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THE IMPACT OF INTERNATIONALIZATION, STRATEGIC INNOVATION AND MANAGERIAL DIGITALIZATION ON THE BUSINESS SUCCESS OF FINTECH ENTERPRISES

Doctoral Thesis

Submitted for the Scientific Doctor's Degree (*Ph.D.*)

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ANNOTATION

This doctor thesis is devoted to the impact of internationalization, managerial digitalization and strategic innovation on the business success of German small and medium-sized enterprises in the financial service sector.

The introduction to the present thesis describes the actuality and importance of the topic. It deals with the status quo of the research subject: the dimensions of the impact of different factors on the business success of small and medium-sized enterprises in the financial service sector. And with that of the research object: the business success research in the financial service industry.

The first chapter presents a literature overview of success factors in the financial service industry. Approaches regarding relevant internationalization theories, innovation research and digitalization theories in relation to the research questions are presented and analyzed. Relevant success factor research itself is analyzed as well.

In the second chapter, the author creates her own definition for the terms “small and medium-sized enterprises” and “FinTech”, as well as parameters to measure the degree of internationalization, managerial digitalization and strategic innovation along with definitions of the respective terms. Secondary data research shows the current degree of digitalization among small and medium-sized German enterprises and the different influences of the tools in regard to business success.

The third chapter begins with the research questions and model development in the form of a path diagram, which leads to the hypotheses. In the first step of the empirical research part, expert interviews were conducted. Expert evaluations compared to the results from the secondary data analysis validate the research model. Afterwards a quantitative survey among all German small and medium-sized companies that are strategically located in the financial sector was carried out. Key findings were established and research triangulation was performed.

Finally, the thesis concludes with the description of the obtained results and interpretations thereof, as well as managerial suggestions.

Keywords: digitalization, internationalization, innovation, success factor, FinTech

INTRODUCTION

Actuality of the Topic

Awareness of market chances and rising competitive constraints stimulates the interest of enterprises in being innovative, adaptive to new processes and vigilant toward new markets.[1] To run a successful business, the economic environment of companies as regards different factors like international orientation, the degree of digitalization and innovative products and services seems to be crucial. Innovative new business models like those of small and medium-sized enterprises from the financial sector, the so-called "FinTechs," look on the surface to be fully adapted to digital processes and, combined with an international orientation through transnational services, in the best condition to run a successful business in terms of these assumptions.[2] Looking in detail at the business model of FinTech enterprises, beside the digital products and services itself they offer, the internal processes are often lacking due to the requirements of digitalization. According to a recent study by PricewaterhouseCoopers (abbreviated PwC), more and more FinTechs even have to give up their businesses.[3] Moreover, the number of small and medium-sized enterprises from the financial service sector that are acting in foreign markets is significantly smaller than the number of internationalized large-scaled enterprises, which increases the competitive constraints for these enterprises.[4] However, current research by the German "Kreditanstalt für Wiederaufbau" (abbreviated KfW) points out that internationally oriented small and medium-sized enterprises are more innovative than enterprises that focus on domestic markets.[5] Also, the willingness to invest in digital infrastructure is lower among small and medium-sized enterprises than among large-scale enterprises. The financial service industry faces a highly competitive environment, because the industry is characterized by high rates of technological change and innovation, and new value chain and business models. At the same time, the finance industry is extremely globalized, dynamic and

[1] Faix, W. G., Kisgen, S., Heilmann, S. Globalisierungsmanagement deutscher Unternehmen: Gründe, Zielregionen, Formen, Hindernisse, Erfolgsfaktoren. Stuttgart: Steinbeis-Stiftung, 2013.
[2] This type of business model will be explained in detail in the next section.
[3] "PwC FinTech-Kooperationsradar: Kooperationen können herausfordernd sein: Immer mehr FinTechs stellen ihr Geschäft ein." 2019. https://www.pwc.de/de/finanzdienstleistungen/pwc-fin-tech-kooperationsradar-2019.pdf, accessed July 2019.
[4] German Federal Ministry of Economic Affairs and Energy, ed. Erschließen der Potenziale der Anwendung von 'Industrie 4.0' im Mittelstand, 2015.
[5] "KfW-Innovationsbericht Mittelstand 2018." 2019. https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-Innovationsbericht/KfW-Innovationsbericht-Mittelstand-2018.pdf, accessed August 2019.

concentrated in specific areas.[6] According to the Organization for Economic Corporation and Development (abbreviated OECD), the financial service sector is additionally characterized by continued high research and development expenditures and a large number of patents, which reflects the key role of the financial sector in innovation activities.[7] Working in such a highly demanding environment represents a challenge for all financial service firms' businesses, especially small and medium-sized ones. So, in what follows, the research subject of FinTech enterprises will be presented in detail.

FinTech companies operate in the financial service sector alongside banks and offer their customers services in the area of financial products like online banking, credit and insurance. FinTech companies are not only those that offer products or services but also those that develop them. This is what gives the general public the idea of a FinTech as a massive digitalized and innovative company with automatic processes and a paperless office. But often this understanding incorrect. Within the internal administrative processes, FinTech companies, just like all other small and medium-sized enterprises, struggle with adapting to the advantages that digitalization comes with.[8] The question that arises at this point is why some FinTech enterprises are more successful than others. The question, therefore, is which factors are the strongest impact factors, like the degree of digitalization of the internal processes, the degree of internationalization and the degree of innovativeness. But the progress of FinTech offering services is dependent on regulators around the world. They must find the right balance between harnessing the possibilities it offers and allowing it to flourish, while providing the right level of supervision.[9] Consequently, within the service range that FinTechs offer their customers there are products that could only be consumed nationally in the country where they are offered and not transnationally. There could be different reasons, therefore, for instance legal regulations (if the country does not allow the use of the service) or tax laws, that limit the spread of the service or simply the service is not needed. Another possibility for why some FinTechs are more successful than others could be the degree of innovation. The product ranges of FinTech companies differ (beside the internationalization

[6] García Manjón, J. V., Mompó, R., Redoli, J. "Accelerating Innovation in Small and Medium-Sized Enterprises in the ICT Services Sector." SAGE Open 6, no. 3 (2016): 215824401667019.
[7] OECD. Digital Economy Outlook 2015. Paris: OECD, 2015. http://gbv.eblib.com/patron/FullRecord.aspx?p=3564449.
[8] Zvirgzdina R., Skadina H. "The Effect of Macroeconomic Factors on Business Models in Fintech Industry." Economic Science for Rural Development Conference Proceedings 49 (2018): 260–268.
[9] Assia, Y., Bailey, S., Barnes, D. "Fintech transforming finance." Professional insight report 1, no. 9 (2016). https://www.accaglobal.com/an/en/professional-insights/technology/fintech-transforming-finance.html.

possibilities) as well the degree of innovative character of the service. So, the product range begins with conservative products like insurance or credits but there are also blockchain technology for payments and the depots of bitcoin currencies that show the innovative character of the service range. With this presentation about the business model of FinTech enterprises the actuality of the topic of this dissertation can be summed up.

The **Actuality of the Topic** has six main aspects:

1. The ongoing relevance of success factor research for the public like management of corporates. According to Alfred Kieser, "delivering effective success factors from management science is highly attractive for practitioners."[10] And, especially for applied sciences, the demands of external stakeholders promote the dissemination of specific research programs. It should be noted that many authors of success factor research studies are reluctant to characterize their results as key performance indicators into which managers should invest. This particularly applies to studies that are published in prestigious academic journals. Many success factor researchers carefully suggest that managers should not rethink their strategies in light of their findings but rather create the impression that an instrumental use of their findings is possible.
2. The appearance of a new business model enterprise called "FinTech." In the last few years, a new business model besides the banks in the financial service industry has appeared. So-called "FinTech" companies, small and medium-sized enterprises from the financial service sector, have obtained more and more market share and importance for the economy.
3. Key performance indicators for FinTechs have not yet been analyzed. Although FinTechs have obtained more market presence in the last few years, some FinTech enterprises are more successful than others, and a large number of them even have to give up their business after a short period. Which growth drivers support the business success of FinTechs has not yet been analyzed either.
4. The increasing impact of new digital external influences through "Industry 4.0" and the "Internet of Things." In combination with the factors "digitalization" and "innovation," the term "Industry 4.0" is increasingly appearing. Berger states that there is a strong need for enterprises to react because of the so-called "fourth industrial revolution" and adapt to its needs. With an increasingly higher degree of digitalized internal administrative processes

[10] Kieser, A., Nicolai, A. T. "Success Factor Research." Journal of Management Inquiry 14, no. 3 (2016): 275–279.

and with this the implementation of the needs of "Industry 4.0" and adaption to the demands of the so-called "Internet of Things" (abbreviated IoT) the impact on the economic competitiveness of enterprises has increased. These factors are underestimated by the relevant individuals in the companies, institutions and in the public in general.

5. Amid the ongoing changing environmental demands for innovation, being aware of innovation is a key issue for business strategy, because it triggers competitiveness and enhanced firm performance. Within the financial service industry, innovation plays an increasingly key role. It is a challenge for all financial service firms' businesses, especially small and medium-sized ones, to keep up with the ongoing changing environment.
6. The effects of globalization are permanently significant: Within the service range of FinTech enterprises some have products that could be bought worldwide without product adjustments and others are stuck in the domestic market. The high degree of internationalization against the background of increasing continuous globalization is crucially underestimated today by those responsible in the enterprises as well as in the government and politics.

Research Aim

The purpose of this dissertation is to determine, through scientific triangulation comprising a literature review, empirical investigation and expert feedback, how different degrees of digitalization of managerial, internal administrative processes, innovative business strategies and internationalization influence the business success of German small and medium-sized enterprises from the financial service sector, in order to explain the underlying cause and effect relationship on a holistic level.

Major Tasks

1. To carry out an extensive literature review of the theories in the field of success factor research in order to carve out key performance indicators for small and medium-sized enterprises in regard to the current state of research in the field of the financial service sector to identify research gaps requiring further scientific investigations.
2. To develop a research model that presents the causality among the impact factors in the field of digitalization, internationalization and innovation to show the assumed influence on business success for small and medium-sized enterprises in the financial sector.
3. To analyze secondary data about the frequency of digitalization tool use and their influence on the business success of German small and medium-sized enterprises in order to draw

conclusions for the expert interviews and the quantitative survey.

4. To conduct a two-step primary study, starting with a qualitative expert interview to gain estimations about the model validation.
5. To then conduct a quantitative survey among all German FinTechs to demonstrate the correlation of the impact factors for business success.
6. To develop an overall assessment of the findings from the literature review and from both quantitative and qualitative survey results in a way that allows holistic conclusions to be drawn on the research topic.
7. To present conclusions and suggestions regarding the findings for research discipline as well as managerial practice.

Main Research Question

With the background information from the literature review the lack in the current literature can be uncovered and with this the main research question of the dissertation can be formulated as:

RQ0: To what extent does a high degree of managerial digitalization, internationalization and strategic innovation enable small and medium-sized enterprises like FinTechs to manage their businesses successfully?

A model in form of a path diagram is developed with the aim of leading to the research question. This research model is called the "Double I-D Model" and it shows that the paths that are used to indicate the direct relationship and causality among the independent variables "digitalization of internal administrative processes" ("D") within an enterprise and the successful international business market entry (first "I") as well as innovative business ideas and service ranges (second "I") lead to the dependent variable of business success.

Basic Hypothesis

With the development of the research model and the identifying of the indicator variables from the path diagram to show the dependences between the main variables, the basic hypothesis can be formulated as follows:

H_{basic}: The higher the degree of managerial digitalization, internationalization and strategic innovation the higher the business success of German small or medium-sized enterprises in the financial service sector.

After the formulation of the main research question and the basic hypothesis, the subject and object of this promotional thesis can be defined and the research methods used can be presented.

Research Object

Business success research in the financial service industry.

Research Subject

Impact of factors on the business success of small and medium-sized enterprises in the financial service sector.

Research Methods

Theoretical studies of previous research are conducted and scientific publications are analyzed regarding the subject and the object of the research. Parameters are defined that should describe a small and medium-sized FinTech, so that a classification is possible as well as business success research thereof. Thus, the theoretical research has focused on internationalization theories and innovation as well as digitalization strategies as possible impact and success factors. After the literature review, secondary data are analyzed in respect of the digital tools used for administrative processes within German small and medium-sized companies and the derivation which of them had a positive impact on business success. With the findings of the secondary data analysis and the theoretically declined framework of the literature research, experts were asked to give estimations about the potential of the determined impact factors as success factors and their future relevance for the business success of FinTech enterprises. At least 20 experts in the fields of the financial sector, the digitalization sector, insiders from the small and medium-sized enterprises area and academic professionals were contacted and asked to rate the results and gave a personal estimation of the outcome. Primary research has been conducted by using a quantitative method incorporating exogenous variables regarding the subject and endogenous variables regarding the object of the study. Empirical data have been collected through a survey. Potential survey participants were identified by using the current list of all German FinTechs and then employees of the companies were identified by searching for them in different social media networks like XING, LinkedIn and various Internet forums and blogs as well as at attended events within the sector like the so-called “FinTech Forum” in Frankfurt in November 2018 or the “Smarter Mittelstand” network event in Friedrichshafen in December 2018. The participants could fill in the survey directly on their laptop when asking them in person at the events or via an e-mail link in a personal e-mail to them. With this procedure at least one person per German FinTech was reached and a full census was achieved.

In summary, there were 289 responsible persons. The participants could answer the questions during the period from October to December 2018. Sixty questionnaires were answered, which corresponds to a response rate of 20.7%, which can be seen as a meaningful result.[11] Analyses were performed using SPSS software for statistical data processing. Descriptive statistics were used in order to characterize the sample. The null hypothesis was tested with the Mann–Whitney U test. The outcome of the statistical tests enables an assessment, first of all, of whether the three impact factors are success factors, and second, verification of whether it is true that the higher the degree of managerial digitalization, strategic innovation and internationalization the greater the impact on the business success of small and medium-sized German FinTechs. Finally, findings from the theoretical part, the secondary data research and from both empirical researches were triangulated in order to formulate holistic conclusions and suggestions, thereby answering the underlying research question.

Structure of the Promotional Work

The thesis is separated into three main chapters:

The first chapter reviews the pertinent theoretical foundations and developments of the relevant research field in success factor research. The necessary definitions of the parental discipline the "success factor research" were found and analyzed to current theories linking business success with strategic innovation, managerial digitalization and internationalization. Hereafter the tertiary sector of the economy, the service sector, is presented. In this industrial sector the FinTech enterprises are active. And consequently, the theories in this field are investigated. Then approaches to international trading and the internationalization of businesses are described. Afterwards, innovation theories in regard to the service industry are analyzed and conclusions are drawn on the importance of managerial digitalization, and their different degrees and tools within the different administrative processes.

The second chapter places the context in reality and actuality and reflects previous experience in the analyzed fields. It begins with an explanation of the relevance of small and medium-sized businesses for the German economy as well as the importance of internationalization, digitalization and innovation among small and medium-sized enterprises in order to achieve business success in

[11] Universität Köln. "Glossar zur Datenerhebung und statistischen Analyse." 2001. http://eswf.uni-koeln.de/glossar/glossar.html, accessed August 2018.

comparison to large-scale enterprises. An intersection of relevant models of business success factors is found. The advantages and disadvantages of small and medium-sized enterprises in relation to large-scale enterprises are laid out as well as a demarcation of the terms “small and medium-sized enterprises” and “FinTech.” This is followed by a determination of the parameters for analyzing the degree of internationalization and strategic innovation. Afterwards, indictors of the degree of managerial digitalization in enterprises are outlined. Then the importance of managerial digitalization, strategic innovation and internationalization of businesses is discussed. A secondary data analysis about the diversity and frequency of the digitalization tools used among German small and medium-sized enterprises is conducted and the extent of their impact on business success is analyzed. With this, the reasons for the selection of the independent variables are set out and the assumed cause and effect relations between the independent and the dependent variables are presented.

The third chapter presents results from the first and second step of the primary research. The underlying research model, the “Double I-D Model,” is presented in the form of a path diagram and its independent and dependent variables are clearly identified and operationalized. Furthermore, the research strategy is presented and the research instruments for the quantitative methods are explained. Additionally, the data collection and analyses are described and the research participants and the sample are introduced. The results from the qualitative and quantitative research are presented, including the outcomes from the statistical analyses relating to the verification of the hypotheses which is formulated to find out whether it is true that the higher the degree of managerial digitalization of internal administrative processes the higher the degree of internationalization; and the higher the degree of strategic innovation the higher the business success of German small and medium-sized enterprises in the financial service sector. The chapter concludes with a discussion and interpretation of the results and with this provides a basis for conclusions and suggestions.

Novelty of the Dissertation

1. Development of a conceptual model for the interrelation between different impact factors on business success for small and medium-sized enterprises from the financial service sector in Germany.
2. Intersection of different scientifically recognized success factor models such as a resource-based model and “DIPLOMA” model and creation of “Double I-D” conceptual model based

on main chosen components: internationalization, strategic innovation and managerial digitalization.

3. Creation of the cause and effect relations model of the impact factors with the help of internationalization, innovation and digitalization as key indicator variables for business success in small and medium sized German enterprises in the financial service sector.
4. Analyses of the influence of different ways of internationalizing a business on the business success of a small and medium-sized company from the financial service sector in Germany.
5. Investigating accelerating factors of managerial digitalization tools in regard to the business success of small and medium-sized enterprises in the financial service sector in Germany.
6. Categorization of degrees of innovation to elaborate the influence of innovative services within the service range of small and medium-sized enterprises in the financial service sector in Germany on their business success.

Limitations

1. There are many different approaches to measuring the performance of financial institutions, but with the focus of FinTech enterprises that make up a special group within the financial sector key performance indicators must be chosen that best fit those start-up new business models. So, the choice to measure the success through key performance indicators and the selection of the success factors thereof are limitations due to the fact that there exist many more techniques for measuring the success of businesses.
2. Out of the numerous possible internationalization theories and market entry strategies that could be used as a foundation for parts of this research, only selected theories and strategies are reviewed and further discussed and derivate to the market entry modes as the scope of the study is limited in respect of resources and time.
3. The same is valid for the selection of digitalization tools and key performance indicators to measure the degree of strategic innovation. Only selected digitalization tools that were identified through the secondary data analysis to measure the degree of managerial digitalization of a company are taken into consideration for the research investigation and the verification of the hypothesis. Additionally, only selected key performance indicators to measure the degree of strategic innovation are chosen.
4. In regard to the willingness of the survey participants to offer facts and figures related to their company only a few key performance indicators were asked for to measure the business success of the enterprise.

5. The research is related to small and medium-sized enterprises from the financial service sector. While care was taken to develop a measuring instrument that can be applied to other enterprises of other sizes and from other sectors, the results may represent industry-specific factors that are not representative of all enterprises of all sizes and from all sectors.
6. In addition, the geographical dimension of the empirical study can be seen as a limitation of the research project. The empirical study was conducted within Germany. The investigations and results of the empirical research project are valid for Germany only. Results may differ significantly when investigating in other countries. This can be seen as a limitation of the quantitative research study and the research project.
7. Finally, primary research has been conducted using a survey. The survey was distributed to 289 FinTech companies who were invited to fill it in. Sixty cases were used for statistical analyses, constituting a response rate of 20%. The achieved sample size can be considered substantial and allowed data processing. Nevertheless, evaluating among the FinTechs and the experts generates subjective results because the author asks questions in the questionnaire and interviews requiring participants' own estimations and opinions.

Approbation of Research Results in Publications and Scientific Conferences

Publications:

1. Neuert, Josef; Teltz, A. (2019): "International Business Success of Small and Medium Sized FinTechs in the Context of Industry 4.0 and Digitalization - A Theoretical Model and Expertise Based Evidence", in IABPAD Journal, ISSN, EBSCO, 2019.
2. Teltz, A. (2019): "The Impact of Digitalization on the Success of Business Internationalization - Relating to German Small and Medium Sized FinTechs", in the Proceedings of the 11th International Scientific Conference "New Challenges in Economic and Business Development, 2019, University of Latvia, Riga, Latvia, pp. 841 - 850, http://www.scieconf.com/archive/.
3. Teltz, A. (2018): "Risk-Willingness and Risk-Avoidance against the Backdrop of Decision-Making", in the Proceedings of the 9th Comparative European Research International Scientific Conference, 2018, London, Great Britain, pp. 28-32, http://www.cer-sciemcee.com/. 978-0-9935191-7-8
4. Teltz, A. (2017): "The Impact of Digitalization on the Success of Internationalization referred to Small and Medium Sized Enterprises", in the Proceedings of the International Masaryk

Conference, 2017, Hradec Krälovo, Czech Republic, pp. 62-68, https://www.law.muni.cz/content/en/proceedings/.

5. Teltz, A. (2017): "Market Entry Strategies for Small and Medium Sized Enterprises in Foreign Markets Based on a literature Research", in the Proceedings of the 8th Biannual Comparative European Research Conference, 2017, London, Great Britain, pp. 66–69, http://www.cer-sciemcee.com/, ISBN 978-0-9935191-6-1
6. Teltz, A. (2017): "Market Entry Strategies for Small and Medium Sized Enterprises in Foreign Markets. In: Proceedings of Annual Berlin Business Research Conference, World Business Institute, Melbourne, Australia, Berlin, Germany, https://wbiworldconpro.com/, ISBN 978-1-925488-45-6.

List of International Conferences:

1. Neuert, Josef; Teltz, A. (2019): "International Business Success of Small and Medium Sized FinTechs in the Context of Industry 4.0 and Digitalization - A Theoretical Model and Expertise Based Evidence", July 22nd – 25th 2019, Athens, Greece.
2. Teltz, A. (2019): "The Impact of Digitalization on the Success of Business Internationalization - Relating to German Small and Medium Sized FinTechs", 11th international scientific conference "New Challenges in Economic and Business Development – 2019: Incentives for Sustainable Economic Growth", May 16th - 18th, 2019, Riga, Latvia.
3. Teltz, A. (2018): "Risk-Willingness and Risk-Avoidance against the Backdrop of Decision-Making", Comparative European Research 9th International Scientific Conference, Mar 26th – Mar 30th, 2018, London, Great Britain.
4. Teltz, A. (2018): "The Impact of Digitalization on the Success of Internationalization referred to Small and Medium Sized Enterprises", 76th Annual Scientific Conference of University of Latvia, Jan 25th, 2017, Riga, Latvia.
5. Teltz, A. (2017): "The Impact of Digitalization on the Success of Internationalization referred to Small and Medium Sized Enterprises ", International Masaryk Conference for Ph.D. Students and Young Researchers, Dec 18th – Dec 20th, 2017, Hradec Krälovo, Czech Republic.
6. Teltz, A. (2017): "Market Entry Strategies for Small and Medium Sized Enterprises in Foreign Markets Based on a literature Research", 8th Biannual Comparative European

Research Conference, Oct 30th – Oct 31th, 2017, London, Great Britain. ISBN 978-0-9935191-6-1

7. Teltz, A. (2017): "Market Entry Strategies for Small and Medium Sized Enterprises in Foreign Markets", Annual Berlin Business Research Conference, Sep 15th – Sep 16th, 2017, Berlin, Germany.
8. Teltz, A. (2017): "Market Entry Strategies for Small and Medium Sized Enterprises in Foreign Markets Based on Literature Research", 75th Annual Scientific Conference of University of Latvia, Jan 26th, 2017, Riga, Latvia.

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1. THEORETICAL CONCEPT OF SUCCESS FACTOR RESEARCH IN THE FIELD OF THE FINANCIAL SERVICE INDUSTRY

The development of a research model to investigate the impact of different factors on the business success of small and medium-sized enterprises in the financial service sector requires a detailed analysis of the existing literature in the field of the financial service sector with regard to the framework of managerial success factor research. For this, it is necessary to develop a comprehensive understanding regarding different definitions and approaches. In the first part, the business success factor research, its definition and evaluation are the main foci (1.1). In what follows, the digital financial service within the tertiary sector of the economy is reviewed (1.2). The three parts thereafter presents the impact factors: internationalization (1.3), strategic innovation (1.4) and managerial digitalization (1.5). Finally, a preliminary research question is developed (1.6).

