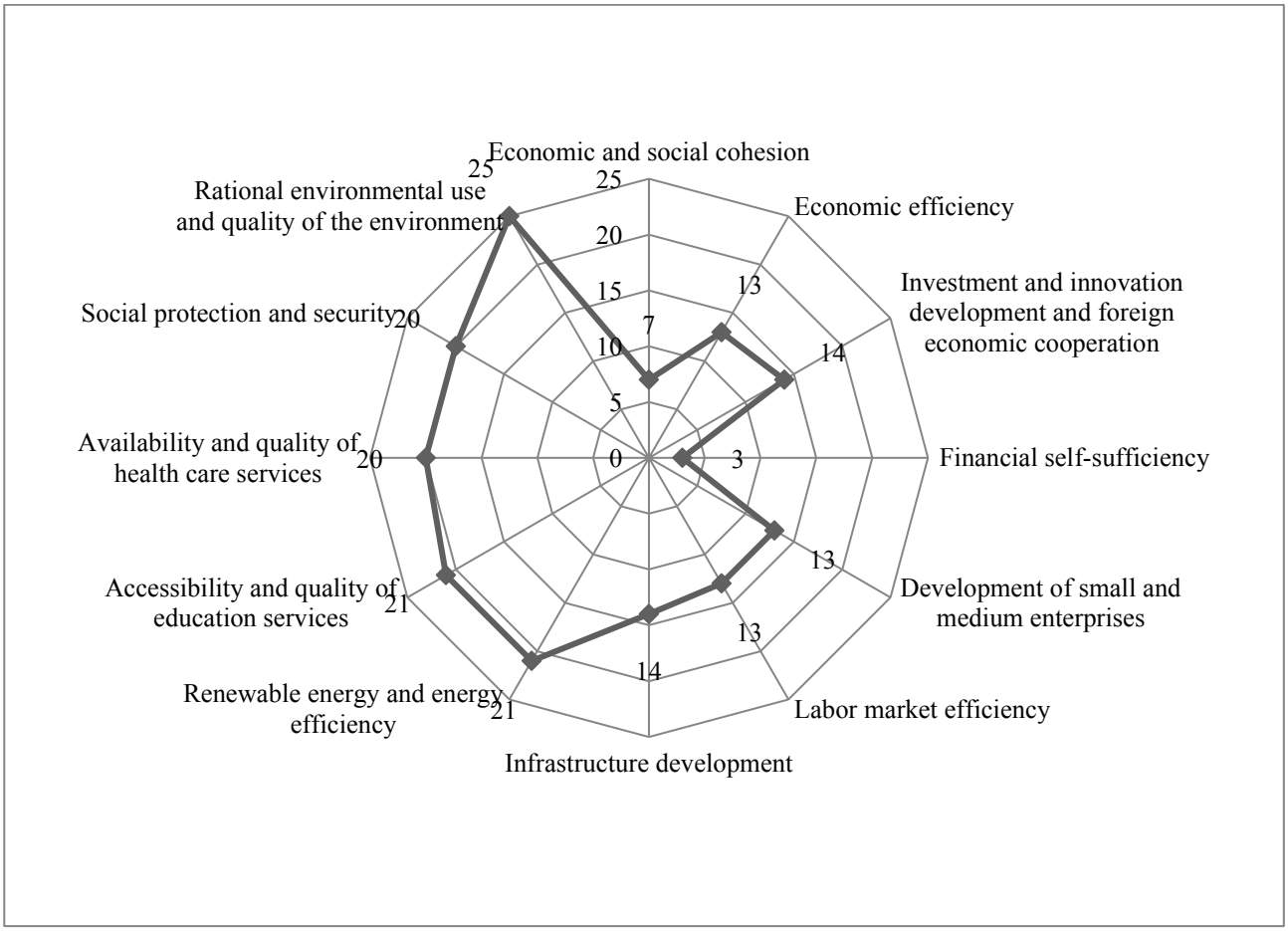
Fig. 4. **Influence of the social and institutional component on the regional sustainable development in Ukraine (2014 year)**

2. Analysis regional development of Odessa region

Odesa region is a seaside and border region of Ukraine, located in the extreme southwest of the country, with a territory of 33.3 thousand km^2 and with a population of 2.38 million people (Odessa Regional State Administration, 2018). Odesa region is a region, which is allocated in the economic complex of Ukraine by its transport-distribution functions, developed industry, intensive agricultural production.

According to the structure of industrial production, the largest share belongs to processing industry enterprises - 69.4%, electricity, gas, steam and conditioned air supply - 28.1%. In the processing industry, the largest amount of products is sold in the production of food products - 42.6%; machine building 7.7%, enterprises in the production of rubber and plastic products; other non-metallic mineral products 6.2%, metallurgy, finished metal products 6.3%.

According to the monitoring of the socio-economic development of the Ukrainian regions for 2017, the Odessa region ranks 21st out of 25 estimated regions and the city of Kyiv and belongs into the unfavorable region (Fig. 5).

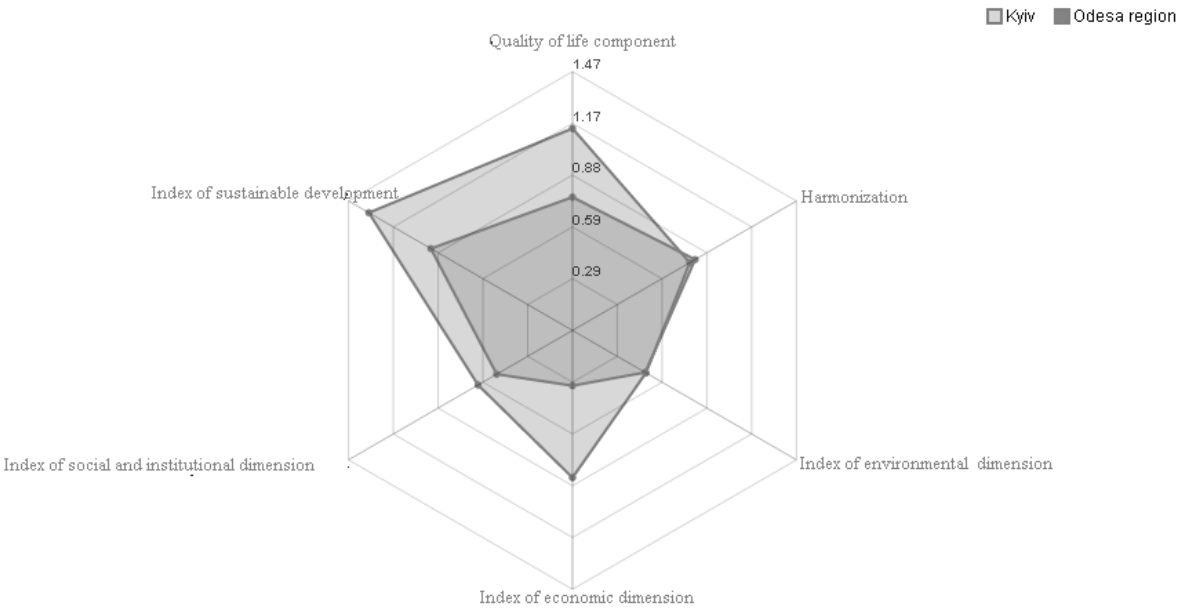


Source: created by author on base data Ministry of Regional Development of Ukraine

Fig. 5. **Assessment of socio-economic development of the Odessa region for 2017**

The best situation in the Odessa region with financial self-sufficiency (3rd place) and economic and social cohesion (7th place). The worst situation in the Odesa region with rational environmental use and quality of the environment (25th place), renewable energy and energy efficiency (21st place) and accessibility and quality of services in education (21st place). Consequently, attention should be focused on these trends and stimulated their development.

According to the index of sustainable development in 2014, Kyiv occupies the leading place in Ukraine (1.33). If the Odesa regional authorities will want to reach the leading level of sustainable development, they will need to compare the indicators of sustainable development of Kyiv and Odesa region (Fig. 6). So, the Odesa region has low than the middle positions in sustainability (0.93) (WDC-Ukraine, 2014).



Source: created by author on base data WDC-Ukraine

Fig. 6. **Indicators of sustainable development of Kyiv and Odessa region in 2014**

According to the ecological direction, Odesa region occupies one of the lowest positions in the Ukrainian regions ranking, since it has some of the worst indicators in Ukraine related to atmospheric air and water quality, high greenhouse gas emissions, and a mediocre level of participation in environmental projects.

So in 2014, the index of environmental measurement in the Odessa region is equal to the index in Kyiv (0.48); below only in Donets'k (0.31), Dnipropetrovsk (0.32), Zaporizhzhya (0.36) and Kyiv (0.46) regions. The maximum value for this index was Zakarpattya region (0,61). But the average value of this index for the regions of Ukraine was 0.46. This means that the Index of environmental dimension for Odessa region is above average value.

Consequently, we can conclude that now for the Odessa region of Ukraine remains characterized extensive type of economic development, which is characterized by: the high nature capacity of production technologies in all sectors of the economy; low coefficient of resource utilization; the application to the economy of the industry of an increasing amount of natural resources, which leads to a shortage of natural resources; depletion of natural resource potential; aggravation of ecological-economic and socio-economic problems of the region.

Conclusions

The main findings of the research are:

1. Currently, regional development should be based on the factors of sustainability, which provides the integration of economic, environmental and social components.
2. Determining the directions of regional development requires the estimation of the current socio-economic level of the region and the index of sustainable development of the regions.
3. Estimation of socio-economic development of Ukrainian regions in 2017 showed that there are regions-leaders, regions with average and low level socio-economic development. But ecological components (Renewable energy and energy efficiency, Rational environmental use and quality of the environment) don't have defining role in the total regional rank.

4. The estimation of sustainable development of Ukrainian regions in 2014 shows that the city of Kyiv has a leading position due the highest value of Index of economic dimension. When estimating other regions we can state that greatest impacts on the level sustainable development have ecological and social and institutional components.
5. According the rating of socio-economic development of the Ukrainian regions in 2017 Odesa region refers to regions with low socio-economic development (21st position from 25). Evaluation of sustainability factors of the Odesa region showed that the worst situation with rational environmental use and quality of the environment (25th place), renewable energy and energy efficiency (21st place), index of environmental dimension for Odessa region is above average value.
6. Estimation of socio-economic and sustainable development shows that Odesa region characterized by extensive type of development. Ensuring sustainable regional development requires consideration of the ecological component in the strategy development for the region, as well as ecologization of economic activity.
7. Further research should focus on developing a methodology that will allow to determine the priority directions of development for any region based on its socio-economic development with limiting index of sustainable development. These activities will be attractive for investments and ensure the regional sustainability also.

Bibliography

Assembly of European Regions, 1996. *Declaration on Regionalism in Europe* [Online] Available at: https://aer.eu/aer-declaration-regionalism/. [Accessed 10 January 2019]

Cabinet of Ministers of Ukraine, 2015. *Resolution «On Approval of the Procedure and Methodology for Monitoring and Evaluation of the Effectiveness of the Implementation of the State Regional Policy»* dated October 21, 2015, No. 856 [Online] Available at: http://zakon.rada.gov.ua/laws/show/856-2015-п. [Accessed 15 January 2019]

Cooke, P. & Leydesdorff, L.J., 2006. *Regional Development in the Knowledge-Based Economy: The Construction of Advantage* [Online] Available at: https://doi.org/10.1007/s10961-005-5009-3. [Accessed 18 March 2019]

Dorohuntsov, S.I., Cherniuk, L.H., Borshchevskyi, P.P., at al., 2002. *Socio-economic system of productive forces of Ukraine's regions*, Kyiv: National Economic University named after Vadym Hetman, p. 364

International Council for Science (ICSU) and others, 2017. *Sustainable Development Analysis: Global and Regional Contexts*, Kyiv: Igor Sikorsky KPI. Part 2. Ukraine in Sustainable Development Indicators (2016– 2017), p. 72

Maddock. C, et al, 2014. *Regional development and state regional policy in Ukraine: status and prospects for change in the context of global challenges and European standards policy* [Online] Available at: https://surdp.eu/uploads/files/Analytical_Report_Main_part_UA.pdf. [Accessed 20 January 2019]

Medvid, V.Y., 2012. *Scientific grounds for determination of the essence of regional development*. Actual problems of the economy Volume №7 (133), p. 157-163

Ministry of Regional Development, Construction, Housing and Utilities of Ukraine, 2017. *Monitoring of socio-economic development of regions for 2017*. [Online] Available at: http://www.minregion.gov.ua/decentralization/presentation/reytingova-otsinka-za-2017-rik-prezentatsiyni-materiali/ [Accessed 10 January 2019]

Odessa Regional State Administration, 2018. *Passport of the Odesa region* [Online] Available at: https://oda.odessa.gov.ua/statics/pages/files/5b27c9f2c5f75.pdf. [Accessed 05 January 2019]

Sikdar, SK, 2003. *Sustainable development and sustainability metrics* [Online] Available at: https://onlinelibrary.wiley.com/doi/epdf/10.1002/aic.690490802. [Accessed 20 March 2019]

Storonianska, I. Z., 2009. *Interregional integration processes in Ukraine: trends and prospects of development*, Lviv: Institute of Regional Research named after M.I. Dolishniy of the NAS of Ukraine, p. 392

Verkhovna Rada of Ukraine, 2005. *The Law of Ukraine "On Stimulating the Development of Regions"* dated September 8, 2005 No. 2850-IV [Online] Available at: https://zakon.rada.gov.ua/laws/show/2850-15. [Accessed 02 February 2019]

WDC-Ukraine, 2014. Analyze UA Regions via SDI-2014. [Online] Available at: http://dj-app.herokuapp.com/app/SDI%20NEXT/ua. [Accessed 10 January 2019]

Zgurovsky, M., et al., 2013. *Sustainable development analysis: global and regional contexts* [Online] Available at: http://wdc.org.ua/sites/default/files/sd2013-P1-FULL-EN_1.pdf. [Accessed 18 January 2019]

INVESTMENT IN HIGH TECHNOLOGIES AND ITS ROLE FOR ENHANCING THE COMPETITIVENESS OF THE NATIONAL ECONOMY

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Abstract. High technology investments today are becoming a crucial factor for the development of national economies. This logically leads to exacerbating competition in attracting high-tech investors to individual countries or economic regions. The results of the implementation of high-tech investments have an impact on public sector management, which is increasingly focusing on updating incentive policies to attract new investments of this type. The purpose of the paper is to determine the impact of high technology investments on the competitiveness of the economy in general, and, in particular that of Bulgaria and, on this basis, to draw recommendations for improving the promotion policy toolkit to attract high-tech investments. The research is based on a literature review of post-2000 publications, secondary data research methods applied to high-tech investments in Bulgaria and expert interviews within the framework of a qualitative survey on the basis of which the results of the implementation of high technology investments at local and national level are identified and evaluated. Research results show that high technology investments lead to positive "direct" economic effects and "transfer" effects, which have a more pronounced social character. Direct effects include reducing operating costs, speeding up turnover through automation of core activities and the payment process, increasing profitability of production/logistics and return on investment, transfer of know-how, etc. The transfer effects concern predominantly the income levels, improving the environment, the image of the territorial unit, etc. The results of the analysis of investment practices in Bulgaria show a favorable impact of investments in high technologies on the competitiveness of the local and national economy. The theoretical dimensions and practical benefits of this study are complemented by recommendations for updating programs/measures to stimulate high-tech investment and improving policies to attract high-tech investors.

Key words: *investments*, *high technology, innovation, competitiveness and national economy*

JEL code: R58, O1

Introduction

Investment activity in a country is a key factor for its socio-economic development. On the one hand investors orientate following certain indicators or a group of criteria defining the investment attractiveness of the country in question. On the other hand, investment activity triggers the development of the country's economy and influences the country's potential for future development. Over the last two decades a great deal of discussion has focused on the role of high technologies in business and the society. Positive results of investment in high technologies draw the attention of companies that aim to maintain up-to-date production and logistics technologies. There are several reasons for this study to be performed. First, the investment structure at a country level determines the country's future social and economic development. Technological balance (investments in high and low technologies) will increasingly influence the market performance of companies and the development of the economy. Second, innovations will continue to be a driver for economic and social progress. Extending the scope of innovations and raising the innovation activity will bring about

technological, process and product renovation of markets. Although innovations are mostly made in manufacturing, distribution and communications, there is hardly a sphere that has not been affected by them. In the third place, increased competition between countries to attract high-quality investors reflects upon the investment decisions. Special policies are devised for attracting high-tech investments that will take into account the country's investment profile and the specifics of the resources to be found on its territory. The transformations in technologies that we have observed over the past few years result in shifting the centres of investment activity and changes in the criteria for choosing a location. In the fourth position, the passive policy for attracting investors is not relevant to the new conditions and circumstances. It is necessary to update the state and public policies for attracting high technology investors by using modern channels, instruments and stimulate.

The purpose of the paper is to determine the impact of high technology investments on the competitiveness of the economy in general, and in particular that of Bulgaria, and, on this basis, to draw up recommendations for improving the promotion policy toolkit to attract high-tech investments. This research uses a classification that is based on NACE (EUROSTAT), that identifies high-technology as „manufacture of basic pharmaceutical products and pharmaceutical preparations, manufacture of computer, electronic and optical products and manufacture of air and spacecraft and related machinery". The research is based on a literature review of post-2000 publications and secondary data research methods applied to high-tech investments in Bulgaria. A qualitative research has been carried out by means of the method of individual interview with experts who should outline the direct and transfer effects of investments in high technologies.

1. Investments in high technologies: a literature review

Innovations drive the development of the economy and society. On the one hand they affect the production, and on the other – the markets. Innovations diffusion is largely determined by the investment made in their distribution and promotion. Investments are viewed as a tool for market success and creation of new employment opportunities and are recognized as a strategic objective for most industrial countries, especially after the global economic crisis (Aldieri L. & Vinci C., 2018). The connection is strengthened between R&D, innovations, investments and high technologies in search of higher economic and social efficiency. Opinions have been heard claiming that empirical results show that R&D investments, actually, create value for the firm (Gharbi S., Sahut J. & Teulon F., 2014). Links have been sought between internationalization and innovativeness as well as innovative behaviour of high-tech business (Wach K., 2016). We have seen the growing role of the high-tech enterprise, which invests more in human resources, R&D funds and technology innovation (Yanrong W., Yu L., & Kang L., 2011). For companies in the high-tech industries R&D activities are crucial to maintain their competitiveness due to the frequent changes in products and processes in this industry segment (Czarnitzki D. & Thorwarth S., 2012). High-tech industries are defined as an important source of employment growth, profits, and innovation in products and production processes (Kask C. & Sieber E., 2002). Many share the view that high technology development is critical to the economic competitiveness and prosperity of states and communities in the U.S (Leicht K. & Jenkins J., 2017). High-technology businesses (software, computers and the Internet) are creating many new, high paying jobs, and transforming a wide range of traditional economic sectors (Cortright J. & Mayer H., 2001). It is believed that the ICT sector has direct impact on the productivity level of country (Rozite K., Balina S., & Freimane R., 2018). Studies carried out in Latvia reveal that high-technology industry companies have high labour productivity and pay higher wages to employees that leads to the higher personal income tax payments in local budgets (Auzina-Emsina A. & Ozolina V., 2017).

Foreign direct investments in high technologies in the USA, for example, are thought to be playing a critical role in the growth of high-tech industries with a positive impact on employment, compensation and significant contributions to

the economy through research and development (R&D) spending, exports, and value-add activities (SelectUSA, 2017). Research on the effect of high-tech industrial R&D spending on economic growth, however, seems to conclude that for low and middle income countries, an additional high-tech R&D investment does not affect significantly the economic growth of the countries (Wang D., Yu T. & Liu H., 2013). A very interesting point seems to be the assessment of R&D investment efficiency in high-tech industry and the results show that certain problems, those concerning China, for instance, are associated with the inefficiency of its technology commercialization processes (Han C. et al., 2017).

A lot of interest is shown in research on studies focusing on smart growth as a tool for regional convergence (Jermolajeva E. et al., 2017).

Despite the unquestioned topicality of the problem discussed, there are still no systemized positive and negative effects of investments in high technologies. However, a systemized framework has been developed about the effect of foreign direct investments (FDI) and this encompasses the groups of economic, social and environmental impact (SOMO Paper, 2008). This systematizing format has been adapted for the purposes of the qualitative research in this paper.

Another important point in the research on high-tech investments is connected with the government and public policies for stimulating these investments. Research results show that authorities which invested in creating facilities for foreign investors attracted a significant higher percentage of high tech investors than any other region (Raluca D. & Alecsandru S., 2014). Appropriate policies have been discussed that may improve high-tech firms' access to equity financing, including venture capital and actively encourage the development of stock markets for small high-tech companies (Carpenter R. & Petersen B., 2002). It is recommended that industrial policies be updated to benefit high-tech industry development (Ślusarczyk B., 2015). Specially developed policies for attracting high-tech investments can draw foreign investors through a combination of factors and the profiles of natural-resources-seeking, market-seeking investments, strategic-asset-seeking, efficiency-seeking and return-seeking investments. In connection with the development of the high-tech sector under the conditions of European integration, ideas are proposed of rational specialization of every high technologies sector in every national or regional economic system and the idea of "oases" and of complex clusterization (Melnikas B., 2014) Attention has been paid to public policies, which should create an appropriate incentive for private R&D activities in order to provide a transformation in manufacturing sector towards high tech specification (Karahan Ö., 2014). It is recommended that European governments be more committed to meet the credit needs of the internet and high-tech SMEs, for a faster and sustainable economic growth (Moreira D., 2016).

2. Investments in high technology manufacturing sectors in Bulgaria

A starting point of the present analysis is the state of the high-tech sector in the Republic of Bulgaria and the national interest in its development. Official data shows that the country is characterized by a low share of high-tech manufacturing in the overall production output. Nevertheless, investment in high-tech areas in which Bulgaria has traditions, has created professionals and successfully competes on the international market (Smart specialisation, 2015). The official position in the research cited is that in the high-tech sector and in high-tech activities, labour productivity is above the national average and high-tech products are dominating in exports (computers and communication equipment, electronic and optical products, medicinal substances and products).

The object of analysis in this paper are foreign direct investments (FDI) in the manufacturing sectors in Bulgaria. Economic activities (second level of aggregate nomenclatures) are distributed by level of technological intensity according to Eurostat classification into four groups (high technology manufacturing sectors, medium high-tech sectors, medium low-tech sectors and low technology manufacturing sectors.)

We have used official statistical data by the National Statistical Institute (NSI), covering a five – year period from 2013 to 2017. During the period observed several positive trends have been identified. According to NSI data, the amount of FDI in Bulgaria, unlike the 23% global downturn in foreign direct investments in 2017 (UNCTAD, 2018), is gradually increasing, from 23,3 bn Euro to 24,5bn Euro. The second positive trend is that the overall amount of foreign direct investment as a share of GDP remains relatively stable. Changes can be noticed in the sector structure of FDI. Investors retreat from construction, real estate and agricultural sectors. At the same time the share of FDI in high- tech manufacturing sectors is growing (table 1). On average, these account for about 22% of all FDI over the analyzed period.

Table 1

Foreign direct investments in technological manufacturing sectors as a share of total foreign direct investments in Bulgaria for the period 2013-2017

	2013	2014	2015	2016	2017
Total technological manufacturing sectors	20,53%	22,83%	21,59%	22,70%	24,19%

Source: authors' calculations based on Information System INFOSTAT of the Bulgarian National Statistical Institute, https://infostat.nsi.bg/infostat/pages/external/login.jsf

There is a marked tendency of investors withdrawing form low-technology sectors and a growing interest in higher technology sectors where more added value is generated (table 2).

Table 2

Foreign direct investments by technological profile of manufacturing sectors in Bulgaria for the period 2013-2017 (thousands Euro)

	2013	2014	2015	2016	2017
High-tech manufacturing sectors	118 058,9	141 739,1	170 883,3	180 109,7	194 942,8
Medium high-tech manufacturing sectors	1 268 136,6	1 432 022,2	1 615 253,7	1 651 446,4	1 829 190,4
Medium low-tech manufacturing sectors	1 951 956,9	1 966 840,2	1 819 843,3	1 868 283,2	2 161 174,9
Low-tech manufacturing sectors	1 453 410,6	1 387 086,5	1 393 857,4	1 637 704,7	1 734 922,7

Note: Data on high-tech manufacturing sectors do not include data on the sector of Manufacturing medicines and medical products, and data about medium low-technology manufacturing sectors do not include the sector of manufacturing cox and refined oil products, as the information is confidential.

Source: authors' calculations based on Information System INFOSTAT of the Bulgarian National Statistical Institute, https://infostat.nsi.bg/infostat/pages/external/login.jsf

Between 2013 and 2017 investments in high-tech manufacturing grew by 76,8 million Euro, i.e. there is a 39,4 % growth. A similar trend can be seen in FDI in medium high-tech manufacturing sectors. During the period studied, these increased by about 30,7 %. This can be attributed to the policy of encouraging investments, which has been carried out mainly through the application of two special regulatory acts: The Investment Promotion Act and the Regulations for its application, which aims at increasing economic activity and technological development in types of production and services of high added value. Despite this seemingly positive trend the World Bank (2015) points out that FDI in Bulgaria have had a much smaller contribution to gross added value and employment than in most regionally comparable economies.

Data on investment certificates issued by the Bulgarian Investment Agency show that a very small part of all direct investments in the country are certified (table 3) and avail themselves of the incentives envisaged in the Investment Promotion Act, such as simplified administrative procedures, provision of economic stimuli and new industrial parks. Although there is a rise in the number of certificates issued for high-tech projects – from 8 certificates in 2015 to15 in

2017, we can draw the conclusion that the national policy for attracting FDI to target high-tech sectors is not effective enough.

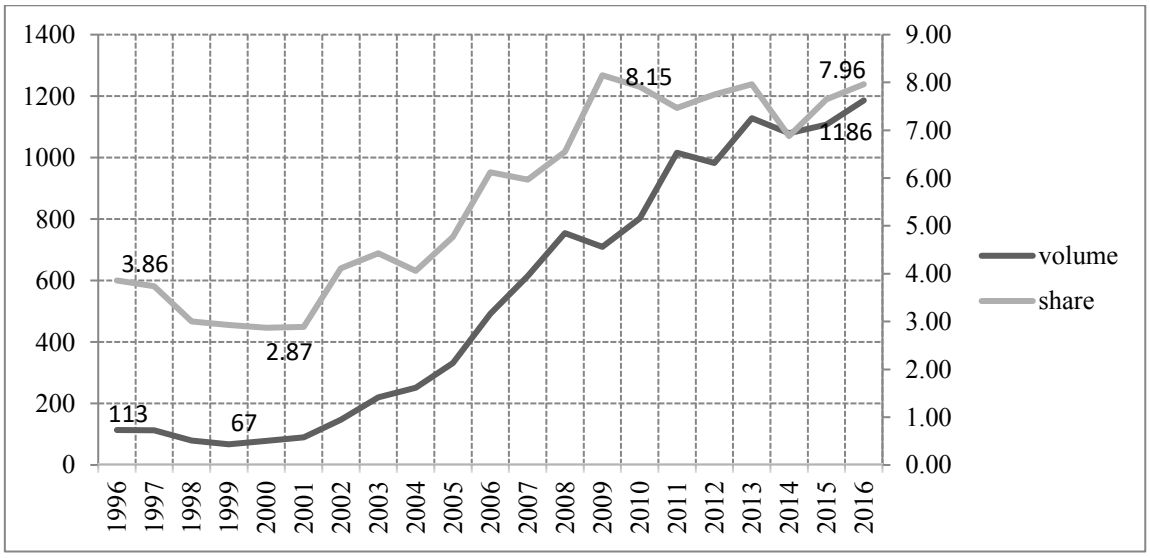
Table 3

Certified investment projects under the Investment Promotion Act

Indicators	**Year**				
	2013	**2014**	**2015**	**2016**	**2017**
Number of certified projects	15	16	12	20	31
Total amount of investments (in million Euro)	59,2	923,2	96,7	164,3	159,3
New jobs opening	889	10091	1265	4079	5802
Ratios					
Average amount of investment per project (in million Euro)	3.49	57.70	8.06	8.22	5.14
Number of jobs per investment project	59	630	105	204	187
Number of jobs per 1m Euro investments	15	11	13	25	36

Source: authors' calculations based on data published on the website of Bulgarian Investment Agency, http://www.investbg.government.bg/en

Realizing the positive impacts of high-tech investments in Bulgaria over the last few years, there have been developed new strategic documents focusing on industrial advance, and more particularly areas such as mechatronics, ICT technologies, health and wellbeing industries, biotechnologies, new technologies in creative and recreative industries. Undoubtedly, modern industrial policies are the major driver in investment policy. The opposite is also true: investment policies (in particular FDI policies) are a key instrument in industrial policies. The results, however, are not very noticeable, which may be due to the ineffective promotional policy that has been carried out so far and the major limitations to this type of investments: the need for considerable financial resources, rapid technological changes, lack of innovative entrepreneurial culture and global competition.



Source: World Bank, World Development Indicators. Available at: https://www.indexmundi.com/facts/bulgaria/indicator/ (last updated June 30, 2016).

Fig. 1. **High-technology exports in Bulgaria - volume US$ million (primary axis) and share of manufactured exports (secondary axis)**

Besides, the government has to develop measures for dealing with the most problematic factors for doing business in Bulgaria – corruption, inefficient government bureaucracy, tax rates and poor work ethic in national labor force (The Global Competitiveness Index 2017-2018 edition) As obstacles facing investment in Bulgaria, the following have been pointed out: availability of staff with the right skills, uncertainty about the future and business regulations and taxation

(European Investment Bank, 2017). To a large degree these adverse factors are the reason why Bulgaria occupies 49th position out of 137 countries in the Global Competitiveness Index list. In the European Innovation Scoreboard Bulgaria ranks as a modest innovator with Relative weaknesses: innovators, finance and support, and attractive research systems (European Innovation Scoreboard, 2018).

Bulgarian high-technology export shows a tendency for growth over the period 1996 – 2016, both in terms of the volume of exported products and in the share of exported high tech products in the overall export (fig. 1). During the last five years of the period analyzed, the volume of high-tech production remains stable at over 1bn $US, and the share of these products in the total amount of Bulgarian exports varies between 7% and 8%. Despite the positive trends presented, research shows that the export specialization of Bulgaria is thus based on static comparative advantages, relying on basic factors of production, namely relatively cheap raw materials, energy and labour force (Zhelev P. & Tzanov T., 2012).

3. Research results and findings

In order to determine the fundamental role of investments in high technologies for enhancing the competitiveness of the economy of Bulgaria and their impact, an interview with experts has been carried out (10 experts), divided as follows: 3 academic experts in the sphere of economics (finances, investments and innovations), 4 experts in the public and state sector (from municipalities with high investment activity) and 3 experts from the sphere of the investments consulting. The research findings are processed by means of content analysis and are presented in an aggregated form in table 4 and table 5.

Table 4

High technologies investment role for enhancing the competitiveness of Bulgarian economy and its direct impact

Impact	Positive effects	Negative effects
High technologies investments and competitiveness of the country's economy	Rise of national business indicators Rise of international investment position and the country's gross currency reserves Successful incorporation in targeted international markets, hubs, accelerators, high-tech incubators	Increased expenses to combat the risks of cyberattacks and risks concerning the national security.
Direct impacts of high technologies investments		
Economic impact	FDI growth Know-how transfer Reducing operating costs Speeding up turnover through automation of core activities and the payment process Increasing profitability of production/logistics and return on investment Higher productivity and increased quality Speeding up the transfer of technologies and rise of transfer capacity and reduction of risk and emergence of new international debt instruments Innovations of equity investments Increased security and transparency of processes	The need to finance traditional manufacture and activities which remain neglected by high technologies.
Social impact	Public and social prosperity- increased income and better quality of life New jobs and new workplaces Easier access to a new generation high technology services Flexible readjustment of international and national human resources	Fall in traditional occupations and reduction of employment
Environmental impact	Accelerated transfer of scientific research and innovations Rise of mobile market diagnostics and audit	Potential regional disproportions and unbalance of investments

Source: authors' construction based on experts interviews

In relation to the nature of high technologies impact on the country competitiveness and its direct effect, the prevailing opinions are that positive effects outnumber the negative ones. There is unanimity about the concrete instances of positive impact of high technologies on competitiveness of the national economy - the experts' expectations are of a rise of basic economic indicators and greater opportunities for joining international initiatives, related to construction of high technologies hubs, incubators, accelerators, etc.

The direct effects of high technologies impact can be demonstrated in different aspects - economic, social and environmental. The interviewed experts stipulate versatile impact of high technologies in economy – ranging from production indicators such as productivity, quality, expenses, to significant changes in the financial toolkit and the way of provision and use of resources. Positive effects are also expected in the social sector – higher standard of living, educational and cultural status. Furthermore, some adverse effects are also indicated such as the inevitable reduction of employment in some traditional professional occupations.

Table 5

Transfer effects of high technologies investments

Groups of impacts	Positive effects	Negative effects
Economic impact	Accelerated restructuring and rebalancing of industries Moving from outsourcing operations to more sustainable high technology productions New standards for reserves, liquidity, monetary and interest statistics according to industries Accelerated development of space business communications and international transport Growth of cluster biotechnologies New toolkit for international mobile distributional systems	Increased infrastructural costs
Social impact	New priorities in culture, style and way of living New communication philosophy and communication modes A new profile of cultural and educational structure Accelerated planned migration and control New criteria for standard of life Improving the image of the territorial units that attracts high-tech investments Increasing the women employability in high-tech industries in Bulgaria	Changes in structuring of social classes Increased social polarisation on the basis of "genome-post genome" High rate of unemployment among the low skilled workers Insufficient high skilled workers
Environmental impact	Increasing the share of environmentally friendly power sources in manufacture Increased use of recycled materials in production supply chains Increasing the share of electric cars and smart houses	Increased hidden costs for prevention of pollution from mobile and other high-tech devices no longer in use

Source: authors' construction based on experts interviews

The experts' expectations for high technologies transfer effects are mostly related to accelerating the processes of restructuring of key economic sectors and industries. It is expected that the transfer of material, financial and human resources to high technological sectors would cause the formation of new business and social structure. Some opinions highlight the possible extension of social inequality as an implicit effect of the aggressive penetration of high technologies in the daily life of people. One can outline significant ecological problems concerning the provision of resources for high technological manufacture. It can be concluded that concerning the implicit effects of economic and environmental impact

the optimistic expectations are prevailing, whereas the conclusions about transfer effects of high technologies in the social sector are not explicit. There are concerns about a possible emergence of serious social problems for which the society is not yet prepared.

Conclusions and recommendations

The results of the scientific literature review, the analysis of secondary data and the qualitative research carried out justify the following conclusions:

1. Investments in high technologies are a powerful driver for enhancing competitiveness of economy and the socio-economic development on the level of territorial units and the country as a whole. The positive effects on company operations that make high-tech investments are transferred to the other economic entities by creating a more favourable business environment and know-how transfer.

2. Analysis of the direct foreign investments in high technological sectors and the share of high tech products in the Bulgarian export shows that a common tendency towards a rise of basic indicators is present. However, at the same time, unsatisfactory results from the incentive state policy are reported. There are weaknesses concerning the bureaucratic obstacles, presence of corruptive practices is admitted as well as problems with providing qualified staff for the high-tech business.

3. The qualitative research by expert opinions indicates that the high tech impact on economic, social and environmental sphere is manifested by direct and transfer effects. These effects can cause positive and negative impacts on the researched spheres. In the experts opinions the positive aspects of this influence are predominant but they also drop a hint about possible problems mainly in the social sphere.

The secondary sources researched, as well as expert opinions about the favorable impact of investments in high technologies on the competitiveness of the local and national economy are good grounds for bringing forward the following recommendations for updating programs/measures to stimulate high-tech investment and improve future policies to attract high-tech investors:

1. To develop a system of indicators for identifying the impact of each high-tech investment where investors benefited from particular incentives and measures. Investment development should be monitored in time.

2. To promulgate good practices of high-tech investments through modern channels and media of global coverage. To popularize these locally, including in educational establishments that are committed to preparing specialists in the particular sphere.

3. Promotional policies are to be adapted to particular regions, districts and municipalities in view of achieving regional and sectoral balance of high-tech investments at a country level. Methodologies should be developed for analysis and evaluation of each high-tech investment. It is necessary to bind promotional policies with the achieved results.

4. There should be guaranteed favourable and time-adequate conditions for business which should result in overcoming the identified problems considered a barrier for foreign investors.

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Bibliography

Aldieri, L. & Vinci, C.P., 2018. Innovation Effects on Employment in High-Tech and Low-Tech industries: Evidence from Large International Firms with in the Triad. *Eurasian Business Review,* Volume: 8, Issue: 2, 229-243.

Auzina-Emsina A. & OzolinaV., 2017. High-technology Industries Competitiveness and Regional Allocation by Nuts 3 Regions in Latvia. *Research for Rural Development,* 2017, Vol 2, 241-248.

Bulgarian Investment Agency, 2018. [Online] Available at: http://www.investbg.government.bg/en

Carpenter, R & Petersen, B., 2002. *Capital Market Imperfections, High-Tech Investment, and New Equity Financing*, 1-40. [Online] Available at: http://oldweb.eco.unipmn.it/eventi/innovarepercompetere/carpenter-petersen-cm.pdf [Accessed 03 February 2019]

Cortright, J. & Mayer, H., 2001. *High Tech Specialization: A Comparison of High Technology Centers*. Center on Urban & Metropolitan Policy. The Brookings Institution•Survey Series, 1-13.

Czarnitzki, D. & Thorwarth, S., 2012. Productivity Effects of Basic Research in Low-tech and High-tech Industries. *Research Policy*, Volume: 41, Issue: 9, 1555-1564.

Dijk, M. & Stichele, M., 2008. *Is Foreign Investment Good for Development? A Literature Review.* Amsterdam: SOMO Paper.

European Investment Bank, 2017. *Investment Report 2017/2018: from recovery to sustainable growth. Key findings.* Luxembourg: European Investment Bank. [Online] Available at: http://www.eib.org/attachments/efs/economic_investment_report_2017_key_findings_en.pdf [Accessed 01 February 2019]

European Union, 2018. *European Innovation Scoreboard 2018.* [Online] Available at: http://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards/index_en.htm [Accessed 01 February 2019]

European Innovation Scoreboard, 2018. [Online] Available at: https://ec.europa.eu/docsroom/documents/30671

[Accessed 04 February 2019]

Eurostat, 2018. *Glossary: High-tech classification of manufacturing industries*. [Online] Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:High-tech_classification_of_manufacturing_industries [Accessed 01 February 2019]

Gharbi, S., Sahut, J. & Teulon, F., 2014. R&D Investments and High-tech firms' Stock Return Volatility. *Technological Forecasting and Social Change*, Elsevier, vol. 88(C), 306-312.

Han, C. & Thomas, S. & Yang, M. & Ieromonachou, P. & Zhang, H., 2017. Evaluating R&D Investment Efficiency in China's High-tech Industry. *The Journal of High Technology Management Research.* Volume 28, Issue 1, 93-109.

INFOSTAT, 2018. [Online] Available at: https://infostat.nsi.bg/infostat/pages/external/login.jsf

Jermolajeva, E. & Rivža, B. & Aleksejeva, L. & Šipilova, V. & Ostrovska, I., 2017. Smart Growth as a Tool for Regional Convergence: Evidence from Latgale Region of Latvia. *Economics and Sociology*, Volume: 10, Issue: 4, 203-224.

Karahan, Ö., 2015. Intensity of Business Enterprise R&D Expenditure and High-Tech Specification in European Manufacturing Sector. *World Conference on Technology, Innovation and Entrepreneurship*. Istanbul, Turkey, May 28-30, 2015: Proceedings Paper, 806-813.

Kask, C. & Sieber, E., 2002. Productivity Growth in High-tech Manufacturing Industries. *Monthly Labor Review*, Volume: 125, Issue: 3, 16-31.

Leicht, K. & Jenkins, J., 2017. State Investments in High-technology Job Growth. *Social Science Research,* Volume: 65, 30-46.

Melnikas, B., 2014. High Technologies Sector Under the Conditions of the European Integration: Innovative Development. *Procedia - Social and Behavioral Sciences.* Volume: 110, 28-39.

Moreira, D., 2016. The microeconomic impact on growth of SMEs when the access to finance widens: evidence from internet & high-tech industry. *19th International Conference Enterprise and Competitive Environment (ECE)*. Mendel Univ, Brno, Czech Republic, Mar 10-11, 2016: Proceedings Paper, 278-287.

Raluca, D. & Alecsandru, S., 2014. Patterns of Foreign Direct Investment in Romania: Low Tech Investments versus High Tech Investments. *International Conference on Applied Statistics.* Conference, Bucharest, Romania, Nov 15, 2013: Proceedings Paper, 275-285.

Rozite, K, Balina, S. & Freimane, R., 2018. Productivity of ICT Sector as a Driving Factor of Country's Economic

Competitiveness. New Challenges of Economic and Business Development – 2018: Productivity and Economic Growth, 571-578.

SelectUSA, 2017. *High-Tech Industries. The Role of FDI in Driving Innovation and Growth*. [Online] Available at: https://www.selectusa.gov. [Accessed 01 February 2019]

Ślusarczyk, B., 2015. The Requirement of New Industrial Policy to Support Polish Economy. *Economic Prospects in the Context of Growing Global and Regional Interdependencies.* 22nd International Economic Conference of Sibiu (IECS), Sibiu, Romania, May 15-16, 2015: Proceedings Paper, 93-101.

Smart specialisation, 2015. *Innovation Strategy for Smart Specialisation the Republic of Bulgaria* 2014-2020. [Online] Available at: https://www.mi.government.bg/files/useruploads/files/innovations/ris3_26.10.2015_en.pdf [Accessed 01 February 2019]

SOMO Paper, 2008. *Foreign Investment Good for Development? A Literature Review*. [Online] Available at: https://www.somo.nl/is-foreign-investment-good-for-development/ [Accessed 01 February 2019]

The Global Competitiveness Index 2017-2018 edition, 2018. [Online] Available at: http://reports.weforum.org/global-competitiveness-index-2017-2018/countryeconomy-profiles/#economy=BGR [Accessed 04 February 2019]

UNCTAD, 2018. *World Investment Report 2018 - Investment and New Industrial Policies*. New York and Geneva. United Nation Publication. [Online] Available at: https://unctad.org/en/PublicationsLibrary/wir2018_en.pdf [Accessed 01 February 2019]

Wach, K.., 2016. Innovative Behaviour of High-Tech Internationalized Firms: Survey Results from Poland. Entrepreneurial Business and Economics Review 4(3), 153-165.

Wang, D. & Yu, T. & Liu, H., 2013. Heterogeneous Effect of High-tech Industrial R&D Spending on Economic Growth. *Journal of Business Research*, Volume: 66, Issue: 10, 1990-1993.

World Bank, 2015. *Bulgaria's Potential for Sustainable Growth and Shared Prosperity : Systematic Country Diagnostic* (English). Washington, D.C. : World Bank Group. [Online] Available at: http://documents.worldbank.org/curated/en/521881467994600656/Bulgaria-s-potential-for-sustainable-growth-and-shared-prosperity-systematic-country-diagnostic [Accessed 01 February 2019]

World Bank, *World Development Indicators*. 2016. [Online] Available at: https://www.indexmundi.com/facts/bulgaria/indicator/ (last updated June 30, 2016).

World Economic Forum, 2017, *Global Competitiveness Index 2017-2018*. Geneva: World Economic Forum. [Online] Available at: https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018 [Accessed 01 February 2019]

Yanrong, W., Yu, L., & Kang, L., 2011. Evaluation on the Competitiveness of High-tech Entrepreneurial Enterprises. International Conference on Energy, Environment and Development (ICEED). International Conference, Kuala Lumpur, Malaysia, Dec 08-09, 2010: Proceedings Paper, Energy Procedia, Volume: 5, 684-689.

Zhelev, P. & Tzanov, T., 2012. Bulgaria's Export Competitiveness Before and After EU Accession. *East-West Journal of Economics and Business*, Volume: XV, Number: 1&2, 107-128.

APPLICATION-BASED MARKETING – FROM REALITY TO THE FUTURE

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Abstract. The use of new technologies and innovations in marketing and the effects of their application have been the focus of research over the past decade. Mobile marketing applications specifically designed to improve marketing efficiency and speed up business processes provoke particular scientific interest. One of the prerequisites for the boom in the development of a variety of marketing applications is the massive penetration of mobile devices into the daily routine of consumers. The steady growth trend in their sales on the market and the expansion of the range of features users use makes them attractive for the development of B2C digital application-based marketing. The paper examines the use of application-based marketing and the benefits for companies and end users. The aim of the study is to systematize the benefits of B2C application-based marketing under conditions of high technology and innovation. The study is based on literature review and secondary data research methods for classifying business practices and published findings on the impact of using the application-based marketing covered by the research. Research results indicate a variety of applications that are used for marketing purposes (location-based marketing, weather-based marketing, content-based marketing, event-based marketing, etc.) as well as communicated positive effects of their use in business. The results presented in the paper contain both a theoretical contribution to an application-based marketing study and practical implications for extending its scope to different areas. Future implications of application-based marketing are also presented.

Key words: *application-based marketing, marketing efficiency, technology and innovation*

JEL code: M31

Introduction

The last decade has seen a drastic change in the marketing toolbox. Besides the tendency for its transfer to the online environment and its integration by channels, a significant growth of innovation in mobile marketing and expansion of the scope of its application has also been seen. Companies increasingly rely on marketing tools to achieve their target efficiency. There are several prerequisites for increasing the role of marketing in general in recent years. First, the results from the implementation of digital marketing encourage companies to reinvest funds in its use and development. If we search among patents over the past decade we will see a boom in the registration of patents in the field of digital marketing, including in the field of mobile applications. It has been suggested that mobile applications have transformed the way firms and consumers communicate with each other (Racherla P. et al., 2012). Another view is that the movement of social networking technology has opened up new opportunities to exploit the interconnections between people, places, and the things people need (Luxford A. & Dickinson J., 2015).

Positive effects on businesses are found both online and offline as a result of efforts to integrate channels and markets. One of the prerequisites for the boom in the development of a variety of marketing applications is the massive penetration of mobile devices into the daily routine of consumers. The steady growth trend in their sales (the number of smartphones sold to end users worldwide in 2012 was 680.11 million units and increased to 1536.54 in 2017, according to Statista) on the market and the expansion of the range of features users use makes them attractive for the development of B2C digital

application-based marketing. The growth in smartphone sales contributes to the increase in the number of consumers who use their mobile devices for everyday pre-shopping, shopping and post-shopping activities (Knežević B. & Delić M., 2017). Second, consumers are more prepared than ever to adopt and use new technologies in their everyday lives. They recognize that innovative marketing technologies benefit not only companies, but also offer undeniable benefits for the consumers themselves, regardless of the role they play in the purchase. Special attention is paid to the factors influencing consumers' attitude towards adoption and continuous use of mobile applications (Malik A. et al., 2017). It also turns out that marketing is not an unfamiliar area to consumers. Most of them self-educate themselves and update their knowledge of marketing, driven by the desire for a more effective communication, ease of purchase and speed of processes. According to McKinsey (Court D. et al., 2009), in today's decision journey, consumer-driven marketing is increasingly important as customers seize control of the process and actively "pull" information helpful to them. The third prerequisite for increasing the interest in digital marketing through mobile applications is associated with the infinite possibilities for its integration and with improving the functionality of companies in offering products and services in various fields. Besides their traditional use in retail, special attention is paid to the possibilities of using mobile applications in education (Pechenkina E., 2017).

The favourable trends in online markets, investments in marketing and the electronics business contribute to increasing the interest in developing and offering applications for marketing purposes. There have been developments and improvements in their functionality and identification of applicability in various fields. The communicated positive effects of their use make them even more sought after by businesses and consumers in both the B2C and C2B directions. The conclusion has been drawn that mobile marketing applications have enabled other applications that are integrated with other marketing applications (Öztaş, Y., 2015. The Increasing Importance of Mobile Marketing in the Light of the Improvement of Mobile Phones, Confronted Problems Encountered in Practice, Solution Offers and Expectations World Conference on Technology. Innovation and Entrepreneurship Procedia - Social and Behavioral Sciences. 195, 1066-1073.Y., 2015).

The aim of the study is to systematize the benefits of B2C application-based marketing under conditions of high technology and innovation and to present outlines for the future of application-based marketing.

The paper examines the use of application-based marketing and the benefits for companies and end users. The aim of the study is to systematize the benefits of B2C application-based marketing under conditions of high technology and innovation. The study is based on literature review and secondary data research methods for classifying business practices and published findings on the impact of using the application-based marketing covered by the research.

1. New technologies and marketing

The most significant impact of new technologies on marketing consists in its automation. The automation of processes by functional components remains a challenge for high-tech companies that develop specific applications for partial or full automation of marketing at the company/companies level. Among the indisputable advantages of automated marketing are higher efficiency, higher speed, more precise targeting and offering, and overcoming the subjectivity in making marketing decisions. The transparency in the processes and the ability to accurately track the effects of automation make it preferable to companies that operate in a highly competitive environment.

The interest of companies in the automation of marketing is growing; also growing is the interest of consumers in its use. Studies in recent years have indicated an expanded scope of automation in various fields and for various purposes. Developers are actively working on pricing automation. Dynamic pricing models have been developed using one or more variables. Distribution is increasingly automated, with focus on the integration of the different channels and operators in

search of higher efficiency. The scope of research and investment in 3D distribution, including in the B2C market, is expanding. Intensive efforts are made to automate the offering and ordering of products and services.

While years ago companies relied on traditional marketing tools to attract the attention of consumers, which tools can generally be defined as static over a certain period of time, now the dynamics in marketing is increasingly relied on. The proper identification of the dynamics of the environment is the basis for the implementation of automated marketing, whether it concerns the online/offline market or their integration.

There is a growing interest in the use of Big Data and certain transformations in marketing in terms of Big Data consumer analytics have emerged (Erevelles S. et al., 2016). The conclusion is made that companies that invest in and successfully derive value from their data will have a distinct advantage over their competitors (EYGM Limited, 2014). Big Data is viewed as the impetus of the next waves of productivity growth (Liang F. et al., 2018). The need to obtain and use up-to-date information about the state, location, environment, etc. of the potential and existing customers in the interest of businesses and consumers is at the heart of the development and promotion of application-based marketing. It sets a new stage in the development of marketing, which is aimed at identifying, integrating, synchronizing and navigating participants. Application-based marketing provides the link between the online and offline markets and aids consumer decisions taking into account one or more variables. Besides its use for business purposes, application-based marketing has been used for various purposes in the non-profit sectors (healthcare, education, environmental protection, etc.).

2. Application-based marketing and the benefits for companies and customers

The growth in purchases and use of mobile devices and in investment in digitalization in recent years has contributed to the interest of businesses in developing and using various applications for marketing purposes. Consumers feel more confident about the use of marketing applications in an environment of improved legislation and clear rules and policies. For both parties the benefits of using application-based marketing need to be clearly defined and characterized. The interest in them is determined by the desire of companies to harness the potential for sales to each individual consumer. The attention of researchers is directed towards value for consumers and retailers from using mobile marketing (Ström R. et al., 2014) and getting to know the customer experience and customer journey (Lemon K. & Verhoef P., 2016). On one side are companies looking for paths to more effective sales using mobile applications, and on the other side are consumers who need to be activated appropriately considering the circumstances and personal characteristics (location, time, state, etc.).

Location-based marketing (LBM) is becoming ever more widely used in B2C markets. Through mobile devices, companies in whose target area (location) the relevant consumers are make offers using location-based alerts. The condition for achieving results is that consumers have installed the mobile application and consented to its use. The boundaries of the territory within which communication will take place are pre-defined taking into account the location, the distances, the direction and other characteristics of the area, which allows companies to guide consumers and influence their choice. Such applications provide the opportunity for future communication with existing and potential customers who have already visited a specific physical retail outlet. Retailers who use location-based technologies offer consumers purchase guidance and navigation capabilities and provide services pertaining to personalized information demands (Tsai Y. et al., 2017). An advantage of LBM is the possibility of integrating the online and offline experiences of consumers aimed at attracting them to specific outlets and at increasing sales. There are also benefits such as location-powered search advertising and SEO to speed the path to in-store visits and purchases (Iab, 2017), improved in-store navigation and content delivery (InLocationAlliance, 2015). A study by Factual (2018) shows that "campaign effectiveness increases when location-based data is used to personalize the customer experience" (Factual, 2018). Proximity marketing by

identifying person/location generates a benefit for an organization in terms of their brand equity, brand recall, customer connectivity and message credibility (Almahdi H. et al., 2018). Proximity marketing based on a precise geographic location may have a positive effect on revenue across a broad range of enterprises, including retailers, hotels and casinos, airports, and entertainment parks (Egol M. et al., 2017). Special attention is also paid to location-based services offered by government institutions, and to the need for marketing to include the creation of value for all citizen-consumers (Krishen A. et al., 2017). Consumers who allow/use applications of this type are more precisely targeted than any others.

Weather-based marketing (WBM) applications are based on the characteristics of the weather. What the weather is like now, what it was before and what it is expected to be can largely influence consumer behaviour and decisions. A report by Weather Unlocked states that weather is the second biggest influence on consumer behavior after the state of the economy (Weather Unlocked). Other studies examine the effect of weather on consumer spending (Murraya K. et al., 2010), people's everyday activities (Horanont T. et al., 2013), sales (Adwordsrobot, 2019), predicting product demand (Sivillo K. & Reilly D., 2004), and distribution channels preferences (WeatherAds, 2019). The companies' use of weather conditions such as temperature, rainfall, humidity, etc. in marketing contributes to more effective offering, communication of offers, pricing, distribution and assortment design. Studies show that companies are leveraging local weather information to increase the relevancy and effectiveness of their promotions (Chenxi L. et al., 2017) and to increase advertising ROI using weather (Weather Unlocked). Specific benefits of weather-targeting promotions such as saving expenditures, higher marketing precision and avoiding customer boredom from frequent promotions have been reported (Tian J. et al., 2018).

Using WBM applications contributes to boosting marketing by creating conditions for effective management of capacities in terms of changes in weather. Another important contribution is the enhancement of sales based on consumer willingness to pay, which is a tool for achieving a higher average price than by using conventional marketing tools. Improving the functionality of applications increases the range of benefits that customers receive from WBM through offering, risk warnings and guidance of orders by channels.

Content-based marketing (CBM) is also improving through the development of new technologies. Such applications contribute to more targeted communication and offering based on content that consumers search for, use and/or share. The trend has shifted from the prevailing use of "push" models in past decades towards the currently used "pull" models in content marketing. There is a growing need to further develop information-based marketing (Weiber R. & Kollmann T., 1998) and to utilize the positive effects of context-based push marketing (Tussyadiah I., 2016).