1.1 Business Success Research, Definition and Evaluation

Success factor research is the parental academic discipline in this dissertation. For further comprehension, first of all a definition of "success factors," "success factor research" and "business success" must be found. In the literature, several definitions exist for these terms and it is difficult to find one for each that is valid for every business case.[12] Representing one of the most frequently cited definitions, Rockart defines success factor research as "the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization." He stresses that these particular areas of activity should be constantly and carefully managed by a company. [13] Ellegard and Grunert define success factor research as "a qualification or resource that a company can invest in, which in turn accounts for a significant part of the observable differences in perceived value and relative costs in the companies' relevant markets."[14] To define business success itself it is important to know the focus on which part of a company's goals should be analyzed. For example, if the goal of a company is not only of a financial nature, such as to gain as much profit as possible and to satisfy stakeholders, but to employ disabled people

[12] Mury, L. "Brazilian SMEs of the Industrial Health Complex: Export Performance from the Resource-Base-View." Business and Management Studies 2016, no. 2 (4): 21–30.
[13] Rockart, J. F. "Chief Executives Define Their Own Data Needs." Harvard Business Review, no. 57 (1979): 81–93.
[14] Ellegard, C., Grunert, K. "The Concept of Key Success Factors: Theory and Method." Perspectives on Marketing Management (1993): 245–274.

or achieve non-profit goals then the focus of the success factor differs.[15] For this promotional thesis financial success is focused within the definition of business success. Often business success in general is defined as: "1. A favorable result that one has tried or hoped for. 2. The attainment of wealth, fame, etc. 3. A successful person or thing."[16] The business success of a financial perspective is defined in the literature as "the repeated, periodic achievement of some levels of operational goal and sometimes success is defined in terms of making progress toward strategic goals."[17] Against this background the author of this promotional thesis has defined financial business success for the further context as follows:

Financial business success is the achievement of a constant, increasing positive business result, measured by key performance indicators like return on sales and sales growth.[18]

According to Peng, success factor research has three main perspectives, which all concentrate on so-called "key performance indicators," for examples parameters to measure business success, namely the "industry-based view," the "institution-based view" and the "resource-based view."[19] The first approach, the industry-based view, has emerged from the economy segment called "industrial organization." Industrial organization is concerned with the way in which productivity activities are coordinated with the demand for goods and services through an organization mechanism, such as the free market, and questions how its mechanism variations and imperfections can affect the economy's demands. [20] One of the main contributions of the industry-based view, according to Peng, is the so-called "Structure-Conduct-Performance Model," which states that the structure of the market of an industry influences the company's economic conduct or strategy, which in turn affects its performance. [21] The purpose of the Structure-Conduct-Performance Model is to study impact factors that affect economic performance, allowing the development of theories

[15] Collins-Dodd, C., Gordon, I., Smart, C. "Success Without Upward Mobility: Evidence from Small Accounting Practices." Journal of Small Business and Entrepreneurship 18, no. 3 (2005): 327–342.
[16] Collins-Dodd, C., Gordon, I., Smart, C. "Success Without Upward Mobility: Evidence from Small Accounting Practices." Journal of Small Business and Entrepreneurship 18, no. 3 (2005): 327–342.
[17] Nash, L., Stevenson, H. "Success that Lasts." Harvard Business Review 82, no. 2 (2004): 102–109.
[18] Author's definition of the term "Business Success."
[19] Lu, Y., Tsang, E. W. K., Peng, M. W. "Knowledge management and innovation strategy in the Asia Pacific: Toward an institution-based view." Asia Pacific Journal of Management 25, no. 3 (2008): 361–374.
[20] Mury, L. "Brazilian SMEs of the Industrial Health Complex: Export Performance from the Resource-Base-View." Business and Management Studies 2016, no. 2 (4): 21–30.
[21] Lu, Y., Tsang, E. W. K., Peng, M. W. "Knowledge management and innovation strategy in the Asia Pacific: Toward an institution-based view." Asia Pacific Journal of Management 25, no. 3 (2008): 361–374.

to describe the connections between those indicators and the industry's performance. [22] The second approach, the "institution-based view," questions the reasons why subsidiaries of a multinational or even similar companies located in different countries or regions have different strategies for business success. According to this view, it is not rationality but instincts and habits that drive economic behavior.[23] The third approach is often used to find out which factors influence a company's business success most, the so-called "resource-based view of the firm."[24] The main awareness interest of this theory is to analyze the reason why a corporation is successful and what measures should be undertaken to achieve this success.[25] Pfeffer and Salancik assumed that the participants on the market differ in their competitive advantages.[26] At the end of the 1970s different scientists developed this resource-based view to explain competitive advantages which has the resource itself in the focus. Some aspects of theories are thought of long before they are formally adopted and brought together into the strict framework of an academic theory. While Wernerfelt named this influential body of research within the field of strategic management in his article "A Resource-Based View of the Firm" (1984), the origins of the resource-based view can be traced back to earlier researches. Retrospectively, elements can be found in works by Coase (1937), Penrose (1955) and Williamson (1975).[27] The described resources aspects within the resource-based view were originally developed by Barney (1991) in his work "Firm Resources and Sustained Competitive Advantage," where the author identified the four above-mentioned attributes that a firm's resources must possess in order to become a source of sustained competitive advantage, as mentioned above.[28] These attributes are the so-called VRIN attributes (the characters stand for valuable, rare, imperfectly imitable and non-substitutable). Resources are typically defined as either assets or capabilities. Assets, which may be tangible or intangible, are owned and controlled by the firm.[29] The literature argues that firm resources can be important success factors of

[22] Lu, Y., Tsang, E. W. K., Peng, M. W. "Knowledge management and innovation strategy in the Asia Pacific: Toward an institution-based view." Asia Pacific Journal of Management 25, no. 3 (2008): 361–374.
[23] Rumelt, R. "Towards a Strategic Theory of the Firm." Competitive Strategic Management (1984): 556–570.
[24] Galbreath, J. "Which resources matter the most to firm success?: An exploratory study of resource-based theory." Technovation 25, no. 9 (2005): 979–987.
[25] Wernerfelt, B. "A resource-based view of the firm." Strategic Management Journal 5, no. 2 (1984): 171–180.
[26] Pfeffer, J. "Building Organization Theory from First Principles: The Self-Enhancement Motive and Understanding Power and Influence." Organization Science 16, no. 4 (2005): 372–388.
[27] Coase, R. "The Nature of the Firm." Economica 4, no. 16 (1937): 386–405; Penrose, E. "Limits to the Growth and Size of Firms." The American Economic Review 45, no. 2 (1955): 531–543; Williamson, O. E. "Markets and hierarchies: Analysis and anfitrust implications." New York: Free Press (1975): 286.
[28] Barney, J. "Firm Resources and Sustained Competitive Advantage." Journal of Management 17, no. 1 (1991): 99–120.
[29] Collis, D. J. "Research note: how valuable are organizational capabilities?" Strategic Management Journal 15 (1994): 143–152.

sustainable competitive advantage and superior firm performance only if they possess certain special characteristics.[30] The resource-based view's main prescription holds that only resources that are valuable, rare, inimitable and non-substitutable (VRIN) are capable of generating and sustaining competitive advantage which affords the accrual of superior performance and with this can be defined as key performance indicators in this promotional thesis. Such resources are considered to be strategic, intangible resources.[31] From a research perspective, although empirical studies are growing rapidly, most studies concentrate on isolating only a few resources, namely intangible resources, within single industry contexts to examine resource effects on firm success. Galbreath found in his studies that those resources that are intangible in nature do, in general, impact more significantly on firm success than those resources that are tangible in nature. [32]

After defining what business success factor research and business success itself mean, it must be analyzed how to measure whether a business is successful. For this question the literature held many different approaches in hand. Key performance indicators are a type of performance measurement that can be used to identify and analyze whether a business is successful.[33] Those indicators evaluate the success of an organization in which it engages. Depending on the sector, different key performance indicators are typically used. Due to the fact that the research subjects of this promotional thesis are FinTech enterprises, the focus on the existing business factor research in this area is much less currently. But in the research field of financial services different theories exist. A great number of studies have analyzed the profit performance of banks. Most of them focus on the profit efficiency of banks,[34] profit productivity[35] and the change in profitability.[36] These studies not only analyze the profit performance, but also underline its drivers. Fu et al. investigate

[30] Barney, J. "Firm Resources and Sustained Competitive Advantage." Journal of Management 17, no. 1 (1991): 99–120.
[31] Amit, R., Schoemaker, P. "Strategic assets and organizational rents." Strategic Management Journal 4 (1993): 33–47.
[32] Galbreath, J. "Which resources matter the most to firm success?: An exploratory study of resource-based theory." Technovation 25, no. 9 (2005): 979–987.
[33] Fitz-Gibbon, Carol T., ed. Performance indicators. Clevedon u.a., 1990; Färe, R., Grosskopf, S., Weber *, W. L. "The effect of risk-based capital requirements on profit efficiency in banking." Applied Economics 36, no. 15 (2004): 1731–1743.
[34] Färe, R., Grosskopf, S., Weber *, W. L. "The effect of risk-based capital requirements on profit efficiency in banking." Applied Economics 36, no. 15 (2004): 1731–1743; Maudos, J., Pastor, J. M. "Cost and profit efficiency in the Spanish banking sector (1985–1996): A non-parametric approach." Applied Financial Economics 13, no. 1 (2003): 1–12.
[35] Chen, X., Fu, T.-T., Juo, J.-C., Yu, M.-M. "A comparative analysis of profit inefficiency and productivity convergence between Taiwanese and Chinese banks." BRQ Business Research Quarterly (2019).
[36] Grifell-Tatjé, E., Lovell, C. A. K. "Profits and Productivity." Management science 45, no. 9 (1999): 1177–1193.

the profit and its sources by decomposing profit efficiency into technical efficiency and allocative efficiency.[37] Juo et al. develop a profit productivity approach and decompose it into four components, namely the changes in technical efficiency, allocative efficiency, technology and price effect.[38] Furthermore, Grifell-Tatjé and Lovell provide a new approach aimed at building a linkage between firms' profits and their productivity. Specifically, their work decomposes the profit change into price effect and quantity effect, with the latter including a technical effect, a technical efficiency effect, a product mix, a resource mix and a scale effect. This decomposition of profit change model introduced by Grifell-Tatjé and Lovell is able to identify the determinants of their profits and improve future performance, thereby leading to future profit gains. It can also better explain the sources of the profit change; it can show regulators or managers how to make a policy or strategy to maintain the banking industry's sustainable growth.[39] One often focused upon key performance indicator is ownership as a critical endogenous factor that affects bank performance. Many studies have come to a relatively unanimous conclusion that different ownership systems have significantly different effects on bank performance. Specifically, state-owned banks have the worst performance and operating management efficiency among various ownership banks.[40] As regards the research subject, FinTech enterprises, ownership and especially state ownership could play an important role. On the one hand, small and medium-sized enterprises are often managed by family members or the founders of the company themselves own and run the business, and on the other hand, FinTech enterprises can be state regulated if they require the permission of banks. Another often focused upon key performance indicator is cost. In the cost minimization process, a firm will seek to minimize the total input cost for a given level of output, and in revenue maximization it will look to maximize the output, and thereby the total revenue, for a given level of input. In profit maximization, the objective of the firm would be to select such an input–output bundle that generates maximum revenue at minimum cost, for given input and output prices.[41] Thus, maximizing revenue is as much a necessary condition as cost minimization for maximizing profit. Hence for a profit-making firm, profit efficiency is a more important source of information

[37] Fu, T., Juo, J. J., Chiang, H. C. "Risk-based decompositions of the meta profit efficiency of Taiwanese and Chinese banks." Omega 62 (2016): 34–46.
[38] Juo, J.-C., Fu, T.-T., Yu, M.-M., Lin, Y.-H. "Profit-oriented productivity change." Omega 57 (2015): 176–187.
[39] Grifell-Tatjé, E., Lovell, C. A. K. "Profits and Productivity." Management science 45, no. 9 (1999): 1177–1193.
[40] Chen, X., Fu, T.-T., Juo, J.-C., Yu, M.-M. "A comparative analysis of profit inefficiency and productivity convergence between Taiwanese and Chinese banks." BRQ Business Research Quarterly (2019).
[41] Jayaraman, A. R., Srinivasan, M. R. "Analyzing profit efficiency of banks in India with undesirable output – Nerlovian profit indicator approach." IIMB Management Review 26, no. 4 (2014): 222–233.

than cost-efficiency, which provides partial information.[42] In the literature, there are numerous studies on measuring the efficiency of financial institutions. Ray and Das studied the profit efficiency of banks using earning assets and excluding the nonperforming element. Nonperforming assets are the by-products of loans and advances and have a direct impact on the performance of banks.[43] Das and Juyaraman came to the conclusion in their studies that to measure assets the total of the balance sheet can be used. For revenue the return of sales can be used.[44] Another approach in the field of business success factor research is the corporate diplomacy approach formulated by Henisz.[45] Henisz provides examples of success and failure that highlight six elements of best practice: due diligence, integration, personal, learning, openness and mindset (abbreviated "DIPLOM"). Two of these elements (due diligence and integration) are data driven and analytic and are appealing to business in the financial service sector. The remaining four are behavioral, with two focused on implementation within the company (learning and mindset) and two focused on implementation with external stakeholders (personal and openness). Boratynska adapts in her study the DIPLOM concept to FinTechs by expanding it into a concept called "digital, innovative, pricing, learning, openness, modern and agile" (abbreviated DIPLOMA). The reason that this adaptation of DIPLOM into DIPLOMA is, regarding to Boratynska, being proposed to introduce the challenges of moving forward on all six elements simultaneously and then evaluating whether FinTech companies have succeeded in implementing it.[46] The study stresses the innovativeness of digitalization in financial services and assesses the impact of digital transformations on value creation in global financial services in the FinTech case.

The two main conclusions of this literature review can be marked out. First, business success can be defined by the author of this promotional thesis for the following work as follows: Financial business success is the achievement of a constant, increasing positive business result, measured by

[42] Ray, S., Das, A. "Distribution of cost and profit efficiency: evidence from Indian banking." European Journal of Operational Research 201, no. 1 (2010): 297–307.
[43] Jayaraman, A. R., Srinivasan, M. R. "Analyzing profit efficiency of banks in India with undesirable output – Nerlovian profit indicator approach." IIMB Management Review 26, no. 4 (2014): 222–233.
[44] Das, A., Nag, A., Ray, S. "Liberalization, ownership and efficiency in Indian banking: a non-parametric analysis." Economic and Political Weekly 40, no. 12 (2005): 1190–1197; Jayaraman, A. R., Srinivasan, M. R. "Analyzing profit efficiency of banks in India with undesirable output – Nerlovian profit indicator approach." IIMB Management Review 26, no. 4 (2014): 222–233.
[45] Henisz, W. J. Corporate Diplomacy: Building Reputations and Relationships with External Stakeholders. 1st ed. Saltaire: Taylor and Francis, 2016. https://ebookcentral.proquest.com/lib/gbv/detail.action?docID=5042637.
[46] Boratyńska, K. "Impact of Digital Transformation on Value Creation in Fintech Services: An Innovative Approach." Journal of Promotion Management 25, no. 5 (2019): 631–639.

key performance indicators like return on sales and sales growth.[47] Second, it can be summarized that using key performance indicators to measure business success in the financial service sector is a meaningful method for carrying out evaluation. FinTechs' business success should be credited for their performance by analyzing assets, profit and revenue. To indicate this information, the key performance indicator "EBIT," which means earnings before interest and tax, can be used. But information thereof is difficult to obtain from the companies. For this reason, other universal valid and throughout the literature and economics science acceptable key performance indicators for company success can be used, such as the total of the balance sheet or the return on sales. Other variables like turnover and sales growth underline the measurements through return on sales and total of the balance sheet and therefore are also asked about in the empirical part. With these two conclusions and the findings about business factor research in the literature review before, it can be concluded that there are existing factors that influence business results, so-called "impact factors":

Impact factors are determinants that influence the results of businesses in different dimensions.[48]

The definition of the term "impact factor" does not say anything about the degree to which such factors had an impact on the results of a business and whether it is in a positive or negative direction. Once it has been assessed that an impact factor has had a positive influence on the business success of a company it is defined as a success factor. An impact factor can be categorized as a success factor when it has a positive impact on results. So not all impact factors are success factors. Inversely, a success factor is always an impact factor.

Success factors are impact factors with a positive dimension.[49]

So, one major conclusion that can be drawn from the findings of this part of the theoretical conception is that business success can be measured by key performance indicators. Business success is influenced by impact factors and positively influenced by impact factors with the categorization of a success factor.

[47] Author's definition of "financial business success."
[48] Author's definition of "impact factors."
[49] Author's definition of "success factor."

1.2 The Service Industry in the Tertiary Sector Model and the FinTech Enterprises within

The so-called "Three-Sector Model" in economics divides the economy into three sectors of activity: extraction of raw materials (primary), manufacturing (secondary) and services (tertiary). The Three-Sector Model was developed by Allan Fisher, Colin Clark and Jean Fourastié.[50] According to the model, the main focus of an economy's activity shifts from the primary, through the secondary and finally to the tertiary sector. Fourastié saw the process as essentially positive, and in "The Great Hope of the Twentieth Century" he wrote of the increase in quality of life, social security, blossoming of education and culture, higher level of qualifications, humanization of work and avoidance of unemployment.[51]

Service

The special nature of services can be encapsulated by the characteristics of the following aspects according to Argouslidis:[52]

1. Intangibility

At the very beginning of empirical research "services" were viewed as lacking physical attributes.[53] But the adequacy of intangibility to distinguish services from products has changed in the last few years, because the inability of customers to physically evaluate services before delivery is also present in some goods, and also the lack of perception of services prior to delivery has changed according Middleton, on the basis that repeated use of a service could nullify any notion of intangibility.[54] The most meaningful challenge to the notion of intangibility was the molecular model of Shostack, which indicated that there are no such things as pure products and services, but what really exists are tangible dominant and intangible dominant entities.[55] Beside the fact that products may contain a service element and the fact that services are often accompanied by tangible

[50] Clark, C. Conditions of Economic Progress, 1940; Fisher, A. "Production, primary, secondary and tertiary." Economic Record (1939): 24–38; Fourastié, J. Die große Hoffnung des 20. Jahrhunderts. Köln-Deutz: Köln-Deutz Verlag, 1954

[51] Fourastié, J. Die große Hoffnung des 20. Jahrhunderts. Köln-Deutz: Köln-Deutz Verlag, 1954.

[52] Argouslidis, P. C. The service elimination process: An empirical investigation into the british financial services sector, 2001.

[53] Clark, C. Conditions of Economic Progress, 1940; Fisher, A. "Production, primary, secondary and tertiary." Economic Record (1939): 24–38.

[54] Wyckham, R. G., Fitzroy, P. T., Mandry, G. D. "Marketing of Services: An Evaluation of the Theory." European Journal of Marketing 9, no. 1 (1975): 59–67; Browne, W. G., Kemp, P. S. "A Three Stage Product Review Process." Industrial Marketing Management 1976 (5): 333–342; Middleton, P. "Are Non-Banks Winning in Retail Financial Services?" International Journal of Bank Marketing 5, no. 1 (1987): 3–18.

[55] Shostack, L. G. "Breaking Free from Product Marketing." Journal of Marketing 41, no. 4 (1977): 73–80.

cues in order to be made less abstract to customers, services remain inherently intangible since they contain "heavy" and "uncontrollable" intangible factors.[56]

2. Inseparability

Although products are first produced, then purchased and ultimately consumed, services are first purchased, then produced and consumed simultaneously. Inseparability refers to the simultaneous production and consumption of services, which was bundled together by Eiglier and Langeard (1977) into the term "servuction." An important aspect of the inseparability of services is the interaction of the front-line staff of service companies with their customers.[57]

3. Heterogeneity

The personal interaction between service employees and customers creates the potential for high variability in the performance and ultimately in the quality of services, which is referred to as "heterogeneity."[58] The characteristic of heterogeneity is particularly applicable to labor-intensive services, which require the physical presence of customers at service encounters.[59]

4. Perishability

Another characteristic of services is that they cannot be saved or stored. This point has been referred to as "perishability."[60] This characteristic causes difficulty in the synchronization of supply and demand for services.[61] The adequacy of perishability to distinguish services from products is criticized on the basis that in the manufacturing sector the management of demand for some products is surrounded by difficulties.[62]

According to Meffert and Bruhn, the economic research field tries to demark the term "service

[56] Flipo, J. P. "On the Intangibility of Services." The Service Industries Journal 8, no. 3 (1988): 287–298.
[57] Eiglier, P., Langeard, E. "A new Approach to Service Marketing." Marketing Consumer Services, no. 1 (1977): 31–58.
[58] Eiglier, P., Langeard, E. "A new Approach to Service Marketing." Marketing Consumer Services, no. 1 (1977): 31–58; Shostack, L. G. "Breaking Free from Product Marketing." Journal of Marketing 41, no. 4 (1977): 73–80; Kieser, A. "Why Organization Theory Needs Historical Analyses: And How This Should Be Performed." Organization Science 5, no. 4 (1994): 608–620.
[59] Argouslidis, P. C. The service elimination process: An empirical investigation into the british financial services sector, 2001.
[60] Lovelock, C. H. "Technology: Servant or Master in the Delivery of Services." Advances in Services Marketing and Management 4 (1995): 63–90.
[61] Sasser, W. E. "Match Supply and Demand in Service Industries." Harvard Business Review, November-December (1976): 133–140; Thomas, D. R. E. "Strategy is Different in Service Businesses." Harvard Business Review, July-August (1978): 158–165.
[62] Argouslidis, P. C. The service elimination process: An empirical investigation into the british financial services sector, 2001.

industry" through constitutional criteria. Beside the immateriality, the integration of the external factor "customer" as well as the high degree of individualization is mentioned.[63] In contrast to Kotler, who described the service industry as "all business are local,"[64] Bruhn and Meffert concentrate on the internationalization of the service industry.[65] And it should be noted that, there are business models that were always internationalized, such as the consulting sector and also the financial service sector. To sum up the points that describe services, "intangibility" seems to be the most outstanding characteristic of the tertiary sector. After having found this definition, a deeper look inside the tertiary sector with a special focus on financial services should be taken.

Financial Service

The financial service industry encompasses services and financial products. This characterizes it as high and intensive use of knowledge and technology, which is why some authors, including Miles, refer to them as knowledge-intensive business sectors, sharing this classification with other specialized service sectors such as engineering, business consultancy, and research and development services.[66] The financial service industry faces a highly competitive environment, because the industry is characterized by high rates of technological change and innovation, and new value chain and business models. At the same time, the finance industry is extremely globalized and dynamic and is highly concentrated in specific areas.[67] According to the "Organisation for Economic Co-operation and Development" (abbreviated OECD), the financial service sector is characterized by continued high research and development expenditures and a large number of patents that reflect the key role of the financial sector in innovation activities.[68] Asmundson found a short and concise definition for the term "financial service" with the words: "Financial services are the economic services provided by the finance industry."[69] Meidan described the term "financial service" in greater depth as follows: "A service or package of services that is typically provided for any one customer by one financial organization (that is, the customer

[63] Benkenstein, M. "Internationales Dienstleistungsmarketing: Strategien – Instrumente – Methoden." Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung 68, no. 4: 475–477. https://datubazes.lanet.lv:5301/content/pdf/10.1007%2Fs41471-016-0023-8.pdf.
[64] Kotler, P. "A Generic Concept of Marketing." Journal of Marketing 36, no. 2 (2018): 46–54.
[65] Ostrum, A. M., Parasuraman, A., Bowen, D. E., Patricio, L., Voss. C.A. "Service Research Priorities in a Rapidly Changing Context." Journal of Service Research, no. 18 (2015): 127–159.
[66] Miles, I. "Patterns of innovation in service industries." IBM Systems Journal 47, no. 1 (2008): 115–128.
[67] García Manjón, J. V., Mompó, R., Redoli, J. "Accelerating Innovation in Small and Medium-Sized Enterprises in the ICT Services Sector." SAGE Open 6, no. 3 (2016): 215824401667019.
[68] OECD. Digital Economy Outlook 2015. Paris: OECD, 2015. http://gbv.eblib.com/patron/FullRecord.aspx?p=3564449.
[69] IMF's Strategy, Policy, and Review Department. "Financial Services: Getting the Goods." 2018. https://www.imf.org/external/pubs/ft/fandd/basics/finserv.htm, accessed December 2019.

does not normally purchase different parts of a package from different financial firms), and is aimed at a particular market."[70] But defining the term officially is surrounded by difficulties due to the complexity and diversity of the financial service sector.[71] The first so-called "Financial Services Act" from 1986 defined "financial services" in a rather narrow sense, since it was concerned only with investments.[72] In Part I, Chapter I, Numbers 1 and 2, investments are defined as follows: "[I]nvestment means any asset, right or interest…"[73] There are some further amendments to the above-mentioned characteristic of the service industry regarding finance and additionally two finance service special characteristics:

To the four previously described characteristics of services (intangibility, simultaneity, heterogeneity and perishability) the following could be added to characterize financial services:

1. Intangibility

The characteristic of intangibility is inherent to almost all financial services.[74] Even if a financial service is accompanied by small but important peripheral tangibles such as plastic cards or information bulletins, little, if any, meaningful help is offered to the total perception of customers of the financial service.[75]

2. Simultaneity

The simultaneity of production and consumption is applicable to many financial services (for example McKechnie 1992). A customer who pays the commission for a money transmission service consumes the service at the point of purchase.[76]

3. Heterogeneity

Despite the fact that the infusion of technology in the production and delivery of many financial

[70] Farquhar, J. D., Meidan, A. "Marketing of Financial Service." Journal of Economics and Behavioral Studies 8, no. 6 (2016): 216–226; Autio, E., Sapienza, H. J., & Almeida, J. G. "Effects of age at entry, knowledge intensity, and imitability on international growth." Academy of Management Journal 43, no. 5 (2000): 909–924.
[71] Gentle, C.J.S. "The Financial Services Industry: The restructuring of the U.K. financial services industry in the 1990s: a reversal of fortune?" Journal of Rural Studies 9, no. 3 (1993): 223–241.
[72] Cartwright, N. The dappled world: A study of the boundaries of science. Cambridge: Cambridge Univ. Press, 2010.
[73] Financial Services Act, 1986.
[74] Farquhar, J. D., Meidan, A. "Marketing of Financial Service." Journal of Economics and Behavioral Studies 8, no. 6 (2016): 216–226.
[75] McGoldrick, P. J., Greenland, S. J. "Competition Between Banks and Building Societies in the Retailing of Financial Services." British Journal of Management, no. 3 (1992): 169–192.
[76] McKechnie, S., Harrison, T. "Understanding Consumers and Markets." Marketing Financial Services (1995): 33–59.

services (such as ATMs, e-insurance and telephone banking) has decreased the potential for variability, the characteristic of heterogeneity remains central to their nature.[77]

4. Perishability

The characteristic of perishability and the resulting difficulty in demand management could be compared to financial services as well.[78] For example, the demand for mortgages depends upon the level of interest rates, while the demand for life insurance is influenced by the general economic activity, the fluctuations of which are often difficult to forecast, thereby making any excess capacity of mortgages and insurance perish.[79]

And to these four characteristics mentioned above the following two points can be added:

5. Fiduciary responsibility

Fiduciary responsibility of financial institutions for the services they provide to the customers. Financial institutions are responsible for the management of their customers' funds as well as for the nature and quality of the information that they provide them with. This is referred to as "fiduciary responsibility."[80]

6. Enduring two-way information

Enduring two-way information flows between the financial institutions and their customers. Rather than involving ad hoc transactions, many financial services involve a sequence of long-lasting two-way transactions between the financial institutions and their customers. These transactions involve the exchange of private and confidential customer-related information, which will be used as a gateway by financial institutions to further develop their relationships with existing customers as well as to attract new ones.[81]

Further refinements to the special characteristic of financial services were demarked by Argouslidis through the definition of six needs of customers (business customers and individuals) in defining

[77] McKechnie, S., Harrison, T. "Understanding Consumers and Markets." Marketing Financial Services (1995): 33–59.
[78] Lewis, M. K., Chiplin, B. "Characteristics of Markets for Personal Financial Services." Personal Financial Services (1986): 27–47.
[79] Gentle, C.J.S. "The Financial Services Industry: The restructuring of the U.K. financial services industry in the 1990s: a reversal of fortune?" Journal of Rural Studies 9, no. 3 (1993): 223–241.
[80] Cartwright, N. The dappled world: A study of the boundaries of science. Cambridge: Cambridge Univ. Press, 2010; McKechnie, S., Harrison, T. "Understanding Consumers and Markets." Marketing Financial Services (1995): 33–59.
[81] McKechnie, S., Harrison, T. "Understanding Consumers and Markets." Marketing Financial Services (1995): 33–59.

financial services:[82]

1. Need for money (loans)
2. Need to earn a return on money (savings and investment)
3. Need to secure and move money (security and money transmission)
4. Need to manage risk (insurance)
5. Need for advice and expertise
6. Need for housing (mortgages)

In order to provide solutions to the financial needs of customers the different types of financial institutions offer a wide range of financial services to retail customers and to corporate customers. With the above-mentioned definition and characteristics, an overview of what a financial service is, can be given and in what follows, small and medium-sized enterprises that are operating in this industrial sector are presented.