The search for opportunities to stimulate interest in events and increase their overall efficiency has contributed to the popularity of event-based marketing (EBM). It generates a range of benefits for companies that are on the territory of the event and for those that provide its logistics. At present banks are active in the utilization of EBM opportunities, and it has been indicated that each prospective event is becoming a marketplace opportunity (Cognizant, 2016) for them. Event-based marketing through the use of various applications helps attract, navigate and engage visitors in more activities, manage capacities for the duration of the event and achieve greater marketing efficiency. It can also generate benefits for companies by means of targeted marketing oriented towards personal events in the private life of consumers (birthdays, anniversaries, etc.). Events indicate a customer willingness to consider new products and services, so the response rates are often higher than other forms of marketing (SAS, 2016). Personal events have great potential for marketing development in the future. Collecting information about events and people with real or potential interest and obtaining permission for communication are an important step towards an effective utilization of this tool by companies.

Usage-based marketing (UBM) also has great potential for development. Voluntary registration of buyers and downloading various usage assistance mobile applications make this marketing model increasingly attractive.

Applications that are designed for consumers who have already purchased the product and are in the phase of using it are characterized by advantages such as increased satisfaction with the use of the product and reduced risks for the company from improper use of the product. UBM creates conditions for utilizing the full functionality of the products offered by the company, which stimulates loyalty and repeat purchases. Features such as purchase planning, reminders, offering incentives, etc. contribute to the sustainability of sales over time. There is a growing use of applications of this type in the field of tourism, taking into account their specificity during tourist trips (Filho L. et al., 2017). Usage-based marketing is also used to reduce the risks when offering products and services and to achieve higher average sale price. UBM is widely applied not only by businesses, but also in the non-profit sectors, with its basic features being assistance and reminders in healthcare (Wang, Z. et al., 2018), education, etc. Usage-based marketing also ensures that consumers will pay a fair price determined on the basis of usage history over a specified period or for the entire period of usage of the product/service.

The reported positive effects identified by examining scientific publications, company reports and individual practices of using ABM are presented summarized in Table 1.

Table 1

Positive effects of Application-based Marketing

Positive effects from the use of ABM	LBM	WBM	CBM	EBM	UBM
Based on:					
Collecting location data	✓	✓	✓	✓	✓
Attracting visitors	✓	✓	✓	✓	-
Increasing the number of consumers	✓	✓	✓	✓	✓
Increasing the average price and frequency of purchase	-	-	✓	✓	✓
Navigation and orientation of consumers	✓	✓	✓	✓	✓
Precision targeting of consumers in the offering stage	✓	✓	✓	✓	-
Customizing the offers	✓	✓	✓	✓	✓
Offering determined by the environment	✓	✓	✓	✓	✓
Relevant interactions	✓	✓	✓	✓	✓
Real time marketing	✓	✓	✓	✓	✓
Stimulating loyalty	✓	✓	✓	✓	✓
Reducing the risk	-	✓	✓	-	✓
Appropriate management of capacities	✓	✓	-	✓	-
Increasing the speed of marketing decisions	✓	✓	✓	✓	-
Cross-sell or up-sell opportunity	-	✓	✓	✓	✓
Improving the conditions for utilizing the benefits of the product	-	-	✓	✓	✓
Positive effects on the market and financial performance					
Achieved growth in customer base	✓	-	✓	✓	✓
Increase in offer acceptance	✓	✓	✓	✓	✓
Additional revenue	✓	✓	✓	✓	✓
Increased consumer satisfaction	✓	✓	✓	✓	✓
Experienced higher response rates	✓	✓	✓	-	✓
Higher customer engagement	✓	✓	✓	✓	✓
Increased effectiveness of marketing and advertising campaigns	✓	✓	✓	✓	✓
Improved ROI in marketing	✓	✓	✓	✓	✓

Source: The table is systemized by the author and content is based on sources (scientific publications, company reports and individual practices) used and cited in this paper with the use of content analysis.

Legend:

✓ - Effect available
\- - Effect not available

The registered and reported positive effects of the ABM application will continue to attract companies' attention to high-tech marketing. The redistribution of marketing budgets in favour of digital marketing and low-cost instruments, based on behavioural economics and nudge marketing, will continue.

On the other side of application-based marketing are the consumers and the benefits they derive from its intended use. Table 2 summarizes the main benefits for consumers. The information is derived from published papers and studies that contain components of ABM. User reviews of the studied applications have also been examined.

Table 2

Consumer benefits of using Application-based Marketing

ABM	Benefits for consumers
Location-based marketing (LBM)	Location is high-impact variable among environmental influences on consumer behaviour. The consumer's location determines substantially his/her position in the market and his/her consumer choice. Through location-based mobile applications, however, the use of consumer location data becomes increasingly efficient for the consumers themselves. For example, registering a consumer within a certain area and involving the consumer's permission in communication can help customize the offer according to location (Levesque N. & Boeck H. 2015), can contribute to an easier orientation, a faster solution to the problem, obtaining additional value by using means to promote sales, savings at more favourable prices, etc.
Weather-based marketing (WBM)	WBM applications provide consumers with relevant offers consistent with past, current and future weather conditions at the location where the consumer is active. WBM contributes to better information symmetry: the consumer can be notified of offers that are tailored to weather conditions (temperature, rainfall, humidity, wind, etc.) and are of interest in the particular conditions and circumstances. According to Weather Unlocked, WBM is beneficial to consumers because through it they receive more valuable and engaging information, more relevant and impactful content can be delivered at the precise moment when it offers the most value (Weather Unlocked).
Content-based marketing (CBM)	Applications of this type contribute to synchronizing communications and offers with the specific characteristics of the consumer. The benefits for the consumer are associated with obtaining what is necessary at the right time and place. Consumers further benefit from the increased proportion of useful content and offers in communications that are directed to them, which definitely saves time and effort and increases the accessibility of the product. The volume and speed of delivery of content that is useful and relevant to consumer needs also increase. Consumers are kept informed in discussions tailored to personal interests. Special attention is paid to consumer power and empowerment (Labrecque L. et al., 2013).
Event-based marketing (EBM)	Consumers can better plan their visits and easier navigate during events. EBM applications influence positively the viewing and purchase of products and services during events and the consumers' overall satisfaction with their visit.
Usage-based marketing (UBM)	The advantage of UBM for consumers is the enhanced satisfaction from the use of the product achieved by ensuring the benefits and reducing the risks and costs for consumers by assisting them at the usage phase. Consumers adopt apps to support them not only in purchasing, but in preparing and consuming food (Doub A. et al, 2015).

Source: The table is systemized by the author and content is based on sources (scientific publications, company reports and individual practices) used and cited in this paper with the application of content analysis.

Improving regulations to protect consumer personal data creates a sense of security in consumers and encourages them to give permission for the use of their personal information to improve consumer-targeted marketing. The positive effects from the implementation of ABM aimed at end users increases the interest in downloading and using applications of different types. Consumers draw specific benefits for themselves, and by communicating this positive experience they may increase the range of individuals through the snowball effect by sharing location, content, incentives, etc.

3. Outlines for the future of Application-based marketing

The opportunities for improvement and integration are endless. The growth in their use will continue as a trend in the next decade. Communicating effects to consumers will continue to contribute to the interest in, installation and use of various applications for marketing purposes. Expectations are for an increase in the number of branded applications, including those that are specifically developed for the marketing needs of certain companies, taking into account the specifics of their products and segments. Special attention is paid to the humanization trend in designing and developing branded apps (Fang Y., 2018). Also expected is an increased interest in applications tailored for specific industries, e.g.

developments in the functionality of applications to be used in the hospitality industry (Chen M, 2016) and banking. Multifunctionality will be one of the challenges in developing applications for marketing purposes – an argument which may be found in studies showing that companies no longer rely on a single app but launch a collection of apps (Kim M. et al. 2017).

The complexity and uniqueness of the circumstances in which consumers make purchase decisions will require combining different applications into a single application which provides broad functionality for the benefit of consumers and companies. The use of hybrid applications for the purposes of marketing and integration between different applications will increase. Mobile applications that serve business partners within integrated communication and sales promotion systems also have potential for development.

Marketers will continue to develop and enhance the functionality of social contact applications: content, interactions and transactions, with the aim to create citizen value involving private companies and citizens (Sandoval-Almazan R. et al., 2012).

Marketing applications will be relied on for accelerating the process of making purchase decisions by consumers. Shortening the entire process or any of its stages will improve the speed of processes related to marketing. Mobile nudging (Wijland R. et al., 2016) and digital nudging (Schneider Ch. et al., 2018) will be increasingly relied on.

Companies' efforts in the coming years will be directed not only towards the development and promotion of mobile applications, but also towards stimulating the full use of applications by consumers by applying marketing tools that increase the usefulness and reduce the overall costs and risks for end users.

Conclusions

The results of the scientific literature review and the analysis of secondary data justify the following conclusions:

1. Finding a balance between the benefits, costs and risks for companies and consumers is the basis for the development of application-based marketing.
2. The benefits for consumers and companies that mobile apps provide are indisputable. The positive effects on the market and financial performance are systemized, as follows: achieved growth, increase in offer acceptance, additional revenue, increased consumer satisfaction, experienced higher response rates and higher customer engagement, increased effectiveness of marketing and advertising campaigns and improved ROI in marketing.
3. The relations between different applications are of extreme importance. The use of hybrid applications for the purposes of marketing and integration between different applications will increase.
4. Marketing applications are important drivers for accelerating the process of making purchase decisions by consumers. Shortening the entire process or any of its stages will have a positive effect on the speed of processes related to marketing.
5. Application-based marketing is an instrument for increasing the product usefulness and reducing the overall costs and risks for end users.

Bibliography

Adwordsrobot, 2019. *How Weather Influences Product Sales*. [Online] Available at: https://www.adwordsrobot.com/en/blog/how-weather-influences-product-sales [Accessed 12 January 2019].

Almahdi, H., Shamsudeen, S., Khalufi, N., 2018. A Study on Customers' Perception on Proximity Marketing in USA. *International Journal of Current Research*, Vol. 10, Issue 10, 74806-74816.

Chen, M., Murphy, H., Knecht S., 2016. An Importance Performance Analysis of Smartphone Applications for Hotel Chains. *Journal of Hospitality and Tourism Management,* Vol. 29, 69-79.

Chenxi L., Xueming L., Cheng Z., Xiaoyi W., 2017. Sunny, Rainy, and Cloudy with a Chance of Mobile Promotion Effectiveness. *Marketing Science*, Vol. 36, 762-779.

Cognizant, 2016. *PART 1 OF A MULTI-PART SERIES Digital Marketing in Banking: Evolution and Revolution,* 1-16 [Online] Available at: https://www.cognizant.com/whitepapers/digital-marketing-in-banking-evolution-and-revolution-codex1920.pdf [Accessed 18 January 2019].

Doub, A., Levin, A., Heath, C., LeVangie, K., 2015. Mobile Appetite: Consumer Attitudes Towards and Use of Mobile Technology in the Context of Eating Behaviour. *Journal of Direct, Data and Digital Marketing Practice*, Vol. 17, Issue 2, 114–129.

Egol, M., Schweiger, R., Baber, Z., Grenis, W., 2017. *The Missing Link: Proximity Marketing Offers a Comprehensive Strategy to Engage Consumers*, PWC, 1-15, [Online] Available at: https://www.strategyand.pwc.com/ media/file/The-missing-link.pdf [Accessed 18 January 2019].

Erevelles, S. Fukawa, N., Swayne, L. S., 2016. Big Data Consumer Analytics and the Transformation of Marketing. *Journal of Business Research*. 69, 897–904.

EYGM Limited, 2014. *Big Data Changing the Way Businesses Compete and Operate Insights on Governance, Risk and Compliance*. [Online] Available at: https://www.ey.com/Publication/vwLUAssets/EY_-_Big_data:_changing_the_way_businesses_operate/%24FILE/EY-Insights-on-GRC-Big-data.pdf [Accessed 8 January 2019].

Factual, 2018. *Location-Based Marketing Report. Practices, Preferences and Plans for the Future*, 1-14, [Online] Available at: https://s3.amazonaws.com/factual-content/marketing/downloads/LocationBasedMarketingReport_Factual.pdf [Accessed 8 January 2019].

Fang, Y., 2018. An App a Day Keeps a Customer Connected: Explicating Loyalty to Brands and Branded Applications Through the Lens of Affordance and Service-dominant Logic. *Information & Management*. [Online] Available at: https://doi.org/10.1016/j.im.2018.07.011 [Accessed 18 January 2019].

Filho, L., Batista, J., Cacho, A., Soares, A., 2017. Mobile Applications and Tourism: A Quantitative Study Applying the Theory of Planned Behavior. *Revista Rosa dos Ventos – Turismo e Hospitalidade*, 9 (II), 179-199.

Horanont, T., Phithakkitnukoon, S., Leong, T., Sekimoto, Y., 2013. Shibasaki, R. Weather Effects on the Patterns of People's Everyday Activities: A Study Using GPS Traces of Mobile Phone Users, *PLoS One*, 8(12): e81153. [Online] Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0081153 [Accessed 8 January 2019].

Iab, 2017. *Location-based Marketing Playbook for Retailers*, 1-9, [Online] Available at: https://www.iab.com/wp-content/uploads/2017/04/IAB_Location-Playbook-for-Retail-Marketers_FINAL.pdf [Accessed 8 January 2019].

InLocationAlliance, 2015. *Indoor Location Based Services in Retail and Marketing*, 1-12 [Online] Available at: http://www.openmobilealliance.org/tech/affiliates/ila/ILA_Use_Case_Retail.pdf [Accessed 8 January 2019].

Kim, M., Kim, J., Choi, J., Trivedi, M., 2017. Mobile Shopping Through Applications: Understanding Application Possession and Mobile Purchase. *Journal of Interactive Marketing*, Vol. 39, 55–68.

Knežević, B., Delić, M., 2017. Young Consumers' Perception of Problems and Usefulness of Mobile Shopping Applications. *Entrepreneurial Business and Economics Review*. 5(1), 43-58.

Krishen, A., Raschke, R., Close, A., Kachroo, P., 2017. A Power-responsibility Equilibrium Framework for Fairness: Understanding Consumers' Implicit Privacy Concerns for Location-based Services. *Journal of Business Research*, Vol. 73, 20–29.

Labrecque, L., Esche, J., Mathwick, C., Novak, T., Hofacker, C., 2013. Consumer Power: Evolution in the Digital Age. *Journal of Interactive Marketing,* Vol. 27, 257–269.

Lemon, K., Verhoef, P., 2016. Understanding Customer Experience Throughout the Customer Journey. *Journal of Marketing: AMA/MSI Special Issue*, 69-96.

Levesque, N., Boeck, H., 2015. Proximity Marketing as an Enabler of Mass Customization and Personalization in a Customer Service Experience. *Conference: 8th World Conference on Mass Customization, Personalization, and Co-Creation (MCPC 2015)*, At Montreal, Canada, 405-420.

Liang, F., Yu, W., An, D., Yang, Q., Fu, X., 2018. A Survey on Big Data Market: Pricing, Trading and Protection. *IEEEAccess*, Vol. 6, 15132-1513.

Luxford, A., Dickinson, J., 2015. The Role of Mobile Applications in the Consumer Experience at Music Festivals, *Event Management*, Vol. 19, 33–46.

Malik, A., Suresh, S., Sharma, S., 2017. Factors Influencing Consumers' Attitude Towards Adoption and Continuous Use of Mobile Applications: a Conceptual Model. *Procedia Computer Science*, Vol. 122, 106-113.

McKinsey, Court, D. Elzinga, D. Mulder, S., Vetvik, O., 2009. *The Consumer Decision Journey*. [Online] Available at: https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/the-consumer-decision-journey [Accessed 8 January 2019].

Murraya, K., Muro, F., Finn, A., Leszczyc P., 2010. The Effect of Weather on Consumer Spending. *Journal of Retailing and Consumer Services*, Vol. 17, Issue 6, 512-520.

Öztaş, Y., 2015. The Increasing Importance of Mobile Marketing in the Light of the Improvement of Mobile Phones, Confronted Problems Encountered in Practice, Solution Offers and Expectations World Conference on Technology. *Innovation and Entrepreneurship Procedia - Social and Behavioral Sciences.* 195, 1066-1073.

Pechenkina, E., 2017. Developing a Typology of Mobile Apps in Higher Education: A National Case Study. *Australian Journal of Educational Technology*. Vol. 33 (4) 134-146.

Racherla, P. and Furner, Ch., Babb, J., 2012. Conceptualizing the Implications of Mobile App Usage and Stickiness: A Research Agenda. [Online] Available at SSRN: http://dx.doi.org/10.2139/ssrn.2187056 [Accessed 18 January 2019].

Sandoval-Almazan, R., Gil-Garcia, J. R., Luna-Reyes, L., Luna, D., Rojas-Romero, Y., 2012. Open Government 2.0: Citizen Empowerment through Open Data, Web and Mobile Apps. *6th International Conference on Theory and Practice of Electronic Governance*, Albany, NY, United States. ACM.

SAS, 2016. *The Internet of Things: Marketing's Opportunities and Challenges*, White paper, 1-7 [Online] Available at: https://www.sas.com/en_us/whitepapers/internet-of-things-marketings-opportunities-challenges-108104.html [Accessed 8 January 2019].

Schneider, Ch., Weinmann, M., Brocke, J., 2018. Digital Nudging: Guiding Online User Choices through Interface Design, *Communications of the ACM*, Vol. 61 (7), 67-73.

Sivillo, J., Reilly, D., 2004. Forecasting Consumer Product Demand with Weather Information: A Case Study. *The Journal of Business Forecasting Methods & Systems*. [Online] Available at: https://www.questia.com/read/1P3-790820921/forecasting-consumer-product-demand-with-weather-information [Accessed 8 January 2019].

Statista, 2019. https://www.statista.com/statistics/263437/global-smartphone-sales-to-end-users-since-2007/ [Accessed 18 January 2019].

Ström R., Vendel, M., Bredican, J., 2014. Mobile Marketing: A Literature Review on its Value for Consumers and Retailers. *Journal of Retailing and Consumer Services*. Vol. 21, Issue 6, 1001-1012.

Tian J., Zhang, Y., Zhang, Ch., 2018. Predicting consumer variety-seeking through weather data analytics. *Electronic Commerce Research and Applications*, 28, 194–207.

Tsai, Y., Wang, S., Yan, K., Chang, C., 2017. Precise Positioning of Marketing and Behavior Intentions of Location-Based Mobile Commerce in the Internet of Things, *Symmetry*, 9/139, 1-16.

Tussyadiah, I., 2016. The Influence of Innovativeness on On-Site Smartphone Use Among American Travelers: Implications for Context-Based Push Marketing. *Journal of Travel & Tourism Marketing*, 33:6, 806-823.

Wang, Z., Zhang, L., Ma, L., Liu, B., 2018. Modeling Medical Services with Mobile Health Applications. *Journal of Healthcare Engineering*, Vol. 2018, Article ID 1385034, 1-11.

Weather Unlocked, 2019. *How to Increase Advertising ROI Using Weather*, [Online] Available at: http://www.weatherunlocked.com/resources/how-to-increase-advertising-roi-using-weather [Accessed 8 January 2019].

Weather Unlocked, 2019. *The Complete Guide to Weather Based Marketing*, [Online] Available at: http://www.weatherunlocked.com/media/1096/the-complete-guide-to-weather-based-marketing.pdf [Accessed 8 January 2019].

WeatherAds, 2014. *How Weather Affects Consumer Behavior and Purchase Decisions*. [Online] Available at: http://www.weatherads.io/blog/2014/june/how-weather-affects-consumer-behaviour-and-purchase-decisions [Accessed 8 January 2019].

Weiber, R., Kollmann, T., 1998 Competitive Advantages in Virtual Markets - Perspectives of "Information-based marketing" in Cyberspace. *European Journal of Marketing*, Vol. 32, Issue: 7/8, 603-615.

Wijland, R., Hansen, P., Gardezi, F., 2016. Mobile Nudging: Youth Engagement with Banking Apps. *Journal of Financial Services Marketing*, 21(1), Macmillan Publishers Ltd., 51-63.

A COMPARISON OF BUSINESS EXCELLENCE MODELS

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Abstract. Nowadays, there is a rising trend of implementing different Business Excellence frameworks also known as Quality Models for the improvement of organizational business performance. Models or Quality Award Model are used to recognize the best practice in the different areas. Many countries of the world adapt these models as their quality improvement tools for business assessment in comparison with the competitors. The research is focused on the review of the major Business Excellence Models such as Deming Prize, European Foundation for Quality Management (EFQM) and Malcolm Baldrige National Quality Award (MBNQA) and their influence.

The research is primarily based on theoretical approach that has applied comparative analysis as a measurement tool to identify the emphasis of different quality models.

The aim of research is to explore the common features and the differences of Business Excellence models based on their emphasis of the framework criteria. The tasks of the research consist of exploring basic Business excellence models, comparing different Business excellence models and making conclusions on best application of the respective model.

The research methods: scientific publications analysis, comparative analysis as a measurement tool to identify the emphasis of different Business Excellence models.

The results of the survey show that Business excellence models are tools that help the companies to improve the business performance and the general business performance increasing the efficiency of the country. In terms of application of the Business Excellence model criteria most companies show common features, meanwhile the differences stand out in the approach, namely, one part of the models relates to the satisfaction of the customers and the other – to business results.

Key words: *comparative analysis, Business Excellence model, Quality Award*.

JEL code: L15, L26, M11

Introduction

In the conditions of constantly increasing competition both in the global and European markets, the competitiveness of the companies to a great extent depends on feasibility of efficient process and resource management, while striving to achieve the results that comply with the aims of the companies.

First, the company should start with the overall assessment of the current situation, identification of the problems and areas of indispensable improvements, bearing in mind that the direct copying of the operational methods applied by successful and renowned companies, never guarantees the success; on the contrary, it often leads to fail. The company in need of improvements must understand the operational methods used by successful and recognized companies and adapt them to the given conditions.

The aim of research to find out the commonalities and differences among these models on the basis of their emphasis on the criterions of the frameworks. The research is based on theoretical approach that has applied comparative analysis as a measurement tool to identify the emphasis of different Quality Excellence models.

Research results and discussion

There are companies striving to improve their own business performance and efficiency along with the business performance and efficiency of their region. One of the strategies consists of application of quality improvement methods to achieve the growth of the business results. One of the instruments used to pave the path to success is application of various Business Excellence Models. (Hewitt S., 1997)

Thürer M., et al, pointed out that the companies tend to apply Business Excellence Models being aware that these models stimulate the adoption of the best practice and the usage of instruments that require the introduction of quality strategy, self-assessment and continuous improvement. (Thürer M., et al, 2018)

Such scholars as K. B. Hendricks and V. R. Singha (Hendricks K.B., Singha V.R., 1996) have verified the hypothesis that the application of efficient quality management programs helps to improve the operational results of the company. Considering this statement, the companies that have received Quality awards considerably exceed the companies with no awards, comparing the revenue-based indices. The authors have analysed the impact of the receipt of the Quality awards to the market value of the company, concluding that the stock market reacts positively to the award communication mainly due to the quality improvement of the goods caused by the introduction of Business Excellence Model. (Mavroidis V., Toliopoulou S., Agoritsas C., 2007) Most of the Business Excellence Models in the world base on three Business Excellence Model Fundamental concepts (See Table 1) characterized by slightly different approaches to quality excellence assessment in the USA, Japan and Europe. Namely, Malcolm Baldrige National Quality Award – MBNQA) excellence model widely applied in the USA, Deming Prize model, which is particularly popular in Japan, and the European Foundation for Quality Management (EFQM) model that sets the core criteria to many European quality awards.

Table 1

Fundamental concepts of the 3 most popular Business Excellence Models in the world

EFQM Business Excellence Model Fundamental Concepts	Fundamental Concepts of Deming Business excellence model	MBNQA Baldrige Business model Fundamental Concepts
Leading with vision, inspiration & integrity. Excellent organisations have leaders who shape the future and make it happen, acting as role models for its values and ethics.	Management Vision and Leadership: Senior executives' leadership	Visionary leadership: Organization's senior leaders should set directions and create a customer focus, clear and visible organizational values, and high expectations for the workforce. The directions, values, and expectations should balance the needs of all stakeholders.
Managing with agility. Excellent organisations are widely recognised for their ability to identify and respond effectively and efficiently to opportunities and threats.	Mapping Out and Deploying Strategies	Agility: Success in today's ever changing, globally competitive environment demands agility a capacity for rapid change and flexibility.
Succeeding through the talent of people. Excellent organisations value their people and create a culture of empowerment for the achievement of both organisational and personal goals.	Understanding and Interaction with Customers and Markets: Quick response to market/customer needs	Systems perspective: Managing whole organization holistically and understands how its components interact, and are aligned to achieve success.
Sustaining outstanding Results. Excellent organisations achieve sustained outstanding results that meet both the short and long term needs of all their stakeholders, within the context of their operating environment.	Human Resource Development and Learning Environment: Education and training of human resources, and development of skills aligned to strategy	Focus on the future: Ensuring an organization's sustainability requires understanding the short and longer term factors that affect your organization and marketplace.

Harnessing creativity & innovation. Excellent organisations generate increased value and levels of performance through continual improvement and systematic innovation by harnessing the creativity of their stakeholders.	Process Management: Continuous improvement of systems and processes	Organizational and personal learning: Achieving the highest levels of organizational performance requires a well - executed approach to organizational and personal learning that includes sharing knowledge via systematic processes. Organizational learning includes both continuous improvement of existing approaches and significant change or innovation, leading to new goals and approaches.
Adding value for customers. Excellent organisations consistently add value for customers by understanding, anticipating and fulfilling needs, expectations and opportunities.	Results of Enterprise Activities: Customer Satisfaction: Quality as judged by the customers; Partnership and teamwork, Commitment to environment protection and public responsibility	Valuing workforce members and partners: An organization's success depends increasingly on an engaged workforce that benefits from meaningful work, clear organizational direction, and performance accountability and that has a safe, trusting, and cooperative environment.
Developing organisational capability. Excellent organisations enhance their capabilities by effectively managing change within and beyond the organisational boundaries.		Managing for innovation: Making meaningful change to improve an organization's products, services, programs, processes, operations, and business model to create new value for the organization's stakeholders.
Creating a sustainable future. Excellent organisations have a positive impact on the world around them by enhancing their performance whilst simultaneously advancing the economic, environmental and social conditions within the communities they touch.		Customer - driven excellence: Performance and quality are judged byan organization's customers. Thus, Organization must take into account all product features and characteristics and all modes of customer access and support that contribute value to the customers.
		Management by fact: Organizations depend on the measurement and analysis of performance. Such measurements should derive from business needs and strategy, and they should provide critical data and information about key processes, outputs, and results.
		Societal responsibility: An organization's leaders should stress responsibilities to the public, ethical behaviour, and the need to consider societal well-being and benefit.
		Focus on results and creating value: An organization's performance measurements need to focus on key results. Results should be used to create and balance value for key stakeholders.

Source: *author's based on Ghicajanu, Irimie, Rares, 2015; Mann, Tickle, Ad banjo, 2011*

In general, the comparison of the core values of three Business Excellence Models allows concluding that some of the core values are similar: a clear vision facilitating the implementation of business strategy; compliance with the long-term and short-term succeeding conditions; involvement of the employees, their assessment and provision of trainings in order to achieve better results; process management etc. The author believes that there are some imperfections regarding the Core values of the Business Excellence model. For example, some of the core values regulating the Deming Quality Prize contain very wide scope of criteria that are worth to consider separately making the model more suitable. For instance,

the results of the company's operational results should include the customer satisfaction, partnership and teamwork, environmental commitment and social responsibility.

The author believes, that the splitting of the aforementioned core values into separate criteria, such as customer satisfaction, building of partnerships, social responsibility and environmental commitment (similar to those of *EFQM* business excellence model and Baldrige model) adding due explanations, could be more suitable. The users of the model would have a clearer idea of each of the core values and the related requirements to comply.

Kim D.Y, Kumar V., Murphy S.A. pointed out that the core values of Baldrige model resemble more the core values of *EFQM* business excellence model, keeping their own specifics and accentuating different kinds of results not taken into account in *EFQM*(Kim D.,Y., Kumar V., Murphy S. A., 2010). Nevertheless, the author believes that the core values of *EFQM* business excellence model are explicitly defined and include many significant aspects of the contemporary business practice to achieve the excellence in performance: processes, employees, orientation to the customer, added-value creation, responsibility for sustainable future etc.

Among other the author concludes, that the responsibility for sustainable future predicting a clear principle of ethical action and implementation of corporate behaviour standards and compliance with them in the framework of company's quality culture, contributing to the common economic, social and ecologic sustainability, appears as core value of excellence exclusively in *EFQM* model. Kalfa K. pointed out that partially, in the framework of particular contexts, it is included also in the *MBNQA* model (i.e. responsibility before the community), but not as clear as in *EFQM* model. (Kalfa K., 2018)

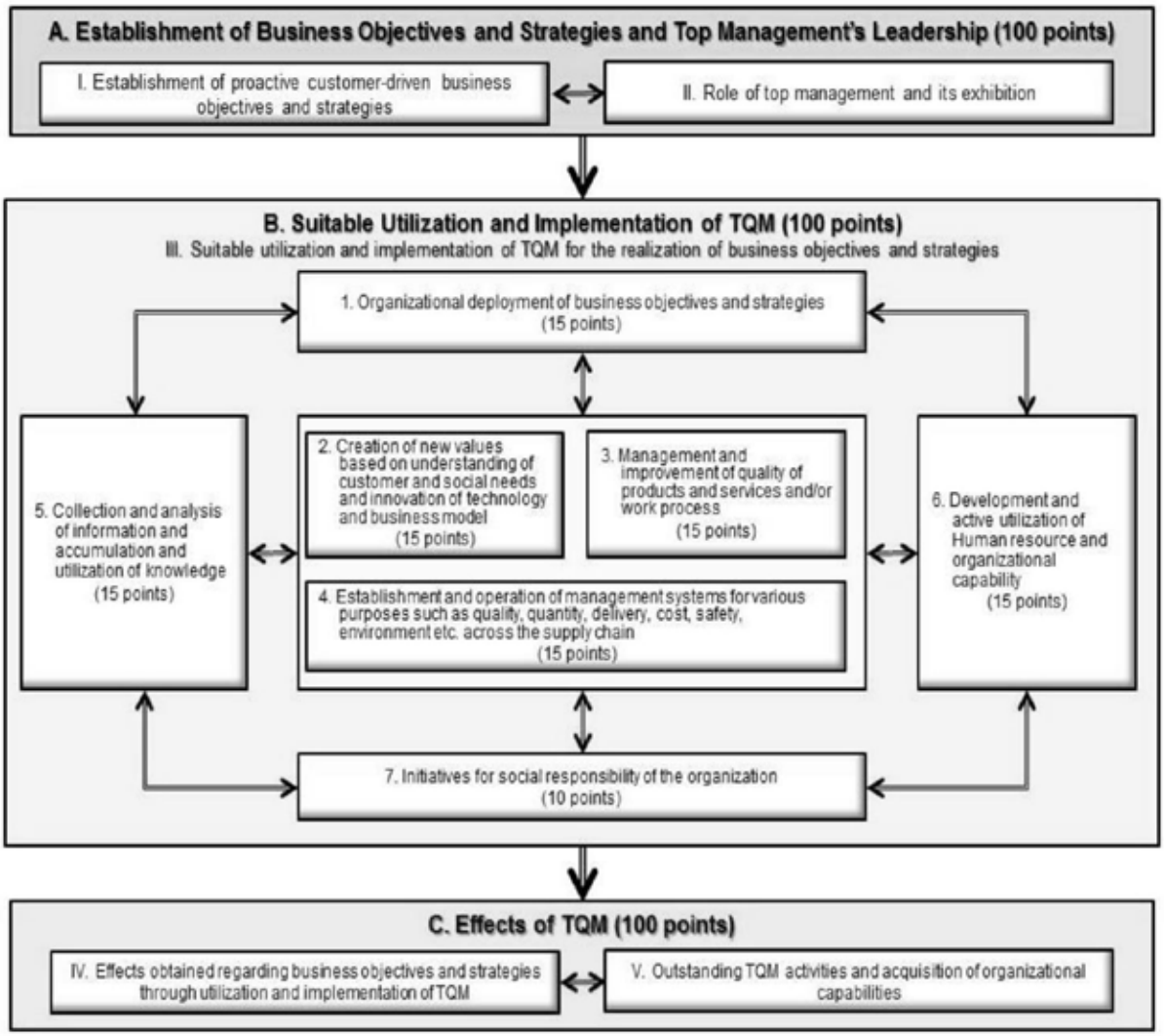
The author states that the sustainability should be an important criterion and part of the business operations for any company striving to excellence and aiming to receive the Quality award. The sustainability means sustainable development satisfying the actual needs without threats to the same satisfaction of needs in next generations. (Core values of the sustainable development in Latvia, 2016). The sustainability is a very wide concept, and therefore the society needs long-term solutions that would ensure the sustainability in terms of environment, economic activities and the society. The companies more and more face the necessity to elaborate the competitive action policy in order to keep in balance the environment, the economics and the society.

Understanding the formulated core values of excellence, the company is able to assess its compliance to the *EFQM* criteria comprehensively. This model is the totality of guidelines available for the companies striving to excellence in their business in order to assess the initial condition, to plan the improvements and to implement gradually the principles of excellence. Since the model does not contain any direct indications regarding the adoptable measures to achieve the excellence, it is the company, who chooses the necessary measures to achieve stable top-quality results according to the specifics of the company, current conditions and the possibilities of the company. (Vokurka, R.J., Stading. G. L., Brazeal, J., 2017; European Excellence model and Latvian Quality award: contest of small and medium enterprises, 2013)

The Union of Japanese Scientists and Engineers (JUSE) founded Deming quality award in 1951 to award the companies or their departments, who have achieved notable operational improvements applying the Total Quality Management (*TQM*). **(**Sampaio P., Saraiva P., Monteiro A., 2012) It is one of the first most important quality awards in the world.

Deming Prize is the symbol of quality improvement efforts of the company, symbol of continuous improvement and the development of quality management in relation with the suppliers. (Guidance For Deming prize, 2018). This totality of guidelines requires the usage of fixed principles and methods, for instance, the process analysis, statistical methods and quality circles. Therefore, most of the criteria closely relate to the application of the required principles and methods. (Guide for The Deming Prize The Deming Grand Prize, 2018).

Such criteria as management of policies, development of human resources, management system, information analysis and application of IT directly affect the implementation of quality measures and the results of quality improvement. (Talwar, 2011). See model's criteria entering into force since 2018 in Fig. 1.



Source: Guide for The Deming Prize. The Deming Grand Prize(2018)

Fig. 1.**Criteria of Deming Prize excellence model**

As for the model's criteria disclosed in the picture, the Union of Japanese scientists and engineers indicated that it is not the compliance to the standards set by the Committee of Deming Prize required from the candidates. (Breja S. K., Banwet D. K., Iyer K.C., 2016). Instead, the Committee expected the ability of the candidates to evaluate the current situation in their company, to set the aims and related tasks, to improve and reform the operations in the framework of company's daily routines. (Guidance For Deming prize, 2018). The evaluation includes not only the achieved results and applied processes, but also the predictable efficiency in future. The assessors evaluate whether the tasks set by the candidate are compatible with the current situation in the company and whether the applied measures comply with the existing conditions and accomplished activities are oriented to higher goals in the future.(The Deming Prize and Development of Quality Control/ Management in Japan, 2017)

MBNQA excellence model was introduced in 1987, when Ronald Reagan, the President of the USA of the time wished to improve the quality management practice and competitiveness in American companies by signing the Malcolm Baldrige National Quality Improvement Act.

This Quality award was established with the aim to encourage the quality awareness, define the criteria of quality excellence and distribute the information about successful quality strategies and related benefits. (Sampaio P., Saraiva P., Monteiro A., 2012). *MBNQA* excellence model consists of seven categories that ensure the strategic progress of the management. Fig. 2 shows the interconnections of all categories.

Source: (Sampaio, P., Saraiva, P., Monteiro, A., 2012)

Fig. 2.**MBNQA excellence model**

Figure represents the *MBNQA* excellence model, continuously improved every two years after collecting the opinion of the users of the model regarding the deficiencies.

In the USA, it is particularly popular system to maintain the organizational self-assessment. The National Institute of Standards And Technology (*NIST*) of the USA acknowledges that thousands of companies use the criteria of this model in their self-assessment procedures. However, this model has been widely criticized, especially in the USA (Jaeger M., Adair D., Al-Qudah, S., 2013)

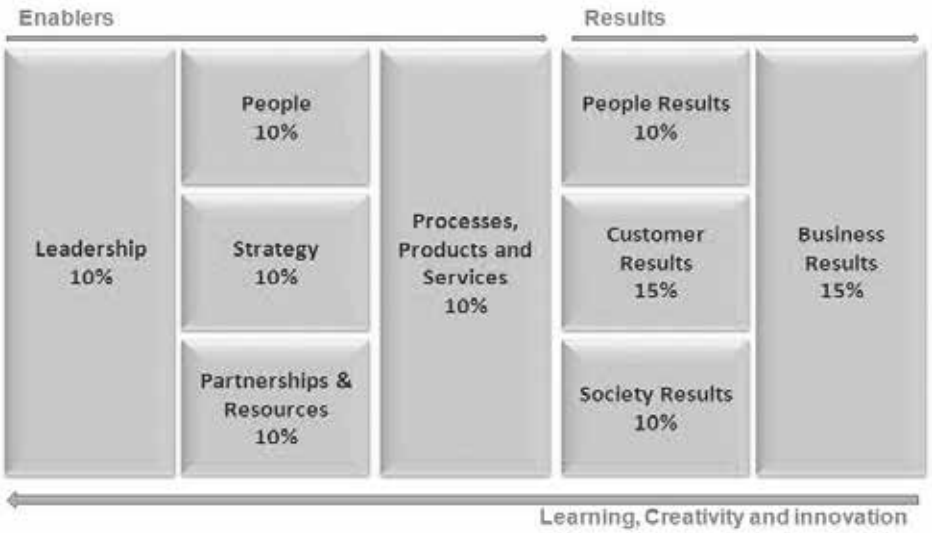
The critics claim that *MBNQA* excellence model is static and does not reflect the quality of goods in point of fact, stressing out that the high scores in self-assessment alone do not testify the high quality of goods. *MBNQA* is just a totality of guidelines, not a rule that makes companies to comply with every indication without research and interpretation of its contents. (Kanji J.G., 2002). Apart from the aforementioned arguments, the significant deficiency is an unproportioned division of points for the criteria. (Latvian Association for Quality, 2013 M.R., 2007)

Considering the importance of quality management, at the end of the 1980-ies the largest European companies successfully established a common European Foundation for Quality Management. In 1991, the organization founded the European Quality Award (*EQA*) programme aimed to praise the excellence of the European enterprises. This award is similar to the *MBNQA* award.

The European Foundation for Quality Management offers several approaches to implement the *EFQM* model, since it is rather impossible to indicate a single best approach due to the differences in application for different companies. It is very important for the company to estimate the priorities of the benefits achievable with the implementation of the model.

According to Bovaird T. and Löffler E. *EFQM* is a powerful instrument of diagnostics providing to the stakeholders the training opportunities aimed to localize the strengths of the company and the potential of improvement. Besides, this model provides to the company the opportunity to see the difference between the best practice and actual performance. It gives a rational justification for the assessment of the performance and progress on the way to the defined aims and tasks (Bovaird T. Löffler E., 2009). Author has chosen the model as the basic instrument for the detailed research and practical

case study due to its popularity, practicableness and wide scope of application. The Fig. 3 represents the EFQM business excellence model composed of 9 criteria and 32 sub-criteria.



Source: European Foundation for Quality Management Excellence Model (2013)

Fig. 3 **EFQM Business Excellence model**

The model consists of two parts: Approach and Results. The criteria divide into 100 points each except „customer-related results" and „ the main operational results", where the value of the criterion is 150 points out of 1000. It is rather impossible to receive 1000 points, because no company is able to comply with all requirements of the criteria. In order to qualify for the EFQM business excellence model award the candidate has to collect 750–850 points. Only the companies able to collect such a score can receive the highest evaluation in Europe or in the world in quality matters: the Quality award. Table 2 made by the author shows the application of business excellence models in different regions of the world.

Table 2

Business excellence model awards in different countries (as of 12.04.2018)

No.	Model Used	Country - Name of Award	Region
1	EFQM Excellence Model	Hungary- Hungarian National Quality Award; Russian Federation - Russian National Quality Award; Poland - Polish Quality Award and Business Fair Play Award; Romania - Romanian Quality Award; Ukraine - Ukrainian National Quality Award; Denmark - Danish Quality Prize; Scotland - Scottish Award for Business Excellence; Czech Republic - Quality Award of the Czech Republic; Ireland - Irish Business Excellence Award; Latvia- Latvian National Quality Award; Estonia - Estonian Quality Award; Lithuania - Lithuanian National Quality Prize; Northern Ireland - Northern Ireland Quality Award; Sweden - Swedish Quality Award; United Kingdom - UK Business Excellence Award; Wales - Wales Quality Award; Italy - Italian Quality Award; Portugal - Portuguese Quality Award; Slovenia - Slovenian Business Excellence Prize; Austria - Austrian Quality Award; Belgium - K2 Award Switzerland - Swiss Quality Award for Business Excellence; Austria - Austrian Quality Award; Germany - German National Quality.	Europe
2	National model	United Arab Emirates; Turkey(developed from EFQM Excellence Model) Norway - Norwegian Quality Award Hungary - IIASA SHIBA Award Netherlands - Dutch Quality Award Slovakia - The Slovak Quality Award France - French Quality Award Greece - Athens Chamber of Commerce and Industry Awards(developed from Deming Prize Model) Ireland - Q-MARK National Quality Award India - CII-EXIM Bank Award for Business Excellence	Europe Asia

3	National model (unique)	Japan - Deming Prize Korea,Taiwan, India Sweden - Swedish Quality Award Greece - ECO-Q Recognitions Luxembourg - Prix Luxembourgeois de la Qualite Canada - Canada Awards for Excellence Australia - Australian Business Excellence Award	Asia Europe Northern America Australia
4	National model (developed from Baldrige model)	China - China Quality Award Egypt Japan - Japan Quality Award Vietnam, Mongolia	Africa Asia
5	Baldrige Criteria for Performance Excellence	Sweden - Swedish Quality Award United States of America - Malcolm Baldrige National Quality Award (MBNQA New Zealand - New Zealand Business Excellence Award Hong Kong - Hong Kong Management Association Quality Award Indonesia, Sri Lanka, Philippines, Thailand	Europe Northern America Oceania Asia

Source: author's created based on Ghicajanu M., Irimie S., Rares L.M., 2015; Pathak S., 2014; Mohammad, M., 2010; Mann, R., Tickle, M., Ad banjo, D., 2011

According to the collected data, in most Asian countries, except Japan, awarding the Deming quality award, apply the models that combine the business excellence models of the USA and/or Europe (including the Singapore excellence model). In addition, there are several countries applying unique business excellence models, such as Canada, Sweden, Spain, Greece etc. The author concludes that the companies tend to choose either widely applicable and/or easy-to-adapt business excellence models as well as try to create their own models taking into account the particularities of the country in question. The comparison of business excellence models' criteria is disclosed in Table 3.

Table 3

The comparison of business excellence models' criteria

Excellence model/criteria	**Leadership**	**Strategic plan nng**	**People**	**Supplier and partner**	**Process**	**Knowledge & Information management**	**Customer satisfection**	**Result Organizatin**	**Employee satisfaction**	**Society result**	**Customer and market focus**	**Other ritera**	**Total**
Deming Prize, Japan	+	✓	+			+							3
European Excellence Award (EFQM Model)	+	+	+	+	+		+	+	+	+			9
Malcolm Baldrige National Quality Award(MBNQA),USA	+	+	+		+	+		+			+		7
Canada Award For Excellence	+	+		+	+			+			+		6
National Quality Award of Mexico	+	+	+		+	+		+		+	+		8
National Quality Award, Brazil	+	+	+		+	+	+	+		+			8
National													

Excellence model/criteria	Leadership	Strategic planning	People	Supplier and partner	Process	Knowledge & Information management	Customer satisfaction	Result Organizatin	Employee satisfaction	Society result	Customer and market focus	Other ritera	Total
Quality Award of Argentina	+	+	+	+	+			+					6
Singapore Quality Award	+	+	+		+	+	+	+	+	+	+		10
Quality Award of Mongolia	+	+	+	+	+			+	+	+	+		9
Japan Quality Award	+	+	+		+	+		+		+	+		8
Indonesia n Quality Award	+		+	+	+		+	+				+	7
Golden Peacock National Quality Award, India	+	+	+		+	+	+	+					7
Rajiv Gandhi National Quality Award	+	+	+	+	+			+	+	+	+		9
National Quality Award of United Kingdom	+	+	+	+	+		+	+	+	+			9
National Quality Award of France	+	+	+	+	+		+	+	+			+	9
National Quality Award of Belarus	+		+	+	+	+		+	+	+		+	9
Prime minister Quality Award,Malaysia	+		+	+	+	+		+			+	+	8
Fiji Quality Award	+	+	+		+	+		+			+		7
Swedish Model for Performance Excellence	+	+	+		+	+	+	+					7
Thailand Quality Award	+	+	+		+	+		+			+		7
National Quality Award of Hungary	+	+	+	+	+		+	+	+	+			9
FNCCI National Excellence Award		+	+		+	+	+	+	+	+		+	9
Philippines Quality Award	+	+	+		+	+		+			+		7
Sri Lanka national Quality Award	+	+	+		+	+		+			+		7

Excellence model/criteria	Leadership	Strategic plan nng	People	Supplier and partner	Process	Knowledge & Information management	Customer satisfection	Result Organizatin	Employee satisfaction	Society result	Customer and market focus	Other ritera	Total
Quality Award of Vietnam	+	+	+		+	+		+			+		7
Slovenian Business Excellence Prize	+	+	+	+	+		+	+	+	+	+		10
King Abdullah II award of Excellence	+		+	+	+	+							5
South African Excellence Award	+	+	+		+	+	+	+	+	+	+		10
Hong Kong Management Association Quality Award	+	+	+		+	+		+			+		7
Dubai Award for Excellence	+	+	+	+	+		+	+	+	+			9
Scottish Award of Business Excellence	+	+	+	+	+		+	+	+	+	+		10
Taiwan national Quality Award	+	+	+		+	+		+			+		7
Polish Quality Award	+	+	+	+	+		+	+	+	+			9
Russian National Quality Award	+	+	+	+	+	+	+	+	+	+			10
Newzealand business Excellence Award	+	+	+		+	+		+			+		7
Australian Business Excellence Award	+	+	+		+	+					+	+	7
Frequency	35	31	35	17	35	23	16	33	15	17	20	6	

Source: author's created based on Pathak S., 2014

According to the data shown in the table, Quality awards of many countries tend to apply similar business excellence models' criteria. For instance, such criterion as "Employees and processes" is included in 35 of 36 business excellence models compared by the author. The second most popular criterion appears to be "Leadership" included in 35 business excellence models of 35 different countries. 31 models contain "Strategic planning", a criterion emphasized by many founders of quality analysis. The author concludes that the criteria of the models do not differ significantly unlike the approaches to reach the excellence that tend to be diverse. The most accented criteria to reach the excellence are either "Results" or "Satisfaction" (of customers, employees). Analysis of business excellence modes drives the author to concluded that part of the models are complex and contain more than 9 criteria making the assessment longer and more complicated, which is the case of Singapore Quality Award (SQA), Russian National Quality Award, South African Excellence Award to mention just a few.

Another group of problems emerges in fact that according to the author a part of business excellence models do not contain some relevant criteria for business excellence. For instance, Prime Minister Quality Award of Malaysia has nothing to do with customers' satisfaction, the National Quality Award of United Kingdom is not customer-oriented, National Quality Award of Belarus lacks the strategic planning criterion etc. The author believes that EFQM business excellence model contain all necessary criteria testifying the business excellence, and therefore this model should be used as the most suitable tool to prove it.

Conclusions

Business excellence models are the instruments, which help the companies improve the performance and the general business performance and efficiency of the country.

In terms of the application of the criteria of business excellence model, most companies show common features. Meanwhile the differences stand out in the approach. Namely, one part of the models relates to the satisfaction of the customers and the other relates to business results.

Core values of European business excellence model contain many aspects that are important for the contemporary business practice aimed at achieving the excellence: processes, employees, orientation to customers, added-value creation, and responsibility for the sustainable future.

Core values of business excellence model of America are similar to the core values of the European business excellence model. However, they conserve certain specifics accentuating different results in comparison to the EFQM model focused on customers' satisfaction.

The Deming Quality Award evaluates the ability of the company to assess the current situation, the aims and tasks, improvement of the operations, and transformations in the framework of the company. The Award does not require rigid compliance with the criteria.

Core values of some model are divided into separate categories like customers' satisfaction, the establishment of partnerships, the responsibility towards the society, and environmental commitment with a proper explanation. They are more suitable because they represent the requirements of each core value for users of the model and other interested stakeholders better.

Most Asian countries, except Japan, apply the models that combine the business excellence models of the USA and/or Europe (including the Singapore excellence model) when awarding the Deming Quality Award. Besides, there are also countries, which have elaborated unique models applied for the assessment of performance excellence.

The company wishing to achieve the excellence in performance can apply the EFQM business excellence model to assess the current situation in the company, to plan the improvements, and to implement the principles of excellence based on compliance with the set criteria.

Due to the constant changes in the business environment, one must review and transform the Business Excellence models regularly according to the current situation or conditions that influence the excellence/performance of the company. Therefore, the models are subject to continuous improvement by their developers to ensure a trustworthy tool for quality management.

Bibliography

Bovaird, T. Löffler, E., 2009. More quality through competitive quality awards? An impact assessment framework. *International Review of Administrative Sciences*. 7(5), 383-401.

Breja, S.,K., Banwet, D., K., Iyer, K.C., 2016. Towards sustainable excellence: strategic analysis of Deming Prize winning companies, *The TQM Journal*, 28(3), 390-410.

Core values of the sustainable development in Latvia, 2016. [Online] Available at: www.varam.gov.lv/files/text/LV_ilgtspejig_att_pamatnostadn.doc[Accessed 16 November 2018]

Ghicajanu, M., Irimie, S., Rares, L. M., 2015. Criteria for Excellence in Business. *Procedia Economics and Finance* 23, 445 – 452.

Guide for The Deming Prize The Deming Grand Prize, 2018. *For Companies and Organizations Overseas*. The Deming Prize Committee Union of Japanese Scientists and Engineers, 80 p.

Guidance For Deming prize, 2018. [Online] Available at: http://www.tqmi.com/media/pdf/Deming%20Prize%20Brochure.pdf.

Hendricks, K. B., Singhal, V.R., 1996. Quality awards and the market value of the firm: An empirical investigation. *Management Science* 42(3), 415-436.

Hewitt, S., 1997. Business excellence: does it work for small companies? The *TQM Magazine*, 9(1),76 p.

Jaeger, M., Adair, D. Al-Qudah,S., 2013. MBNQA criteria used in the GCC countries. *The TQM Journal*, 25(2), 110-123.

Kalfa, K., 2018. The effect of Europe Union common assessment framework on organisational commitment with role of job satisfaction. *Total Quality Management & Business Excellence* 29(5), 704-726.

Kanji, J.G., 2002. *Measuring Business Excellence*, Routledge, 24 p.

Kim, D.,Y., Kumar, V., Murphy, S. A., 2010. European Foundation for Quality Management Business Excellence Model. *International Journal of Quality & Reliability Management* 27(6), 684-701.

Kumar M.R., 2007.Comparison between DP and MBNQA: Convergence and Divergence over Time. *The TQM Magazine* 19(3), 3-29.

Latvian Association for Quality, 2013. *European Excellence model and Latvian Quality award: contest of small and medium enterprises.* [Online] Available at: http://www.lka.lv/index.php?module=Articles&cat_id=41[Accessed 16 November 2018].

Mann, R., Tickle, M., Ad banjo, D., 2011. Deployment of business excellence in Asia: an exploratory study. *International Journal of Quality & Reliability Management*, 28(6), 604-627.

Mavroidis, V., Toliopoulou, S., Agoritsas, C., 2007. A comparative analysis and review of national quality awards in Europe: Development of critical success factors. *The TQM Magazine*, 19(5), 454-467.

Mohammad, M., 2010. *National Quality/Business Excellence Awards in different countries*. [Online] Available at: http://www.nist.gov/[Accessed 21 December 2018]

Pathak, S., 2014. *Comparative analysis of local, Regional and Intercontinental Business Excellence Models to recommend appropriate model & Quality management system structure in context of Nepal*. [Online] Available at: https://www.politesi.polimi.it/bitstream/10589/89886/3/2014_04_Pathak_Sagar.pdf[Accessed 19 November 2018]

Sampaio, P., Saraiva, P., Monteiro, A., 2012. A comparison and usage overview of business excellence models. *The TQM Journal*, 24(2), 181-200.

Talwar, B. Excellence models and path ahead. *The TQM Journal*, 23(1), 21-35.

The Deming Prize and Development of Quality Control, 2017. *Management in Japan*. [Online] Available at: http://www.juse.or.jp/e/deming/77/ /[Accessed 21 December 2018]

Thürer, M., Tomašević, I., Stevenson, M., Fredendall, L. D., Protzman, W., 2018. On the meaning and use of excellence in the operations literature: a systematic review. *Total Quality Management & Business Excellence,* 257, 1-28.

Vokurka, R.J., Stading. G. L., Brazeal, J., 2000. A Comparative Analysis of National and Region Quality Awards. *Qualitiy Progress*, 33(8),41-49.

PROSPECTIVE CONSEQUENCES OF THE TRADE WAR BETWEEN THE UNITED STATES AND CHINA

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Abstract. First signs of a trade war between the United States and China appeared on March 8th, 2018 with the announcement by D. Trump administration of new additional tariffs on steel and aluminium imports to the US as a means of protection of domestic producers. In March USTR carried out a procedure based on Clause 301 of Trade Act of 1974 accusing China of unfair trade practices. In April a possibility to introduce tariffs on imports from China. Ultimately, on July 6th, new tariffs were implemented, and other are to be introduced in the future. Chinese government announced they would reply in kind to the changes in American trade policy and released a list of retaliatory measures they would be seeking towards the United States - thus both countries appear to have engaged in a trade war, that can affect their economies as well as the rest of the world.

Main goal of the paper is to evaluate potential effects of the US-China trade war. Analysis focuses on:

1) bilateral trade flows between the United States and China;

2) evaluation of the consequences of new tariffs and non-tariff barriers on the US and China;

3) assessment of the consequences of trade war on selected countries and the world economy.