FinTech Industry

FinTech companies operate in the financial service sector alongside banks and offer their customers services in the area of financial products like online banking, credits and insurance. Arner and Barberis describe the development of "FinTech industries" further as an ongoing process in which finance and technology, which evolved together and led to numerous incremental and disruptive innovations such as Internet banking, mobile payments, crowdfunding, peer-to-peer lending, robotics-advisory and online identification, continue to develop.[83] Zavoloki states that the finance industry was strongly influenced by digitalization in the last decade, which is reflected in the emergence of FinTech as a combination of the terms "finance" and "information technology." FinTech industries represent a currently innovative and emerging field, which has attracted attention from the media as well as practitioners, investors and scientists.[84] Beside the term "FinTech," in this research area the term "digital financial services" comes up. Digital financial services are a wide range of innovative technologies aimed at delivering essential financial services to consumers. Such innovative tools range from simple mobile phones to other information and

[82] Argouslidis, P. C. The service elimination process: An empirical investigation into the british financial services sector, 2001; Farquhar, J. D., Meidan, A. "Marketing of Financial Service." Journal of Economics and Behavioral Studies 8, no. 6 (2016): 216–226.
[83] Bettinger, A. "FINTECH: A Series of 40 Time Shared Models Used at Manufacturers." Interfaces 2, no. 4 (1972): 62–63.
[84] Zavolokina, L., Dolata, M., Schwabe, G. "The FinTech phenomenon: Antecedents of financial innovation perceived by the popular press." Financial Innovation 2, no. 1 (2016): 175.

communications technology applications in the form of structured electronic payment platforms and mobile phone-enabled solutions. David-West defines digital financial services as the "leverage of information and communication technologies for cost-efficient delivery channels" including electronic payment systems and electronic banking products or services.[85] Business operations that comprise middle- and back-office client support, product servicing and risk management functions affect distribution, which includes online and physical channels, agents, financial advisors and other third parties. According to Lee and Shin, small and medium-sized enterprises from the financial service sector like FinTechs are assumed to reshape the financial industry by cutting costs, improving the quality of financial services, and creating a more diverse and stable financial landscape.[86] FinTech companies will accomplish this, according to a study on demand by Deloitte, by altering industry dynamics altogether, causing changes in the competitive structure and ecosystem of financial services.[87] In regard to an analysis of the consulting company PricewaterhouseCoopers' FinTech enterprises brings change to all types of banks, asset and wealth managers, fund and payment providers, brokers, exchanges and insurers.[88]

The main segments of the new business models among FinTech enterprises are generally regarded as the following:

1. Finance
2. Payments and settlement
3. Data analytics
4. Regulatory technology
5. Blockchain-related impact
6. Interaction across all of these segments.

These segments will be focused upon in the empirical part of this dissertation where the author gathers together data from all German small and medium-sized FinTech companies.

[85] David-West, O., Iheanachor, N., Kelikume, I. "A resource-based view of digital financial services (DFS): An exploratory study of Nigerian providers." Journal of Business Research 88 (2018): 513–526.
[86] Lee, I., Shin, Y. J. "Fintech: Ecosystem, business models, investment decisions, and challenges." Business Horizons 61, no. 1 (2018): 35–46.
[87] "Disaggregating Fintech: brighter shades of disruption." 2016. https://www2.deloitte.com/content/dam/Deloitte/us/Documents/financial-services/us-fsi-disaggregating-fintech-brighter-shades-of-disruption.pdf, accessed July 2019.
[88] PWC. "The Un(der)banked is FinTech's Largest Opportunity.: FinTech ReCap and Funding ReView." DeNovo, no. 2 (2016). https://www.strategyand.pwc.com/media/file/DeNovo-Quarterly-Q2-2016.pd.

The emerging technologies drove an exceptional enrichment of the financial service offering, which also brought a variety of challenges from the technical perspective such as security and privacy concerns. Gai et al. pointed out that crucial issues of FinTech companies can be categorized according to various perspectives. From a technical perspective, their issues can be classified into five major technical dimensions: security and privacy, data techniques, hardware and infrastructure, applications and management, and service models. [89] Today, the service industry in the financial sector is increasingly influenced by digitalization; an example, therefore, is the arising new business model of FinTech enterprises. FinTech enterprises thereby influence business economics across the borders of the service industry in the financial sector to all business sectors. FinTech and FinTech enterprises influence revenue, costs and margins of all market participants. The author of this promotional thesis sees with these findings that small and medium-sized enterprises from the financial sector, like FinTech enterprises, are a particular type of business ecosystem.

1.3 Impact Factors in the Service Sector Industry through International Trading and Market Entry

When it comes to the question of whether it would benefit the results of a company to act internationally or enter foreign markets, the existing literature held different theories developed over the last 250 years to find an answer. The aim of these theories is to explain the structure, behavior, efficiency and change of economic institutions.[90] In what follows, there is a rough overview of the most important international trade theories and market entry strategies in the field of international business and new institutional economics related to the focus of the dissertation: financial services. Consequently, the marked-out internationalization theories and strategies deal more with services than with goods. In the literature there are different ways to classify and group those theories. The author of this promotional thesis has decided to classify the theories as "international trade" and "market entry" but throughout the literature there are also different classifications, such as "new" and "classical" approaches or "descriptive" and "normative" ones.

[89] Gai, K., Qiu, M., Sun, X. "A survey on FinTech." Journal of Network and Computer Applications 103 (2018): 262–273.

[90] Kieser, A. "Why Organization Theory Needs Historical Analyses: And How This Should Be Performed." Organization Science 5, no. 4 (1994): 608–620.

The theories in the field of international business and foreign market entry try to connect economic theories with organizational theories. In what follows, the four theories will be explained in detail.

International Trade Theories in the Service Sector

Smith first alluded to the concept of absolute advantage as the basis for international trade in his famous work "The Wealth of Nations" from 1776.[91] For this promotional thesis the approach of Smith and further Ricardo are transferred to the tertiary sector of economy. In Smith's "Theory of Comparative Cost Advantages" he explained, that economic success could be achieved by a country (or as adapted to this promotional thesis: a company) if the country (or company) export those products (or as adapted to this promotional thesis: offer services) in which it had an absolute advantage and is specialized in. An absolute advantage existed for example when the country (or company) could produce a good (or offer service) with less costs per unit than its trading partner. The country (or company) should import product (or buy services) in which it had an absolute disadvantage.[92] Ricardo developed that approach and argued that a country (or company) does not need to have an absolute advantage in the production (or service offer) of any commodity for international trade between it and another country (or company) to have an advantage. Absolute advantage meant greater efficiency in production (or transferred to services: know-how in the service offer). Two countries (or companies) could both benefit from trade if each had a relative advantage in production (or service offer). Relative advantage meant that the ratio of the work to produce or offer the product or service embodied in the two products (or services) differed between two countries (or companies), such that each country (or company) would have at least one commodity where the relative amount of work embodied to produce or offer would be less than that of the other country (or company).[93] The so-called "Ricardian model" resulting from this is a general mathematical model of international trade. Another theory in this research area is "transaction cost theory," which says that every transaction is connected with costs; these costs describe the price of participating in a market. With this theory, enterprises can determine whether a foreign market entry will be efficient for their business.[94] Transaction cost theory, also known as "transaction cost economics," is an organizational theory that explains why some transactions for

[91] Dixit, A. K., Norman, V. D. "Theory of international trade: A dual, general equilibrium approach." Theoretical Economics Letters 7, no. 2 (1980).
[92] Ingham, G. "Some recent changes in the relationship between economics and sociology." Cambridge Journal of Economics 20, no. 2 (1996): 243–275
[93] Hunt, E. K. "Environmental pollution, externalities, and conventional economic wisdom." Environmental Affairs, no. 1 (1971): 266
[94] Commons, J. R. "Institutional Economics." The American Economic Review 21, no. 4 (1931): 648–657.

some organizational methods of exchange are more efficient than others.[95] It says that transactions are made within an institution if the transaction costs on the free market are higher than the internal costs. Therefore, the conditions of an efficient international transaction compared to a transaction that is outsourced to an external partner were analyzed.[96] The theory provides an answer to the question of under which terms and which business models, and with this which market entry mode, will provide the most efficient solution when it comes to the question of going international.[97] In regard to transaction cost theory, the type of market entry is the coordination form of the transaction at an explicit time. Williamson describes the coordination form as "run[ning] from discrete market exchange at the one extreme to centralized hierarchical organization at the other, with myriad mixed or intermediate modes filling the range in between."[98] A transaction is defined by Commons as "not the exchange of commodities, but the alienation and acquisition, between individuals, of the rights of property and liberty created by society, which must therefore be negotiated between the parties concerned before labor can produce, or consumers can consume, or commodities be physically exchanged."

Market Entry Theories in the Service Sector

One market entry theory in the field of the service sector is "internalization theory." This theory was developed by Rugman and refined by Buckley and Casson, and can be seen as a further development of transaction cost theory.[99] Internalization theory is used to analyze international business behavior and with this how to choose the best way to enter foreign markets. This centers on the international transfer of knowledge in multinational enterprises and the role of firm- and country-specific advantages in determining flows and outcomes of foreign direct investment.[100] Internalization can refer to any process that is handled within a particular entity instead of directing it to an outside source for completion. This means, for example, that internalization can apply to a multinational corporation shifting assets between subsidiaries across borders. Or, as adapted to the

[95] Kieser, A. "Why Organization Theory Needs Historical Analyses: And How This Should Be Performed." Organization Science 5, no. 4 (1994): 608–620.
[96] Kieser, A. "Why Organization Theory Needs Historical Analyses: And How This Should Be Performed." Organization Science 5, no. 4 (1994): 608–620, p. 225.
[97] Weiss, C. A. Die Wahl internationaler Markteintrittsstrategien: Eine transaktionskostenorientierte Analyse. Wiesbaden: Gabler Verlag, 1996. http://dx.doi.org/10.1007/978-3-322-86637-0.
[98] Williamson, O. E. The economic institutions of capitalism: Firms, markets, relational contracting. 1st ed. New York, NY: Free Press, 1987, p. 16.
[99] Bain, J. S. "Barriers to new competition." The American Economic Review 47, no. 3 (1957): 363–371; Commons, J. R. "Institutional Economics." American Economic Review, no. 21 (1931): 648–657; Commons, J. R. "Institutional Economics." The American Economic Review 21, no. 4 (1931): 648–657.
[100] Rugman, A. M., Collinson, S. "The Regional Nature of Japanese Multinational Business." Journal of International Business Studies 39, no. 2 (2008): 215–230.

service sector industry in this promotional thesis: offering parts of a service in countries where the know-how is available or the labor is cheaper. According to Buckley and Casson, internalization theory focuses on imperfections in intermediate product markets. Intermediate products or services mean on the one hand the knowledge flows which are linking research and development to production or service offer and on the other hand components flows and raw materials from an upstream production facility to a downstream one (and could be compared to service offer as well). An assumption in this approach is, that proprietary knowledge is easier to appropriate when the intellectual property rights like patents and trademarks are weak. When internalization leads to foreign investment the business accept risk due to unfamiliarity with the foreign environment. These are known as "costs of doing business abroad."[101] Another theory among the market entry theories is the "resource-based view." This approach is a basis for the competitive advantage of a firm, which lies primarily in the application of a bundle of valuable tangible or intangible resources at the firm's disposal.[102] With this approach the success factors for a foreign market entry can be figured out. The resource-based view posits that a firm's success is largely driven by resources that possess certain special characteristics.[103] It is a model that sees resources as the key to superior firm performance. If a resource exhibits so-called "VRIN" attributes (the letters stand for valuable, rare, imperfectly imitable and nonsubstitutable), the resource enables the firm to gain and sustain competitive advantage.[104] Critics about the Resource Based View says, that there is the assumption that a firm can be profitable in a highly competitive market as long as it can exploit advantageous resources, but this may not necessarily be the case, because with this assumption external factors concerning the industry as a whole were ignored.

Success Factors of International Trading and Market Entry

All the presented strategies sum up the relevant basic theories in the existing literature when it comes to the question for enterprises of whether it would benefit the company's results to go international. The theories do not only mean international markets but foreign markets, but in the

[101] Buckley, P. J., Casson, M. "The internalisation theory of the multinational enterprise: A review of the progress of a research agenda after 30 years." Journal of International Business Studies (2009): 1–18, p. 112.
[102] Wernerfelt, B. "A resource-based view of the firm." Strategic Management Journal 5, no. 2 (1984): 171–180; Barney, J. "Firm Resources and Sustained Competitive Advantage." Journal of Management 17, no. 1 (1991): 99–120; Penrose, E. "Limits to the Growth and Size of Firms." The American Economic Review 45, no. 2 (1955): 531–543.
[103] Galbreath, J. "Which resources matter the most to firm success?: An exploratory study of resource-based theory." Technovation 25, no. 9 (2005): 979–987.
[104] Zeinab Khalili Sourkouhi, Farshad Sameni Keivani, Mohammad Reza Almasi, Sara Makouei. "Strategic management; concepts, benefits and process." IOSR Journal of Business and Management 13, no. 3 (2013): 61–64. http://iosrjournals.org/iosr-jbm/papers/Vol13-issue3/I01336164.pdf., p. 61.

case of this dissertation, these strategies should be seen from the perspective of foreign markets abroad. Managers can derive different success factors from the strategies and can identify them for their management decisions.

Table 1.3.1: Success Factors of International Trading and Market Entry

International Trade Theories

Name	Success factor
Comparative Cost Advantage (David Ricardo 1817)	Low opportunity costs of producing goods across countries. Comparative advantages arise due to differences in technology or natural resources with results in the number of hours to produce a good.[105]
Transaction Cost Theory (Commons 1931, Bain 1957)	Low transaction costs like search and information costs or negotiation and contract costs. Transaction costs show the costs of participating in a (foreign) market. Every transaction is connected with costs.[106]

Market Entry Theories

Name	Success factor
Internalization Theory (Buckley and Casson 1976, Rugman 1981)	Internalization of transactions like knowledge or intellectual property. Figures out whether internalization of transactions has higher efficiency than transaction by an external partner.[107]
Resource-Based View (Wernerfelt 1984)	Relevant resources that are valuable, rare, imitable and nonsubstitutable. Basis for the competitive advantage. Identify the firm's potential key resources for foreign market entry.[108]

Source: Author's creation

[105] Hunt, E. K. "Environmental pollution, externalities, and conventional economic wisdom." Environmental Affairs, no. 1 (1971): 266.
[106] Bain, J. S. "Barriers to new competition." The American Economic Review 47, no. 3 (1957): 363–371; Commons, J. R. "Institutional Economics." American Economic Review, no. 21 (1931): 648–657; Commons, J. R. "Institutional Economics." The American Economic Review 21, no. 4 (1931): 648–657.
[107] Rugman, A. M., Verbeke, A. "Edith Penrose's contribution to the resource-based view of strategic management." Strategic Management Journal 23, no. 8 (2002): 769–780; Rugman, A. M., Collinson, S. "The Regional Nature of Japanese Multinational Business." Journal of International Business Studies 39, no. 2 (2008): 215–230.
[108] Galbreath, J. "Which resources matter the most to firm success?: An exploratory study of resource-based theory." Technovation 25, no. 9 (2005): 979–987.

All presented theories within the current literature about market entry strategy have different factors that have their influence on the business success of an institution. In the table above it can be seen which success factors of the mentioned theories and in detail which attributes of key performance indicators are defined. Low costs and the comparative advantage thereof are the most frequently mentioned key performance indicator in the literature. Managers and other decision-makers from enterprises could use these findings to derive the different market entry modes to implement the internationalization plans in the business plans.

International Market Entry Modes in the Service Sector

International market entry is one of the most important steps a company can take during the process of internationalization because the decision to enter a foreign market in all its facets, such as which market, which form of market entry, at what time and so on, as well as the search for a cooperation partner, will have a huge influence on further success.[109]

For this research work the term "internationalization" is defined as follows:

Internationalization is the increasing economic transformation of business activities to operate in international markets.[110]

In the literature there are numerous attempts to classify the different market entry forms.[111] When a company has decided to go international for new markets, it also has to decide on an adequate entry mode. It can choose from a wide range of options, which range from export entry modes to investment modes. For this promotional thesis the author creates her own classification to have a basis for further definitions and the creation of the research model. For this reason, classifications of market entry modes by different authors were considered, like those of Pan and Tse ,[112] Grüning

[109] Davidson, W. H. "The location of foreign direct investment activity: Country characteristics and experience effects." Journal of International Business Studies, no. 11 (1980): 9–11; Root, F. R. "Entry strategies for international markets." Journal of International Business Studies 15, no. 3 (1984): 19–23, p. 75ff.
[110] Author's definition of the term "Internationalization."
[111] Meffert, H. "Marketing im Spannungsfeld zwischen weltweitem Wettbewerb und nationalen Bedürfnisse: Voraussetzungen und Implikationen von Globalisierungsstrategien." Wissenschaftliche Gesellschaft für Marketing und Unternehmensführung e.V. 27 (1986)., p. 1150.
[112] Tse, T., Esposito, M., Soufani, K. "Fast-Expanding Markets: The Revolution of the Microeconomy." Thunderbird International Business Review 58, no. 1 (2016): 5–11.

and Morschett (2012)[113] and Root (1984).[114] For the author, the three main categories of entry modes for services are export, intermediate and investment because with this classification, the previously mentioned differentiation by the aforementioned authors is considered as well, with the differentiation now focusing on the service industry not industry in general.

Table 1.3.2: Market Entry Modes Classification by the Author with Special Consideration of the Service Industry

Author's Classification

Nonequity	Equity	
Export	No Direct Investment	With Direct Investment
Indirect and Direct Export	Licensee, Contractual, Joint Venture, Franchise and Strategic Allicance	Wholly Owned Subsidiary, Mergers and Aquisitions and Greenfield Investments

Examples of Business Models

Agency	Licensing (Product, Process, Brand)	Sole venture (Acquisition, New establishment, Greenfield)
Direct Sector	Franchising	Joint venture (Minority Cooperation, Parity Cooperation, Majority Cooperation)
Subsidiary	Training Contract	
Sector Office	Service contracts	
Distribution	Management contracts	Mergers
Joint Venture	Contract Manufacture	Acquisitions
Holding	R&D contracts	Other
Other	Alliances	
	Other	

Source: Author's creation

In what follows there is an overview that sums up the insights the author gained through the literature research about the advantages, disadvantages and different conditions that favor the specific market entry mode. All modes are related to the financial service industry sector. For this overview the findings from the previously mentioned authors from the literature research, namely Pan and Tse (2000), Root (1984), Weiss (1996) and Foley (1999), were used.

[113] Grüning, R., Morschett, D., Swoboda, B., Schramm-Klein, H. "Einflussfaktoren auf die Wahl einer Markteintrittsstrategie: Eine meta-analytische Untersuchung der Entscheidung zwischen Tochtergesellschaft und Kooperation." Zeitschrift für betriebswirtschaftliche Forschung 78, no. 5 (2012): 509–552.

[114] Root, F. R. "Entry strategies for international markets." Journal of International Business Studies 15, no. 3 (1984): 19–23.

Table 1.3.3: Overview of Advantages, Disadvantages and Conditions Favoring the Market Entry Modes in the Financial Service Industry

Advantages of:	Disadvantages of:	Conditions that Favor the Mode:
Export Market Entry Modes		
– Low risk – Low investment – Speed of entry – Maximizes scale by using existing facilities	– Trade barriers – Limits access to local information – Company viewed as an outsider – Tariffs add to costs	– Sporadic sales or limited sales potential of service abroad – International sales spread over a large number of different countries – Liberal import policies – High political risk
Contractual Market Entry Modes		
– Low risk – Low investment – Speed of entry – Able to circumvent trade barriers – High return on investment	– Lack of control over use of assets – Licensee may become competitor – Knowledge spillovers – Licensee period is limited	– Trade restrictions and import barriers – Legal protection possible in target environment – High political risk – Local company can provide skills, resources, distribution network, brand name, etc.
Investment Market Entry Modes		
– Full control – Often provide access to distribution channels – Overcomes ownership restrictions and cultural distance – Combines resources of several companies – Minimizes knowledge spillover – Better applies specialized skills	– Lack of control – Partner may become a competitor – Difficult to manage – Greater risk than exporting and contract – Requires more resources and commitment	– Large-scale enterprises – High resources – No trade barriers – Sufficient output, high sales potential – Low political risk – Import barriers – Large cultural distance – Assets cannot be fairly priced

Source: Author's creation

This overview can be seen as the result of the information given so far and overview of the theoretical framework, beginning with the market entry strategies within the new institutional economics as base knowledge and framework. After this overview of the different market entry modes that result from the market entry strategies, their classification in the three categories could be found. Combined with the information, when benefits a company to choose one or other mode and the comparison of the conditions, advantages and disadvantages of the modes. Which market entry mode fts best for a small and medium-sized German FinTech is not clearly derivable. Too many different factors play a role, including resource availability, service categories and risk-bearing capacity. For the empirical part of this dissertation the gained insights about the different impact factors of internationalization on business success as well as the possible market entry modes in the service sector industry will be examined in the coming parts of this work.

1.4 Innovation Theories in Regard to the Service Sector

Beside internationalization in management research science also innovation is often mentioned as an impact factor on the business success of a company and with this a possible success factor. On the other hand, Priccewaterhouse Coopers points out in their annual "Global Innovation 1000" study that there is no statistical relationship between the budget that is spend on innovation and financial performance. They came to the conclusion that it is the way the management of the firms spend the money on innovation is more important than how many is spend.[115] Success factors research approaches often claim, that for development in scientific and technological way a constant change is needed. For this change within a business "Technological Innovation" is an often-mentioned key factor. First ideas and approaches about this came from Schumpeter in 1934 [116], Roger 1962, Freeman 1974 and Lundvall 1985. Regarding Schumpeter's "Theory of Economic Development" innovation does not occur in isolation, many different impact factors within the organizational context influence the change through innovation.[117] Roger's Theory of Diffusion of Innovations deals with the question how innovation is spread through an organization and which impact factors play key roles within.[118] With the "Model of endogenous growth through

[115] Jaruzelski, B., Chwalik, R., Goehle, B. "The Global Innovation 1000 Study: Investigating trends at the world's 1000 largest corporate R&D spenders." Tech & Innovation, no. 93 (2018).
[116] Schumpeter, J. A. Capitalism, Socialism and Democracy. New York: Harper, 1942
[117] Carvalho, A. D. P., Cunha, S. K. d., Lima, L. F. d., Carstens, D. D. "The role and contributions of sociological institutional theory to the socio-technical approach to innovation theory." RAI Revista de Administração e Inovação 14, no. 3 (2017): 250–259
[118] Rogers, E. M. Diffusion of innovations. 3rd ed. New York, NY: Free Press, 1983

Innovation" Dosi 1982 relates innovation to the business size.[119] With the Economics of Industrial Innovation Theory Freeman claims that "innovation is important not only for increasing the wealth of nations in the narrow sense of increasing prosperity, but also in the more fundamental sense of enabling people to do things which have never been done before."[120] Lundvall presents in its "National Innovation System Theory" innovation as a continual process that involves not just radical and incremental innovation, but also the diffusion, absorption and utilization of innovation.[121]

Table 1.4.1: Author's Overview of the Innovation Theories in the Field of International Business regarding the Service Industry

Innovation Theories
Theory of Economic Development (Schumpeter, 1934) Economic development is driven by the discontinuous emergence of new combinations (innovations) that are economically more viable than the old way of doing things.
Diffusion of Innovations Theory (Rogers, 1962) Theory of how, why and at what rate new ideas and technology spread through cultures.
Model of Endogenous Growth through Innovation (Dosi, 1982) Innovation relate to the size of a business and economic growth is fueled by technological advances.
Theory of National Innovation System (Lundvall, 1985) Flow of technology and information among people, enterprises and institutions which is key to the innovative process on the national level.

Source: Author's creation

In what follows the theories will be explained in detail. The overview above has already mentioned that there are a lot of theories in the field of innovation, but only a few are in regard to the research fields of international business and the service sector industry.

The Economic Development Theory

[119] Dosi, G. "Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change." Science Policy Reseaerch Unit 11, no. 2 (1982): 147–162
[120] Freeman, C., Soete, L. The economics of industrial innovation. 3rd ed. London: Continuum, 2000; Freeman, C., Soete, L. The economics of industrial innovation. 3rd ed. London: Continuum, 2000, p.22
[121] Lundvall, B.-Å. Growth, Innovation and Social Cohesion: The Danish model. Edward Elgar, Cheltenham, 2002

Regarding Drejer innovation is closely related to development in Schumpeter's "theory of economic development".[122] There it says that "economic development is driven by the discontinuous emergence of new combinations (innovations) that are economically more viable than the old way of doing things".[123] The theory about economic development by Schumpeter from 1934 describes economic development as a phenomenon that is driven by the discontinuous emergence of new combinations, which means innovations, that are economically more viable than the old way of doing things Schumpeter's innovation concept covers five areas: [124]

1. The introduction of a new good or a new quality of a good (product innovation)
2. The introduction of a new method of production, including a new way of handling a commodity commercially (process innovation)
3. The opening of a new market (market innovation)
4. The conquest of a new source of supply of raw material or intermediate input (input innovation)
5. The carrying out of a new organization of industry (organizational innovation)

It is an essential feature of innovation that it is something that is carried out in practice, and further that the entrepreneur leads others in the same sector to follow, for example the innovation gets diffused through imitation.[125] Schumpeter further develops his ideas to the "theory of economic development" in regard to the point, that innovation does not have to be radical and unpredictable to be considered a true innovation.[126] Schumpeter thus acknowledges the importance of the cumulative nature of knowledge by stating that a technical revolution cannot be understood without reference to the development that led up to it.[127] And Schumpeter claims that it has become much easier to do things that lie outside the familiar routine, and accordingly innovation itself can be perceived as being reduced to routine in the sense that technological progress has become the

[122] Drejer, I. "Identifying innovation in surveys of services: A Schumpeterian perspective." Research Policy 33, no. 3 (2004): 551–562
[123] Schumpeter, J. A. The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle. Cambridge: Harvard University Press, 1934
[124] Schumpeter, J. A. The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle. Cambridge: Harvard University Press, 1934, p.66
[125] Drejer, I. "Identifying innovation in surveys of services: A Schumpeterian perspective." Research Policy 33, no. 3 (2004): 551–562
[126] Gadrey, J., Gallouj, F., Weinstein, O. "New modes of innovation. How services benefit industry." International Journal of Service Industry Management 6 (1995): 4–16
[127] Coombs, R., Miles, I. "Innovation, measurement and services: the new problematic." Innovation Systems in the Service Economy 1, no. 1 (2000): 85–103

business of trained specialists. [128] Although Schumpeter sees the innovation process as being increasingly more institutionalized, depersonalized and automatized, this does not imply that innovation itself has ceased being a break with "business as usual." Schumpeter thus describes innovation as a "process of industrial mutation (…) that incessantly revolutionizes the economic structure from within."[129] With this approach concerning the Schumpeterian view of innovation a main theory in this field is presented. It was chosen by the author because of its fitting to the service sector industry.

Theory of Diffusion of Innovations

Regarding to Rogers "innovation" is an idea, practice, or object that is perceived as new by an individual or other unit of adoption.[130] "Diffusion of innovations" is a theory by Rogers that seeks to explain how, why, and at what rate new ideas and technology spread. [131] Rate of adoption is the relative speed with which an innovation is adopted by members of a social system.[132] Within the rate of adoption, there is a point at which an innovation reaches critical mass. The categories of adopters are innovators, early adopters, early majority, late majority, and laggards.[133] The origins of the diffusion of innovations theory are varied and span multiple disciplines. First of all, Roger's states in his theory, that "getting a new idea adopted, even when it has obvious advantages, is difficult." And further: "Many innovations require a lengthy period of many years form time when they become available to the time when they are widely adopted."[134] Diffusion manifests itself in different ways and is highly subject to the type of adopters and innovation-decision process. The criterion for the adopter categorization is innovativeness, defined as the degree to which an individual adopts a new idea.[135] According to diffusion of innovation theory, five different attributes of innovations are described. Each of these is somewhat empirically interrelated with the

[128] Drejer, I. "Identifying innovation in surveys of services: A Schumpeterian perspective." Research Policy 33, no. 3 (2004): 551–562
[129] Schumpeter, J. A. Capitalism, Socialism and Democracy. New York: Harper, 1942, p. 83.
[130] Oturakci, M., Yuregir, O. H. "New approach to Rogers' innovation characteristics and comparative implementation study." Journal of Engineering and Technology Management 47 (2018): 53–67
[131] Rogers, E. M. Diffusion of innovations. 5th ed. New York: Free Press, 2003
[132] Oturakci, M., Yuregir, O. H. "New approach to Rogers' innovation characteristics and comparative implementation study." Journal of Engineering and Technology Management 47 (2018): 53–67
[133] Stone, D. "Transfer agents and global networks in the 'transnationalization' of policy." Journal of European Public Policy 11, no. 3 (2004): 545–566
[134] Rogers, E. M. Diffusion of innovations. 5th ed. New York: Free Press, 2003
[135] Stone, D. "Transfer agents and global networks in the 'transnationalization' of policy." Journal of European Public Policy 11, no. 3 (2004): 545–566

other four, but they are conceptually distinct. The five attributes are called "key elements" in diffusion research, they are namely:[136]

Table 1.4.2: Rogers' Key Elements of the Diffusion of Innovation Theory

Element	Definition
Innovation	Innovation is a broad category, relative to the current knowledge of the analyzed unit. Any idea, practice or object that is perceived as new by an individual or other unit of adoption could be considered an innovation available for study.[137]
Adopters	Adopters are the minimal unit of analysis. In most studies, adopters are individuals, but they can also be organizations (businesses, schools, hospitals, etc.), clusters within social networks or countries.[138]
Communication channels	Diffusion, by definition, takes place among people or organizations. Communication channels allow the transfer of information from one unit to another.[139] Communication patterns or capabilities must be established between parties as a minimum for diffusion to occur.[140]
Time	The passage of time is necessary for innovations to be adopted; they are rarely adopted instantaneously. In fact, in the Ryan and Gross (1943) study on hybrid corn adoption, adoption occurred over more than ten years, and most farmers only dedicated a fraction of their fields to the new corn in the first years after adoption.[141]
Social system	The social system is the combination of external influences (mass media, surfactants, organizational or governmental mandates) and internal influences (strong and weak social relationships, distance from opinion

[136] Oturakci, M., Yuregir, O. H. "New approach to Rogers' innovation characteristics and comparative implementation study." Journal of Engineering and Technology Management 47 (2018): 53–67roger
[137] Rogers, E. M. Diffusion of innovations. 5th ed. New York: Free Press, 2003.
[138] Meyer, G. "Diffusion methodology: Time to innovate?" Journal of health communication 9 Suppl 1 (2004): 59–69.
[139] Rogers, E. M. Diffusion of innovations. 5th ed. New York: Free Press, 2003.
[140] Ghoshal, S., Bartlett, C. A. "Creation, Adoption and Diffusion of Innovations by Subsidiaries of Multinational Corporations." Journal of International Business Studies 19, no. 3 (1988): 365–388.
[141] Dominowski, R. L. Research methods. Englewood Cliffs, N.J.: Prentice-Hall, 1980.

leaders).[142] There are many roles in a social system, and their combination represents all the influences on a potential adopter.[143]

Source: Author's creation, in regard to Rogers (2003)

Regarding Roger's approach there are five stages with defines the adoption process within innovation. In these stages there are attributes mentioned which creates the innovation adaption. These attributes could be seen as success factors. These stages which results in a complete implementation of an innovation are regarding Rogers[144]: 1. Through "Knowledge" the individual is first exposed to an innovation, but the individual lacks information about the innovation. 2. In the "Persuasion" stage the individual is interested in the innovation and actively seeks related information about it. 3. Within the stage "Decision" the individual takes the concept of the change and weighs the advantages of using the innovation. 4. In the "Implementation" stage the individual employs the innovation to a varying degree depending on the situation. In the final 5. stage the "Confirmation" stage, the individual finalizes the decision to continue using the innovation. Roger's "Theory of Diffusion of Innovations" focus less on physical innovation than on intangible ones. And with this aspect it fits in the research field of success factor with the special focus on the service sector industry and the financial industry which could both be categorized as intangible businesses. According to the Coenen and López model, the "Theory of Innovation" has three main approaches, which are: the "Sectoral System", the "Technological System" and the "Socio-Technical System".[145] An innovation system is defined as organizational and institutional networks that develop, diffuse and utilize innovations.[146] With these stages the implementation process of a "strategic innovation" as it is defined in this promotional thesis at the end of this chapter could be analyzed and managerial decision thereof could be found.

Model of Endogenous Growth through Innovation

The approach of Dosi in 2002 with relation to earlier works of Dosi beginning 1982, presents a

[142] Agndal, H., Chetty, S. "The impact of relationships on changes in internationalisation strategies of SMEs." European Journal of Marketing 41, 11/12 (2007): 1449–1474; Strang, D., Soule, S. A. "Diffusion in Organizations and Social Movements: From Hybrid Corn to Poison Pills." Annual Review of Sociology 24, no. 1 (1998): 265–290.
[143] Dominowski, R. L. Research methods. Englewood Cliffs, N.J.: Prentice-Hall, 1980.
[144] Rogers, E. M. Diffusion of innovations. 5th ed. New York: Free Press, 2003
[145] Coenen, L., Lopez, F. D. "Comparing systemic approaches to innovation for sustainability and competitiveness." Submitted to DIME international conference "Innovation, sustainability and policy, no. 1 (2008): 11–13
[146] Carvalho, A. D. P., Cunha, S. K. d., Lima, L. F. d., Carstens, D. D. "The role and contributions of sociological institutional theory to the socio-technical approach to innovation theory." RAI Revista de Administração e Inovação 14, no. 3 (2017): 250–259

model of endogenous growth in which firms are modeled as boundedly-rational, locally interacting, agents.[147] According to Dosi, "companies produce a homogeneous good employing technologies located in an open-ended technological space and are allowed to either imitate existing similar practices or to locally explore the technological space to find new, more productive, techniques."[148] The paper presents a simple model in which self-sustaining growth endogenously emerges, under suitable technological and behavioral conditions, as the result of imperfect coordination among stylized, boundedly-rational, heterogeneous, firms locally interacting in an open-ended technological space.[149] The model shows that the very possibility of notionally unlimited technological for exponential growth in the economy. In that circumstance, exponential growth is attained whenever technological opportunities or globality of interactions in the information diffusion process and with this a perfect matching link between the both impact factor of this promotional thesis "innovation" and "internationalization".

Theory of National Innovation System

In his "Theory of Economics Industrial Innovation" Freeman 1974 claims that indicators of science, technology and innovation (abbreviated STI) can be both used and abused. The use is the result of the interaction between supply and demand. Competition stimulated this demand for innovation. Abuse may arise from loss of most of the information content that qualify such a role.[150] The "Theory of National Innovation System" by Lundvall and Freeman could be seen as a further development of "The Theory of Economics Industrial Innovation" by Freeman in 1974. It deals with the flow of technology and information among people, enterprises and institutions which is defined as the key to the innovative process on the national level. According to this theory, innovation and technology development are results of a complex set of relationships among organizations. Freeman defines "national system of innovation" been as follows: [151]

1. The network of institutions whose activities initiate, import, modify and diffuse new

[147] Dosi, K. "Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change." Revista Brasileira de Inovação 5, no. 1 (2006).
[148] Giovanni Dosi, Luigi Marengo, and Giogio Fagiolo, "Learning in evolutionary environments," 2001
[149] Dosi, G., Lovallo, D. "Rational entrepreneurs or optimistic martyrs? Some considerations on technological regimes, corporate entries, and the evolutionary role of decision biases." Technological innovation: Oversights and foresights (1997): 41–70
[150] Freeman, C., Soete, L. "Developing science, technology and innovation indicators: What we can learn from the past." Research Policy 38, no. 4 (2009): 583–589
[151] Freeman, C. "The 'National System of Innovation' in historical perspective." Cambridge Journal of Economics (1995).

technologies.[152]

2. The elements and relationships which interact in the production, diffusion and use of new, and economically useful, knowledge.[153]

3. A set of institutions whose interactions determine the innovative performance of national firms.

4. The national institutions, their incentive structures and their competencies, that determine the rate and direction of technological learning in a country. [154]

5. A set of distinct institutions which jointly and individually contribute to the development and diffusion of new technologies and which provides the framework within which governments form and implement policies to influence the innovation process.[155]

According to the success factor research in the tertiary sector of economy this theory creates a support for institutions regarding decisions in strategic innovation including research and development department.

To sum up the findings from the above-mentioned theories, the author of this promotional thesis is able to create her own definition of the term "strategic innovation" for further comprehension of the work:

Strategic innovation describes the (technical) economic development of a new service caused through a changing environment[156]

The literature review of this work has already presented different important areas of research focuses for the follow-up work. Beginning with the parental discipline of business success factor research and definitions in this field for different terminology to specify the research object of this work: managerial digitalization and strategic innovation in relation to internationalization and its influences on business success. All the findings relate to the research subject, namely German small

[152] Lundvall, B.-Å. Growth, Innovation and Social Cohesion: The Danish model. Edward Elgar, Cheltenham, 2002
[153] Nelson, Richard R., ed. National innovation systems: A comparative analysis. New York: Oxford University Press, 2010. http://search.ebscohost.com/login.aspx?direct=true&scope=site&db=nlebk&db=nlabk&AN=140859.
[154] Patel, P. "The nature and economic importance of national innovations systems." STI Review, no. 7 (1994): 9–32
[155] Stoneman, Paul, ed. Handbook of the economics of innovation and technological change. Oxford: Blackwell, 1998
[156] Author's definition of the term "strategic innovation."

and medium-sized FinTech companies. After this, the literature research presented the research subject and the research field in which the subjects act. The tertiary sector of the economy, the service sector and in detail the financial service sector and the FinTech companies within were presented. After this, the research fields around the assumed independent variables of internationalization and strategic innovation were presented. Finally, in what follows the literature research tries to draw conclusions about the influence of managerial digitalization on the success of business.

1.5 Managerial Digitalization as an Impact Factor for Businesses in the Financial Service Sector

Digitization is defined as the process of converting analogue data into digital data sets. This is the framework for digitalization, which is defined as the exploitation of digital opportunities.[157] Digital transformation is defined by Brennen[158] as the process that is used to restructure economies, institutions and society on a system level, and also digitization describes the process of the conversion of analogue and noisy information into digital data.

Digitalization defines opportunities to convert analogue data into digital data. Managerial digitalization describes digital processes within an organization. Digital internal administrative processes replace paper-based workflows within an organization.

In the framework of this promotional thesis,[159] "managerial digitalization" and "digital internal administrative processes" are defined as mentioned above and will be used and analyzed in the work.

Digitalization Theories regarding Organizational Behavior

At the present status of the literature there are no theories towards digitalization as the only focused term. The literature mostly combines digitalization with other trends and thus formulates theories. The best-fitting example, therefore, is Reimer with his digitalization theories in the context of management decision-making and organizational behavior. He describes the planning and

[157] Rachinger, M., Rauter, R., Müller, C., Vorraber, W., Schirgi, E. "Digitalization and its influence on business model innovation." Journal of Manufacturing Technology Management 53, no. 3 (2018): 41.
[158] Brennen, J. S., Kreiss, D. The International Encyclopedia of Communication Theory and Philosophy: Digitalization. Chichester: Wiley-Blackwell, 2016.
[159] Author's definition of the terms "digitalization," "managerial digitalization" and "internal administrative processes."

incremental approach to a digitalization strategy as widely used and described and as an interaction-based approach. Each of the three approaches offers, according to Reimer, different explanations for behavior in terms of outcome and processes:[160] The rational planning model posits that members of organizations will make rational decisions that will provide maximum benefits to the firm. This approach is typically associated with stable conditions where structures can be identified and the future can be predicted. Predictability is the main argument for engaging in formal procedures involving data collection and analyses.[161] The incremental model utilizes a planning terminology but acknowledges that the future cannot always be predicted. Therefore, organizational plans must be updated on a regular basis. Planning is, however, still possible and beneficial.[162] Finally, the interaction approach to strategy making shows that the future is always in a state of flux, and thus not possible to predict. Only through actions and the derived reflections will it be possible to understand and act in this ever-changing environment.[163] It must be noted that this interaction approach is not as well developed and described in the literature as the other two approaches. This is the case in the general strategy literature and also in the literature that deals with digitalization strategy.[164]

The three variables which are presented in this chapter as possible impact factors are seen as crucial for the business success, but often there comes risk with it as well. Rachinger et. al. sees on the one hand over the past decades the global industries have faced the technological changes that have led to opportunities like those ones digitalization comes with and brings greater flexibility, reactivity and product individualization, but also diverse challenges such as rapid technological change, increased complexity and changing customer preferences and legal requirements.[165] This has led

[160] Ivang, R., Rask, M., Hinson, R. "B2b inter-organisational digitalisation strategies." Direct Marketing: An International Journal 3, no. 4 (2009): 244–261.
[161] King, W. R. "Strategic Planning for Management Information Systems." MIS Quarterly 2, no. 1 (1978): 27 Premkumar, G., King, W. R. "The evaluation of strategic information system planning." Information & Management 26, no. 6 (1994): 327–340.
[162] Sambamurthy, V., Zmud, R. W., Byrd, T. A. "The comprehensiveness of IT planning processes: A contingency approach." Journal of information technology management 5, no. 1 (1994): 1–10.
[163] Venkatraman, N. "Five Steps to a Dot-Corn Strategy: How to find your footing on the Web." Sloan Management Review 41, no. 3 (2000): 109; Holmqvist, M., Pessi, K. "Agility through scenario development and continuous implementation: A global aftermarket logistics case." European Journal of Information Systems 15, no. 2 (2006): 146–158.
[164] Fuglsang, L., Sundbo, J. "The organizational innovation system: Three modes." Journal of change Management 5, no. 3 (2005): 329–344.
[165] Rachinger, M., Rauter, R., Müller, C., Vorraber, W., Schirgi, E. "Digitalization and its influence on business model innovation." Journal of Manufacturing Technology Management 53, no. 3 (2018): 41

to challenging situations with causes uncertainty and risks within the management and the employees in a corporate context: advantages through implement of the new technological opportunities are wished, but people are uncertain how to use and implement them simultaneously in terms of product and service offers.

Industry 4.0 as a New Development within the Industrial Sectors of the Economy

In combination with the change to digitalization and the digitalization of firms, in the media and literature the term "Industry 4.0" is increasingly appearing. The phenomenon of Industry 4.0 was first mentioned in 2011 in Germany as a proposal for the development of a new concept of German economic policy based on high-tech strategies and found its way more and more through Europe.[166] "Industry 4.0 is the intelligent real-time, horizontal and vertical integration of humans and machines with objects and information and communication technology systems (digitalization) to enable a flexible and dynamic management of complex systems."[167] According to current literature, there is a strong need to react because of the so-called "fourth industrial revolution" and with this the adaption to the needs of "Industry 4.0."[168] According to the authors Zezulka et al., there are three factors that sum up this term:[169] the digitization and integration of any simple technical-economic relation to complex technical-economic networks; the digitization of product and service offers; and new market models. But despite this, there are other various definitions of the term, such as "Industry 4.0 is the integration of complex physical machinery and devices with networked sensors and software, used to predict, control and plan for better business and societal outcomes."[170] Henning and Johannes define it as "a new level of value chain organization and management across the life cycle of products."[171] Hermann et al. define Industry 4.0 as "a collective term for technologies and concepts of value chain organization."[172] According to Santos et al., "one

[166] Roblek, V., Meško, M., Krapež, A. "A Complex View of Industry 4.0." SAGE Open 6, no. 2 (2016): 215824401665398.
[167] Bauer, W., Schlund, S., Marrenbach, D., Ganschar, O. Industrie 4.0: Volkswirtschaftliches Potenzial für Deutschland, 2014, p. 45.
[168] "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.
[169] Zezulka, F., Marcon, P., Vesely, I., Sajdl, O. "Industry 4.0 – An Introduction in the phenomenon." IFAC-PapersOnLine 49, no. 25 (2016): 8–12. http://www.sciencedirect.com/science/article/pii/S2405896316326386.
[170] Lu, Y. "Industry 4.0: A survey on technologies, applications and open research issues." Journal of Industrial Information Integration 6, Supplement C (2017): 1–10. http://www.sciencedirect.com/science/article/pii/S2452414X17300043.
[171] Kagermann, H., Wahlster, W., Helbig, J. "Recommendations for implementing the strategic initiative INDUSTRIE 4.0: Securing the future of German manufacturing industry." Plattform Industrie 4.0, no. 4 (2013).
[172] Herrmann, F. "KMU: fit für Internationalisierung." MQ Management und Qualität, no. 12 (2005): 15–17.

of the main characteristics of Industry 4.0 is that it supports the integration and virtualization of the manufacturing design and production process and the internet to create smart products."[173] The goals of Industry 4.0 are to achieve a higher level of operational efficiency and productivity, as well as a higher level of automatization.[174] As Roblek et al. pointed out, the major features of Industry 4.0 for industry are the digitization of internal and external administrative and operational processes; the optimization of all processes within and outside the enterprise; the customization of production to gain comprehensive advantages and the automation and adaptation of production processes; the human-machine interaction within the production process and the value-added services and businesses to offer to the customers; and finally, automatic data exchange and communication.[175] These features are not only highly correlated with Internet technologies and advanced algorithms, but they also indicate that Industry 4.0 is an industrial process of value adding and knowledge management.[176] As previously explained, digitalizing internal administrative processes and adapting to the needs of Industry 4.0 as a company brings different advantages for enterprises. These advantages are independent of the size of the company and thus can be seen as an opportunity to reduce the differences in business success for small and medium-sized enterprises in comparison to large-scale enterprises. In what follows, the impact factor of "digitalization" is explained in detail. Also, the term "Internet of Things" is appearing more and more; this means, for instance, hyperconnectivity of devices, sensors and systems that supports machine-to-machine communication and enables the generation of an unprecedented volume of data.

Impact Factors of Managerial Digitalization for Business Success

Johnson sums up that the degree of digitalization will be decision-making for enterprises when it comes to the question of competitive advantages.[177] Schröder shows, as a result of his studies, that there is a positive correlation between high sales growth and digitization. Companies with, for

[173] Santos, K., Loures, E., Piechnicki, F., Canciglieri, O. "Opportunities Assessment of Product Development Process in Industry 4.0." Procedia Manufacturing 11, Supplement C (2017): 1358–1365. http://www.sciencedirect.com/science/article/pii/S2351978917304730.

[174] Thames, L., Schaefer, D. "Software-defined Cloud Manufacturing for Industry 4.0." Procedia CIRP 52 (2016): 12–17.

[175] Roblek, V., Meško, M., Krapež, A. "A Complex View of Industry 4.0." SAGE Open 6, no. 2 (2016): 215824401665398.

[176] Lu, Y. "Industry 4.0: A survey on technologies, applications and open research issues." Journal of Industrial Information Integration 6, Supplement C (2017): 1–10. http://www.sciencedirect.com/science/article/pii/S2452414X17300043. Roblek, V., Meško, M., Krapež, A. "A Complex View of Industry 4.0." SAGE Open 6, no. 2 (2016): 215824401665398.