The analysis carried out in the paper reveals that greater trade costs will pertain to China and negative effects in the US will stem from the introduction of non-tariff barriers. Additionally, trade war between the United States and China can result in a declining exports flows, lowering of the GDP dynamics and an increase in unemployment in many other economies.

Key words: *trade policy, international trade, protectionism*

JEL code: F13, F14, F51

Introduction

March 8th 2018 is widely considered the beginning of the United States trade war with China. On this day the American president Donald Trump introduced global tariffs on steel and aluminium to protect domestic producers. There were exemptions to this measure pertaining to many countries, but these did not include China. In response to the Trump administration's decision, China introduced a range of 15-25% tariffs on various products imported from the United States. It pertained to approximately 3 billion USD of American imports to China. (Lee, Kaiman 2018). In March USTR carried out a procedure based on Clause 301 of Trade Act of 1974 accusing China of unfair trade practices. In April a possibility to introduce 25% tariffs on imports from China of about 1300 products with the estimated value of 50 billion USD was announced. Ultimately, on July 6th, new tariffs were implemented that pertained to 34 billion USD of Chinese imports, tariffs on the other 16 billion USD are to be introduced in the future.

The sources of the US trade conflict with China are quite deep and connected both to the domestic issues in the US as well as the structural changes in the world economy. The ongoing de-industrialization in the United States matched with

an increasing competition from Chinese imports resulted in the labour market issues in traditional sectors of the economy. Additionally, economic crisis of 2008-2009 adversely affected the internal economic conditions in the US and contributed to the shift towards protectionism. Another factor contributing to the increase in protectionist tendencies can be derived from the weakening of the US role as a leader in the post-war global economy and the loss of comparative advantage in relation to China (Mucha-Leszko, Kąkol 2012a).

Development of US-China trade relations in the 21st century is relatively widely analyzed in literature. The beginnings of the cooperation in 1970s and 1980s are the subject of papers by Xie (2009), Lardy (1994), Naughton (2007) and Quixiang (1987), while Morrison (2017) or Schell and Chairs (2017) focus on the more contemporary trade and economic relations. Ikenson (2017), Lazard (2017) and Posen (2018) discuss the possible threat of a trade war and the in-depth analysis of the potential consequences of a US-China trade conflict was carried out by Liu (2017), Li, Hen and Lin (2018), Bouët, Laborde (2018) and Citibank (2018) among others.

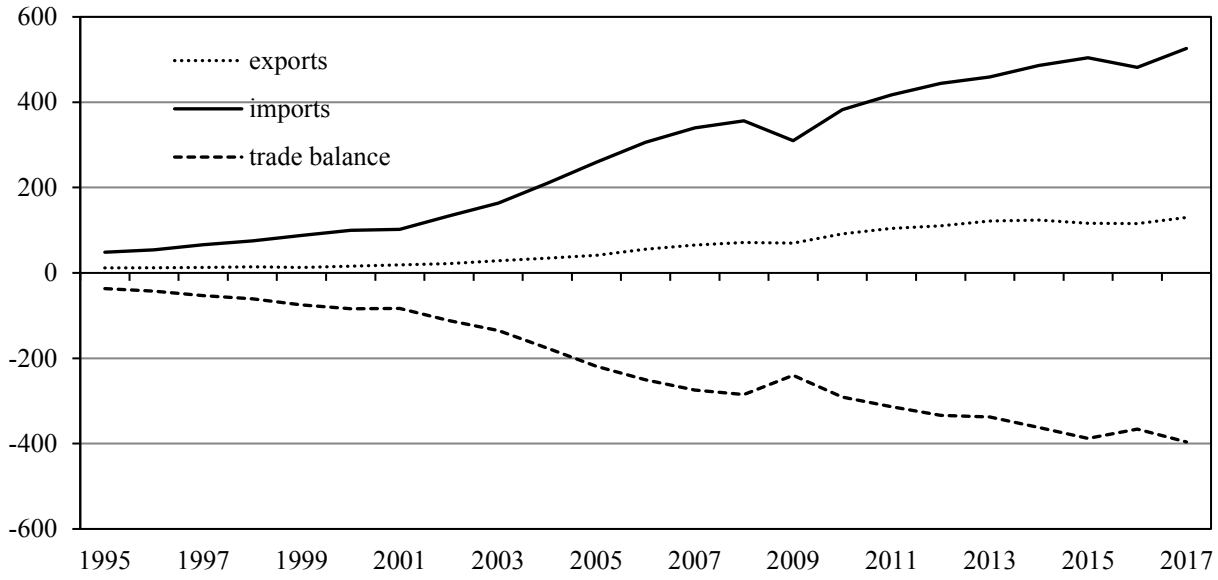
Main goal of the paper is to evaluate potential effects of the US-China trade war. Analysis focuses on:
1) bilateral trade flows between the United States and China;
2) evaluation of the consequences of new tariffs and non-tariff barriers on the US and China;
3) assessment of the consequences of trade war on selected countries and the world economy.

UNCTAD (2019) and IMF (2018) databases were used as the chief sources of statistical data in the paper and the timeframe is 1995-2017. In the case of the delays in the availability of data the most recent available year was used.

1. Development of trade between the United States and China

According to UNCTAD (2019) during the 1995-2017 the value of US exports to China increased from 12 billion USD to 130 billion USD while the value of imports rose from 49 billion USD to 526 billion USD. Persistent surplus of imports over exports resulted in a deepening US trade deficit with China. In 1995 the deficit was 37 billion USD and it reached 396 billion USD in 2017 - the highest ever recorded level during the entire history of US-China trade relations. Over the same period, the total US trade deficit increased from 188 billion USD to 862 billion USD - as a consequence - Chinese contribution to the US trade deficit increased from 19.7% in 1995 to 45.9% in 2017.

Three product groups play the major role in the merchandise structure of the US exports to China: 1) machinery and transport equipment (share of 30.1% in 2017), 2) crude materials, inedible, except fuels (20.0%) and 3) chemicals and related products (12.1%). Combined share of the aforementioned categories was 62.2% of the total US exports to China. The most notable changes in the merchandise structure over 1995-2017 included the decline in the share of machinery and transport equipment by 10.1 p.p. This downward trend started in 1999 and was intensified since 2003. In 1997-2002 the share of machinery and transport equipment in the US exports to China surpassed 50% and the record level of 57.8% was noted in 1998.



Source: author's construction based on UNCTAD 2019.

Fig. 1. V**alue of the United States trade with China in 1995-2017 ib billion USD**

The less pronounced changes to the merchandise structure of the US exports to China were as follows:

- decline in the share of food and live animals by 6.8 p.p., chemicals and related products by 5.0 p.p. and animal and vegetable oils, fats and waxes by 3.3 p.p.;
- increase in the shares of mineral fuels, lubricants and related materials by 6.4 p.p. as well as crude materials, inedible, except fuels by 5.7 p.p.;
- the remaining merchandise groups' shares were relatively stable.

To sum up, the changes to the merchandise structure of the American exports to China appear to be unfavourable. There was a decline in the degree of technological advancement as well as the degree of product processing. On the other hand, the shares of labour-intensive and material-intensive categories increased.

Table 1

Merchandise structure of the United States' exports to China in 1995-2017 in %

	1995	2000	2005	2010	2017
Food and live animals	11.2	2.9	2.7	3.5	4.3
Beverages and tobacco	0.1	0.0	0.0	0.2	0.2
Crude materials, inedible, except fuels	14.3	15.8	24.1	29.9	20.0
Mineral fuels, lubricants and related materials	0.2	0.4	0.3	1.5	6.6
Animal and vegetable oils, fats and waxes	3.4	0.1	0.1	0.5	0.0
Chemicals and related products, n.e.s.	17.1	10.2	12.4	13.8	12.1
Manufactured goods	5.7	7.8	7.5	5.5	4.9
Machinery and transport equipment	41.1	50.0	34.4	30.6	30.1
Miscellaneous manufactured articles	5.7	7.6	7.5	6.9	7.7
Commodities and transactions, n.e.s.	1.3	5.1	11.0	7.7	13.9

Source: author's construction based on UNCTAD 2019.

From the point of view of the increasing controversies in the bilateral US-China trade relations and the resulting increase in the American protectionism, the changes in the merchandise structure of imports appear to be much more impactful. There were two main product groups with the majority share in the US imports from China: 1) machinery and transport equipment (share of 53.1% of the total US imports from China in 2017) and 2) miscellaneous manufactured

articles (29.4%). The most noticeable changes in the structure of imports in 1995-2017 also pertained to the abovementioned groups. The share of machinery and transport equipment increased by 27.3 p.p. and the share of miscellaneous manufactured articles decreased by 29.4 p.p. The growing share of machinery and transport equipment was a result of the rising value of imports in the office machines and automatic data processing machines category (increase in the total imports from China by 8.4 p.p. in 1995-2017) as well as telecommunication and sound recording apparatus (an increase of 8.8 p.p.). China has a high competitive advantage measured by the Revealed Comparative Advantage Index. According to the estimates by K. Liu, the RCA index for the group increased in 2007-2011, and then it started to decrease in 2012-2016. Nevertheless, China still maintains relative comparative advantage (Liu 2018).

Table 2

Merchandise structure of the United States' imports from China in 1995-2017 in %

	1995	2000	2005	2010	2017
Food and live animals	1.4	1.0	1.2	1.4	1.2
Beverages and tobacco	0.0	0.0	0.0	0.0	0.0
Crude materials, inedible, except fuels	0.8	0.6	0.6	0.4	0.4
Mineral fuels, lubricants and related materials	1.0	0.7	0.4	0.1	0.1
Animal and vegetable oils, fats and waxes	0.0	0.0	0.0	0.0	0.0
Chemicals and related products, n.e.s.	1.9	1.8	2.2	3.0	3.6
Manufactured goods	9.5	10.3	12.0	10.7	11.0
Machinery and transport equipment	25.8	34.9	43.6	48.6	53.1
Miscellaneous manufactured articles	58.7	49.4	38.9	34.8	29.4
Commodities and transactions, n.e.s.	0.8	1.1	1.1	1.0	1.2

Source: author's construction based on UNCTAD 2019.

2. Main factors affecting the United States trade policy towards China

The first trade agreement between the United States and China was signed on July 7th 1979 (entered into force on Feb. 1st 1980). It awarded China with the Most Favoured Nation clause that needed to be renewed annually (Xie 2009). In reality, China received the same access to the US market as the signatories of the GATT. During the subsequent years a number of agreements were signed that widened the scope of cooperation both in terms of bilateral trade and other economic relations, which contributed to the high growth of trade flows, in particular the value of imports from China. Continuously increasing US trade imbalance and the loss of jobs resulted in the tightening of the American trade policy towards China. In 1990 around 47% of total US imports from China and 62% of manufacturing imports from China was subject to various kinds of non-tariff barriers, including in particular: quantitative barriers, countervailing duties, antidumping procedures and import bans (Lardy 1994).

The turning point in the bilateral trade relations was connected with China's accession to the World Trade Organization (WTO) in December 2001. Members of the WTO were obliged to remove many of the trade barriers against China which resulted in a fast-paced trade growth. Simultaneously a number of issues and disputes emerged in the US-China trade relations. The main issues were connected to the deteriorating US trade balance, Chinese producers' violations of health and safety standards, Chinese exchange rate policy and China's non-compliance with the WTO rules on intellectual property rights. Considerable controversies were also raised in relation to the Chinese industrial policy 'Made in China 2025' (Zhang 2015; Liu 2018).

Apart from the trade deficit, there is a number of other factors contributing to the exacerbation of the US trade policy towards China in recent years and as a consequence break out of the trade war. These are: economic slowdown in the

United States, loss of the competitive advantage and position in the world economy as well as internal tensions due to the growing imbalances both social as well as regional (Lu 2018).

Declining economic growth rate in the US is associated with the phenomenon of the new secular stagnation and is believed to be the major cause of the most recent tightening of American trade policy towards China by D. Trump administration. According to F. Lu (2017) in 1950s and 1960s the average GDP growth rate in the US was around 4.2%, in 1970s-1980s it dropped to an average of 3.3% and in 2000-2017 it was only 1.9% in the aftermath of the 2001 and 2008-2009 recessions. Moreover, the low economic growth rate persisted in recent years despite the introduction of the policy aimed at stimulating the economy. The slump is also accompanied by the increase in unemployment rate. According to the IMF (2018) unemployment rate doubled in 2009-2012 growing from around 4% to over 8%. After 2013 a slight improvement was recorded. Still the share of the unemployed in the US remains higher than in the 1990s. Ongoing unfavourable situation on the labour market became the catalyst for change in the American trade policy. Pressures from various professions threatened with the loss of jobs were on the rise, in particular in those sectors directly competing with imports.

Second major factor can be derived from the deep structural changes in the world economy that are reflected in the weakening of the economic position of the United States in favour of China. According to the IMF the US contributed 29.1 percent to global economic growth in the 1990s. However, from 2008 to 2016 this figure dropped to 7.4 percent. By comparison, in the 1990s, China's input into global economic growth was approximately 9 percent. In the post-crisis era this figure rose to 35.6 percent. In 1990 the shares of China and the United States in the world GDP based on PPP were 4.1% and 21.8% respectively. In 2017 Chinese share climbed to 18.2% and the American declined to 15.3% (IMF 2018). As the history of international relations demonstrates, the leadership of a single country is more conducive to the liberal trends in the world economy and the loss of leading market position can prompt a shift towards protectionism (Lake 2018; Mucha-Leszko, Kąkol 2012b).

Another determinant of the American turn towards protectionism is connected to the internal economic conditions in the US. Continuous process of de-industrialization and the decline of the traditional sectors of the economy contributions to the creation of GDP and jobs resulted in the increasing tensions in the so called 'rust-belt regions' (Midwest and Great Lakes). The collapse of industry caused socio-economic problems in some US states, such as: Ohio, Pennsylvania, Michigan, Illinois or Wisconsin. To a large extent this was due to the growing imports from China and it lead to the aversion towards products from China and the success of populist candidates in the elections.

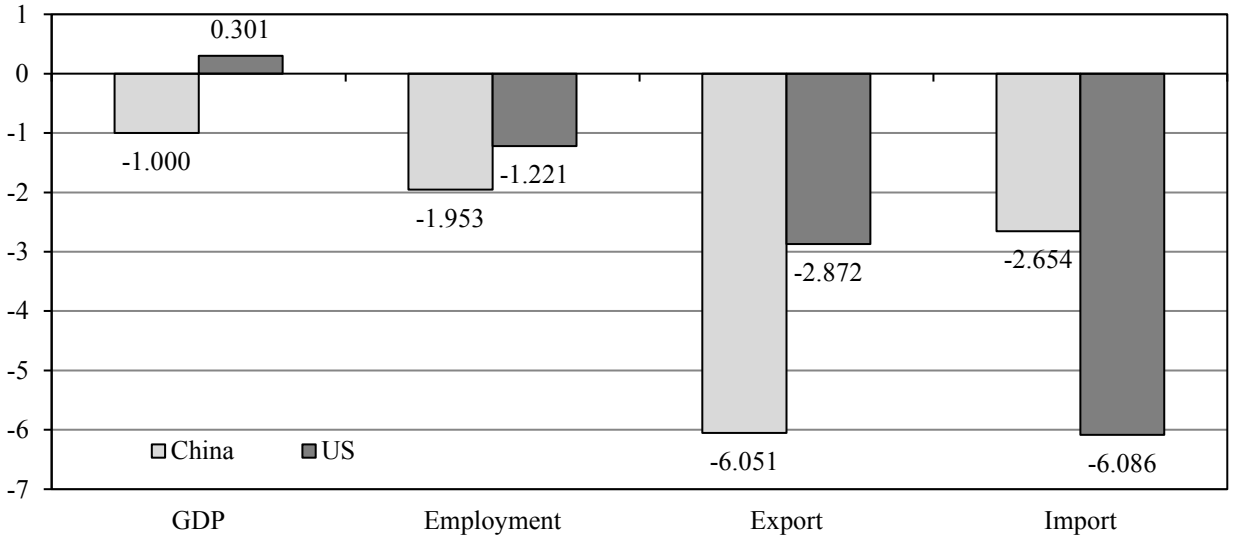
3. Consequences of American protectionism towards China

Increased protectionism and a threat of US-China trade war can have a serious impact both for China and the United States as well as the entire world economy. Available studies on potential effects of the trade war between the United States and China on the world economy seem to be moderately pessimistic. The analyzed scenarios of tariff escalation assume modest impact on economic growth derived from the decline in trade flows. More serious losses can arise from the growing uncertainty on international markets and the weakening of production linkages within the global value chains. Even with the assumption that global trade flows will not be significantly affected, economic slowdown can still occur through the adverse impact of tariffs on income and aggregated demand (UNCTAD 2018; Eichengreen 2018).

Much more in-depth analysis was carried out in terms of the consequences of trade war for the economies of China and the United States. According to Citibank (2018), the US tariffs of 25 percent on Chinese imports of 50 bn USD and 10 percent on Chinese imports worth 20 bn USD could together reduce Chinese GDP by approximately 0.5 percent, while raising US consumer prices by approximately 0.1 percent. However, these estimates need to be taken with a grain of salt, as the complexities of global value chains make it plausible to predict a fairly wide range of effects. Additionally, because

US imports from China contain a high share of foreign value added, the effective impact on Chinese production could be higher than suggested by the nominal value of the tariff rates. (Lawrence 2018).

One of the most complex and up-to-date analysis of the possible consequences of the trade war was carried out by Ch. Li, Ch. He and Ch. Lin (2018). They examined a number of scenarios. The first two scenarios considered the impact of four potential tariff levels (15%, 30%, 45% and 60%) introduced either unilaterally by the United States or bilaterally by both trading partners. Subsequent scenarios included implementation of non-tariff barriers in addition to tariffs. Assuming that the least serious scenario of 15% tariffs and non-tariff barriers is realized the following possible effects in terms of GDP growth, employment and trade flows can be expected (fig. 2). The impact on the American GDP is predicted to be positive (0.3%). In the case of tariff escalation beyond the 15% threshold to 30%, 45% or 60% the results are even better (0.755% if the 60% tariff is adopted). On the other hand, the possible consequences of trade war for China appear to be negative. If 15% barriers are introduced - the loss of GDP would be -1.0% and in the case of escalation the losses are even greater. For 60% level of trade measures the decline in GDP could reach -2.181%.



Source: Li et al. 2018.

Fig. 2. **The effects of China-US mutual trade war with the same level of 15% trade cost measures on China and the US, (percent change)**

Both in the case of China and the United States trade war is expected to affect employment in a negative way. The decline in employment would reach -1.953% in China and -1.221% in the United States, taking into consideration the 15% trade measures level. Escalation of protectionism result in a swift increase in terms of the adverse effects. With the 60% scenario, losses for employment would reach -4.298% in China and -2.610% in the US.

The most pronounced consequences of trade war are predicted in terms of foreign trade. With the 15% scenario a decline in Chinese exports is estimated at -6.051% and in the case of American exports -2.872%. Regarding imports a decrease is also foreseen - by -2.654% for China and by -6.086% for the US. The estimates for the impact of the war's escalation appear particularly alarming. With the 60% scenario - both exports and imports collapse would double. Chinese exports are expected to decrease by -13.201%, and American - by -6.202%, while for imports the declines are -5.553% and -12.965% respectively. Additionally, B. Eichengreen (2018) emphasizes that actual effects of trade war for exports and imports can be difficult to predict due to the strong links of China within the global value chains (Pasierbiak

2014). For example a decline in US imports of Chinese electronics could result in a falling demand for components used in the production of electronics that are mostly imported from other Asian countries and thus result in a domino effect.

Assessment of the US-China trade war can also include its impact on GDP, employment and trade of individual countries. With the 15% level of trade barriers the world GDP is expected to decline by -0.041%, and slight declines pertain to the European Union (-0.001%), Brunei (-0.097%) and the rest of the world countries (ROW) (tab. 3). The consequences of the US-China trade war would also not be very significant for the level of employment. The world employment is expected to decline by -0.375%, and the only country (except China and the US) from the analyzed group that would be affected negatively is Brunei (-0.008%).

Predictions on the likelihood of the fast spreading of the trade war effects through the links of the global value chains are reflected in the data in table 3. A decline in Chinese exports to the US can result in a decline of exports in Asia and Pacific countries, but also Latin American countries that have strong production linkages with China. In the case of 15% scenario, a chance of decline in exports pertains to Korea (-0.056%), Australia (-0.140%), New Zealand (-0.227%), Singapore (-0.082%), Russia (-0.030%), Brazil (-0.035%), Indonesia (-0.040%), Malaysia (-0.099%), Philippines (-0.156%), Thailand (-0.085%), Vietnam (-0.114%) and Peru (-0.108%). Combined impact on the world exports decline was estimated at -1.230%. Regarding imports, apart from China and the US, a small decline is expected in Canada (-0.005%).

Raising trade barriers up to the 60% level is estimated to result in a decline of world GDP by -0.087%, employment by -0.0835%, and trade by -2.606%. Negative consequences will pertain to a larger group of countries but their extent will not be serious (see tab. 3). Apart from China and the US, a significant decline in the level of employment is not expected. Small decreases might occur in Australia and Brunei. In the case of exports, a 60% increase in trade measures could deepen the decline in Australia and Singapore.

Table 3

Potential consequences of trade war between the US and China for GDP, employment and trade in %

	GDP	Employment	Export	Import	GDP	Employment	Export	Import
	Mutual trade war with 15% trade cost measures				Mutual trade war with 60% trade cost measures			
China	-1.000	-1.953	-6.051	-2.654	-2.181	-4.298	-13.0201	-5.533
US	0.301	-1.221	-2.872	-6.086	0.755	-2.610	-6.202	-12.965
EU	-0.001	0.029	0.066	0.107	-0.003	0.065	0.197	0.244
Japan	0,003	0.066	0.057	0.118	-0.009	0.117	0.211	0.284
Korea	0.000	0.057	-0.056	0.080	-0.046	0.082	-0.021	0.175
Canada	0.148	0.281	0.476	-0.005	0.332	0.607	1.302	-0.043
Australia	0.005	0.051	-0.140	0.126	-0.047	-0.001	-0.229	0.256
New Zealand	0.197	0.171	-0.227	0.159	0.094	0.104	-0.132	0.169
Singapore	0.019	0.063	-0.082	0.056	-0.038	0.039	-0.104	0.103
India	0.024	0.105	0.021	0.068	0.004	0.118	0.124	0.146

	GDP	Employment	Export	Import	GDP	Employment	Export	Import
	Mutual trade war with 15% trade cost measures				Mutual trade war with 60% trade cost measures			
Russia	0.008	0.041	-0.030	0.120	-0.022	0.035	-0.008	0.237
Brazil	0.017	0.069	-0.035	0.090	-0.001	0.051	0.015	0.164
Mexico	0.173	0.229	0.479	0.031	0.375	0.479	1.319	0.035
Indonesia	0.039	0.031	-0.040	0.145	-0.011	0.017	0.033	0.287
Malaysia	0.110	0.036	-0.099	0.061	0.052	0.047	0.002	0.110
Philippines	0.142	0.120	-0.156	0.159	0.056	0.080	-0.037	0.226
Thailand	0.087	0.079	-0.085	0.061	0.033	0.087	0.001	0.099
Vietnam	0.214	0.033	-0.114	0.070	0.148	0.044	0.134	0.125
Peru	0.196	0.091	-0.108	0.149	0.120	0.059	0.158	0.144
Brunei	-0.097	-0.008	0.019	0.063	-0.220	-0.011	0.010	0.143
ROW	-0.015	0.030	0.001	0.073	-0.032	0.075	0.051	0.169
World	-0.041	-0.375	-1.230	-1.230	-0.087	-0.835	-2.606	-2.606

Source: Li et al. 2018.

Conclusions, proposals, recommendations

Analysis of US-China trade relations, taking into account the threat of possible trade war, allows to draw some conclusions. Firstly, since the beginning of the bilateral trade relations trade flows were growing at a fast pace, but over time asymmetry started to build up. The dynamics of imports from China was much higher compared with exports to China. As a consequence trade deficit emerged and constituted an ever growing share of the total US trade deficit.

Secondly, the most distinct factors affecting the development of US-China trade relations stem from both signing bilateral trade agreements as well as Chinese accession to the World Trade Organization in 2001. These were crucial to the development of bilateral trade flows in the late 20th century. However, in recent years other factors played a larger role. These can be derived from domestic economic conditions in China and the United States, but also the entire world economy. A significant part in the case of China is connected with the 'Made in China 2025' industrial policy that includes the development of advanced sectors of the economy and improvement of China's competitive position in world high-tech markets. For the United States, main determinants of the shift towards protectionism can be derived from the spreading of various structural issues such as a decrease in the GDP growth rate, increase in unemployment in traditional sectors and the deepening of foreign trade deficit. Additionally, there is always the weakening of US position as a leader of the global economy in favour of China.

Thirdly, available studies on the effects of possible trade war connected with the recent changes in American trade policy towards China allow to evaluate the cost for GDP, employment and trade for both the US and China as well as other countries and the world economy. The US-China trade war would affect the whole world economy causing the decline in global GDP, employment and trade but the intensity of this is not expected to be significant. The majority of the decline in GDP growth, employment and trade would originate in the deterioration of the Chinese economic situation and its considerable share in the world economy. Bilateral introduction of new tariffs and non-tariff barriers would affect

China more than the United States. If only tariffs would be implemented, the likelihood of any losses for the American economy is slim. They would appear with the use of non-tariff barriers. Nevertheless, their economic consequences would be twice as severe for China.

Fourthly, there is a risk of domino effect and the spreading of the crisis emerging due to trade war. Barriers for Chinese merchandise would result in the decline of exports and this in turn would cause a decrease in production and employment in other countries, especially from Southeast Asia that remain strongly linked with China through global value chains.

On December 1st, 2018, during the G20 Summit in Buenos Aires, the United States and China agreed to a temporary truce to de-escalate trade tensions. Both parties will refrain from increasing tariffs or imposing new tariffs for 90 days (until March 1, 2019), as they negotiate future conditions for the bilateral trade. As the deadline is approaching there does not seem to be any progress in the talks. Whether the time for talks will be extended remains uncertain, but the probability of the full-blown trade war is increasing unless some more significant moves towards resolving the conflict are made by both sides.

Bibliography

Bouët A., Laborde D., 2018, *US trade Wars In the twenty-first century with emerging countries: Make America and its partners Lose again,* The World Economy, Vol. 41, 2276-2319.

Citibank 2018, *Global economic view,* Global Economics Research, 11 July, New York: Citibank.

Eichengreen B. 2018, *The economic consequences of Trump's trade war,* Project Syndicate, [Online] Available at: https://www.project-syndicate.org/commentary/economic-consequences-of-trump-trade-war-by-barry-eichengreen-2018-07.[Accessed 10 January 2019].

Ikenson D. 2017, *Into the Abyss: Is a U.S.-China Trade War Inevitable?,* Herbert A. Stiefel Center for Trade Policy Studies Free Trade Bulletin, No. 69.

IMF 2018, *World Economic Outlook Database October 2018 Edition,* [Online] Available at: https://www.imf.org/external/pubs/ft/weo/2018/02/weodata/index.aspx. [Accessed 10 January 2019].

Lake D.A. 2018, *Economic Openness and Great Power Competition: Lessons for China and the United States,* The Chinese Journal of International Politics, vol. 11. no. 3, 237-270.

Lardy N. 1994, *China in the World Economy,* Peterson Institute for International Economics, Washington D.C.

Lawrence R.Z. 2018, *Can the Trading System Survive US-China Trade Friction?,* China and World Economy, vol. 26, no. 5, 62-82.