[177] Johnson, H. G. "The Efficiency and Welfare Implications of the International Corporation." Internationalization Process of the MNE (2008): 11.

example, Internet-based coordination of workflows or logistics are more common in the group of growth champions than companies that have not yet digitized their production processes. This also applies when companies give their employees external access to emails or files.[178] According to Berman, the digitalization in the operating part of the business as well as the administrative processes forces enterprises to change their business models in general.[179] For example, because of the continuous diminishing cost of data collection, storage and processing and computing power increases, and economic activities are increasingly migrating to the Internet. Technologies, smart applications and other innovations in the digital economy can improve enterprises' products and services. Information and communication technologies do not just bring innovation to products, but also to processes and organizational arrangements for companies. According to the Organisation for Economic Co-operation and Development, digital technologies may be disruptive and may have effects on productivity and employment. While new technologies create opportunities for businesses, workers and citizens to engage in economic activity, these technologies are also likely to displace workers doing specific tasks and may further increase existing gaps in access and use, resulting in new digital divides and greater inequality.[180]

In the following table there is an overview of the above-mentioned impact factors of digitalization including Industry 4.0 by different authors:

Table 1.5.1: Success Factors of Digitalization and Industry 4.0 for Business Success

Author	Success Factor
	Digitalization
Koreen, Cusmano and Pissareva (2018)[181]	
	Stay agile through outsourcing.
	Lower fixed costs through the use of the Internet as leverage.
	Better access to skills and talent through better job recruitment sites, outsourcing and online task hiring.

[178] Schroeder, C., Schlepphorst, S., Kay, R. Bedeutung der Digitalisierung im Mittelstand. Bonn, 2015.
[179] Berman, S. J. "Digital transformation: Opportunities to create new business models." Strategy & Leadership 40, no. 2 (2012): 16–24
[180] OECD and German Presidency, eds., Key Issues for Digital Transformation in the G20: Report prepared for a joint G20 (2017).
[181] Koreen, M., Cusmano, L., Pissareva, L. OECD SME and Entrepreneurship Papers, 2018.

	Improve knowledge through connection with knowledge partners online.
	Better access to a range of financing instruments.
	Smarter financial work and overview through mobile banking and online payments.
Zhang Yuhua (2015)[182]	
	Lower trade costs through digitalization of communication.
	Reduce risk of entering foreign markets through lower trade costs.
Asia-Pacific Economic Forum (2016)[183]	
	Facilitating information flows through the use of the Internet.
	Expanding the market potential through the use of the Internet.
Organisation for Economic Co-operation and Development (2017)[184]	
	Lowering important barriers to entering foreign markets through the use of e-commerce tools.
	Facilitating cross-borders sales through e-commerce tools.
	Participation in global value chains with Internet applications like Skype or Alibaba.
	Become competitors in niche markets through access to networks.
Organisation for Economic Co-operation and Development (2016)[185]	
	Facilitating payments, enabling collaboration, avoiding investment in fixed assets through cloud-based services.
	Facilitating payments, enabling collaboration, avoiding investment in fixed assets with alternative funding mechanisms.

[182] Zhang Yuhua, B. "SME Internationalization and Measurement." APEC Policy Support Unit, no. 12 (2015).
[183] APEC Small and Medium Enterprises Working Group (SMEWG), ed., SME Monitoring Index (2016).
[184] OECD, ed., Going Digital: Making the Transformation Work for Growth and Well-Being (2017).
[185] OECD, ed., Maximising the Economic and Social Value of Data: Understanding the Benefits and Challenges of Enhanced Data Access. Internal document (Paris, 2016).

Lu (2017)[186]	Better business and societal outcomes
Santos (2017)[187]	Through support of the integration and virtualization of manufacturing design. Using the Internet to create smart products.
Thames (2016)[188]	Higher level of operational efficiency and productivity. Higher level of automatization.
Roblek (2016)[189]	Optimization of production through process of value adding and knowledge management.

Source: Author's creation

Digitalizing an enterprise has many benefits in terms of economic results and managerial decisions, as the table above shows. Beside saving costs and increasing efficiency, know-how can also be improved. Managerial digitalization is in most cases for all company sizes same expensive or affordable because most software, cloud storage etc. can be broken down to the extent needed for the company size, number of employees and so on, like the number of software users, concurrent licenses, gigabytes for storage, etc. So, the advantage for small and medium-sized enterprises is that there are no disadvantages vis-à-vis large-scale enterprises when it comes to the question of digitalization. Small and medium-sized enterprises are given the same consideration as large-scale enterprises by the providers of software, cloud space and information websites.

[186] Lu, Y. "Industry 4.0: A survey on technologies, applications and open research issues." Journal of Industrial Information Integration 6, Supplement C (2017): 1–10. http://www.sciencedirect.com/science/article/pii/S2452414X17300043.
[187] Santos, K., Loures, E., Piechnicki, F., Canciglieri, O. "Opportunities Assessment of Product Development Process in Industry 4.0." Procedia Manufacturing 11, Supplement C (2017): 1358–1365. http://www.sciencedirect.com/science/article/pii/S2351978917304730.
[188] Thames, L., Schaefer, D. "Software-defined Cloud Manufacturing for Industry 4.0." Procedia CIRP 52 (2016): 12–17.
[189] Roblek, V., Meško, M., Krapež, A. "A Complex View of Industry 4.0." SAGE Open 6, no. 2 (2016): 215824401665398.

1.6 Summary of the Literature Review and Derivation of the Research Question

Lack of Research within the Success Factors for the Business Results of FinTech Enterprises

The current literature for success factor research in the field of financial services focuses predominantly on large-scale enterprises and conservative established business models like those of banks. This might be due to the greater interest in them because of a presumed bigger economic impact. But there is a structural difference between small and medium-sized enterprises and large-scale enterprises and certainly between classic bank business models and innovative new business models like those of FinTech enterprises. Managerial digitalization effects, internationalization plans and strategic innovative acts are not considered in existing researches in the field of success factor research in regard to the success of small and medium-sized enterprises from the financial service sector in Germany. It is not analyzed whether those factors have a positive impact on the business success of FinTech enterprises and thus whether they are really success factors or only impact factors or if they have any impact at all on business success. This might be due to the fact that the tools that could be used within a company to become a digital office are very new on the market and the effects on business results are rarely analyzed in the field of small and medium-sized businesses. The target group of this promotional thesis, the FinTechs, have a new and for the current literature predominantly unknown business model within the financial sector. Beside the business model that leads to business success for these companies, the administrative work processes within the enterprises are not investigated and analyzed in the current literature. Internationalization plans and the way in which they enter foreign markets and which success factors are relevant in this context have not been examined until today.

There is a missing consideration in the international trade theories and market entry strategies for the needs of small and medium-sized enterprise. The mentioned theories in the literature review have their importance for the derived market entry mode selection. But there are gaps in the literature regarding the special characteristic of small and medium-sized enterprises and their needs within the different theories of internationalization.

Table 1.6.1: Missing Consideration in the International Trade Theories and Market Entry Strategies of the Needs of Small and Medium-Sized Enterprises

Name	Description and Missing Consideration of Small and Medium-Sized Enterprises' Special Needs
International Trade Theories	
Comparative Cost Advantage *(Ricardo)*	Comparative advantages due to differences in production.[190] Owners 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.[191]
Transaction Cost Theory *(Commons, Coase, Williamson)*	Transaction costs show the costs of participating in a (foreign) market. Every transaction is connected with costs.[192] Tough competition in the new markets due to lower financial resources than bigger companies.
Market Entry Strategies	
Internalization Theory *(Bain, Buckley-Casson)*	Points out if internalization of transactions has higher efficiency than transaction by an external partner.[193] Often owners of small and medium-sized enterprises do not have that amount of knowledge to compare and additionally it is harder to get in contact with external partners.
Resource-Based View *(Wernerfelt, Pfeffer, Salancik)*	Resources are the basis for competitive advantage. Identifying the firm's potential key resources for foreign market entry is crucial.[194] Possible disadvantages regarding the resource-based view are lower financial resources, fewer human resources and less skilled employees.

[190] Hunt, E. K. "Environmental pollution, externalities, and conventional economic wisdom." Environmental Affairs, no. 1 (1971): 266.
[191] O'Donnell, A., Gilmore, A., Carson, D., Cummins, D. "Competitive advantage in small to medium-sized enterprises." Journal of Strategic Marketing 10, no. 3 (2011): 205–223.
[192] Bain, J. S. "Barriers to new competition." The American Economic Review 47, no. 3 (1957): 363–371; Commons, J. R. "Institutional Economics." American Economic Review, no. 21 (1931): 648–657; Commons, J. R. "Institutional Economics." The American Economic Review 21, no. 4 (1931): 648–657.
[193] Rugman, A. M., Verbeke, A. "Edith Penrose's contribution to the resource-based view of strategic management." Strategic Management Journal 23, no. 8 (2002): 769–780; Rugman, A. M., Collinson, S. "The Regional Nature of Japanese Multinational Business." Journal of International Business Studies 39, no. 2 (2008): 215–230.
[194] Wernerfelt, B. "A resource-based view of the firm." Strategic Management Journal 5, no. 2 (1984): 171–180.

Source: Author's creation

The present theories are mainly focused on big companies, multinational enterprises and global players and less focused on small and medium-sized enterprises and their special requirements. It is obvious that many aspects are connected with costs, which, in regard to the deliberations of small and medium-sized enterprises, shows that there is a lack in the literature and the existing theories for the special needs of these kinds of enterprises. This leads to disadvantages for small and medium-sized enterprises regarding the entering of foreign markets. In addition, all of the presented theories were developed at a time before digitalization played a role in companies' decision-making.

The use of digital technology during the process by which a firm innovates has radically changed the nature and structure of new products and services, including financial technology services. Moreover, digital innovation has spawned novel value creation and value appropriation pathways. More recently, there has been an expansion in the identification and articulation of unique aspects of digitalization in industries, specific organizational domains or product families.[195] According to Nambisan, it is a consequence of the growing body of research on digitalization and FinTech that it is time to develop theories that explicitly incorporate the variability, materiality, emergence and richness of FinTech as a phenomenon.[196]

The effects of business success due to the usage of digitalization tools for internal administrative processes have not been sufficiently analyzed. Due to the fact that the current assorted characteristics of digitalization, such as cloud usage, digital workflow processes and the usage of enterprise resource planning software, have not been used that long in businesses and have not even been available for very long on the market, there are very few empirical studies on the effects on business success in general of using the advantages that digitalization brings them. Among the many different sources within the current literature, researches and statistics there are very few results and little information concerning the degree of digitalization among small and medium-sized enterprises. Connected with this fact, there is almost nothing to find about the effects that digitalization processes have on small and medium-sized enterprises. Additionally, the detail what

[195] Nambisan, S., Lyytinen, K., Majchrzak, A., Song, M. "Digital Innovation Management: Reinventing Innovation Management Research in a Digital World." MIS Quarterly 41, no. 1 (2017): 223–238.
[196] Boratyńska, K. "Impact of Digital Transformation on Value Creation in Fintech Services: An Innovative Approach." Journal of Promotion Management 25, no. 5 (2019): 631–639.

digitalization broken-down to processes and examples mean is missing. For example, the Organisation for Economic Co-operation and Development has undertaken a huge empirical research on the topic of digitalization within the economy. They presented their results in the study for the, at the time, upcoming so-called G20 Summit (Summit on Financial Markets and the World Economy)[197] in "Key Issues for Digital Transformation in the G20: Report prepared for a joint G20" in 2017.[198] Small and medium-sized enterprises were in some parts the focus of the research but not for Germany in particular, and also the processes within the digitalization were not broken down into detail. The missing results for Germany in particular as well as the missing characterization of the processes within the digitalization are, beside the abstracts of the Organisation for Economic Co-operation and Development, often missing in international, European or worldwide research results. So, to fill the gap of the missing results for Germany in particular, the author of this promotional thesis had a look at German literature on this topic. The study of the Institut für Mittelstandsforschung "The impact of digitalization" in 2015[199] presents an overview about trends in digitalization for German small and medium-sized enterprises, but what constitutes digitalization in detail, what digitalized processes are and what impact a high degree of digital processes has on the success of an enterprise were not examined. The German Federal Ministry of Economic Affairs and Energy had a deeper look in their study on the topic of "Industry 4.0" and what entrepreneurs think about this trend as well as possible opportunities and potentials this trend could create for companies and the economy, but again the precise broken-down criteria for what digitalization stands for, what impact it has on the processes and what successful results (or failures) can be derived from this for the enterprises are missing.[200]

Preliminary Research Question

After the conceptual framework of the existing theories in the field of internationalization, innovation and digitalization had been developed, the research question of this dissertation could be built. This promotional thesis at this point leads to the finding that managerial digitalization, strategic innovation and internationalization are impact factors for enterprises of the financial service industry. But whether they are also success factors for business results, and if so to what

[197] G20 Summit is the Weltfinanzgipfel / G20-Gipfel.
[198] OECD and German Presidency, eds., Key Issues for Digital Transformation in the G20: Report prepared for a joint G20 (2017).
[199] Schroeder, C., Schlepphorst, S., Kay, R. Bedeutung der Digitalisierung im Mittelstand. Bonn, 2015.
[200] German Federal Ministry of Economic Affairs and Energy, ed. Erschließen der Potenziale der Anwendung von 'Industrie 4.0' im Mittelstand, 2015.

extent, has not yet been analyzed with the findings of the current literature research. With its focus on small and medium-sized enterprises in the financial service sector and new business models like FinTechs have, the literature shows a gap in theories and strategies, even though these enterprises, compared to large-scale enterprises, are also very important for the German economy. With these findings the preliminary research question could be formulated as follows:

RQ0: To what extent does a high degree of managerial digitalization, internationalization and strategic innovation have an impact on the business results of small and medium-sized enterprises like FinTechs?

Based on the findings of the literature research in the field of success factor research the term "financial business success" could be formulated. An additional finding is that impact factors could have different dimensions in which they influence financial business success. The status quo of studies indicated that the success factors with the highest impact for business results (for example related to the "resource-based view" by Wernerfeldt)[201]are: tangible resources, which include, on the one hand, financial and physical assets,[202] and intangible resources, which are assets that include intellectual property assets[203] and organizational assets,[204] and additional intangible resources, which are skills that include capabilities.[205] While other resource categories may exist, the above constructs are largely used because they have been tested in previous research.[206] But what has also been identified is that there is a lack of success factor research on FinTech enterprises. Combining these findings with the analyses of the current status of small and medium-sized enterprises in the financial service sector in Germany, internationalization (organizational assets) caused by an ongoing globalization, strategic innovation (intellectual property assets) caused by rising competitive constraints and managerial digitalization (skills and capabilities) caused by the ongoing process of digitalization in all aspects of business, these three independent variables were determined and selected for the model. Because existing success factor research in the field of the

[201] Wernerfelt, B. "A resource-based view of the firm." Strategic Management Journal 5, no. 2 (1984): 171–180.
[202] Grant, R. M. "The resource-based theory of competitive advantage: Implications for strategy formulation." California Management Review, no. 33 (1991): 114–135.
[203] Hall, R. "The strategic analysis of intangible resources." Strategic Management Journal, no. 13 (1992): 135–144.
[204] Barney, J. "Firm Resources and Sustained Competitive Advantage." Journal of Management 17, no. 1 (1991): 99–120.
[205] Amit, R., Schoemaker, P. "Strategic assets and organizational rents." Strategic Management Journal 4 (1993): 33–47.
[206] Galbreath, J. "Which resources matter the most to firm success?: An exploratory study of resource-based theory." Technovation 25, no. 9 (2005): 979–987.

financial service sector is very limited and no empirical basis was found in connection with FinTech companies, further research must be performed to identify possible key factors of business success. To achieve this, an explorative research approach is necessary to identify and delimit the correct key factors.

2. ACTUAL STATE OF GERMAN SMALL AND MEDIUM-SIZED ENTERPRISES IN THE FINANCIAL SECTOR AND CONCEPTUAL FRAMEWORK OF PARAMETERS TO ANALYZE THEIR BUSINESS SUCCESS

After the theoretical foundations about success factor research and the service industry were laid in the first chapter, in Chapter Two small and medium-sized enterprises in Germany are evaluated and defined (2.1) and a presentation and definition of FinTech enterprises is developed (2.2). The determination of the parameters to measure the extent of the influence of impact factors on business success (2.3) and the importance of the parameters of internationalization, strategic innovation and managerial digitalization (2.4) themselves are explained. In the conclusion of the second chapter, secondary data about the diversity of digital tool use within the target group are collected (2.5), conceptual guidance for the subsequent model development is explained (2.6) and cause and effect relations between the variables are shown (2.7).

2.1 Demarcation of Small and Medium-Sized Enterprises in Germany and their Importance for the Economy

There is no conclusive definition of small and medium-sized enterprises in the literature. To find a definition for this work, first, the quantitative aspects should be explained. But because of the different demarcations for small and medium-sized enterprises in quantitative aspects, depending on the institution and country, as well as the possibility of these quantitative values quickly changing, qualitative criteria in defining small and medium-sized enterprises should be explained as well. Results from both findings should be used for an own definition of small and medium-sized enterprises for this work.

Quantitative aspects of the term mostly relate to the size of the company. To scale this size often the turnover and the number of employees (headcount) are used. Also, the total of the balance sheet could be used to classify the size of a company.[207] These numbers vary in relation to the different institutions and countries. In Europe, the European Union definition of a small or medium-sized enterprise covers firms with less than 250 employees, and it is complemented by criteria on annual

[207] Becker, W., Staffel, M., Ulrich, P. Mittelstand und Mittelstandsforschung. Bamberg: Deloitte, 2008. http://nbn-resolving.de/urn:nbn:de:bvb:473-opus-1708.

turnover and the balance sheet.[208] In the United States, the small and medium-sized enterprise limit is commonly 500 employees, but it can also vary up to 1,500 in certain industries. In other parts of the world, for example in China, the small and medium-sized enterprise definition differs from the European Union or United States standards, as in China, small and medium-sized enterprises can have up to 2,000 employees for industrial firms or 3,000 for construction firms.[209]

Table 2.1.1: Quantitative Definition of Small and Medium-Sized Enterprises by different Institutes

Definition Approach	Headcount	Turnover	Total of Balance Sheet
HGB (Commercial Law)	up to 250	up to 32.12M€	up to 16.06M€
European Commission	up to 249	up to 50M€	up to 43M€
Federal Statistical Office	up to 249	up to 50M€	
United States of America	up to 500 (or higher)		
China	up to 2,000 (or higher)		

Source: Author's creation, in regard to Becker (2015) and Hall (1992)[210]

The Institut für Mittelstandsforschung in Germany permanently investigates small and medium-sized enterprises in Germany.[211] According to them and in regard to the qualitative aspects, small and medium-sized enterprises are defined by the unity of equity and management; this means that small and medium-sized enterprises that are dependent on another enterprise do not fulfill the middle-class definition. According to the definition of the Institut für Mittelstandsforschung, the concepts of "middle class," "family enterprise," "owner's enterprise" and "family-controlled

[208] L. Haunschild, Ch. Hauser, and B. Günterberg, "Die Bedeutung der außenwirtschaftlichen Aktivitäten für den deutschen Mittelstand," Untersuchung im Auftrag des Bundesministeriums für Wirtschaft und Technologie, 2007.
[209] Hall, R. "The strategic analysis of intangible resources." Strategic Management Journal, no. 13 (1992): 135–144.
[210] Becker, W., Staffel, M., Ulrich, P. Mittelstand und Mittelstandsforschung. Bamberg: Deloitte, 2008. http://nbn-resolving.de/urn:nbn:de:bvb:473-opus-1708; Hall, R. "The strategic analysis of intangible resources." Strategic Management Journal, no. 13 (1992): 135–144.
[211] The Institut für Mittelstandsforschung (IfM), Bonn was established in 1957 as a foundation of private law on the initiative of Ludwig Erhard, then Minister of Economic Affairs (and later German Chancellor). All information in this dissertation about and from the IfM is found on their website: www.ifm-bonn.org.

enterprise" are considered to be synonymous.[212] Reinemann describes other characteristics to identify the qualitative criteria of small and medium-sized enterprises. For him, flat hierarchies, personal relationships and a corporate environment are criteria for the qualitative perspective.[213] Beside this, being managed by the owner is one of the most frequently mentioned qualitative criteria among the definitions of small and medium-sized enterprises. With this, the owner is mostly solely responsible for their decisions and actions and the responsibility is concentrated on only one person. The owner carries all risks, often with his private equity. Additionally, his private equity is connected with the equity of the enterprise.[214] Kaufmann adds a smaller and often more locally oriented product range compared to large-scale enterprises.[215] But small and medium-sized enterprises are often active and more successful than large-scale enterprises in niche markets with customized products.[216] The European Commission differentiates small and medium-sized enterprises into three more categories: autonomous, partner enterprise and linked enterprise. [217]

Regarding the definition of the European Commission in 2015 an enterprise is categorized as autonomous if it is totally independent from participation in other enterprises; and the other way around no enterprise has a participation in it. It has a holding of less than 25 % of the capital or voting rights (whichever is higher) in one or more other enterprises or any external parties have a stake of no more than 25 % of the capital or voting rights (whichever is higher) in the enterprise. It is not linked to another enterprise through a natural person.[218]

Regarding the definition of the European Commission in 2015 an enterprise is categorized as a partner enterprise if, the enterprise has a holding equal to or greater than 25 % of the capital or voting rights in another enterprise. And another enterprise has a holding equal to or greater than 25 % in the enterprise in question and the enterprise is not linked to another enterprise. This means,

[212] Adenäuer, C. "Barriers to SME Access to Promotion of Foreign Trade and Investment Some evidence from Germany." (2009).
[213] Reinemann, H. "Mittelstandsmanagement." Zeitschrift für betriebswirtschaftliche Forschung (2011). http://gbv.eblib.com/patron/FullRecord.aspx?p=1402660., p. 20f.
[214] Hamer, E. Das mittelständische Unternehmen: Eigenarten, Bedeutung, Risiken u. Chancen. Stuttgart: Poller, 1987.
[215] Kaufmann, F. Internationalisierung durch Kooperation: Strategien für mittelständische Unternehmen. Wiesbaden: Deutscher Univesitätsverlag, 1993.
[216] Fiegenbaum, A., Karnani, A. "Output flexibility—A competitive advantage for small firms." Strategic Management Journal 12, no. 2 (1991): 101–114.
[217] European Commission. "SMEs in the European Union generate half of the intra-EU trade in goods: With a slightly higher share for imports." 2017. http://ec.europa.eu/eurostat/documents/2995521/8467294/6-21112017-AP-EN.pdf.
[218] European Commission. User guide to the SME defintion. Luxembourg: Publications Office of the European Union, 2015

among other things, that the enterprise's voting rights in the other enterprise (or vice versa) do not exceed 50%.[219]

Regarding the definition of the European Commission in 2015 two enterprises are categorized as linked when they have any of the following relationships: One enterprise holds a majority of the shareholders' or members' voting rights in another. One enterprise is entitled to appoint or remove a majority of the administrative, management or supervisory body of another. A contract between the enterprises, or a provision in the memorandum or articles of association of one of the enterprises, enables one to exercise a dominant influence over the other. One enterprise is able, by agreement, to exercise sole control over a majority of shareholders' or members' voting rights in another. A typical example of a linked enterprise is the wholly owned subsidiary.[220]

In the following table, the aforementioned qualitative criteria from the different authors are summed up:

Table 2.1.2: Small and Medium-Sized Enterprises' Qualitative Criteria

Qualitative Criteria	Description
Equity	– Unity of equity (Institut für Mittelstandsforschung 2018) – Autonomous (European Commission 2016) – No partner or linked enterprise (European Commission 2016)
Management	– Unity of management (Institut für Mittelstandsforschung 2018) – Manager is also owner (Institut für Mittelstandsforschung 2018) – Owner is mostly solely responsible and decision-maker (Fu 2005) – High independence from foreign management (Fu 2005)
Organization	– Flat hierarchies (Reinemann 2011) – Corporate is manageable from an economic and technical point of view (Reinemann 2011)

[219] European Commission. User guide to the SME defintion. Luxembourg: Publications Office of the European Union, 2015

[220] European Commission. User guide to the SME defintion. Luxembourg: Publications Office of the European Union, 2015, p "Sonderauswertung des Unternehmensregisters: im Auftrag des IfM Bonn." verschiedene Jahrgänge. https://www.destatis.de/DE/Startseite.html..21

	– Enterprise's voting rights in the other enterprise (or vice versa) do not exceed 50% (European Commission 2016) – Not linked with other enterprises (European Commission 2016) – High flexibility (Fu 2005)
Finance	– Small equity ratio (Fu 2005) – Bounded access to capital market (Fu 2005) – Bounded risk-bearing capacity (Fu 2005)
Products	– Niche products (Fiegenbaum 1991) – Customized products (Fiegenbaum 1991) – Locally oriented product range (Kaufmann 1993) – Small product range, compared to large-scale enterprises (Kaufmann 1993)
Purchasing & Logistics	– Weak position on the buying market (Fu 2005) – Simple logistics (Fu 2005) – Regional economic dependence (Lin 2000)

Source: Author's creation

Derived from the above-mentioned criteria from the existing literature, the following table indicates how the term "small and medium-sized enterprises" should be marked out for this work. For a clear definition, a two-step definition should be used. In the first step, a gross delimitation of the observed enterprises should indicate every enterprise that does not fulfill the quantitative criteria which are presented in the following table and which are inspired by the European Commission; and in the second step those companies are picked out that fulfill the next presented qualitative aspects.

Table 2.1.3. Author's Differentiation of the Term "Small and Medium-Sized Enterprises"

Step 1

Quantitative Criteria	Description
	– Headcount up to 249 full-time equivalents – Turnover up to 50 million euro – Total of balance sheet up to 43 million euro

Step 2

Qualitative Criteria	Description
Equity	– Autonomous company in regard to the unity of equity
Management	– Manager is majoritarian owner, responsible person and decision-maker
Organization	– Flat hierarchies and high flexibility in organizational structure
Finance	– Small equity ratio
Products	– Small product range or even customized products
Logistics	– Simple logistics

Source: Author's creation

According to the German Federal Statistical Office[221] and to the quantitative criteria, this definition accounts for 3.4 million German small and medium-sized enterprises (according to the year 2017). It is assumed that a large majority of these 3.4 million companies also fulfill the qualitative criteria. To highlight these numbers a bit: In 2017 there were only 16,500 large-scale enterprises. This leads to the next section, where the importance of small and medium-sized enterprises will be discussed.