Li Ch., He Ch., Lin Ch. 2018, *Economic Impacts of the Possible China-US Trade War,* Emerging Markets, Finance and Trade, 54, 1557-1577.

Liu K. 2018, *Chinese Manufacturing in the Shadow of the China-US Trade War,* Economic Affairs, vol. 38, no. 3., 307-324.

Lu F. 2018, *China-US Trade Disputes in 2018: An Overview,* China and World Economy, vol. 26, no. 5, 83-103.

Morrison W.M. 2017, *China-U.S. trade issues.* Congressional Research Service Report, 7-5700, Washington D.C.

Mucha-Leszko B., Kąkol K. 2012a, *Globalizacja i zmiany w układzie sił gospodarczych a międzynarodowy system walutowy* in: E. Molendowski (ed.), *Globalizacja i regionalizacja we współczesnym świecie, Księga jubileuszowa dedykowana Profesor Irenie Pietrzyk*, Wydawnictwo Uniwersytetu Ekonomicznego w Krakowie, 313-322.

Mucha-Leszko B., Kąkol K. 2012b, *Polityka handlowa w warunkach Pax Americana i Pax Britannica*, Annales UMCS, Sectio H Oeconomia, vol. XLVI, no 2, 153-163.

Naughton B. 2007, *The Chinese Economy: Transitions and Growth*, Cambridge: MIT Press.

Pasierbiak P. 2014, *International Fragmentation of Production and Foreign Trade of China, Japan and The Republic of Korea,* Asia-Pacific Journal of EU Studies, vol. 12, no. 2, 1-19.
Qixiang Y. 1987, *The United States* in: Peiji Z. and Huenemann R.W. (eds.), *China's Foreign Trade,* Lantzvill: Oolichan Books.

Schell O., Chairs S.L.S. 2017, *US policy toward China: Recommendations for a new administration,* Center on US-China Relations Task Force Report.

UNCTAD 2018, *Trade and Development Report 2018: Power, Platforms and the Free Trade Delusion,* New York and Geneva: United Nations.

UNCTAD, 2019, *UNCTAD STAT* [Online] Available at: http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en. [Accessed 10 January 2019].

Xie T. 2009, *U.S.-China Relations: China Policy on Capitol Hill,* New York: Routledge.

Zhang K. 2015, *China's Manufacturing Performance and Industrial Competitiveness Upgrading: International comparison and Policy Reflection*, in: L. Song et al. (eds.) *China's Domestic Transformation in a Global Context,* Canberra: ANU Press.

THE UNITED STATES' TRADE POLICY TOWARDS THE EUROPEAN UNION AND DEVELOPMENT OF BILATERAL TRADE FLOWS

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Abstract. The United States and the European Union remain key players in the international trade policy. Their positions during World Trade Organization Ministerials determine the issues, the course and results of negotiations and unilateral trade policy has a significant impact on global trade flows. They are also responsible for the bulk of the global trade. According to the WTO data in 2017 joint share of the US and the EU amounted to 43.3% of world merchandise exports and 47.2% of imports.

The change in American foreign trade policy towards a more protectionist approach announced during the presidential campaign of D. Trump has begun in 2018. New tariffs on steel and aluminium announced in March 2018 (in force since June) can be viewed as a start of a trade war. In response, European Commission introduced retaliatory tariffs on US products.

Main goal of the paper is to assess potential effects for the EU and selected member countries of the increased protectionism in the US trade with the European Union.

The analysis will focus on:

1) main tendencies in the development of trade and trade policy of the United States towards the European Union in 2010-2018;

2) evaluation of the consequences of new tariffs for the development of the EU trade;

3) assessment of the consequences of rising protectionism on foreign trade of selected EU members.

The results of the analysis allow to draw a conclusion that rising tariffs on steel and aluminium will have a limited impact on the total EU exports, however in the case of selected countries a small declines could occur. Moreover, there is a risk of trade conflict escalation that can bring about much more serious consequences.

Key words: *trade policy, international trade, protectionism*

JEL code: F13, F14, F51

Introduction

The United States and the European Union have been key players on the world trade policy arena since the end of World War II. The main issues in multilateral trade negotiations within the General Agreement on Tariffs and Trade (GATT) were usually settled between them. Nowadays, their positions during World Trade Organization Ministerial Conferences determine the issues, the course and the results of negotiations and their unilateral trade policies have a significant impact on global trade flows. They are also responsible for the bulk of global trade. According to the WTO (2019) data in 2017 joint share of the US and the EU amounted to 43.3% of world merchandise exports and 47.2% of imports.

There is plenty of evidence that protectionism spreads in times of economic and political shocks and multilateral cooperation in trade policy is the safeguard against trade wars. However, there are growing signs that a global trade war

is possible and that the multilateral trading system may not be able to prevent it since the strong impulse towards limiting trade comes from one of the top world exporters - the United States. According to president D. Trump unfair trade deals are the main cause of the growing US deficit, despite the vast amount of literature that in the flexible exchange rate regime it is the ratio of domestic to foreign savings that affects the current account balance. (Nordhaus 2018) (Mucha, Kakol 2009) The new administration has recently focused on rebalancing trade relationships and trade agreements with the rest of the world. The United States threatened trade partners with and embarked on imposing import trade tariffs. Those unilateral measures have met with retaliation, among others by the European Union. This path, if continued, could result in a worldwide spread of protectionism.

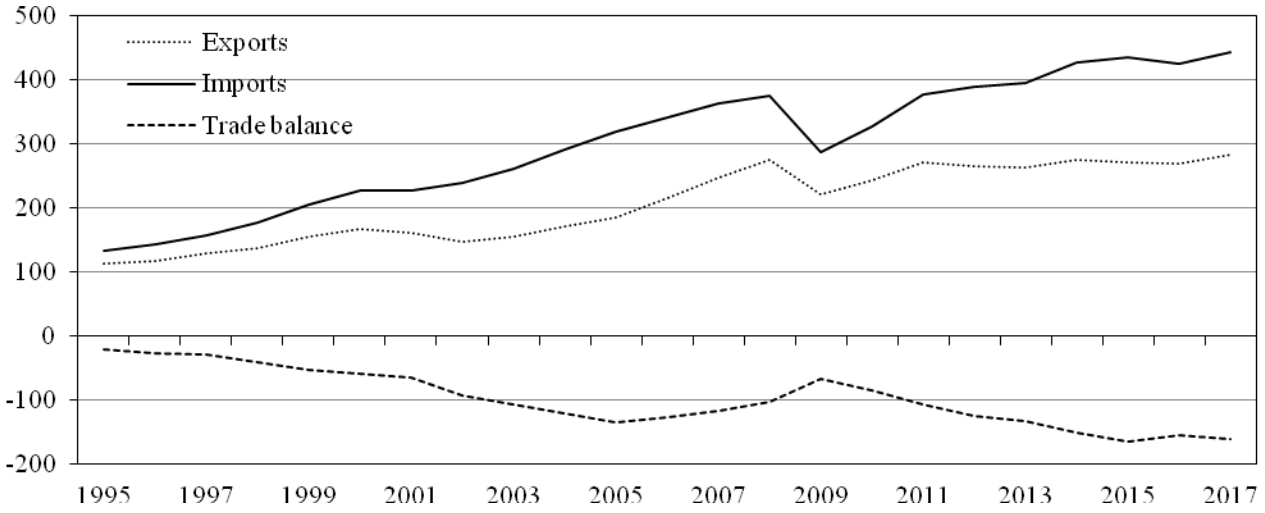
The main goal of the paper is to assess potential effects for the EU and selected member countries of the increased protectionism in the US trade with the European Union. The analysis will focus on:

1) main tendencies in the development of trade and trade policy of the United States towards the European Union in 2010-2018;
2) evaluation of the consequences of new tariffs for the development of the EU trade;
3) assessment of the consequences of rising protectionism on foreign trade of selected EU members.

The data used in the paper were derived from UNCTAD and WTO databases. Critical analysis of the available simulations and estimates of possible results of a trade war between the US and the EU was used.

1. Analysis of trade flows between the United States and the European Union

Two main stages appear in the development of trade between the US and the EU since the mid-1990s. The first one was 1995-2008 and it was characterized by a stable and fast increase in the value of both exports and imports. In 1995 the value of US exports to the European Union amounted to 114 billion USD and it increased up to 276 billion USD in 2008. During the same period, the value of imports rose from 133 billion USD to 373 billion USD. The faster pace of imports growth compared with exports resulted in a deepening of the trade deficit. The deficit was 19 billion USD in 1995 and increased up to 134 billion USD in 2005. After 2006 the US trade balance with the EU improved slightly. In 2007-2008 it was chiefly due to the declining demand as a result of the economic crisis. The second stage started with the break out of the global economic crisis of 2008-2009. The deepest collapse occurred in 2009. The value of US exports to the EU decreased by 54 billion USD and imports - by 90 billion USD (fig. 1). Nevertheless, the crash was short-lived and there was a significant increase in the value of trade flows as early as 2010-2011. Subsequent slowdown emerged after 2012 as a consequence of the second wave of the economic crisis as well as deflationary tendencies in world trade. The slump pertained to exports in particular. Its value during the 2012-2017 period increased from 266 billion USD up to 283 billion USD whereas in the case of imports the rise was from 390 billion USD to 444 billion USD. American trade balance also deteriorated - in 2012-2017 deficit increased from 124 billion USD to 161 billion USD which was the historically highest value ever in bilateral transatlantic trade flows. During the entire analyzed period (1995-2017) the EU contribution to the total US trade deficit increased from 10.1% to 18.7%.



Source: authors' construction based on UNCTAD 2019.

Fig. 1. **Value of the US - EU trade in 1995-2017 in billion USD**

The merchandise structure of the US exports to the EU (tab. 1) significantly changed in 1995-2017. The major changes include the decline in the share of machinery and transport equipment by 24.1 p.p. The noticeable decrease in the share of this particular product group began in 2000 and accelerated markedly in 2009-2017. In 2000 the share of the analyzed group amounted to 54.3% of total exports and it declined to 41.3% in 2008 whereas during the period of 2009-2017 it shrank further to 27.2%. This was due to the decrease within three sub-categories: office machines and automatic data processing machines (a decline of 10.2 p.p. in 1995-2017) other transport equipment (a decline by 6.6 p.p.) and electrical machinery, apparatus and appliances (decline by 4.2 p.p.).

Another important change in the merchandise structure of the US exports to the EU was an increase in chemicals and related products by 9.7 p.p. Similarly as in the case of machinery and transport equipment, the most noticeable changes occurred after the year 2000. Among other, less marked changes, there was an increase of mineral fuels, lubricants and related materials by 4.6 p.p. and the decrease in the case of crude materials, inedible, except fuels - by 2.6 p.p. Within the remaining merchandise groups the changes were relatively small, not surpassing 1.5 p.p. (table 1).

Table 1

Merchandise structure of the United States exports to the European Union in 1995-2017

	1995	2000	2005	2010	2017
Food and live animals	4.2	2.2	2.8	2.6	2.8
Beverages and tobacco	1.2	1.0	0.7	0.6	0.6
Crude materials, inedible, except fuels	6.1	3.7	3.9	4.0	3.5
Mineral fuels, lubricants and related materials	2.1	1.1	1.6	6.3	6.7
Animal and vegetable oils, fats and waxes	0.3	0.1	0.1	0.1	0.2
Chemicals and related products, n.e.s.	10.5	13.3	19.9	22.5	20.2
Manufactured goods	6.6	6.3	6.9	7.1	7.0
Machinery and transport equipment	51.2	54.3	34.4	26.0	27.2
Miscellaneous manufactured articles	13.1	13.9	14.7	13.8	13.9
Commodities and transactions, n.e.s.	4.8	4.1	14.9	17.0	17.9

Source: authors' construction based on UNCTAD 2019.

With regards to the merchandise structure of imports - main changes pertained to the increase of chemicals and related products by 11.0 p.p. which was caused by a high increase in the value of imports of medicinal and pharmaceutical products (increased share in the total imports by 11.3 p.p. during 1995-2017). A decline in the share of the following three groups can also be pointed out: machinery and transport equipment by 5.5 p.p., manufactured foods - by 5.0 p.p. and miscellaneous manufactured articles 0 by 2.3 p.p. The remaining product groups' shares did not shift significantly - the changes did not surpass 0.5 p.p. (table 2).

Table 2

Merchandise structure of the United States imports to the EU in 1995-2017

	1995	2000	2005	2010	2017
Food and live animals	2.2	1.6	1.6	1.8	2.3
Beverages and tobacco	2.7	2.4	2.8	3.1	3.2
Crude materials, inedible, except fuels	1.1	0.8	1.1	0.8	0.9
Mineral fuels, lubricants and related materials	3.0	4.0	7.2	6.7	2.7
Animal and vegetable oils, fats and waxes	0.3	0.2	0.3	0.3	0.3
Chemicals and related products, n.e.s.	12.3	16.8	21.4	25.7	23.4
Manufactured goods	14.1	11.9	11.2	9.7	9.1
Machinery and transport equipment	44.9	43.3	38.2	34.5	39.4
Miscellaneous manufactured articles	14.9	13.6	11.8	11.9	12.6
Commodities and transactions, n.e.s.	4.5	5.5	4.5	5.6	6.1

Source: authors' construction based on UNCTAD 2019.

High concentration of trade on a limited group of trading partners with the highest economic potential is considered a particular trait of the US foreign trade. The crucial destination countries for the US exports to the EU were: the United Kingdom (19.8% of total US exports to the EU in 2017), Germany (18.9%), the Netherlands (14.6%), France (12.2%) and Belgium (10.6%). The combined share of the aforementioned 5 countries amounted to 76.0% of the US exports to the EU in 2017. As the import origin, the following countries accounted for the lion's share of the trade flows: Germany (27.0%), the UK (12.1%), Italy (11.6%), France (11.3%) and Ireland (11.0%). Their joint share was 73% of total imports to the US. A noticeably higher share of the Netherlands in exports compared with imports was the consequence of the so-called 'Rotterdam effect' connected to the high share of Dutch ports in the imports to the European Union. The strong position of Italy in the US imports was due to the significance of the machinery and transport equipment imports while in the case of Ireland it was the result of solid ties of American corporations and the high share if intra-firm trade in the exchange between Ireland and the US, in particular in the case of electronics and pharmaceuticals sectors.

Evaluating the changes in the geographical structure of trade between the US and the European Union requires to point to the relatively slight fluctuations of individual countries' shares. The most noticeable change pertained to the decline of the UK, both in exports (by 4.7 p.p. in 2000-2017) as well as imports (by 6.9 p.p.). What is more, the prospect of the UK leaving the European Union is expected to further decrease the bilateral trade flows of the EU with the US by around 15%.

To fully assess the role of individual EU countries in trade flows with the United States it is important to note which EU members had a deficit or a surplus in their trade balance with the US. According to the UNCTAD data (2019), in 2000-2017 the cumulative US trade deficit with the EU was 2061.1 billion USD. The following countries contributed the most to the negative trade balance: Germany (-916.1 billion USD), Ireland (-421.0 billion USD), Italy (-377.7 billion USD), France (-226.3 billion USD) and Sweden (-124.8 billion USD). Positive impact on the US-EU trade balance was due to trade flows with the Netherlands (surplus of 288.5 billion USD) and Belgium (162.6 billion USD) and to a much lesser extent Greece, Cyprus and Luxembourg.

Table 3

Geographical structure of the United States trade with the European Union in 2000-2017

	Exports				Imports			
	2000	**2005**	**2010**	**2017**	**2000**	**2005**	**2010**	**2017**
Austria	1.5	1.4	1.0	1.5	1.4	2.0	2.1	2.7
Belgium	8.3	10.0	10.5	10.6	4.4	4.2	4.8	3.5
Bulgaria	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2
Croatia	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1
Cyprus	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Czechia	0.4	0.6	0.6	0.8	0.5	0.7	0.8	1.1
Denmark	0.9	1.0	0.9	0.8	1.3	1.7	1.9	1.8
Estonia	0.1	0.1	0.1	0.1	0.3	0.2	0.2	0.1
Finland	0.9	1.2	0.9	0.5	1.4	1.4	1.2	1.4
France	12.2	12.0	11.4	12.1	13.1	10.9	11.9	11.3
Germany	17.4	18.3	19.7	18.9	25.7	27.1	25.7	27.0
Greece	0.7	0.6	0.5	0.3	0.3	0.3	0.3	0.3
Hungary	0.3	0.5	0.5	0.7	1.2	0.8	0.8	1.2
Ireland	4.6	4.5	3.0	3.8	7.2	9.0	10.4	11.0
Italy	6.6	6.2	5.8	6.5	11.0	10.1	9.0	11.6
Latvia	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Lithuania	0.0	0.2	0.3	0.2	0.1	0.2	0.2	0.4
Luxembourg	0.2	0.4	0.6	0.4	0.1	0.1	0.1	0.1
Malta	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.0
Netherlands	12.9	14.2	15.5	14.6	4.2	4.8	6.3	4.1
Poland	0.4	0.7	1.2	1.6	0.5	0.6	0.9	1.7
Portugal	0.6	0.6	0.4	0.4	0.7	0.8	0.7	0.8
Romania	0.1	0.3	0.3	0.3	0.2	0.4	0.3	0.5
Slovakia	0.1	0.1	0.1	0.2	0.1	0.3	0.3	0.7
Slovenia	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
Spain	3.7	3.7	4.3	3.9	2.5	2.9	2.7	3.7
Sweden	2.7	2.0	1.9	1.3	4.2	4.4	3.3	2.5
United Kingdom	24.6	20.7	19.9	19.8	19.0	16.4	15.5	12.1

Source: authors' construction based on UNCTAD 2019.

2. The United States trade policy towards the EU

The foundations of US-EU trade relations stem from very close cooperation after World War II which led to the growing trade and investment flows. Yet as trade grew, so did the number of disputes. Attempts at formalization of the trade relations in a transatlantic treaty undertaken since the early 1990s were not successful. A Transatlantic Free Trade Area had been proposed in the mid-1990s as well as the New Transatlantic Marketplace project or Transatlantic Economic Partnership (1998) which remained a limited agreement. In 2007, a Transatlantic Economic Council was established in order to advance transatlantic economic cooperation (Wojtas 2009). It is jointly headed by the US Deputy National Security Advisor for International Economic Affairs and the EU's Commissioner for Trade. The meetings are held annually, however, there are no tangible results of the TEC activities.

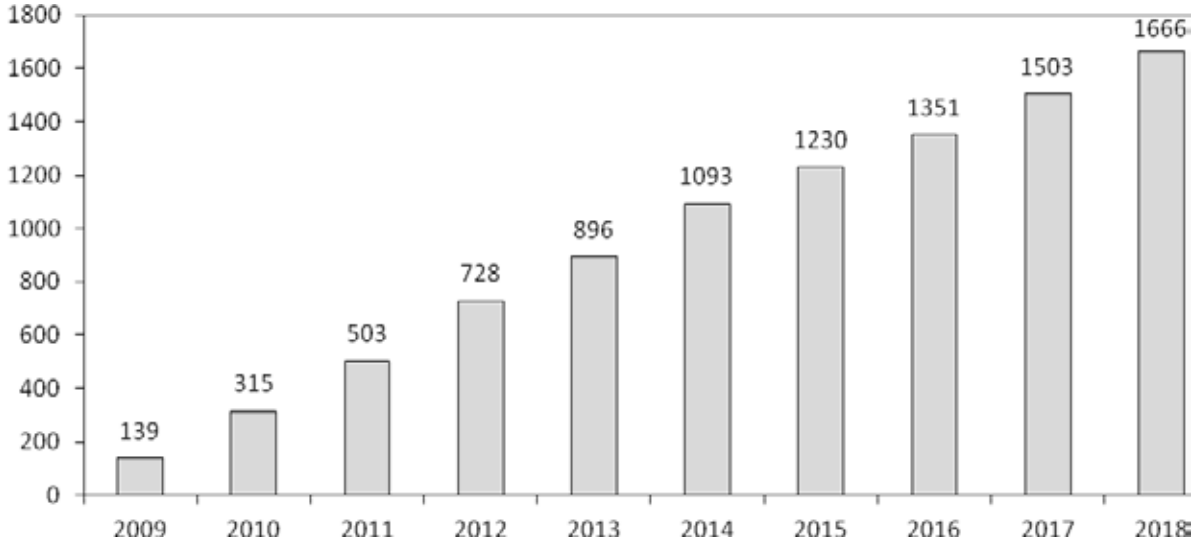
The intensification of the pursuit to strike a trade and economic deal between the US and the EU came about with the recovery from the global economic crisis. In 2011 the High-Level Working Group on Jobs and Growth was set up. In its 2013 report, it confirmed the need for a comprehensive agreement regulating the issues of bilateral trade and investment exchange as the means to eliminate trade barriers. In June 2013 negotiations were launched on the Transatlantic Trade

and Investment Partnership between the EU and the USA (TTIP). The objectives of the agreement included opening access to internal markets, both merchandise and service market, eliminating custom duties in bilateral trade, reducing investment barriers, and lowering bureaucratic and procedural costs (Jarosz-Angowska 2015). According to J. Pelkmans the core of TTIP was to deal with the costs of technical barriers to trade (TBTs), sanitary and phytosanitary (SPS) barriers (in food and feed regulatory instruments), and other regulatory barriers in merchandise and services markets (Pelkmans 2015). It was believed to have the potential of becoming the most comprehensive free trade agreement in history. The main reasons behind the decision to launch the talks on TTIP stemmed from the slowdown in world trade since 2012 as well as the lack of progress in the WTO Doha Round negotiations on trade liberalization. As a result first the US and later on the EU as well as many other nations decided to join in the trend and negotiate bilateral trade agreements beyond the scope of the WTO negotiations. (Mucha-Leszko 2014) A large number of scholarly studies and analyses predicted that the agreement would have beneficial effects for both the signatories as well as the rest of the world predicting welfare gains as large as 4% increase in the GDP for the EU and the US and the creation of 750 thousands of jobs (Francois et al. 2013; Pelkmans et al. 2014; Mustili 2015; Aichele, Felbermayr, Heiland 2014; Bertelsmann Foundation 2016).

However, following 15 rounds of talks, the negotiations were halted without any conclusion at the end of 2016, as a result of the presidential elections and coming to power by Donald Trump. President Trump's doctrine on trade appears to represent a radical change compared to previous US policy. During the campaign, Donald Trump made potentially dangerous economic policy proposals, including threatening to pull out of the WTO, renegotiating trade agreements, and imposing tariffs on imports from Mexico and China, basically proposing to implement economic nationalism and start evaluating US trading partners trade policies fairness. The main goal is achieving a 'free, fair and reciprocal' trading system. This was driven by the belief that previous governments have let other countries take advantage of the United States. (Nordhaus 2018) On the first day in office D. Trump announced the withdrawal of the US from the Trans-Pacific Partnership - a free trade agreement signed on 4th of February 2016 with 11 other countries on the Pacific Rim and during the first months a number of other decisions were made in line with the 'America First' approach to economy and trade. These decisions included among others (European Parliament 2018):

- restricting the use of exceptions to "Buy American, Hire American" in U.S. government procurement contracts;
- provisions in the December 2017 tax reform that arguably disadvantaged imports as well as foreign investors in the United States;
- intensified use of traditional trade defence (anti-dumping and countervailing duties) instruments (issuing 122 decisions against dumped and subsidized imports in the first 20 months of the presidency).

In terms of tariffs, the US trade policy can be viewed as liberalized. the simple mean of US tariffs applied across all products was 3.4% in 2017, compared with the EU average of 5.1% (WTO 2018). However, in terms of non-tariff measures, it was a different story. There is evidence of increasing protectionist attitude from the US in the recent past even before the presidential elections of 2016. According to the data of Global Trade Alert Project (GTAP), the United States is the most protectionist country within the G20 countries, as it has implemented by far the highest number of non-tariff barriers since the break out of the economic crisis in 2008. The number of NTB applied each year has continued to increase (fig. 2). However, since the beginning of the new administration through the end of August 2018, the US Department of Commerce has made affirmative decisions of dumping and/or subsidization in 122 AD/CVD investigations, a 221 percent increase over a similar period in the previous administration, 70 orders were implemented, 14% of which pertained to the European Union (European Parliament 2018).



Source: Evenett, Fritz 2018.

Fig. 2. **Number of NTB imposed by the United States since November 2008**

In 2017 the US launched investigations into whether imported steel and aluminium threatened the national security of the United States. These investigations covered all foreign sources of steel and aluminium. Following the completion of the reports, additional tariffs of 25% were imposed on selected steel products on 23 March 2018. Extra import duties of 10% were imposed on aluminium on 23 March 2018 (Evenett, Fritz 2018). Apparently, the main reason behind these was to affect imports from China but blanket import duties were used that pertained to all US trading partners in order to prevent China from shipping steel and aluminium to the United States via third countries. In response the European Union announced its planned retaliatory measures which included filing a formal WTO dispute, safeguard restrictions of its own and almost immediate imposition of a 25% tariff on $3.4 billion of US exports. As a result of this threat, the EU was temporarily exempt from the new tariffs. However, this exemption ended on June 1st 2018. The EU responded in kind with the previously announced measures. This subsequently led to the United States filing a WTO dispute against the EU challenging the tariffs. In May 2018 the US administration ordered another national security investigation - into imported autos and parts - threatening to impose 25% tariffs, that would have affected European car manufacturers such as BMW or Mercedes (Bown, Kolb 2018). On July 25th 2018 a joint US - EU statement was released announcing a truce - The two sides agreed to work together towards “zero tariffs, zero non-tariff barriers and zero subsidies on non-auto industrial goods.” The cooperation is to reduce barriers and increase trade in services, chemicals, pharmaceuticals, medical products and soybeans. It was also decided to put on hold any new tariffs, including the planned US duties on auto imports, while the talks proceeded. However, this did not resolve the steel and aluminium tariff issues or retaliatory tariffs (European Commission 2018). Whether the talks will result in a new trade deal remains to be seen however it conveys the political will to liberalise trade between the EU and US.

3. Consequences of rising trade barriers

A global scale bilateral trade war with the US that poses a serious threat to the global economy as well as to the global multilateral system. The first risk pertains to global trade flows, particularly the integrated supply chains and countries’ abilities to exploit economies of scale. Imposing tariffs will hamper EU companies’ production. Beyond trade, however,

there is a risk to the global trading system and multilateralism. If the US defies the rules agreed upon in the World Trade Organization (WTO), it will threaten the validity and the legitimacy of the WTO (Demertzis, Fredriksson 2018).

There are estimates on how global trade war would affect the world economy. P. Krugman discusses simulations based on general equilibrium quantitative trade models that would lead to a 30 to 60 p.p. increase in import tariffs and would result in a global real GDP loss of 2% to 3% over the long term. He also predicts a 70% drop in world trade which would be around the 1950s levels (Krugman 2018). The French Council of Economic Analysis provides similar calculations that a 60 p.p. increase in import tariffs would result in a 3% to 4% decline in real GDP in large economies. The EU losses would be -4.2% of GDP in the full-scale trade war scenario, which is more serious than in the case of the United States (-3.5%) or China (-3.3%). The EU countries that would suffer the highest declines in GDP due to the trade war are: Ireland (-12%), United Kingdom (-4.7%), Germany (-4.4%) Spain (-3.7%), France (-3.3%) and Italy (-3%) (Jean, Martin, Sapir 2018). Some other analyses point to the decline in world welfare (IMF2018; Berthou et. al 2018; Demertzis, Fredriksson 2018). In itself, the predictions do not appear to be too significant. However, it is often mentioned that these losses could be much more serious. P. Krugman mentions that the real problem lies within the disruption of the functioning of the economy (Krugman 2018). A Berthou et. al (2018) discuss some additional consequence of the rising tariffs that might contribute to deeper declines in GDP:

- a reduction in productivity, due to an inefficient reallocation of factors of production;
- an increase in the cost of capital due to greater borrower risk;
- a decrease in investment demand as a result of a more uncertain business environment.