Relevance of Small and Medium-Sized Enterprises for the German Economy

Small and medium-sized enterprises are known as the backbone of the German economy. According to the data of the Institut für Mittelstandsforschung, Bonn,[222] during the period from 2011 to 2017, 99.5% of enterprises were small and medium-sized enterprises, according to the definition of small and medium-sized enterprises of the European Commission. Looking at the European Union, it is evident that this is very similar to the number of small and medium-sized

[221] Federal Statistical Office, Söllner, R. "The german mittelstand in the age of globalisation." WISTA, no. 2 (2016): 107 et seq.; "Berechnungen des IfM Bonn, 05/2019." https://www.ifm-bonn.org/statistiken/mittelstand-im-ueberblick/#accordion=0&tab=1, accessed July 2019.

[222] Institute for Research for Small and Medium Sized Enterprises in Bonn, Germany; Institut für Mittelstandsforschung. "Die IfM-Statistiken." 2018. https://www.ifm-bonn.org/statistiken/.

enterprises in the whole of the European Union. These enterprises employed 14.2 to 17.49 million people during the period from 2011 to 2017 (a steady increase), accounting for 54% to 58% of total employment over the same period (a steady decrease) in Germany. They generated between 33% and 36% of the total sales of all enterprises in Germany. These mentioned facts are some of the reasons why small and medium-sized enterprises have increasingly become the focus of economic policy in Germany and the European Union. The great interest of policymakers in small and medium-sized enterprises is justified.[223] The relevance of small and medium-sized enterprises for the German economy is understood by the German government and because of this there are a huge number of support programs for them. There are 55 different support opportunities for companies in Germany in connection with the project of entering foreign markets and 233 support programs in the area of digitalization.[224] Beside the support by financing models there are platforms for know-how transfer and shareholdings. The following table is a creation by the author based on the data obtained from the German Statistical Office[225] overview about the aforementioned statistical data for small and medium-sized enterprises in Germany over the period shown from 2011 to 2015. The number of enterprises is related to the registered enterprises in the German company register; the employees were measured by the number of employees with a national insurance, and the demarcation of the term "small and medium-sized enterprises" of the European Commission was used.

Table 2.1.4: Share of Small and Medium-Sized Enterprises Compared to All Enterprises in Germany in the Period 2011–2017

Small and Medium-Sized Enterprises in Comparison to all Enterprises

According to the Definition of Small and Medium-Sized Enterprises of the European Commission

Germany 2011–2017

	2011	2014	2017
	Number of Enterprises		
Small and Medium-Sized Enterprises	3,630,991	3,627,675	3,465,239
All Enterprises	3,649,397	3,647,326	3,481,860
Share of Small and Medium-Sized Enterprises in all Enterprises	99.50%	99.46%	99.52%

[223] Federal Statistical Office, Söllner, R. "The german mittelstand in the age of globalisation." WISTA, no. 2 (2016): 107 et seq.; "Berechnungen des IfM Bonn, 05/2019." https://www.ifm-bonn.org/statistiken/mittelstand-im-ueberblick/#accordion=0&tab=1, accessed July 2019.

[224] "Programme zur Gründungsförderung." 2019. http://www.bundesregierung.de/infomaterial.

[225] "Sonderauswertung des Unternehmensregisters: im Auftrag des IfM Bonn." verschiedene Jahrgänge. https://www.destatis.de/DE/Startseite.html.

	Sales in Billion Euro		
Small and Medium-Sized Enterprises	2,064.60	2,131.70	2,331.15
All Enterprises	5,920.90	6,235.80	6,360.95
Share of Small and Medium-Sized Enterprises in all Enterprises	34.87%	34.18%	36.65%
	Number of Persons Employed in Million		
Small and Medium-Sized Enterprises	14.30	14.89	17.49
All Enterprises	26.45	28.10	30.22
Share of Small and Medium-Sized Enterprises in all Enterprises	54.05%	52.99%	57.88%

Source: Author's creation, based on Institut für Mittelstandforschung Bonn

To formulate an answer to the question of whether and to what extent small and medium-sized enterprises are important for the economy, the presented facts and figures present an obvious picture. At 99.42%, nearly all enterprises in Germany are small and medium-sized. This is only in regard to the quantitative criteria of the European Commission. And there has been a decreasing trend over the last five years, which means the number of large-scale enterprises is rising. Nevertheless, the total number of people employed in small and medium-sized enterprises is rising, which underlines the importance of these enterprises. More than half of all employed people in Germany work for a small and medium-sized enterprise. But the share of employed people is decreasing. And an even more adjusted picture is shown by having a look at the sales volume. Here a bit more than one third of the sales were created by small and medium-sized enterprises over the period 2011–2017 in Germany with a rising trend, which shows the economic power. Nevertheless, the importance of small and medium-sized enterprises for the economy is clearly demonstrated. But also, the tough competition and environment for small and medium-sized enterprises in contrast to large-scale enterprises is evident.

2.2 Definition of the Portmanteau Term "FinTech"

FinTech companies operate in the financial sector alongside banks and offer their customers payments and money transfers in electronic and virtual currency. These companies are recognizable as fast lenders or peer-to-peer platforms, in which clients manage their money as well as borrowing from and lending it to each other. They are security market consultants that compete

with banks by offering a high consulting level through robots.[226] FinTech companies are not only those that offer products or services but also those that develop them.[227] The use of the wording "FinTech" is increasing steadily worldwide. Everyone has a vague understanding of what is meant by it. But until now, there has been no legal definition of the term.[228] Schueffel states that there is currently no consensus about what the term FinTech means.[229] Schueffel explores FinTech's complexity and attempts a definition, drawn from a process of reviewing more than 200 scholarly articles referencing the term "FinTech" and covering a period of more than 40 years. He concludes that "FinTech is a new financial industry that applies technology to improve financial activities." The German Bundesbank defines it as a "technology-enabled financial innovation and with this it is a segment of the financial system."[230] 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.[231] Startups are also developing additional innovative and technology-based payment options, thereby positioning themselves directly between the customer and the bank. The use of smartphones is becoming increasingly important with the new payment methods, for example with functions such as the "digital wallet."[232] This is what gives individuals the idea of a FinTech as a massive digitalized company with automatic processes and a paperless office.

FinTech products can be consumer (business to consumer: B2C) or business (business to business: B2B) solutions, back office applications or different ways of performing core functions of

[226] Zvirgzdina R., Skadina H. "The Effect of Macroeconomic Factors on Business Models in Fintech Industry." Economic Science for Rural Development Conference Proceedings 49 (2018): 260–268.
[227] John, K. "User's Acceptance of Mobile Fintech Service: Immersion of Mobile Devices' Moderating Effect." The e-Business Studies 6, no. 16 (2015): 359–381.
[228] Deutsche Bundesbank. "Die Deutsche Bundesbank leistet Hilfestellung bei der aufsichtlichen Einordnung von innovativen Geschäftsmodellen für FinTechs." 2018. https://www.bundesbank.de/Redaktion/DE/Downloads/Aufgaben/Bankenaufsicht/die_deutsche_bundesbank_leistet_hilfestellung.pdf?__blob=publicationFile, accessed June 2018.
[229] Schueffel, J. "Taming the beast: A scientific definition of fintech." Journal of Innovation Management, no. 4 (2016): 32–54. https://journalengineering.fe.up.pt/index.php/IJMAI/article/view/322/221.
[230] Deutsche Bundesbank. "Die Deutsche Bundesbank leistet Hilfestellung bei der aufsichtlichen Einordnung von innovativen Geschäftsmodellen für FinTechs." 2018. https://www.bundesbank.de/Redaktion/DE/Downloads/Aufgaben/Bankenaufsicht/die_deutsche_bundesbank_leistet_hilfestellung.pdf?__blob=publicationFile, accessed June 2018.
[231] Deutsche Bundesbank. "Annual Report 2017." 2018. https://www.bundesbank.de/Redaktion/EN/Downloads/Bundesbank/TCBC/annual_report_2017.pdf?__blob=publicationFile.
[232] Bundesanstalt für Finanzdiensteistungsaufsicht. "FinTechs: Young IT companies on the financial market." 2016. https://www.bafin.de/SharedDocs/Veroeffentlichungen/EN/Fachartikel/2016/fa_bj_1601_fintechs_en.html.

traditional financial intermediaries (such as lending, payments or asset management). In the narrower sense of the term, FinTech is often used to describe businesses providing such technology-enabled financial innovations.[233] What all descriptions of the product range of FinTechs have in common is the point that their services and products are digital: Consumers and businesses can buy them online, use them online or at least digitally at their computers as software. These players carve out, automate and rearrange parts of the value-added chain of traditional financial intermediaries.[234] The products themselves can be found in different categories within the financial sector, such as payment, bitcoins, e-commerce, factoring and many more.

Table 2.2.1: Author's Differentiation of the Term "FinTech"

Step 1

Criteria of Small and Medium-Sized Enterprises	
Quantitative	– Headcount up to 249 full-time equivalents – Turnover up to 50 million euro – Total of balance sheet up to 43 million euro
Qualitative	– Equity – Management – Organization – Finance – Products & Logistics

Step 2

Criteria of FinTech	
Product Functions	– Technology-enabled financial innovation – Segment of financial system – Traditional financial intermediaries' functions – Businesses providing functions such as technology-enabled financial innovations

[233] Deutsche Bundesbank. "Die Deutsche Bundesbank leistet Hilfestellung bei der aufsichtlichen Einordnung von innovativen Geschäftsmodellen für FinTechs." 2018. https://www.bundesbank.de/Redaktion/DE/Downloads/Aufgaben/Bankenaufsicht/die_deutsche_bundesbank_leistet_hilfestellung.pdf?__blob=publicationFile, accessed June 2018.

[234] "Fintechs: Technology enabled financial innovations." 2018. https://www.bundesbank.de/Redaktion/EN/Standardartikel/Tasks/Banking_supervision/fintechs.html?nsc=true&https=1&https=1&https=1, accessed June 2018.

Product Usability	– Digital services and products – Buy product online – Use product online – Software as a Service[235]	
Competition	– Carve out, automate or rearrange parts of the value-added chain of traditional financial intermediaries	
Sector	**Innovative Services:**	**Classic Banking Services:**
	– Bitcoins – Application Program Interface Banking – Ident – Peer-to-Peer Payment – E-Commerce – Donations	– Portfolio Management – Savings – Insurance – Property Finance – Risk Rating – Payments – Factoring – Accounting – Order/Cash – Credit – Banking

Source: Author's creation

In Germany (as compared to the rest of the European Union and United States as well), a bank with classical banking services requires authorization by the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht – BaFin). The following table gives an overview of whether a bank or a FinTech company needs such an authorization.

[235] Software as a Service (SaaS) is a term that describes a software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted.

Table 2.2.2: Categorization of German FinTech Business Regarding Deutsche Bundesbank

Category	Description	Result Permission Required
Businesses with no institutional-prudential offense[236]	– No competition to prudential institutions – Business models with information technology with supported functions for banks, bank customers or financial service companies – No bank services or finance services as defined by the German Banking Act[237] or the German Payment Services Supervision Act[238]	No
Companies with bank businesses regarding paragraph 1 section 1 German Banking Act	– Companies with bank business with obligation to gain permission – In particular deposit businesses regarding paragraph 1 section 1 sentence 2 number 1 of the German Banking Act And/or – Credit businesses regarding paragraph 1 section 1 sentence 2 number 2 of the German Banking Act. As well as – Financial Commission Businesses regarding paragraph 1 section 1 sentence 2 number 4 of the German Banking Act Or – Depositing business regarding paragraph 1 section 1 sentence 2 number 5 of the German Banking Act	Yes
Companies with financial businesses regarding paragraph 1 section 1a German Banking Act	– Investment brokerage regarding paragraph 1 section 1a sentence 2 number 1 German Banking Act And/or – Investment advisory regarding paragraph 1 section 1a sentence 2 number 1a German Banking Act And/or – Acquisition brokerage regarding paragraph 1 section 1a sentence 2 number 2 German Banking Act	Yes

[236] (Non)Supervisory Board Institution.
[237] Kreditwesengesetz (KWG).
[238] Zahlungsdiensteaufsichtsgesetz (ZAG).

	And/or – Financial portfolio management regarding paragraph 1 section 1a sentence 2 number 3 German Banking Act And/or – Factoring businesses regarding paragraph 1 section 1a sentence 2 number 9 German Banking Act	
Companies with payment services regarding paragraph 1 section 2 Payment Services Supervision Act	– All services for Internet payment methods which require a permission	Yes

Source: Author's creation, based on the definition of Deutsche Bundesbank

A number of active FinTech Businesses in Germany were published monthly from "paymentandbank.com." For this promotional thesis the number from May 2018 will be the status quo for the target group of the empirical part. There were at that time 289 FinTech companies in Germany depending on the definition of a FinTech company and in the view of the author's definition of a FinTech company. Paymentandbank.com also published the different sectors in which the FinTechs act, but according to the relevant parameters of this work (business size, organizational structure, business model and internal administrative processes), they build a homogeneity and with this can be compared to each other.

After this overview about what the current literature states about FinTechs, the author of this promotional thesis creates her own definition of the term "FinTech," which should be used in the following approach for demarcation:

FinTechs are enterprises with a digital and Internet-integrated financial product service range.[239]

Due to the fact that FinTechs generate their growth with digital services there are no studies indicating how digitalized FinTechs are, when it comes to the point of their organization itself. Until now no researcher has asked whether a digital product or service leads to the fact that the internal processes within the company are digital as well. How digital their internal processes,

[239] Author's definition of the term "FinTech."

structures and workflows are having until now, not been observed. But as described before, every company, no matter in which field they are acting, can profit from the advantages of digitalization. Often FinTechs fit within the definition of a small and medium-sized enterprise, because they are so-called "startup companies,"[240] but not all of them are categorized in this business size, as the German Bundesbank mentions.[241]

A disruptive technology is a technology that initiates massive economic transformations in existing markets and value networks, typically disrupting the status quo by displacing established market leaders, products and/or alliances.[242] In the banking domain, disruptive technology refers to the application of rapidly developing technology at both the retail and small-business levels and the entrenchment of financial technology in financial services. Examples include digital reporting, digital loan origination, payment transfers and demonetization resulting in the conception of new banking segments, channels and products. FinTech generally leverages technology and innovation, delivering niche services via electronic (online) conduits through disintermediation that circumvents incumbent financial institutions.[243]

Beside the advantages of digitalization for the success of a company, internationalization has been mentioned before. Compared to the benefits of digitalization, internationalization is a growth driver for enterprises. These observations compared to the interest in small and medium-sized enterprises due to the aforementioned importance for the German economy leads the author to the main research question of this work: To what extent does a high degree of managerial digitalization, internationalization and strategic innovation enable small and medium -sized enterprises like

[240] A startup company (startup or start-up) is an entrepreneurial venture that is typically a newly emerged business that aims to meet a marketplace need by developing a viable business model around a product, service, process or platform. A startup is usually a company designed to effectively develop and validate a scalable business model. Katila, R., Chen, E. L., Piezunka, H. "All the right moves: How entrepreneurial firms compete effectively." Strategic Entrepreneurship Journal 6, no. 2 (2012): 116–132.

[241] Deutsche Bundesbank. "Die Deutsche Bundesbank leistet Hilfestellung bei der aufsichtlichen Einordnung von innovativen Geschäftsmodellen für FinTechs." 2018. https://www.bundesbank.de/Redaktion/DE/Downloads/Aufgaben/Bankenaufsicht/die_deutsche_bundesbank_leistet_hilfestellung.pdf?__blob=publicationFile, accessed June 2018. Deutsche Bundesbank. "Annual Report 2017." 2018. https://www.bundesbank.de/Redaktion/EN/Downloads/Bundesbank/TCBC/annual_report_2017.pdf?__blob=publicationFile.

[242] "The concise fintech compendium." 2017. http://www.heg-fr.ch/EN/Pages/School-of-Management-Fribourg.aspx, accessed July 2019; Boratyńska, K. "Impact of Digital Transformation on Value Creation in Fintech Services: An Innovative Approach." Journal of Promotion Management 25, no. 5 (2019): 631–639.

[243] Anagnostopoulos, I. "Fintech and regtech: Impact on regulators and banks." Journal of Economics and Business 100 (2018): 7–25.

FinTechs to manage their businesses successfully?

Relevance of FinTechs for the Economy

The technological developments in infrastructure, big data, data analytics and mobile devices allow FinTech startups to disintermediate traditional financial firms with unique, niche and personalized services.[244] The growth of investment in FinTech has been increased dramatically. According to an industrial report by Skan, Dickerson and Gagliardi, the cumulative value of investments in FinTech firms reached US$22.3 billion in 2015 and grew by 75% from the previous year.[245] In total, more than US$50 billion has been invested in FinTech firms around the world since 2010. The number of FinTech firms is currently estimated at more than 12,000 worldwide.[246] In Germany, the number of FinTechs is comparably less with 289 FinTech enterprise categorized companies (as of May 2018, paymentandbanking.com). Digital innovation, or the use of digital technology during the process by which a firm innovates, has radically changed the nature and structure of new products and services, including financial technology services. Moreover, digital innovation has spawned novel value creation and value appropriation pathways. More recently, there has been an expansion to identifying and articulating unique aspects of digitalization in industries, specific organizational domains or product families.[247]

The financial technology itself is one of the most significant innovations in the finance industry and is evolving rapidly, driven mainly by the sharing economy, information technology and favorable regulation. Thus, FinTechs are an important and relevant group in the economy in Germany and worldwide.

[244] Lee, I., Shin, Y. J. "Fintech: Ecosystem, business models, investment decisions, and challenges." Business Horizons 61, no. 1 (2018): 35–46.
[245] "Fintech and the evolving landscape: landing points for the industry. Retrieved from." 2016. http://www.fintechinnovationlablondon.co.uk/pdf/Fintech_Evolving_Landscape_2016.pdf, accessed June 2019.
[246] Lee, I., Shin, Y. J. "Fintech: Ecosystem, business models, investment decisions, and challenges." Business Horizons 61, no. 1 (2018): 35–46.
[247] Nambisan, S., Lyytinen, K., Majchrzak, A., Song, M. "Digital Innovation Management: Reinventing Innovation Management Research in a Digital World." MIS Quarterly 41, no. 1 (2017): 223–238.

2.3 Determination of Parameters to Analyze Business Success in the Context of Internationalization, Managerial Digitalization and Strategic Innovation

2.3.1 Parameters to measure the Degree of Internationalization

According to the Organisation for Economic Co-operation and Development, the globalization process for small and medium-sized enterprises can be realized through any of a range of cross-border activities, including trade, international investment (like "foreign direct investments") and participation in strategic alliances, partnerships and networking arrangements, affecting a variety of business functions ranging from research and product development to distribution. The key performance indicators in the study of Zhang in 2017, "Cooperating with foreign enterprises under joint ventures, non-equity alliances, licensing and franchising," were additionally analyzed by the Organisation for Economic Co-operation and Development together with Sakai in 2000. According to the Organisation for Economic Co-operation and Development, there is a disproportionately low level of European small and medium-sized enterprises' activity in international markets compared to large-scale enterprises.[248] It leads to the same outcome when the focus is on German small and medium-sized enterprises in particular, as shown in an investigation by Adenäuer.[249] Also, the Institut für Mittelstandsforschung comes to the same estimation for German small and medium-sized enterprises. The Institute, together with Söllner, found that small and medium-sized enterprises differ remarkably from large enterprises with regard to their degree of internationalization. The directions of trade flows result in a large proportion of small and medium-sized enterprises (77%) not being involved in foreign trade at all, while 14% conducted only imports, 3% only exports and 5% were what are referred to as two-way traders (i.e. they have both imports and exports) in the year 2013. In this respect, small and medium-sized enterprises are completely different from large enterprises: Only 19% of large firms do not show any activity in foreign trade, but more than 50% are two-way traders and 24% have only imports.[250] The following table shows that German cross-border trade in goods is dominated by large firms. All small and medium-sized enterprise groups together (micro, small and medium-sized) accounted for only 16%

[248] OECD, ed., Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards A More Responsible And Inclusive Globalisation (Istanbul, Turkey, 2004).
[249] Adenäuer, C. "Barriers to SME Access to Promotion of Foreign Trade and Investment Some evidence from Germany." (2009).
[250] Federal Statistical Office, Söllner, R. "The german mittelstand in the age of globalisation." WISTA, no. 2 (2016): 107 et seq.

of the exports and 20% of the imports in 2017. The volume of exports and imports by small and medium-sized enterprises decreased over the period 2011–2017. According to an analysis by the Institut für Mittelstandsforschung in 2017, 11% of all enterprises in Germany trade goods with foreign countries, and 97.3% of all these enterprises are small and medium-sized (as of the year 2017).[251]

Table 2.3.1: Overview of Export and Import Volume of Small and Medium-Sized Enterprises in Comparison to Large-Scale Enterprises in Germany for the Period 2011–2017

German Export and Import Volume by Business Size for the Period 2011–2017[252]

Year	Small and Medium-Sized Enterprises	Large-Scale Enterprises	Total	Small and Medium-Sized Enterprises Share
	Million Euro[253]			In %
German Export Volume				
2011	501,39	874,20	1.375,58	36%
2014	323,57	1.100,37	1.423,95	23%
2017	213,90	1.087,20	1.301,10	16%
German Import Volume				
2011	541,63	548,82	1.090,45	50%
2014	357,97	739,58	1.097,54	33%
2017	128,40	502,16	630,56	20%

Source: Author's creation, based on Organisation for Economic Co-operation and Development (2018) and IfM Bonn 2019[254]

Summing up the provided data and information, the table above confirms the estimation of the different authors that in terms of the number of foreign trading companies, small and medium-sized

[251] Statistisches Bundesamt, and Institut für Mittelstandsforschung, eds. Sonderauswertung der Umsatzsteuerstatistik (Voranmeldungen) 2015. Wiesbaden, 2017.

[252] This indicator shows the contribution to exports and imports by different-sized enterprises. Business size is measured by the number of employees and exports are measured in trade value in millions of USD. Small and medium-sized enterprises employ fewer than 250 people, with further subdivision into micro-enterprises (fewer than 10 employees), small enterprises (10 to 49 employees) and medium-sized enterprises (50 to 249 employees). Large enterprises employ 250 or more people.

[253] Original data in US dollars. For a better comparison to the other tables: Currency Translation 1.1.2018 (1.00 USD = 0.83 EUR) Bundesverband Deutscher Banken https://bankenverband.de/service/waehrungsrechner/.

[254] OECD (2018), Imports by business size (indicator). doi: 10.1787/ef8f00b7-en (accessed 21 May 2018); "Berechnungen des IfM Bonn, 05/2019." https://www.ifm-bonn.org/statistiken/mittelstand-im-ueberblick/#accordion=0&tab=1, accessed July 2019.

companies are the vast majority, but looking at the volume itself, they have a very underrepresented role. This counts for the import as well as the export volume. And as regards the numbers shown, there is an increasing trend in the export and import volume in the share of large-scale enterprises, which underlines again (as in the total numbers, employed people and sales table before) the tough competition for small and medium-sized enterprises on the market compared to large-scale enterprises.

Internationalization is much more complex than can be encapsulated in a single index like the export-import rate, thus other measurements tend to adopt a discrete or mixed approach combining quantitative and qualitative elements. Because small and medium-sized enterprises are usually not part of any representative business association promoting their interests, and many of them do not necessarily keep detailed records of their activities and also business patterns are constantly evolving and this makes it difficult to find a sound methodology, it is not easy to measure the degree of internationalization over time.[255] The most comprehensive method so far is the measurement by Dunning and Lundan. They use seven indicators to capture the internationalization of a firm:[256] the number of foreign markets involved; the number and revenue of foreign affiliates; the proportion of foreign assets, sales, profit or staff of the firm; the proportion of foreign ownership or management in the firm; the value of research and development conducted abroad; whether the firm controls international networks; and the extent to which the management of the firm is devoted to foreign affiliates.