Ł. Ambroziak (2018) carried out an analysis of potential consequences of the implementation of US tariffs on steel, aluminium and autos for the EU exports using partial equilibrium model SMART. According to the estimates, the most serious losses would stem from the implementation of tariffs in the automotive sector - these would result in losses of over 21 billion USD or a decline in exports within this sector by -5.03% per year. The least harmful tariffs are those imposed on aluminium (tab. 4).

Table 4

Potential losses for the EU from the implementation of tariffs on steel, aluminium and autos (per annum)

	Steel	Aluminium	Auto	Total
In mio USD	-2335.7	-158.2	-21063.0	- 23556.9
In share in total EU exports to the US (%)	-0.56	-0.04	-5.03	-5.64

Source: Ambroziak 2018.

Germany as the largest trading partner of the US within the EU is estimated to suffer the most significant losses in terms of the value of exports within all three sectors. (tab. 5) Over 50% of total EU automotive exports decline is expected to pertain to Germany. This would result in a -9.04% decrease in German exports to the United States. Other countries that would experience considerable losses are the UK and Italy. In percentage terms, Slovakia is estimated to suffer a -22.5% drop in its exports to the US due to the introduction of automotive tariffs. These estimates only include direct effects and do not take into consideration the links within the supply chains which are particularly strong in the sector. Thus the total impact of automotive tariffs might be much more serious - in particular for Central and Eastern European countries such as Poland or Czechia. In the case of steel tariffs, the negative effects are expected to be the largest in Germany, Italy and the Netherlands. The results of the increase in aluminium tariffs are not as alarming - the majority of the EU members would not be affected at all and the most losses would occur in Germany and France (Ambroziak 2018).

Table 5

Potential losses from the implementation of tariffs on steel, aluminium and autos for selected EU countries (in million USD)

Steel	Aluminium	Auto
Germany (-591.5)	Germany (-48.4)	Germany (-11428.0)
Italy (-274.4)	France (-29.0)	UK (-3602.9)
Netherlands (-220.8)	Austria (-13.6)	Italy (-2191.6)
France (-202.7)	Italy (-13.4)	Sweden (-760.4)
Austria (-180.1)	UK (-9.9)	Slovakia (-533.4)
Sweden (-180.1)	Spain (-8.8)	Austria (-502.3)
UK (-167.5)	Belgium (-8.1)	Spain (-443.1)

Source: Ambroziak 2018.

Conclusions, proposals, recommendations

Undoubtedly protectionist policies appear to be on the rise globally. The decisions that attract the most attention are those of the United States trade authorities. It is believed that the American trade policy was too liberalized and led to unfair advantages achieved by other economies and resulted in a continuously growing US trade deficit. Thus D. Trump policy is aimed at rectifying those unfair trading conditions. The US position is focused on bilateral trade imbalances presumably resulting from unbalanced trade policies. The decisions made so far have been met with a threat of retaliatory measures and thus spreading the fear of a global trade war. The estimated results of such an event appear to be more harmful to the US trading partners, including the European Union. The simulations of potential effects of the trade war do not appear overly alarming. However, it is believed that due to the linkages in the economy resulting from global value chains the overall impact on the global economy may be much more serious. Among the EU countries the most affected would be those that are most open and have strong ties with the United States - such as Germany, UK, France or Ireland. The uncertainty about the future conditions of trade may further hinder the development of trade flows.

Previous experiences have shown that retaliation to increased tariffs can be expected and their impact would further affect the world economy in an adverse way. There is a vast literature on the effects of the US Smoot-Hawley Tariff Act of 1930 that can be used to support this thesis. (McDonald et. a. 1997; Irwin 1998; Eichengreen 2001; Bond et. al. 2013).

Given the strategy of an aggressive attack on multilateralism by the current US government the European Union definitely needs to implement a defense strategy. Retaliations in proportion to unjustified US protectionist measures, together with a complaint to the WTO, are short-term options. In the longer run such retaliations should be coordinated with countries with which the EU has trade agreements (Canada, Japan, etc.). The purpose of these retaliations is to increase the cost of a unilateral protectionist policy for the non-cooperative country - in this case the United States. On the other hand, the spreading of protectionist tensions can result in a profound change in the scope of trade agreements. They may become, for the European Union, an 'insurance policy' in the event of a full-scale trade war with the disappearance of the WTO. In 2018 the EU signed a PTA with Japan. Final deals are just around the corner with Singapore and Vietnam. A number of other agreements are in various stages of negotiation. In 2018 new negotiations were launched with Australia and New Zealand. Perhaps, a conflict with the United States might be a common ground for the stronger EU cooperation with China and would speed up the ongoing negotiations on the investment deal as well as encourage to open trade talks.

In the meantime, there appears to be a truce on the front of the US-EU trade war. However, the already imposed tariffs were not removed. Only a postponement of the decision on auto tariffs emerged. Even if this means preventing further escalation, the resolution of the dispute is far from near. The ceasefire on the United States part might also be a politically

motivated ploy used temporarily before the mid-term elections in November 2018 since the new US tariff policy appears to be controversial even within Trump's party.

Bibliography

Aichele R., Felbermayr G., Heiland I. 2014, *Going Deep: The Trade and Welfare Effects of TTIP*, CESIFO Working Paper, No. 5150, December.

Ambroziak Ł., 2018, *Straty w polskim handlu jako efekt wojny handlowej USA-UE*, Instytut Badań Rynku, Konsumpcji i Koniunktur – Państwowy Instytut Badawczy, Working Paper, No. 1/2018.

Bertelsmann Foundation 2016, *TTIP Beyond the Beltway: American Perspectives*, March.

Berthou A., Jardet C., Siena D., Szczerbowicz U. 2018, *Quantifying the losses from a global trade war*, Banque de France, 19 July 2018, [Online] Available at: https://blocnotesdeleco.banque-france.fr/en/blog-entry/quantifying-losses-global-trade-war. [Accessed 10 January 2019].

Bond E., Crucini M., Potter T., Rodrigue J. 2013, *Misallocation and productivity effects of the Smoot–Hawley tariff*, Review of Economic Dynamics, Vol. 16, Issue 1, 120-134.

Bown C., Kolb M. 2018, *Trump's trade war timeline: an up-to-date guide,* Peterson Institute for International Economics, updated 1 December, 2018.

Demertzis M., Fredriksson G. 2018, *The EU Response to US Trade Tariffs*, Interconomics, Volume 53, September/October, No. 5, 260-268.

Eichengreen B. 2001, *The Political Economy of the Smoot-Hawley Tariff* [in:] D. Lake, J. Frieden (ed.), International Political Economy: Perspectives on Global Power and Wealth, Routledge.

European Commission, 2018, *Joint U.S.-EU Statement following President Juncker's visit to the White House*, Washington, 25 July 2018, STATEMENT/18/4687

European Parliament, 2018, *Consequences of US trade policy on EU-US trade relations and the global trading system*, November 2018 - PE 603.882.

Evenett S., Fritz J. 2018, *Brazen Unilateralism: The US-China Tariff War in Perspective,* The 23rd Global Trade Alert Report, CEPR.

Francois J. et al, 2013, *Reducing Transatlantic Barriers to Trade and Investment: An Economic Assessment*, Centre for Economic Policy Research, London.

IMF, 2018, *World Economic Outlook October 2018, Challenges to Steady Growth*, Washington.

Irwin D. 1998, *THE SMOOT-HAWLEY TARIFF: A QUANTITATIVE ASSESSMENT*, Review of Economics & Statistics, Vol. 80 Issue 2, 326-334.

Jarosz-Angowska A. 2015, *Trade policy of the European Union and the United States and its impact on mutual trade turnover*, Proceedings ICABR 2015.

Krugman P., 2018, *Thinking About a Trade War (Very Wonkish)*, The New York Times, [Online] Available at: https://www.nytimes.com/2018/06/17/opinion/thinking-about-a-trade-war-very-wonkish.html [Accessed 10 January 2019].

McDonald, J., O'Brien, A., & Callahan, C. (1997), *Trade Wars: Canada's Reaction to the Smoot-Hawley T*ariff, The Journal of Economic History, 57(4), 802-826.

Mucha-Leszko B. 2014, *Globalna czy regionalna liberalizacja handlu międzynarodowego?,* Zeszyty Naukowe Uniwersytetu Szczecińskiego. Współczesne Problemy Ekonomiczne. Globalizacja. Liberalizacja. Etyka, nr 8, 143-154.

Mucha-Leszko B., Kąkol M. 2009, *Polityka Systemu Rezerwy federalnej USA i jej skutki w latach 1995-2008* in: J.L. Bednarczyk, S.I. Bukowski, J. Misala (ed.), Współczesny kryzys gospodarczy. Przyczyny – przebieg – skutki, Warszawa, 45-66.

Mustilli F. 2015, *Estimating economic gains of TTIP*, Intereconomics, Vol. 50, No. 6, 321-327.

Nordhaus W., 2018, *The Trump doctrine on international trade: Part two*, Vox.eu Column, [Online] Available at: https://voxeu.org/article/trump-doctrine-international-trade-part-two [Accessed 10 January 2019].

Pelkmans J. 2015, *TTIP: Political and Economic Rationale and Implications*, Intereconomics, Volume 50, November/December, Number 6, 312-343.

Pelkmans J. et al. 2014, *The Impact of TTIP The underlying economic model and comparisons*, Centre for European Policy Studies Special Report, No. 93, October.

UNCTAD, 2019, *UNCTAD STAT* [Online] Available at: http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en. [Accessed 10 January 2019]

Wojtas M. 2009, *Stosunki handlowe Unii Europejskiej ze Stanami Zjednoczonymi w latach 1995-2007* [in:] B. Mucha-Leszko (red.), Pozycja Unii Europejskiej w handlu międzynarodowym, Wydawnictwo UMCS, Lublin.

WTO 2018, *World Tariff Profiles 2018*, Geneva.

WTO, 2019, *The WTO Data* [Online] Available at: http://data.wto.org/ [Accessed 10 January 2019].

SHIFTING TAX BURDEN FROM LABOUR TO PROPERTY: THE CASE OF LATVIA

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Abstract. The need to reduce high taxes on low wages and to raise more revenues from real estate taxes and environmentally related taxes has been repeatedly emphasized by the European Commission and OECD. In this paper we determine the scope to shift tax burden from labour to property in Latvia. We use a unique dataset, which links EU-SILC 2012 database with administrative data on actual immovable property ownership, allowing for empirical analysis on the degree of progressivity of the property tax. We consider the possibilities of ensuring more progressivity of the tax system while cutting the tax burden on low-paid workers in Latvia and partly compensating foregone budget revenues with higher revenues from immovable property (by raising tax rates, especially tax rate on land, and lowering tax brackets, but providing the tax discounts to pensioner households). To estimate the effect of the tax reforms on disposable incomes, we use EUROMOD extended with immovable property tax modelling. According to our results, in Latvia property tax is regressive, which is mainly due to taxation of land: land constitute the main source of revenues and poor households have large possessions of cheap land. Main beneficiaries of the proposed reforms are in middle deciles of income distribution. Though not strongly, the proposed reforms reduce income inequality. The direct fiscal effect of the reforms is negative and most of the burden is on local governments' budgets.

Key words: *personal income tax, property taxes, shifting tax burden, EUROMOD*

JEL code: D31, C15, C63, R20, H20

Introduction

The need to reduce high taxes on low earnings and to raise more revenues from real estate taxes and environmentally related taxes has been repeatedly emphasized by the European Commission and OECD (European Commission, 2018a; OECD, 2017). The recurrent taxes on real estate property are low in Latvia (0.9% of GDP vs. 1.6% of EU-28 GDP weighted average and 3.3% of GDP in France with the highest share of recurrent property taxes). The great gap between the tax-to-GDP ratio in Latvia and France suggests that there is considerable room for raising extra budget revenues by reforming recurrent property tax system in Latvia. At the same time recurrent property taxes are considered to be the least detrimental to economic growth (e.g., OECD, 2010; Prammer, 2011; Arnold et al, 2011; European Commission, 2012; European Commission, 2018b) along with consumption taxes and environmental taxes.

The main property that makes the real estate tax efficient is immobility of the tax base. It makes property taxes rather hard to avoid (Norregaard, 2013), which is not true about labour taxes. According to existing empirical evidence, tax avoidance, and personal income tax avoidance in particular is highly prevalent in Latvia. For example, according to European Commission (2014), the share of employees receiving unreported income is the highest in Latvia among the European Union countries: 11% of surveyed employees (vs. 4% EU-wide average) admitted to have received undeclared remuneration. Other available evidence, based on a dedicated survey of private sector enterprises (Putnins and Sauka, 2018) suggests that Latvia has the highest share of unreported employees and the highest share of unreported salaries among the Baltic states.

It has been a one of the Latvian government's priorities to lower the tax burden on labour for a number of years. The tax burden on low wage recipients had been gradually brought down until 2008, which was achieved by increasing basic

untaxable allowances and tax allowances for dependents. In the crisis years, however, due to growing budget pressures the basic allowance was cut, as well as the flat tax rate was increased, hereby increasing net personal average tax rate on low wage earners. Tax burden on low wages refused to slightly decrease only in 2013, which was achieved by reducing the flat tax rate, and by increasing basic untaxable allowance for low income earners in the coming years. Nevertheless, net personal average tax rate on low wage recipients (67% of an average worker's wage, single wage earners without dependents) remains pretty high in 2016 – the 6th highest across EU countries (based on Eurostat data).

In this paper we determine the scope to shift tax burden from labour to property in Latvia. We consider the possibilities of ensuring more progressivity of the tax system while improving work incentives for low wage earners (by cutting the tax burden on low-paid workers in Latvia) and partly compensating foregone budget revenues with higher revenues from immovable property (by raising tax rates, especially tax rate on land, and lowering tax brackets, but providing the tax discounts to pensioner households). To estimate the effect of the tax reforms on disposable incomes, we use EUROMOD, the European Union tax-benefit microsimulation model, extended with immovable property tax modelling.

There is no existing empirical evidence on who bears tax burden on immovable property in Latvia and no existing national models that can be used to model immovable property tax reforms. In our analysis, we use a unique dataset, which links EU-SILC 2012 database with administrative data on actual immovable property ownership, allowing for empirical analysis on the degree of progressivity of the property tax. The resulting database contains information on owned immovable property of EU-SILC 2012 respondents, i.e. the type of the property (individual house, apartment in an apartment block, garage, land, etc), area of the property in square meters, and cadastral value of the property.

According to our results, in Latvia property tax is regressive, which is mainly due to taxation of land: land constitute the main source of revenues and poor households have large possessions of cheap land. Main beneficiaries of the proposed reforms are in middle deciles of income distribution. Though not strongly, the proposed reforms reduce income inequality. The direct fiscal effect of the reforms is negative and most of the burden is on local governments' budgets.

Research results and discussion

1. Recurrent taxes on immovable property in Latvia

In Latvia, property taxes comprise recurrent taxes on immovable property, which are linked to cadastral value of immovable property, and other property taxes, which include taxes on financial and capital transactions and taxes on estate, inheritance and gift taxes.

Recurrent taxes on immovable property (hereafter property tax) are applied on land, buildings and other structures. In general case, the tax rate of 1.5% is applied to the cadastral value of the land, buildings or its parts and engineering structures, while the rate on residential property is between 0.2% and 0.6% of cadastral value depending on the cadastral value of the property (i.e., 0.2% of the cadastral value below EUR 56 915;0.4% of the cadastral value from EUR 56 915 to EUR 106 715; 0.6% of the cadastral value above 106 715 EUR).

All local governments provide discounts to families with children. Generally, the law stipulates that the discount should be provided to families with three or more children, where the child is defined as a person aged 18 or less. The size of the discount is 50% of the calculated tax liability, but not more than 427 EUR. Riga provides more generous support to all families with children: 50% for families with one child, 70% for families with 2 children and 90% for families with three or more children. Moreover, according to the Riga rules, a person is qualified as a child until he/she reaches the age of 19, or longer if the person remains in education, but not after he or she reaches the age of 24.

Indigent and low-income persons receive an allowance up to 90% from the calculated tax amount. Many municipalities provide varying relief for specific categories of vulnerable persons e.g. pensioners, disabled persons etc.

The Latvian system of cadastral valuation is rather good by EU and OECD standards. Property cadastral values are updated by on a regular basis (annually) using information about the property values in market transactions in recent years. Cadastral values of the property are pretty well reflecting the actual market values: thus, the average ratio of property cadastral values in 2014 to market prices in 2012-2013 is 0.8, implying that on average cadastral values of the property are 20% below the market values of similar properties, which can be regarded a reasonably good approximation State Land Service (2014). The ratios differ for different types of property - while it is below 1 for all types of property (i.e., cadastral values undervalue the market values), the ratios vary from 0.84 for standard-type apartments (mainly in older houses built in Soviet times) and 0.82 for privately owned land to 0.53 for rural land.

2. Methodology and data

In this paper we use the Latvian component of the European-wide tax-benefit microsimulation model EUROMOD. This is a static microsimulation model, i.e. it allows estimating the first-round effects of the reforms abstracting from any behavioural responses of economic agents. The model allows simulating household disposable incomes before and after taxes and benefits, under different tax-benefit scenarios. Model is run on representative national income surveys (EU-SILC in most countries), which allows estimating the policy effects on actual income distribution and all derived income inequality and poverty indicators (for more details on EUROMOD and its applications see Sutherland, H. and F. Figari (2013)).

The standard version of the Latvian EUROMOD model simulates personal income tax and social security contributions, contributory unemployment benefit, all major family benefits, state social security benefit, as well as means-tested social assistance benefits - GMI and housing benefit (Pluta et al. (2018)). This paper uses a modified version of the EUROMOD-LV model, which additionally simulates immovable property tax paid by households for land and dwellings that are in households' possession.

The Latvian EUROMOD model, like EUROMOD models for most other European countries, is validated and run on EU-SILC income survey data. While EU-SILC data contains information about the property tax paid by households, information on the characteristics of the immovable property owned by the household is very limited for our purposes. Namely, the database contains information about the size of the dwelling, its condition, available utilities, number of rooms in the dwelling, but there is no information about its expected market value or cadastral value of the property, and no information about land that possibly belongs to the household. Since it is the cadastral value of dwellings and land that is subject to the immovable property tax in Latvia, lack of this information is a serious limitation to the possibilities of simulating the tax using EU-SILC data.

In this paper we use a specially constructed database, where EU-SILC 2012 database is matched with households' possessed property from administrative data (matching was done by the Central Statistical Bureau of Latvia). The resulting database contains information on the type of the dwelling (individual house, apartment in an apartment block, garage, land, etc), area of the property in square meters, and cadastral value of the property. EU-SILC 2012 data contains information about income received in 2011. To reproduce the 2018 tax-benefit system and to simulate policy reforms using 2018 as the benchmark scenario, all non-simulated monetary variables in EU-SILC 2012 are uprated to 2018 values using aggregate macroeconomic data on the dynamics of correspondent income components (for more details on the updating methodology, see Pluta et al. (2018)). The cadastral values correspond to the actual cadastral values that were in force in 2014.

First, we use the model to reproduce the Latvian tax-benefit system of 2018 that serves as the benchmark scenario. Next, we simulate reforms of the immovable property tax and the personal income tax, and then we combine reforms of

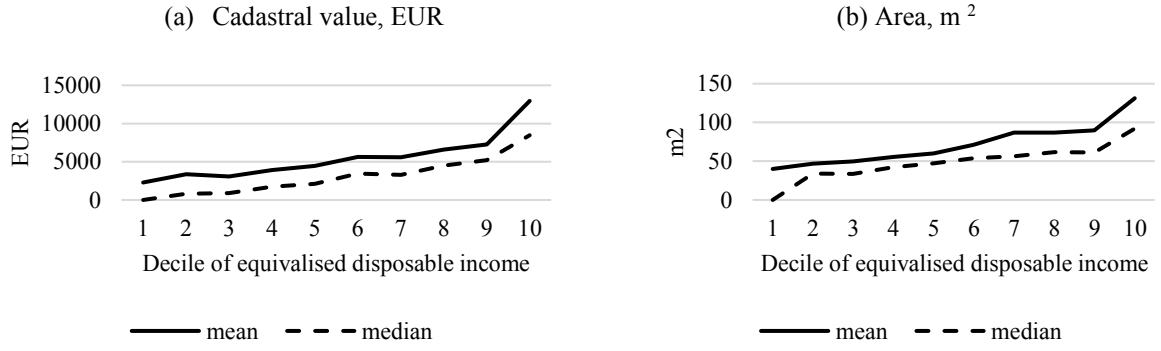
the tax on immovable property and reforms of the personal income tax to estimate the joint impact. After each simulation we compute the resulting change in disposable income of household, as well as income inequality and poverty indicators.

3. First look at the data on owned immovable property

One of the specific features of the Latvian residential property market is a very high share of outright homeowners. According to EU-SILC 2017, in 2016, 70.7% of the Latvian population were residing in dwellings owned outright (with no outstanding mortgage or housing loan), while the average corresponding share in EU-28 was 42.8% (Eurostat,2018). Another 10.8% of population owned dwellings with mortgage or loan (vs. 26.5% in EU-28). On the whole, the share of homeowners in the population in 2016 amounted to 81.5% (contrasted to the average share of 69.3% in EU-28).

Property tax in Latvia is charged on property owners. One of the challenges in designing any property tax reforms is that there is no clear empirical evidence on the relationship between property value and income of the property owners. Under planned economy housing was provided by the state, which might still have consequences for distribution of population across regions and property types in Latvia and other transition economies, and might result in situations when relatively poor people own expensive properties.

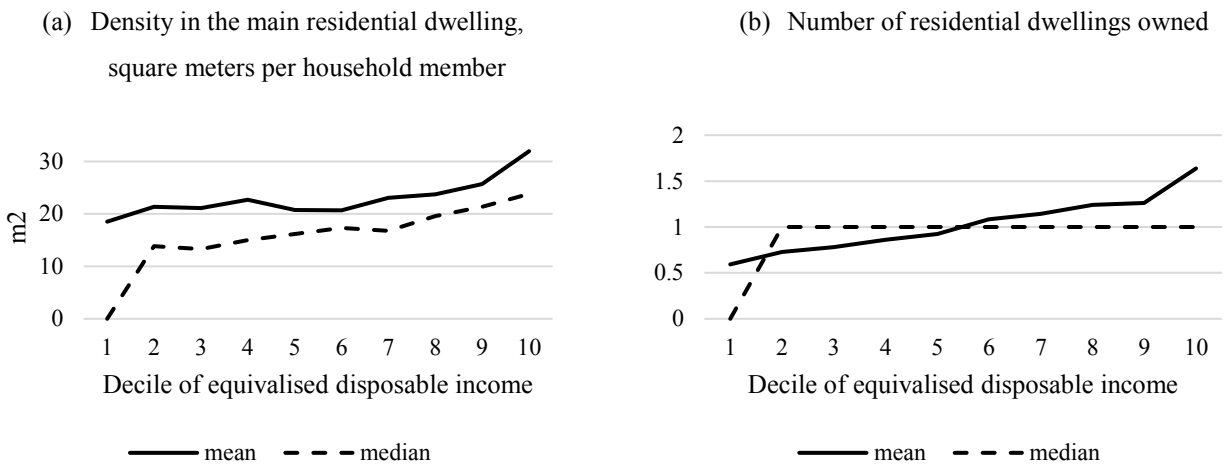
The EU-SILC data matched with property from cadastral records allows to infer the correlation between monetary wealth and value of the owned property. First, the data suggests that there is a positive correlation between disposable equivalised household income and cadastral value of all owned property, as well as the area of the owned property (see Figures 1a and 1b). This positive relationship is especially strong for the value of the property and to a smaller extent for the area of the owned property: while the average cadastral value of the property owned by the 10th decile is about 5.7 times the value of property owned by the 1st decile, the corresponding factor for the area is only 3.3. This perhaps does not come as a big surprise and implies that wealthier households own properties that are more expensive per unit area. But on the whole, the positive relationship between income and value of the property, as well as income and area of the property suggests that there is a room for policy reforms that would tax property progressively without putting excess burden on poor population groups.



Source: author's calculations based on EU-SILC 2012 matched with households' possessed property from administrative data (matching was done by the Central Statistical Bureau of Latvia).

Fig. 1. **All residential dwellings owned by households**

Another observation is that richer households on average tend to own more residential properties (see Figure 2b), which suggests that taxing dwellings that do not serve as a household's main residence at a higher rate would tax progressively richer households. In terms of the area per one household member, however, the correlation is less obvious – the average number of square meters per household member in the main residence is around 20 meters in households belonging to up to 6th decile of disposable equivalent income, it is not much larger (around 25 meters) in 7th to 9th deciles and only in the top decile it raises to above 30 square meters (see Figure 2a).

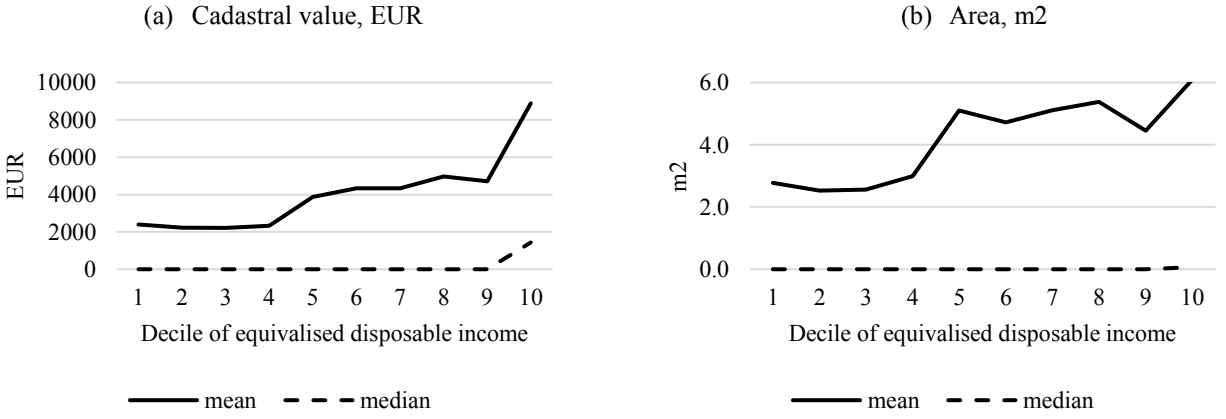


Source: author's calculations based on EU-SILC 2012 matched with households' possessed property from administrative data (matching was done by the Central Statistical Bureau of Latvia).

Fig. 2. **Density in the main residential dwelling and number of property owned**

The average area of owned land is quite small (see Figure 3b) - it ranges from about 2.8 square meters in the 1st decile to slightly above 6 square meters in the top decile and the median value is zero in all deciles except the top decile. Most households do not own land, but even those who do, own very small pieces, which is mainly due to the size of land possessions in urban areas. The mean area of land owned by households residing in urban areas is 4.9 square meters (taking into account only those households who do own land). The average area of owned land piece in rural area is 16.0 square meters. The likely reason for such small land pieces in urban areas is the way the state-owned land under multi-apartment houses was privatised, when the land below the houses was divided proportionally between the apartment owners.