According to the study of the Organisation for Economic Co-operation and Development, small firms became more frequent participants and targets of cross-border mergers and acquisitions, but mostly with larger firms that were seeking specialized units, new technologies or niche products and services. It is obvious that the number of deals has steadily increased since 1996 for service alliances. For manufacturing alliances there is no tendency for a growth or decrease. Becoming a specialized supplier to large multinational enterprises is another form of globalization. Most small and medium-sized enterprises joining alliances in these sectors are medium-sized firms, and, as mentioned, the bulk of the deals involve collaboration with larger firms, although some are also with other small and medium-sized enterprises. Another Organisation for Economic Co-operation

[255] APEC Small and Medium Enterprises Working Group (SMEWG), ed., SME Monitoring Index (2016).
[256] Dunning, J. H., Lundan, S. M. Multinational enterprises and the global economy. 2nd ed. Cheltenham: Elgar, 2008. http://lib.myilibrary.com/detail.asp?id=177936.

and Development study shows that only a very small minority of small and medium-sized enterprises invest abroad in subsidiaries, branches or joint ventures in other countries. The survey shows that in the year 2005, only 3% of small and medium-sized enterprises in Europe had subsidiaries, branches or joint ventures in other countries, which is exactly the same number as for Germany in 2005 (see Figure Appendix 1: European Small and Medium-Sized Enterprises Having Subsidiaries / Branches / Joint Ventures Located Abroad in % in 2005).[257] The degree of investments abroad by German small and medium-sized enterprises in the period 2007–2011 was analyzed by the Kreditanstalt für Wiederaufbau (abbreviation KfW) in 2012 and they found out that 20% of the investigated companies made foreign investments. These 20% invest 18% of all their investments abroad (average of the investigated years).[258] Söllner investigated the amount of foreign control of small and medium-sized enterprises in Germany in the period 2009–2013 by companies abroad.[259] The investigation reveals that in 2013, there were almost 18,000 enterprises in Germany that were controlled by a parent company located abroad. Söllner's research shows that the economic importance of foreign-controlled small and medium-sized enterprises has increased within the German Mittelstand in regard to the number of employed persons, and the same is true if the turnover is observed.

Obstacles and Barriers for Small and Medium-Sized Enterprises when becoming International

Faix points out in general the different issues that every enterprise, no matter what size, has to deal with when it considers internationalizing.[260] Additional resource availability and knowledge play a pivotal role in the internationalization process of small and medium-sized enterprises.[261] The management has to evaluate the current situation and must have an overview of the framework conditions of its own company and the potential foreign market. Further, the management has to investigate the risks and potentials in going international and the company's international market

[257] OECD, ed., Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards A More Responsible And Inclusive Globalisation (Istanbul, Turkey, 2004).
[258] KfW Bankengruppe. Internationalisierung im Deutschen Mittelstand. Studien und Materialien. Frankfurt am Main: KfW Bankengruppe, 2012.
[259] Federal Statistical Office, Söllner, R. "The german mittelstand in the age of globalisation." WISTA, no. 2 (2016): 107 et seq.
[260] Faix, W. G., Kisgen, S., Heilmann, S. Globalisierungsmanagement deutscher Unternehmen: Gründe, Zielregionen, Formen, Hindernisse, Erfolgsfaktoren. Stuttgart: Steinbeis-Stiftung, 2013.
[261] Autio, E., Sapienza, H. J., & Almeida, J. G. "Effects of age at entry, knowledge intensity, and imitability on international growth." Academy of Management Journal 43, no. 5 (2000): 909–924.

selection for going international.[262] In a nutshell, internationalizing small and medium-sized enterprises face smallness, newness, foreignness and outsider ship liabilities.[263]

Faix makes the point that although there are some exceptional examples of small and medium-sized enterprises that have successfully adapted to environmental changes, which forces enterprises to follow their customers to foreign markets, most small and medium-sized enterprises lack the internal resources needed for entry into, and the development of, foreign markets.[264] Additionally, the unique business environment of each target "foreign" market, characterized by its own configuration of regulatory, administrative, policy and cultural dimensions, embodies a formidable challenge to the "would-be small and medium-sized enterprise exporter," investor or future network partner, involving both complexity and risk dimensions, for which the exporting small and medium-sized enterprises are largely ill-prepared.[265] Structural problems related to small and medium-sized enterprises compared to large-scale enterprises make it more complicated for them to successfully master the challenges of globalization. They have disadvantages compared to larger firms, for example that they are less well-resourced than large firms for meeting globalization in terms of handling barriers to internationalization such as limited capital and a management system, a lack of time, experience and information resources, and environmental restrictions.[266] Moreover, they are less well equipped than large-scale enterprises, but on the other hand experience the same needs as larger firms for prior research and preparations before embarking on global markets.[267] The Kreditanstalt für Wiederaufbau, together with Creditreform, found out in an analysis in 2012 among 28,000 surveyed companies that at 39%, the (felt) missing legal security in foreign countries is the most frequently mentioned export obstacle, while 36% of the surveyed enterprises named problems with payment ethics secondly as export obstacles as well as bureaucracy issues (34%).[268]

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262 Faix, W. G., Kisgen, S., Heilmann, S. Globalisierungsmanagement deutscher Unternehmen: Gründe, Zielregionen, Formen, Hindernisse, Erfolgsfaktoren. Stuttgart: Steinbeis-Stiftung, 2013.

263 Almodóvar, P., Rugman, A. M. "Testing the revisited Uppsala model: Does insidership improve international performance?" International Marketing Review 32, no. 6 (2015): 686–712.

264 Faix, W. G., Lau, A., Schulten, A., Zywietz, T., Kisgen, S. Außenwirtschaft. Stuttgart: Gabler Verlag, 2006. http://gbv.eblib.com/patron/FullRecord.aspx?p=748454.

265 OECD, ed., Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards A More Responsible And Inclusive Globalisation (Istanbul, Turkey, 2004).

266 Rialp, A., and Rialp, J. "Conceptual frameworks on SMEs' internationalization: Past, present and future trends of research." Axinn, no. 11 (2001): 49–78.

267 OECD, ed., Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards A More Responsible And Inclusive Globalisation (Istanbul, Turkey, 2004).

268 KfW Bankengruppe. Internationalisierung im Deutschen Mittelstand. Studien und Materialien. Frankfurt am Main: KfW Bankengruppe, 2012.

Challenges and threats can concern the standards and international compatibility issues of a company, the intellectual property protection as well as political risks and corruption or rule-of-law issues in general.[269] According to different authors from the aforementioned studies, inadequate resourcessuch as limited staff capacity and capital impede the research and analysis of relevant data, which is necessary to gain information.[270] Demick added that small and medium-sized enterprises seldom observe and investigate new markets, and in particular international markets. Furthermore, they find it difficult to evaluate the opportunities and risks related to international markets.[271] Also, Gankema adds that small and medium-sized enterprises often have difficulty in developing potential foreign business without neglecting their domestic business.[272] The probability of false estimations and wrong decisions is high and can only be corrected with difficulty afterwards.[273] It is evident that most small and medium-sized enterprises do not possess the capacity, knowledge or experience to identify and develop the international market potential purposefully.[274] In addition, the Organisation for Economic Co-operation and Development points out that several supply-side obstacles are important, notably trade and regulatory barriers. The most common barriers to foreign market access, including via e-commerce, include:[275] high customs administration and shipping costs, such as obstructing long-tail economic transactions, which affect the ability to engage in electronic commerce; inadequate property rights protection, such as copyrights, patents and trademarks; and a shortage of working capital to finance exports, such as information to locate and analyze markets, or managerial time, skills and knowledge.

[269] Malhotra, S., Sivakumar, K., Zhu, P. C. "Distance factors and target market selection: The moderating effect of market potential." International Marketing Review 26, no. 6 (2008): 651–673.
[270] Adenäuer, C. "Barriers to SME Access to Promotion of Foreign Trade and Investment Some evidence from Germany." (2009).; Korhonen, H., Luostarinen, R., Welch, L. "Internationalization of SMEs: Inward-outward patterns and government policy." Management International 36, no. 4 (1996): 315–329.
[271] Demick, D. H., O'Reilly, A. J. "Supporting SME Internationalisation: A Collaborative Project for Accelerated Export Development." Irish Marketing Review, 13(1) (2000): 34–45, p. 34.
[272] Gankema, H. G. J., Snuif, H. R., Zwart, P. S. "The internationalization process of small and medium-sized enterprises: An evaluation of stage theory." Journal of Small Business Management 2000: 15–27, accessed November 2016., p. 55ff.
[273] Chiara, A. de, Minguzzi, A. "Success Factors in SMEs' Internationalization Processes: An Italian Investigation." Journal of Small Business Management 40, no. 2 (2002): 144–153.
[274] Collinson, S., Houlden, J. "Decision-Making and Market Orientation in the Internationalization Process of Small and Medium-Sized Enterprises." MIR: Management International Review 45, no. 4 (2005): 413–436.
[275] OECD, ed., Maximising the Economic and Social Value of Data: Understanding the Benefits and Challenges of Enhanced Data Access. Internal document (Paris, 2016).

Table 2.3.2: Small and Medium-Sized Enterprises' Specific Problems and Threats from Entering Foreign Markets

Problems

Resources	Structure	Information
Lack of internal resources	Limited management system	Lack of information about important resources
Less well equipped	Structural problems	Lack of information to locate markets
Shortage of working capital to finance exports		Lack of information to analyze markets
Limited capital resources		

Costs	Management	Trade Barriers
High customs administration costs (compared to large-scale enterprises)	Lack of internationalization experience	Tariff and nontariff trade barriers
High shipping costs (compared to large-scale enterprises)	Lack of managerial knowledge	Cost factor in small-scale trade
	Lack of managerial skills	
	Lack of managerial time	

Threats

Competition	Heightened international competition	Loss of traditional markets to lower-priced competition
Foreign economic environment	Standards and international compatibility issue	Rule-of-law issues
Intangible assets	Intellectual property protection	Property rights protection
Political environment	Political risks	Corruption

Source: Author's creation, based on OECD (2004, 2016), Rial (2001), Felbermayr (2015), Malhotra (2008)

Compared to multinational enterprises, small and medium-sized enterprises have their own specific problems with entering foreign markets, as shown in the table above. This potential risk of a failure evaluation, combined with the probability of financial distress, combined with the aforementioned

threats that entrepreneurs of small and medium-sized enterprises have, as also shown in the table above, may explain the low number of internationalized small and medium-sized enterprises, and shows even more the need to investigate in this area.

2.3.2 Parameter to Measure the Degree of Strategic Innovation

In regard to a report of the Organisation for Economic Co-operation and Development from 2019 "Innovation" got a changing nature. And with this characteristic it has altered the conditions under which firms innovate and modified the range and importance of the innovation assets like their offered products and services. The shift towards more incremental, nontechnological and open innovation models has brought new opportunities for firms that do not carry out research and development and for smaller-scale actors. In the past these were often smaller firms with a lower budget than large-scaled enterprises. Innovation modes have diversified as firms increasingly combined different approaches and invested in complementary assets, such as technology like digital administration tool, firm-specific skills, organizational settings and processes. Small and medium-sized enterprises are primary sources of innovation. Their contribution to innovation remains, however, subdued compared to the large population of firms they account for.[276]

To measure how innovative an enterprise is, different approaches exist in the literature. One well-known approach is that of Schumpeter (1934). He differentiates between two variables and the correlating indicators thereof. These are input and output indicators.

Input indicators could be:

- Capital
- Human Resources
- Know-how
- Technology
- Organizational Concepts

Measuring the degree of innovation within an enterprise through these indicators is called the "resource-oriented-approach."[277] This approach has already been shown in the literature review

[276] OECD SME and Entrepreneurship Outlook 2019: OECD, 2019.
[277] Barney, J. "Firm Resources and Sustained Competitive Advantage." Journal of Management 17, no. 1 (1991): 99–120.

before when it came to the question of internationalization theories. The indicators for the variables are direct, measurable and quantifiable. These variables answer the question of "what an enterprise puts in" for innovation. Output indicators can also be measured, direct and quantifiable. This shows the economic effects of the innovation.[278]

Output indicators could be:

- Product
- Costs
- Quality
- Flexibility
- Time[279]

These variables answer the question of "what the results of the innovation activities are."

More in detail with the variables of Schumpeter, he combines these with the act of internationalization.[280]

Entrepreneurial act of internationalization by Schumpeter:

- Product: The introduction of a new good, which means the consumers are not yet familiar with the quality of this good.
- Process: The introduction of a new method of production, which is one not yet tested by experience in the sector.
- Business model: The entering of a new market, which is a market into which the particular sector of manufacture of the country has not entered before.
- Source of supply: The conquest of a new source of supply of raw materials of half-manufactured goods, even if this source already exists.

[278] Schumpeter, J. A. The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle. Cambridge: Harvard University Press, 1934.
[279] Porter, M. E. The competitive advantage of nations: With a new introduction. New York: Free Press, 1998. http://www.loc.gov/catdir/bios/simon051/98009584.html.
280 Drejer, I. "Identifying innovation in surveys of services: A Schumpeterian perspective." Research Policy 33, no. 3 (2004): 551–562

– Mergers & divestments: The carrying out of new organization of any industry, such as the creation of a monopoly position or the breaking up of a monopoly position.

But in the current literature there are existing much more measurement methods like investigating the bidirectional causality between research and development to profitability which could be measured in terms of net profit, return on assets or return on equity. [281] Additionally, in regard to Kenton, a generally known key performance indicator to measure the success of innovation within a company is the "Return on Innovation Investment". This is a performance measure used to evaluate the effectiveness of a company's investment in new products or services. The return on innovation investment is calculated by comparing the profits of new product or service sales to the research, development and other direct expenditures generated in creating these new products or services. The focus of return on innovation investment is not only to determine how well a company is turning its investments in new products or services into additional profit for the company, but also how efficient it is in its research and development spending.[282] Busru et. al. points out in their annual "Global Innovation 1000" study that there is no statistical relationship between the budget that is spend on innovation and financial performance. They came also to the conclusion that it is the way the management of the firms spend the money on innovation is more important than how many is spend.[283] The better a company is able to forecast the demand for its new offerings, as well as how efficient it is in allocating resources, the better its return on innovation investment should be.[284]

Blockchain Technology and Robotics as Innovation Factors for FinTechs

Blockchain technology is a distributed ledger, a chain of blocks; it is "a database of assets or transactions that is shared with a network so that all parties have their own identical copy of the ledger. When a change is made to the ledger, every copy of the ledger across the network is updated

[281] Busru, S. A., Shanmugasundaram, G. "Effects of Innovation Investment on Profitability and Moderating Role of Corporate Governance: Empirical Study of Indian Listed Firms." Indian Journal of Corporate Governance 10, no. 2 (2017): 97–117

[282] "Return On Innovation Investment." https://www.investopedia.com/terms/r/return-on-innovation.asp, accessed October 2019.

[283] Jaruzelski, B., Chwalik, R., Goehle, B. "The Global Innovation 1000 Study: Investigating trends at the world's 1000 largest corporate R&D spenders." Tech & Innovation, no. 93 (2018).

[284] "Return On Innovation Investment." https://www.investopedia.com/terms/r/return-on-innovation.asp, accessed October 2019.

almost simultaneously."[285] In the case of blockchain, each transaction, or database entry, is recorded as a block of data, and each new block has an encrypted copy of the previous block within it, thereby connecting the two together. Blocks are then linked together using cryptographic signatures, creating a chain of activity or transactions that are time-stamped, distributed according to their nature and tamper-proof. With this, blockchain creates an incorruptible ledger of blocks of information. The information it stores can be potentially anything, from the ownership of works of art to copyright information and financial transactions. Distributed ledgers can be public or private.[286]

As a source of future innovation, blockchain has four main strengths:[287]

1. Blockchain is an "open book", this means, the access to the programming interface is free to be accessed by anyone who agreed to join the network. Open sources for all developers make a high increase of innovation within the blockchain technology possible.
2. Blockchain is distributed, this means that every transaction which is done with the technic of a blockchain gets one copy of millions, generated by the system and can see updates of all transactions processed without the approval of a central authority.
3. Consequently, it is secure, the described complex copy system and algorithm behind it made to the ledger are individually immutable.
4. Additionally, it is affordable for the enterprises, caused through the fact that it is distributed over a network and without control by a single authority.

For the management of small and medium-sized enterprises this means, if all the information about all the assets at work and all the processes happening are recorded instantaneously and stored as such as described, management can have all kind of financial and business reports almost live, on-line.[288] Robotics Process Automation deals with the question, how much and where up can go the automated decision system, without human intervention. In this case, nowadays the term Robotics Process Automation (abbreviated RPA) plays a role. "It is already bringing sweeping change to the

[285] Drescher, D. Blockchain Basics: A Non-Technical Introduction in 25 Steps. New York: Apress, 2017. http://dx.doi.org/10.1007/978-1-4842-2604-9.
[286] Higgins, R. C. Analysis for financial management. New York, NY: McGraw-Hill Education, 2016.
[287] Drescher, D. Blockchain Basics: A Non-Technical Introduction in 25 Steps. New York: Apress, 2017. http://dx.doi.org/10.1007/978-1-4842-2604-9.
[288] Dimbean-Creta, O. "FinTech in Corporations: TRansforming the Finacne Function." Quality-Access to Success 3, no. 19 (2018). https://www.srac.ro/calitatea/en/arhiva/supliment/2018/Q-asContents_Vol.19_S3_October-2018.pdf.

finance function, enabling dramatic cost savings and increasing the speed of transaction processing.[289]

Blockchain services are meanwhile a small but established sector within the German financial industry and with its decentralized and trustless nature, blockchain technology can lead to new opportunities and benefit businesses through greater transparency, enhanced security, and easier traceability. With these advantages blockchain (could be added as a part of "strategic innovation") supports the suggestion that "strategic innovation" could be a success factor as well. The assumption of a high degree of innovation within German small and medium sized FinTechs could be estimated.

2.3.3 Parameters to Measure the Degree of Managerial Digitalization

To identify the degree of managerial digitalization of a small or medium-sized enterprise, the relevant technologies regarding digitalization that stands for a digital enterprise were figured out by evaluating an overview of many different current studies and position papers. On the basis of this, a compilation of the most important mentions and a clustering of relevant digitalization fields were carried out: "Cloud Usage for Data Storage," "Cloud Usage for Software," "Communication via Internet," "Digital Workflow," "Digital Human Resource Process, Digital Travel Management," "Digital Fleet Management," "Use of Enterprise Resource Planning Software," "Use of Online Shop for Sales Activity" and "Use of Digital Knowledge Database."

For the author's definition of the degree of managerial digitalization of an enterprise it is not important which product or service the enterprise offers or whether this is in some way digital or digitally available. In this promotional thesis it is about the internal administrative processes, which describes the degree of managerial digitalization in an enterprise. According to a study by Schroeder in cooperation with the Institut für Mittelstandsforschung, Bonn in 2014, the different internal administrative digitalization tools are not equally important for the success of the business. In the study "Bedeutung der Digitalisierung im Mittelstand" they grouped the digitalization tools into six categories: accounting, sales, purchase, strategy, production and human resources. For the study, Schroeder et al. analyzed 3,800 small and medium-sized enterprises in 2014 using the

[289] Drescher, D. Blockchain Basics: A Non-Technical Introduction in 25 Steps. New York: Apress, 2017. http://dx.doi.org/10.1007/978-1-4842-2604-9; PWC. "Robotics An immediate opportunity for finance: How finance functions are transforming to drive business results." Finance Effectiveness Benchmark Report 2017, no. 1 (2017).

technique of structured interviews via questionnaires. The enterprises depended on different industrial sectors and financing was one of them (1.8% of the analyzed enterprises came from the finance sector). The most important tools were found in the category of accounting with 25.9%, followed by sales. The least important tools were found in the category of human resources.[290] Another study by Steimel and Buehler also grouped digitalization tools in categories and analyzed the tools in terms of their importance for business success. In this study from 2018 they found nine categories: technology, strategy, leadership, accounting, sales, production, administrative processes, culture and human resources.[291] Steimel and Buehler interviewed 54 experts for this reason from 54 different companies. They found that the highest impact in terms of business success is found in the category of leadership (70%) and the lowest impact is found in "customer experience" with 45%. For the following secondary data analysis only the results from the first study were considered, due to the fact that the categories best fit those of the author of this promotional thesis.

[290] Schroeder, C., Schlepphorst, S., Kay, R. Bedeutung der Digitalisierung im Mittelstand. Bonn, 2015.
[291] "Digitale Dividende im Mittelstand." 2018. https://www.rfh-koeln.de/aktuelles/meldungen/2018/neue_mittelstands-studie_mit_der_digitalisierung_steigen_die_profite/index_ger.html, accessed November 2019.

Table 2.3.3: Importance of the Measured Digitalization Tools for the Business Success of Small and Medium-Sized Enterprises from the German Financial Service Sector

Importance for Business Success in %					
Schroeder, C.; Schlepphorst, S. & Kay, R. (2015)	**Digitalization Tool by Teltz, A.**	**No Estimate**	**No or Low Importance**	**Medium Importance**	**Important to High Importance**
Accounting	Digital Workflow	38,3	13,0	24,3	24,5
Sales	Use of Online Shop for Sales Activity	38,2	15,4	23,6	22,8
Purchase	-	39,8	24,2	20,6	15,5
Strategy	Cloud Usage for Data Storage	43,9	28,6	12,2	15,4
	Cloud Usage for Software				
	Communication via Internet				
	Digital Fleet-Management				
	Use of Digital Knowledge Database				
Production	Use of Enterprise Resource Planning Software	43,9	28,6	12,2	15,4
Human Resources	Digital Human Resource Process	37,8	24,0	24,5	13,8
	Digital Travel-Management				

Source: Author's creation based on Schroeder, Schlepphorst and Kay. Bedeutung der Digitalisierung im Mittelstand; Steimel and Buehler. Digitale Dividende im Mittelstand; [292]

For the author of this promotional thesis it is important for the empirical data analysis after the quantitative survey to know which digitalization tools influence business success more than others and which are perhaps often used but irrelevant for business success. So, with the findings of the study, the usage of the described digitalization tools with high importance will be considered. All

[292] Schroeder, C., Schlepphorst, S., Kay, R. Bedeutung der Digitalisierung im Mittelstand. Bonn, 2015; "Digitale Dividende im Mittelstand." 2018. https://www.rfh-koeln.de/aktuelles/meldungen/2018/neue_mittelstands-studie_mit_der_digitalisierung_steigen_die_profite/index_ger.html, accessed November 2019.

of the results from the study by Schroeder et al. can be found in the appendix (Appendix Figure 2).

Gap between the Awareness of Theoretical Chances of Digitalization and the Practical Implementation

On the one hand, owners of small and medium-sized enterprises recognize the relevance and importance of digitalization in general, as previously mentioned,[293] but on the other hand, they can't derive this awareness to their operative business. Often, they face a deficit of knowledge and awareness of the chances and new business opportunities offered by digitized business and work, which then leads to a poor ability to change and competitive disadvantages.[294] What is making the situation worse is that many of the currently available information communication technology products and information thereof do not necessarily take the specific needs of small and medium-sized enterprises into account.

A study funded by the German Federal Ministry of Economic Affairs and Energy, for instance, confirms that current research and projects on Industry 4.0 are too often not presenting their results in a format and language that is appropriate to small and medium-sized enterprises and skilled crafts. Important differences in information and communication technology adoption and usage exist between large and small firms, with small and medium-sized enterprises facing several barriers to adopting information and communication technology and digital technologies in their operational activities, in particular in having the resources to acquire the necessary complementary knowledge-based assets, such as organizational and human capital.[295]

Bordonada showed in a research in 2012 a set of additional challenges for smaller firms in regard to the lack of digitalization:[296]

- Reluctance of managers to adapt to technological change, possibly due to a lack of knowledge, time or mistrust

[293] OECD and German Presidency, eds., Key Issues for Digital Transformation in the G20: Report prepared for a joint G20 (2017).
[294] German Federal Ministry of Economic Affairs and Energy, ed. Erschließen der Potenziale der Anwendung von 'Industrie 4.0' im Mittelstand, 2015.
[295] OECD and German Presidency, eds., Key Issues for Digital Transformation in the G20: Report prepared for a joint G20 (2017).
[296] Bordonada, J., Lucia - Palacios, L. and Y. Polo - Redondo. "The influence of organizational factors on e-business use: Analysis of firm size." Marketing, Intelligence and Planning 30, no. 2 (2012): 212–229.

– A view of the Internet mainly as a tool for cutting costs rather than for expanding markets and commercial opportunities
– Lack of information and communication technology skills and expertise, including lacking motivation or resources to train employees or to recruit specialists.

Table 2.3.4: Reasons for Lower Degree of Digitalization Among Small and Medium-Sized Enterprises

Low degree caused by:	Less use of:	Possible reason out of this:
Low adaptation of technological change	Internet	Security threats
Knowledge deficit of the chances	Information and communication technologies	Employees' and managers' lack of knowledge
Low awareness of new business opportunities	Enterprise resource planning software	Reluctance of managers
Not recognizing the potential of an expanded usage of the Internet	Cloud computing	Lack of essential skills
	E-commerce	Mistrust
		Information not appropriate to owner

Source: Author's creation, based on the Conference of the United Nations on Trade and Development in 2017, Bordonada (2012), German Federal Ministry of Economic Affairs and Energy (2015), World Bank (2016)

There were different reasons mentioned for why the degree of digitalization among small and medium-sized enterprises is that much lower than among large enterprises: Mistrust and fear are often reasons, but other aspects play a role as well, as shown in the table above. A big mistrust in security is obviously a main reason for the low degree of digitalization as well as a lack of information and communication technology skills and expertise on the part of the owners of small and medium-sized enterprises.

The importance of small and medium-sized enterprises in Germany was shown, and the need to internationalize and digitalize the enterprises was demonstrated. Nevertheless, there is a research gap in different areas of economic science regarding these points and their connection to each other. This lack will be described in the following section.