In terms of the owned land, reacher households on average tend to own land with higher cadastral value (see Figure 3a). The average cadastral value of the land owned by the 10th decile is about 3.7 times the value of land owned by the 1st decile, while the corresponding factor for the area is only 2.2, implying that wealthier households own land that is more expensive per unit area.



Source: author's calculations based on EU-SILC 2012 matched with households' possessed property from administrative data (matching was done by the Central Statistical Bureau of Latvia).

Fig. 3. **Land owned by households**

4. Benchmark simulation

As described in Section 2, EUROMOD is run on EU-SILC 2012 data, which contains information about 2011-year income. In order to simulate households' disposable income in 2018, all non-simulated income components have been uprated to 2018 values using aggregate statistics on the dynamics of the corresponding income components over the period 2011-2018. All other income components are simulated according to the policy rules that were in place in 2018. The Latvian tax-benefit system of 2018 is used as the benchmark scenario.

Before turning to the discussion of the simulated reforms, we test how well the benchmark scenario reproduces the tax-benefit system that was actually in place in 2017*. Table 1 compares actual data on income and poverty indicators in 2017 (based on EU-SILC 2018)* with the simulated benchmark system (based on EU-SILC 2012).

The shares of income received by middle quantiles are underestimated in the benchmark simulation, resulting in higher Gini coefficient than the actual. The simulated S80/S20 income quintile ratio is slightly lower than the actual, suggesting that income inequality as measured by this indicator is underestimated. The main reason for underestimating S80/S20 income quintile ratio is the fact that in the simulations we assume full take-up of means-tested social assistance benefits (GMI and housing benefit) which are targeted at the poorest population groups, and, as a result, we overestimate the share of income received by the bottom quintile.

Table 1

Income distribution and poverty indicators: actual data vs. simulated benchmark system, 2017 and 2018

	Equivalised monthly disposable income, EUR		Gini	Poverty rate*	S80/S20
	Mean	Median			
Actual (based on SILC 2018)	728.20	611.08	35.6	23.3	6.8
Benchmark simulation, 2017 (based on SILC 2012)	624.54	494.76	36.8	22.2	6.5
Benchmark simulation, 2018 (based on SILC 2012)	682.37	545.52	36.8	22.6	6.6

*Notes: *Measured as percent of population with income below 60 percent of the median income.*
Source: Central Statistical Bureau of Latvia (EU-SILC 2018), authors' calculations.

Revenues from social contributions and personal income tax are overestimated (see Table 2), and the main reason behind this are unreported wages widely prevalent in Latvia. EU-SILC data can partly cover both unreported income and unreported employment, since information on income is collected both from the registers and survey of individuals. Model simulations are done assuming full tax compliance, which leads to overestimation of tax revenues. Another likely reason for overestimating personal income tax revenues is that we cannot simulate some tax allowances (e.g. PIT allowance paid to disabled people, politically repressed, and some other special allowances) and we cannot simulate tax refunds for deductible expenditures (e.g. expenditures on education, health services and health insurance premiums) due to lack of data that would allow us identifying eligibility for the allowances or data on expenditures.

At the same time, as Table 4 shows, the simulated revenues from property tax are considerably below the actual revenues from the property tax. The main reason for this is that external data on the property tax does not allow identifying the share of taxes paid by households. What we see in external statistics are total tax payments made by both households and businesses, hence the numbers are not really comparable. The benchmark simulation, however, quite well reproduces EU-SILC data, which contains respondents' self-reported information on their payments of the property tax (the revenues are underestimated by 12.7%) and hence represents a comparable indicator.

* Actual data on income and poverty indicators are not available for 2018, because the income reference period of EU-SILC is a fixed 12-month period, i.e. the previous calendar year.

Table 2

Annual revenues from selected taxes: actual revenues vs. simulated benchmark system, 2014, mln EUR

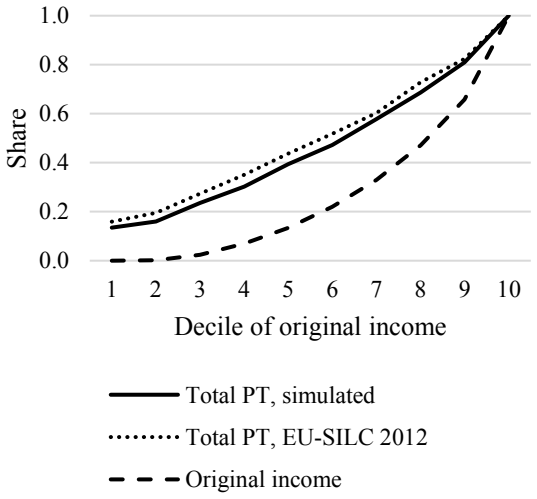
	Social contributions	Personal income tax	Property tax: land*	Property tax: buildings*	Property tax: residential dwellings *,**	Property tax: total*
Actual, 2018	3 204.5	1 723.6				
Actual, 2017	2 794.0	1 703.1	112.3	66.3	32.3	210.9
EU-SILC 2012 data	-	-	-	-	-	69.3
Benchmark simulation, 2018 (based on SILC 2012)	3 685.1	1 823.0	48.5	12.0	8.6	60.5
Benchmark simulation, 2017 (based on SILC 2012)	3 288.7	1 878.9	48.5	12.0	8.6	60.4

*Notes: *External statistics on revenues from the property tax cover both households and businesses, while the simulated values cover only households*
*** Subcategory of the property tax on buildings.*
Source: Latvian State Treasury, authors' calculations.

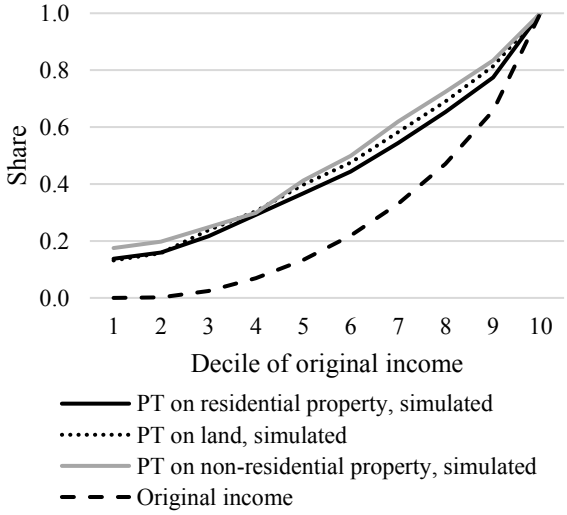
A major share of property tax revenues is comprised from the revenues of the tax on land. This is implied both by external statistics (which covers both households and the businesses) and by simulation results. The latter might seem surprising, given that most households don't have land possessions (see Section 3). However, since the tax rate on land is much higher than the tax rate on residential properties (1.5% vs. 0.2%-0.6%), this makes the tax payments on land larger than tax payments on residential dwellings.

Figures 4a and 4b show the cumulated shares of revenues from the collected tax on immovable property by deciles of original income, and the cumulated shares of received original income by deciles[†]. First thing to note is that the benchmark simulation reproduces the distribution of revenues from the property tax based on EU-SILC 2012 quite well (see Figure 4a). Second, tax revenue distribution curves are located above income distribution curve, suggesting that under the current system the property tax is regressive (i.e., the share of tax revenues received from bottom deciles exceed the share of income received by the bottom deciles).

(a) Total revenues from immovable property tax



(b) Revenues by type of property



Source: author's calculations based on EU-SILC 2012 matched with households' possessed property from administrative data (matching was done by the Central Statistical Bureau of Latvia).
Note: Original income includes income from employment and self-employment, investment income, private pensions, property income, other income received by children under 16 and net regular interhousehold cash transfers. For the purpose of calculating distribution of the original income and when calculating deciles of original income all negative values of original income were substituted with zeros.

Fig. 4. **Shares of total revenues from immovable property tax paid by deciles of original income**

[†] *Original income includes employment income, self-employment income, investment income, private pensions, property income, other income received by children under 16 and net regular interhousehold cash transfers. For the purpose of calculating distribution of the original income and when calculating deciles of original income all negative values of original income were substituted with zeros.*

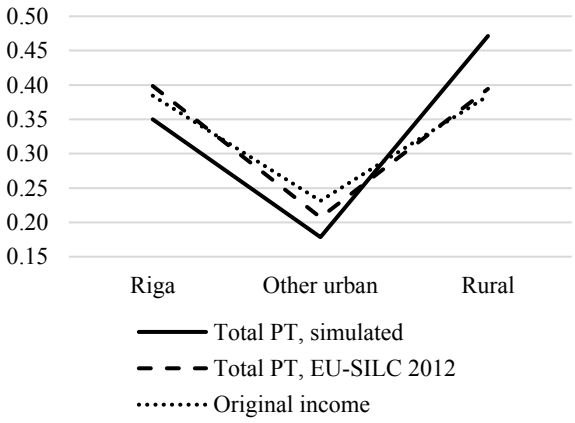
As shown in Figure 4b, property tax on non-residential property and on land are more regressive than the property tax on residential property. Non-residential property, however, makes up a very small share of total households' property tax obligations, hence it does not have a strong impact on the overall progressivity of the property tax. The tax on land, on the contrary, is a major tax component, and strongly affects the distribution of revenues from the property tax.

Immovable property possessions and hence tax payments are region-specific. Residents of rural areas tend to own larger pieces of land, whereas residents of the urban areas, and the capital city in particular, on average tend to own more expensive residential dwellings (with the exception of specific rural areas that can be regarded luxury, like suburbs of Riga, or the Baltic sea coast, where property prices are on average higher than in urban areas). Figures 5a and 5b show the shares of original income received by residents of Riga, other urban areas and rural areas (note that the graphs show actual shares by regions, not cumulated shares). Our benchmark simulation reproduces the regional distribution reasonably well, but we slightly underestimate the share of the tax paid by Riga and other urban areas and overestimate the share of tax paid by residents of rural areas (see Figure 5a).

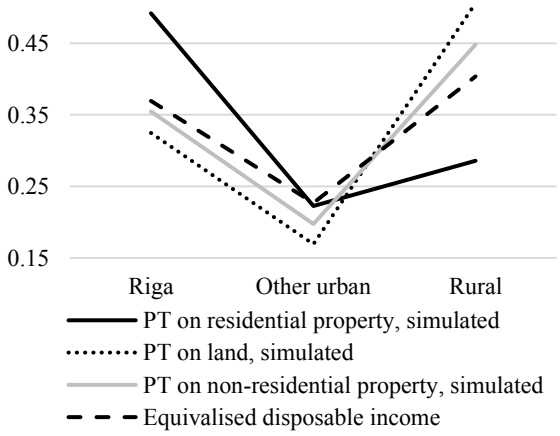
Half of the revenues from taxes on residential property is collected from residents of Riga, while they receive only 35% of total original income. This suggests that inhabitants of Riga face a notably higher average tax rate on residential buildings than residents of the rest of the country.

At the same time, inhabitants of other urban areas face a relatively low average tax rate on all types of property - the share of revenues from all types of the property is lower than the share of original income received. As to the rural areas, inhabitants of rural areas pay proportionally more taxes on land and non-residential buildings.

(a) Total revenues from immovable property tax



(b) Revenues by type of properties



Source: authors calculations based on EU-SILC 2012 matched with households' possessed property from administrative data (matching was done by the Central Statistical Bureau of Latvia).

Fig. 5. **Revenues from immovable property tax by regions**

5. Simulated reforms

All of the simulated reforms are aimed at achieving two main objectives: (1) to reduce tax burden on labour, in particular on low wage earners, (2) to (at least partially) compensate the foregone earnings by extra revenues from the immovable property tax.

In 2018, Latvia introduced progressive PIT rate with three brackets: 20% (applied to annual income not exceeding 20,000 EUR), 23% (for annual income above 20,004 EUR and below 55,000 EUR) and 31.4% (applied to income exceeding 55,000 EUR per year). Under such PIT system, 93.5% of all PIT taxable income earners fall into the lowest

income bracket, and only about 6.5% fall into the second income bracket and about 0.5% face the top PIT rate[‡] (Pluta A., Zasova A., 2017).

We start with reforms of the personal income tax (PIT). We simulate the decrease of the lowest PIT rate and decrease of the annual income threshold for lowest rate allowing more PIT taxable income earners fall into the middle-income bracket, as well as increase of the middle rate to partly compensate the foregone revenues (see the parameters of the simulated reforms "2018_a"and "2018_b " in Table 3).

Latvia has a differentiated allowance since 2016, which means that individuals with lower incomes are eligible for a higher tax allowance. To reduce the tax burden on low wage earners, we simulate an increase of maximum annual non-taxable allowance (from 5.6 up to 12 monthly minimum wages), as well as increase of annual income above which non-taxable allowance is not applied (from 27.9 up to 41.9 monthly minimum wages) (see the parameters of the simulated reforms "2018_c" and "2018_d"in table 3).

Table 3

Simulated PIT reforms

Reform scenario	Lowest rate	Annual income threshold for lowest tax, EUR	Middle rate	Annual income threshold for top rate, EUR	Top rate	Minimum standard non-taxable allowance, EUR	Maximum standard non-taxable allowance, EUR	Annual income below which maximum allowance is applied	Annual income above which minimum allowance is applied
2018 benchmark	0.20	20 004	0.23	55 000	0.314	0	2 400	5 280	12 000
2018_a	0.15	12 000	0.23	55 000	0.314	0	2 400	5 280	12 000
2018_b	0.15	12 000	0.25	55 000	0.314	0	2 400	5 280	12 000
2018_c	0.20	20 004	0.23	55 000	0.314	0	5 160	5 160	18 000
2018_d	0.20	20 004	0.23	55 000	0.314	0	3 870	5 160	18 000
2018_e	0.15	12 000	0.25	55 000	0.314	0	3 870	5 160	18 000

We try to shift the tax burden away from labour to property by raising tax rate, especially tax rate on land and lowering tax brackets and linking the tax brackets to quantiles of distribution of property cadastral value. The parameters of the simulated reforms are listed in Table 4. The tax discounts are provided to pensioner households and indigent and low-income households.

Table 4

Simulated property tax reforms

	Lowest rate	**Annual income threshold for lowest tax, EUR***	**Middle rate**	**Annual income threshold for top rate, EUR**	**Top rate**	**Tax rate on land**	**Simulated discounts**
2018 (benchmark)	0.002	56 915	0.004	106 715	0.006	0.015	For poor households on residential property (90%)
2018_1a	0.004	3634 (min value of 6th decile)	-	-	0.012	0.03	(1) For poor households on residential property (90%), (2) For poor household on land (90%), (3) For pensioner`s households (90%)
2018_1b	0.008	3634 (min value of 6th decile)	-	-	0.012	0.03	
2018_2a	0.004	56 915	0.008	106 715	0.012	0.03	
2018_2b	0.004	4 697 (min value of 7th decile)	0.008	11 197 (min value of 10th decile)	0.012	0.03	
2018_3a	0.004	6 301 (min value of 8th decile)	-	-	0.012	0.03	

[‡] Those falling into the top PIT bracket will, in fact, not face a higher PIT rate than those falling into the second income bracket – the introduction of the top rate will be offset by the restructuring of the solidarity tax.

	Lowest rate	Annual income threshold for lowest tax, EUR*	Middle rate	Annual income threshold for top rate, EUR	Top rate	Tax rate on land	Simulated discounts
2018_3b	0.008	6 301 (min value of 8th decile)	-	-	0.012	0.03	

*Note: * we simulate the reforms based on thresholds that are defined in terms of deciles of cadastral values of residential dwellings (minimum value).*

We don't have any residential dwellings in the database that fall into the top tax bracket. The proportion of dwellings that fall into the middle tax bracket is 0.18%, which is lower than the actual proportion of the dwellings falling into this category. However, the State Land Service data also suggests that the proportion of apartments and private houses that fall into the higher brackets is very low. And on the whole, the average cadastral value in our database is lower than in VZD data. Taking this into account, we are unlikely to miss a major part of revenues by not having the expensive apartments in the database. In the reforms, we propose relative thresholds – we simulate the reforms based on thresholds that are defined in terms of deciles of cadastral values of residential dwellings (minimum value). This approach might be not perfect in predicting the actual budget revenues, but it will allow to assess the effect of tax reforms on income distribution.

Table 5 shows the effect of simulated reforms on poverty and inequality indicator and fiscal effect. Property tax reforms do not have a significant effect on poverty and inequality indicator such as the poverty line and poverty rate, Gini and S80/S20. This is essentially because property taxes and especially changes in them represent a rather small share of the incomes of most households (see Figure 6b). However, raising tax rate on residential dwelling and tax rate on land and lowering tax brackets allows significantly increase the revenues from recurrent property taxes (the largest increase in revenues is achieved by simulated recurrent property tax reform "2018_1b" and is estimated to be 107.9%).

Despite the fact that simulated PIT reforms help to achieve some reduction in income inequality (measured both by Gini and S80/S20 quintile ratio), their implementation has large negative fiscal effect which is unlikely possible to cover by raising recurrent property taxes.

In order to estimate composite effect of PIT and property tax reforms, we choose (1) property tax reform "2018_3b" that results in doubling of revenues from recurrent property taxes and (2) PIT tax reform "2018_e" which is the most effective in reduction of income inequality measured by Gini coefficient. This reform still helps to reduce income inequality, while the main beneficiaries of the proposed reforms are in middle deciles of income distribution (see Figure 6c). The direct fiscal effect of the reform is negative and most of the burden is on local governments' budgets.

Table 5

Effect of simulated reforms on Gini coefficient, S80/S20, poverty rate and fiscal effect

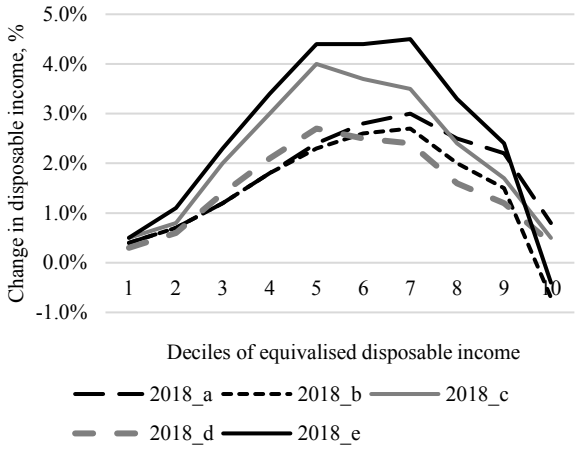
	Gini	Change in Gini vs. baseline	S80/S20	Change in S80/S20 vs. baseline	Poverty rate, % (poverty line, EUR)	Revenue changes compared with benchmark, %	Fiscal effect, EUR**
2018_benchmark	0.368		6.588		22.6 (EUR 327.31)		
Property tax reforms							
2018_1a	0.368	0	6.574	-0.014	22.6 (EUR 324.05)	96.1% (of revenues from property taxes)	58.1 mln.
2018_1b	0.368	0	6.577	-0.010	22.6 (EUR 323.88)	107.9%	65.2 mln.
2018_2a	0.368	0	6.575	-0.013	22.5 (EUR 324.62)	70.7%	42.7 mln
2018_2b	0.368	0	6.573	-0.015	22.5 (EUR 324.46)	85.1%	51.5 mln.
2018_3a	0.368	0	6.573	-0.014	22.5 (EUR 324.54)	86.7%	52.4 mln.
2018_3b	**0.368**	**0**	**6.577**	**-0.011**	**22.6 (EUR 324.01)**	**103.2%**	**62.4 mln.**
PIT reforms							

	Gini	Change in Gini vs. baseline	S80/S20	Change in S80/S20 vs. baseline	Poverty rate, % (poverty line, EUR)	Revenue changes compared with benchmark, %	Fiscal effect, EUR**
2018_a	0.367	-0.000	6.644	0.056	23.4 (EUR 336.77)	-11.4% (of revenues from PIT)	-196.5 mln
2018_b	0.365	-0.003	6.563	-0.025	23.4 (EUR 336.13)	-7.5%	-129.3 mln
2018_c	0.365	-0.003	6.607	0.020	23.7 (EUR 341.16)	-12.0%	-207.4 mln
2018_d	0.366	-0.002	6.598	0.010	23.2 (EUR 335.92)	-8.2%	-141.4 mln
2018_e	**0.363**	**-0.005**	**6.572**	**-0.016**	**23.8 (EUR 342.61)**	**-13.7%**	**-235.4 mln**
Composite effect of PIT and property tax reforms							
2018_3b & 2018_e	0.363	-0.005	6.557	-0.031	23.8 (EUR 339.70)	103.2% (of revenues from property taxes) -13.7% (of revenues from PIT)	-173.0 mln

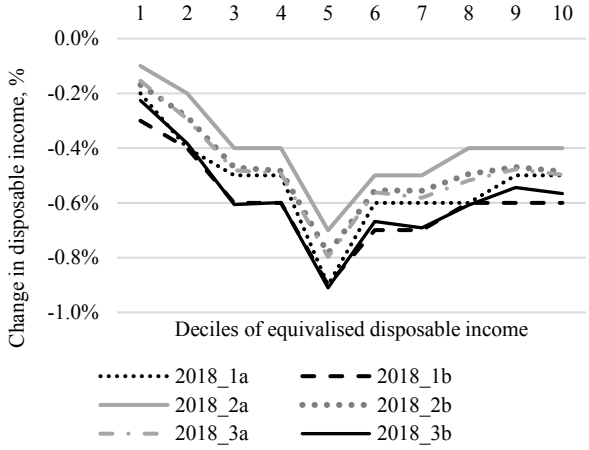
*Notes: *Measured as percent of population with income below 60 percent of the median income. **In order to calculate the fiscal effect, we use the external statistics of revenues from PIT (Latvian State Treasury) and the calculated change (%) of simulated revenues compared with the benchmark scenario. In order to calculate the fiscal effect of the changes in recurrent property tax, we use the simulated change of revenues compared with the benchmark scenario.*

Source: authors` calculations using EUROMOD-LV model based on EU-SILC 2012 matched with households' possessed property from administrative data (matching was done by the Central Statistical Bureau of Latvia).

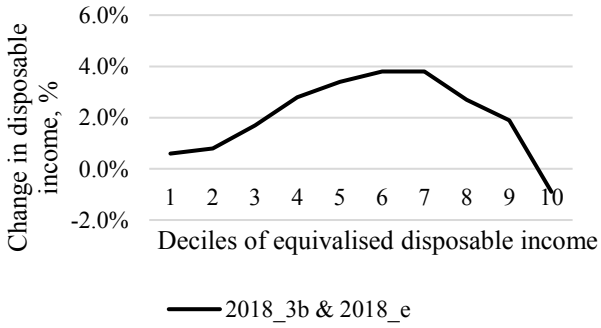
(a) PIT reforms



(b) Property tax reforms



(c) Composite effect of PIT and property tax reforms



Source: author's calculations based on EU-SILC 2012 matched with households' possessed property from administrative data (matching was done by the Central Statistical Bureau of Latvia).

Fig 6. Change in equivalized disposable income by income deciles caused by the reforms of the PIT and property tax compared to benchmark (no-reform) scenario, %

We are aware that likely underestimate the effect on inequality, because the analysis doesn't account for labour supply effects of lowering the tax burden on labour. Reduction in tax burden on labour is expected to stimulate employment

growth and shift of the employment from the shadow economy to the formal economy, particularly in countries where tax evasion and tax avoidance is widespread. The direct fiscal effect of the reforms is negative and most of the burden is on local governments' budgets.

Conclusions

EU-SILC 2012 database linked with administrative data on actual immovable property ownership allows to infer the correlation between monetary wealth and characteristics of the owned property and allows for empirical analysis on the degree of progressivity of the property tax. The main conclusions are the following:

1. The positive relationship between income and value of the property, as well as income and area of the property suggests that there is a room for policy reforms that would tax property progressively without putting excess burden on poor population groups.
2. Richer households on average tend to own more residential properties, which suggests that taxing dwellings that do not serve as a household's main residence at a higher rate would tax progressively richer households.
3. Reacher households on average tend to own larger parcels of land and land with higher cadastral value. The average cadastral value of the land owned by the 10th decile is about 3.7 times the value of land owned by the 1st decile, while the corresponding factor for the area is only 2.2, implying that wealthier households own land that is more expensive per unit area.
4. Residents of rural areas tend to own larger pieces of land, whereas residents of the urban areas, and the capital city in particular, on average tend to own more expensive residential dwellings
5. In Latvia property tax is regressive (i.e., the share of tax revenues received from bottom deciles exceed the share of income received by the bottom deciles). This is mainly due to taxation of land: land constitute the main source of revenues and poor households have large possessions of cheap land.
6. Property tax reforms do not have a significant effect on poverty and inequality indicator such as the poverty line and Gini. This is essentially because property taxes and especially changes in them represent a rather small share of the incomes of most households.
7. Tax shift from labour to property helps to reduce income inequality, while the main beneficiaries of the proposed reforms are in middle deciles of income distribution. The direct fiscal effect of such reform is negative and most of the burden is on local governments' budgets.

Bibliography

Arnold, J. M., Brys, B., Heady, C., Johansson, A., Schwellnus, C., Vartia, L., 2011. Tax Policy for Economic Recovery and Growth. *The Economic Journal*. 121 (550), F59-F80.

European Commission, 2012. Possible Reform of Real Estate Taxation: Criteria for Successful Policies. *Occasional Papers*, (119).

European Commission, 2014. Undeclared Work in the European Union, Special Eurobarometer 402. *Technical Report.*

European Commission, 2018a. 2018 European Semester: Country Specific Recommendation / Council Recommendation – Latvia. [Online] Available at: https://ec.europa.eu/info/sites/info/files/file_import/2018-european-semester-country-specific-recommendation-commission-recommendation-latvia-en.pdf

European Commission, 2018b. Taxation Trends in the European Union. 2018 Edition. Data for the EU Member States, Iceland and Norway. [Online] Available at: https://ec.europa.eu/taxation_customs/sites/taxation/files/taxation_trends_report_2018.pdf

Eurostat, 2018. *Distribution of population by tenure status, type of household and income group - EU-SILC survey.* Statistics on population and social conditions [ilc_lvho02].

Norregaard, J., 2013. Taxing Immovable Property - Revenue Potential and Implementation Challenges. *IMF Working Paper, WP/13/129.*

OECD, 2010. Tax Policy Reform and Economic Growth. *OECD Publishing.* DOI: http://dx.doi.org/10.1787/9789264091085-en.

OECD, 2017. OECD Economic Surveys: Latvia 2017. *OECD Publishing*. DOI: https://dx.doi.org/10.1787/eco_surveys-lva-2017-en

Pluta, A.; and A. Zasova, 2017. Latvia Stumbling Towards Progressive Income Taxation: Episode II. *SSE Riga/BICEPS Occasional papers, ISSN 1691-3620*

Pluta, A. and A. Zasova, 2018. EUROMOD Country Report: Latvia (2015-2018). *EUROMOD Country Report.*

Prammer, D., 2011. Quality of Taxation and the Crisis: Tax Shifts from a Growth Perspective. *Taxation papers, European Commission, Working Paper No. 29.*

Putnins, T.; Sauka A., 2018. Shadow Economy Index for the Baltic countries 2009-2017. *Technical Report, Centre for Sustainable Business at the Stockholm School of Economics in Riga*.

State Land Service, 2014. *Par Kadastrālo Vērtību Bāzes Izstrādi 2016. gadam (attiecināms arī 2017., 2018. un 2019. gadā*. (engl. - On Constructing Cadastral Value Database for 2016 (also applicable in 2017, 2018 and 2019)). Technical Report.

Sutherland, H.; and F. Figari, 2013. EUROMOD: the European Union tax-benefit microsimulation model. *International Journal of Microsimulation 6(1), 4–26.*