2.4 Importance of Internationalization, Managerial Digitalization and Strategic Innovation for the Business Results of Small and Medium-Sized Enterprises

Importance of Internationalization

Wagner analyzed whether internationalization is a key performance indicator for businesses. In his study he summarized the findings of 54 empirical papers published between 1995 and 2006 that used firm-level data from 34 countries to investigate the relationship between exporting and productivity. Among the countries covered were highly industrialized countries, countries in Latin America and Asia, transition economies and least developed countries. The evidence for this wide range of countries is remarkably consistent and clear-cut.[297] According to Onkelinx, internationalization benefits small and medium-sized enterprises in many ways. First, it helps them to disperse business risk across different markets. Second, it generates more revenue to invest in technology and production, which are key to small and medium-sized enterprises' growth. Third, by cooperating with foreign enterprises, small and medium-sized enterprises can gain access to more advanced technology and improve innovative capacity. Additionally, internationalization allows small and medium-sized enterprises access to foreign markets, which helps to improve operational efficiency and tap production potential.[298] Internationally active small and medium-sized enterprises grow faster than small and medium-sized enterprises that focus only on their domestic market.[299] The Organization for Economic Cooperation and Development adds to this benefits in their report about the activities of small and medium sized enterprises in 2004 the following advantages of gaining access to international markets:[300]

1. Internationalization as a strategic instrument for their competitiveness and further development.
2. Internationalization is often an essential strategic move for small and medium sized enterprises with large investments in intellectual property, but with this, the enterprises could realize the potential for prospective high-growth firms.
3. Internationalization can offer a host of business opportunities, such as new niche markets; possibilities to exploit economies of scale, scope, volume and technological advantages; the up grading of technological capability; ways of spreading risks; lowering and sharing costs,

[297] Wagner, J. "Exports and Productivity: A Survey of the Evidence from Firm-level Data." The World Economy 30, no. 1 (2007): 60–82.
[298] Onkelinx, J., Sleuwaegen, L. Internationalization of SMEs. Leuven: Flanders District of Creativity, 2008. http://www.flandersdc.be/download/nl/6033307/entire/flandersdc_internationalization_of_sme_s.pdf.
[299] Zhang Yuhua, B. "SME Internationalization and Measurement." APEC Policy Support Unit, no. 12 (2015).
[300] OECD, ed., Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards A More Responsible And Inclusive Globalisation (Istanbul, Turkey, 2004).

including research and development costs; and in many cases, affording improved access to finance.[301]

Recent research findings show that exporting is not the end of a strong growth process but rather appears instead to be its starting point and serves to accompany the growth process. [302] There is evidence that a group of small and medium sized enterprises with high-growth potential require early access to international markets to ensure their development and growth.[303]

Summing up the mentioned advantages for small and medium size business from the above-mentioned Author's, the reasons for entering foreign markets are:

Table 2.4.1: Advantages of Internationalization for Small and Medium-Sized Enterprises

	Benefit	**Reason**
Risk	Disperse and spread business risk	Through different markets
	Stay competitive	Force through competitors to react to their internationalization
	Keep existing customers	Follow customers in new markets
Revenue	Generate more revenue	Realization of more sales through new markets and customers
	Realize the potential for prospective high-growth firms	
	Export as starting point to accompany growth	
	Host of business opportunities in new niche markets	
Efficiency	Gain access to more advanced technology	Insights into other business models
	Improve operational efficiency	Cost savings
		Task spreads
	Upgrading of technological capability	

[301] Dembinski, P. H. "Economic Power and Social Responsibility of Very Big Enterprises: Facts And Challenges." In The Role of Large Enterprises in Democracy and Society, edited by Barbara Fryzel and Paul H. Dembinski. London: Palgrave Macmillan UK, 2010Ibid.

[302] Malhotra, S., Sivakumar, K., Zhu, P. C. "Distance factors and target market selection: The moderating effect of market potential." International Marketing Review 26, no. 6 (2008): 651–673

[303] OECD, ed., Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards A More Responsible And Inclusive Globalisation (Istanbul, Turkey, 2004).

	Improve innovative capacity	Gain know-how
Production	Tap production potential	For example, through lower property prices
	Improve operational efficiency	For example, through more skilled employees
Costs	Lowering costs	For example, lower costs of human resources lower transportation costs lower tax rates or trade discounts
	Sharing costs	With allied companies or subsidiaries, for example
Finance	Improve access to finance	
	Large investments can be recouped	

Source: Author's creation

There is no evidence as to which of the aforementioned advantages carry greater weight than the others, but according to the number of mentions throughout the literature, the opportunity to "generate more revenue" as well as "staying competitive" are mostly mentioned and maybe with this could be seen as two of the most important reasons to enter foreign markets.

Importance of Digitalization

According to a study by the Institut für Mittelstandsforschung, Bonn in 2015, two out of three managers of small and medium-sized enterprises see digitalization as being extremely important for their company. This is relevant across all sectors and neither the age of a company nor innovational activities play a role regarding the valuation of the importance of digitalization.[304] The situation is different, however, from the point of view of internationally acting small and medium-sized enterprises: These companies see an even higher importance of digitalization for their performance than nationally acting companies of a similar size. With the ongoing digitalization it is more and more important for small and medium-sized enterprises to recognize trends early and

[304] Schroeder, C., Schlepphorst, S., Kay, R. Bedeutung der Digitalisierung im Mittelstand. Bonn, 2015.

use them to the advantage of their own business.[305] Schroeder points out that due to the limited human resources, small and medium-sized enterprises in particular could underestimate the relevance of the increasing importance of digitization, and with this lose competitiveness. He furthermore continues that the importance of digitalization is obvious: German companies gain more than 20% of their sales via the Internet. Among German companies, small and medium-sized enterprises with annual turnovers of less than two million have gained 35% of their total sales via the Internet compared to bigger companies with 20%.[306]

To analyze whether there is a correlation between a company's performance and digitalization the Institut für Mittelstandsforschung, Bonn developed a multivariable model where different aspects of digitalization were compared with revenue growth. In the next figure the results are shown. All but one aspect has shown a significant positive correlation between the variables.

[305] ENSR, ed. Observatory of European SMEs, 2002, accessed May 2018.
[306] Schroeder, C., Schlepphorst, S., Kay, R. Bedeutung der Digitalisierung im Mittelstand. Bonn, 2015.

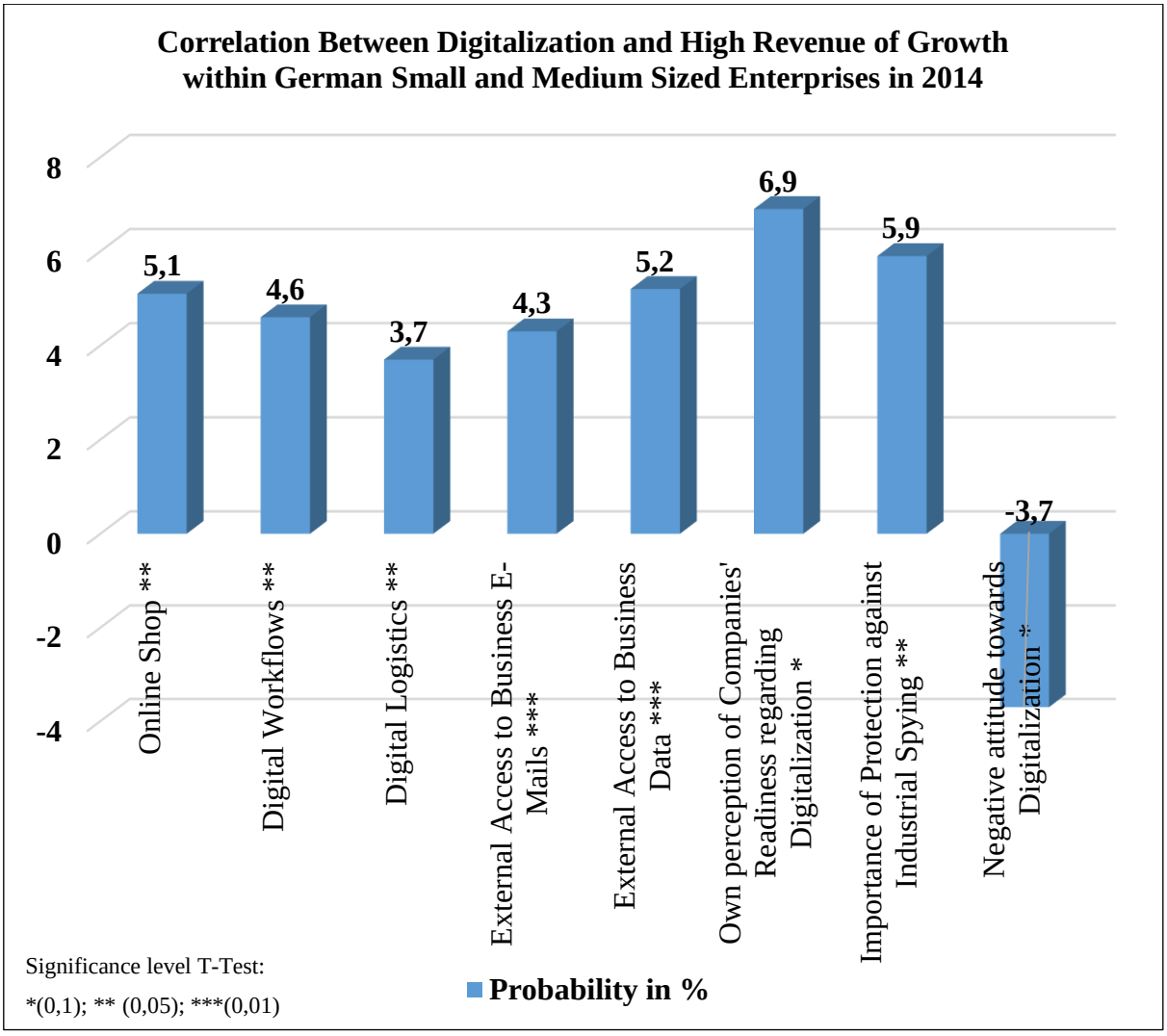

Figure 2.4.1: Correlation Between Digitalization and High Revenue of Growth among German Small and Medium-Sized Enterprises.
Source: Author's creation, based on Institut für Mittelstandsforschung, Bonn (2015)

According to a study by Glynn, "big data/analytics," "mobile technologies" and "private cloud" contribute most to an organization's revenue growth. Brian Glynn analyzed which technologies contribute most and least to revenue growth. With 49% of enterprises saying that excelling at managing business performance through data availability and visibility is what defines their digital business, it's understandable why big data/analytics is perceived by 70% of IT executives as contributing most to revenue growth.[307]

[307] "State of Digital Business Transformation." 2018. https://cdn2.hubspot.net/hubfs/1624046/Digital%20Business%20Executive%20Summary_FINAL.pdf, accessed January 2019.

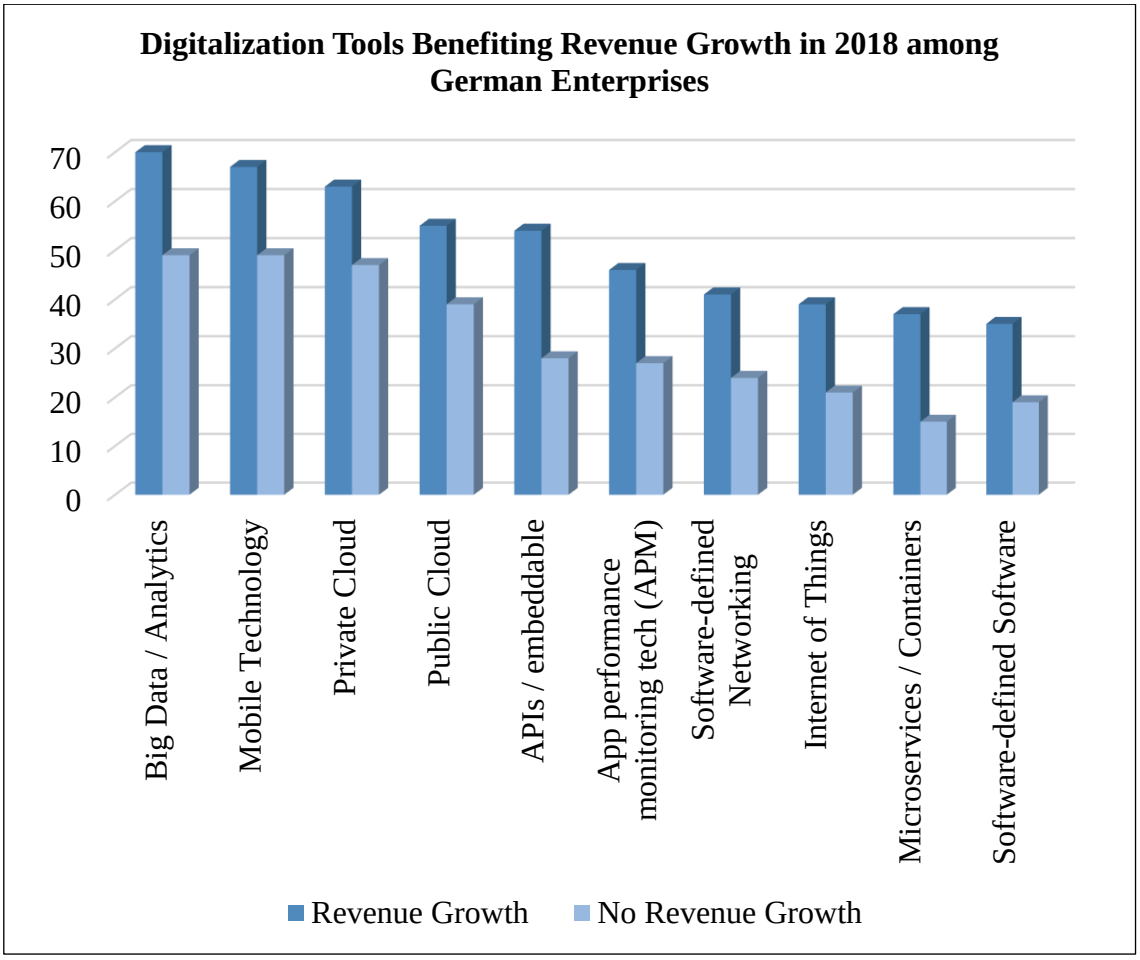

Figure 2.4.2: Digitalization Tools Benefiting Revenue Growth in 2018 among German Enterprises
Source: Author's creation, based on Brian, G. 2018

According to Koreen and Cusmano, digital technologies allow small and medium-sized enterprises to improve market intelligence and access global markets and knowledge networks at relatively low cost. The digital transition facilitates the emergence of "born global" small businesses and provides new opportunities for small and medium-sized enterprises to enhance their competitiveness in local and global markets, through product or service innovation and improved production processes. The authors mentioned, furthermore, that big data and data analytics provide a wide range of opportunities for small and medium-sized enterprises, enabling a better understanding of the processes within the firm, the needs of their clients and partners, and the overall business environment. In addition, the digital transition opens up a range of new opportunities for scaling up, and different forms of business growth are emerging, with some companies able to achieve a substantial scale without a significant number of employees or other

tangible assets. Small and medium-sized enterprises in particular (compared to large-scale enterprises) are emerging that leverage the Internet to lower fixed costs and outsource many aspects of the business to stay agile and responsive to the market. The use of digital technologies can also ease small and medium-sized enterprises' access to skills and talent, through better job recruitment sites, outsourcing and online task hiring, as well as connection with knowledge partners.[308] It can also facilitate access to a range of financing instruments. Mobile banking and online payments have had an important impact on traditional small and medium-sized enterprises' financing, and digitalization has allowed new financial services to emerge, with innovative solutions to address information asymmetries and collateral shortages.[309] Zhang Yuhua, furthermore, pointed out advances in the sector of digitalization such as telecommunication. According to Zhang Yuhua, advantages like telecommunication have decreased cross-border trade costs and with this the risk for small and medium-sized enterprises entering foreign markets.[310] The Asia-Pacific economic forum come to the same estimation in their report about the international activities of small and medium-sized enterprises in 2016. They say that the advances in information and communication technology, and in particular the Internet, have been a major factor in facilitating information flows and expanding the market potential of smaller firms.[311] In their report on "Key Issues for Digital Transformation in the G20" the Organisation for Economic Co-operation and Development figured out as well that digital technologies also offer new opportunities for firms, including lowering important barriers to entry. They added the point about using e-commerce tools, which can facilitate cross-border activities and participation in global value chains (for example the use of Skype for communications, Google for research, Dropbox for file sharing, LinkedIn for finding talent, PayPal for transactions, and Alibaba and Amazon for sales). Enhancing access to networks and enabling small and medium-sized enterprises to engage in e-commerce can be an effective way for small firms to go global and even grow across borders where they can become competitors in niche markets.[312] In another report by the Organisation for Economic Co-operation and Development, it is also mentioned that digital trade opens up opportunities for entrepreneurship, innovation and job creation. This results in the estimation of the Organisation that digital tools can

[308] OECD, ed., Going Digital: Making the Transformation Work for Growth and Well-Being (2017).
[309] Koreen, M., Cusmano, L., Pissareva, L. OECD SME and Entrepreneurship Papers, 2018.
[310] Zhang Yuhua, B. "SME Internationalization and Measurement." APEC Policy Support Unit, no. 12 (2015).
[311] APEC Small and Medium Enterprises Working Group (SMEWG), ed., SME Monitoring Index (2016).
[312] OECD and German Presidency, eds., Key Issues for Digital Transformation in the G20: Report prepared for a joint G20 (2017).

help firms (and small and medium-sized enterprises in particular) overcome barriers to their growth by facilitating payments, enabling collaboration, avoiding investment in fixed assets through the use of cloud-based services and using alternative funding mechanisms (like crowdfunding[313]). The effective use of information and communication technology can also be constrained by other barriers, particularly for small and medium-sized enterprises. For example, while many information and communication technology applications, like cloud computing,[314] have become cheap and easily accessible for small and medium-sized enterprises.[315] There is even some evidence on the emergence of so-called "micro-multinationals," such as small and young firms that are born global.[316]

Table 2.4.2: Advantages of Digitalization for Small and Medium-Sized Enterprises

	Benefit	**Reason**	**Example**
Human Resources	Better access to skills and talent	Finding qualified workers	Job recruitment website
		Affording qualified workers	Outsourcing
New Markets	Greater access to markets	The Internet allows firms to access markets all over the world at relatively low cost, enabling them to reach scale	
Financing	More extensive access to financing	The Internet as a source of financing for firms	Online crowdfunding
		Use of digital intangible assets as collateral by firms	Intellectual property
Exchange with Others	Better collaboration and communication	Collaborate with others in ways that weren't possible before due to a lack of time, resources or connections	Solutions such as incubators, research clusters and online tools
		Participation in global value chains	

[313] The practice of funding a project or venture by raising money from a large number of people who each contribute a relatively small amount, typically via the Internet.
[314] The practice of using a network of remote servers hosted on the Internet to store, manage and process data, rather than a local server or a personal computer.
[315] OECD, ed., Maximising the Economic and Social Value of Data: Understanding the Benefits and Challenges of Enhanced Data Access. Internal document (Paris, 2016).
[316] OECD and German Presidency, eds., Key Issues for Digital Transformation in the G20: Report prepared for a joint G20 (2017).

Technology	Greater access to technology and applications	Cloud services provide access to a wide range of technologies and applications	Big data analytics
Research and Development	More extensive product development	Crowdsourcing via the Internet provides design and develops products	
Government	Reductions in red tape	Online government portals for information on business creation and registration can help lower the burden	

Source: Author's creation, based on Organisation for Economic Co-operation and Development (2005)

The table above sums up the aforementioned benefits for small and medium-sized enterprises from digital technologies. With special regard to the financial sector, digitalization offers a more extensive access to financing. The reasons are that the Internet can be seen as a source of financing for firms and the use of digital intangible assets as collateral by firms. In this area, sectors like "crowdfunding" are sectors that FinTechs dominate in their business models.

Importance of Innovation

Being aware of the aforementioned points, Manjón considers innovation to be a key issue for business strategy, because it is believed that it triggers competitiveness and firm performance.[317] Thus, scientific literature postulates that innovation represents a significant factor in determining a firm's success,[318] while others[319] warn that firms that do not innovate face underperformance or dissolution. Manjón stated that "given the greater knowledge intensity presented by these sectors in comparison to nontechnological or medium-tech sectors, it is reasonable to expect strong correlations between research and development costs and firm growth."[320] Manjón found a positive market response to increased research and development investment for high-tech industry firms, while the relationship turns out to be negative for low-tech industry firms. Price et al. noted that "firms that engage in developing innovative products and services are positioned to compete more successfully through the development of new products and processes, before competitors in first-

[317] García Manjón, J. V., Mompó, R., Redoli, J. "Accelerating Innovation in Small and Medium-Sized Enterprises in the ICT Services Sector." SAGE Open 6, no. 3 (2016): 215824401667019.
[318] Pratali, P. "Strategic management of technological innovations in the small to medium enterprise." European Journal of Innovation Management 6, no. 1 (2003): 18–31; Tse, T., Esposito, M., Soufani, K. "Fast-Expanding Markets: The Revolution of the Microeconomy." Thunderbird International Business Review 58, no. 1 (2016): 5–11.
[319] Wilkinson, T. J., Thomas, A. R. "Innovation's Second Step." Thunderbird International Business Review 56, no. 3 (2014): 273–284.
[320] García Manjón, J. V., Mompó, R., Redoli, J. "Accelerating Innovation in Small and Medium-Sized Enterprises in the ICT Services Sector." SAGE Open 6, no. 3 (2016): 215824401667019.

mover advantage, increasing market share, return on investment, and overall firm success."[321] Finally, Coad and Rao also studied the effects of innovation on firm growth in high-tech sectors (including computers and office equipment, electronics, medical instruments and drugs); their results vary within the different sectors analyzed, but they generally find that growth is related to innovativeness for most firms.[322] Boratyńska analyzed in her study the correlation between innovation and business success with a special focus on the research subject of FinTech enterprises.[323] This study includes the corporate diplomacy approach formulated by Henisz.[324] Henisz provides examples of success and failure that highlight six elements of best practice: due diligence, integration, personal, learning, openness and mindset. Two of these elements (due diligence and integration) are data driven and analytic and are appealing to financiers. The remaining four are behavioral, with two focused on implementation within the company (learning and mindset) and two focused on implementation with external stakeholders (personal and openness). This study looks to Henisz's study and adapts the concept to FinTech by expanding it into due diligence, integration, personal, learning, openness, mindset and agile.[325] Financial service industries show two singular characteristics: on the one hand, they belong to the service sector; on the other hand, they are technology- and knowledge-based sectors. So it is expected that the innovation patterns in these sectors will differ from other industrial or low-tech sectors. For instance, some authors report significant differences between the effect of research and development investment in the manufacturing sector, which contributes more positively to firm market value than in the service sector.[326] Another difference between innovation in industrial and service sectors is the proper definition of innovation. Thus, it is worth proposing a definition of service innovation as "an offering not previously available to a firm's customers resulting from the addition of a service offering or changes in the service concept that allow for the service offering

[321] Price, D. P., Stoica, M., Boncella, R. J. "The relationship between innovation, knowledge, and performance in family and non-family firms: An analysis of SMEs." Journal of Innovation and Entrepreneurship 2, no. 1 (2013): 14.
[322] Coad, A., Rao, R. "Innovation and firm growth in high-tech sectors: A quantile regression approach." Research Policy, no. 37 (2008): 633–648.
[323] Boratyńska, K. "Impact of Digital Transformation on Value Creation in Fintech Services: An Innovative Approach." Journal of Promotion Management 25, no. 5 (2019): 631–639.
[324] Henisz, W. J. Corporate Diplomacy: Building Reputations and Relationships with External Stakeholders. 1st ed. Saltaire: Taylor and Francis, 2016. https://ebookcentral.proquest.com/lib/gbv/detail.action?docID=5042637.
[325] Boratyńska, K. "Impact of Digital Transformation on Value Creation in Fintech Services: An Innovative Approach." Journal of Promotion Management 25, no. 5 (2019): 631–639.
[326] Ehie, I. C., Olibe, K. "The effect of R&D investment on firm value: An examination of US manufacturing and service industries." International Journal of Production Economics 128, 1-SI (2010): 127–135.

to be made available."[327] According to current research by Zimmermann from the German "Kreditanstalt für Wiederaufbau," the innovation quota among small and medium-sized enterprises is decreasing. But for small and medium-sized enterprises with an international orientation the quota shrink is smaller (2% shrinking) than for enterprises that are nationally focused (5% to 7% decreasing).[328] These numbers show the importance of innovation for the business success of all enterprises. And with the findings of Coad and Rao it can be seen that even enterprises like FinTechs benefit from the advantages that innovation provides.

2.5 Diversity of the Use of Digitalization Tools among German Small and Medium-Sized Enterprises

A secondary data analysis performed by the author in accordance with the degree of digitalization among small and medium-sized enterprises in Germany validates the aforementioned trends towards the degree of digitalization among German small and medium-sized enterprises.

For the secondary data analysis the customer database from one of the largest German software companies was evaluated.[329] DATEV eG is a software company that produces accounting and taxation software with a focus on small and medium-sized companies. Its turnover in 2018 amounted to one billion euro and 7,500 employees. Some 2.5 million German companies were bookkept with their software solutions.[330] For 2018, according to the German Federal Statistical Office there were 3.4 million enterprises in Germany. This corresponds to a rate of 73.5%.[331] For this secondary data survey of the database the numbers from October 2018 were analyzed.

[327] García Manjón, J. V., Mompó, R., Redoli, J. "Accelerating Innovation in Small and Medium-Sized Enterprises in the ICT Services Sector." SAGE Open 6, no. 3 (2016): 215824401667019.
[328] "KfW-Innovationsbericht Mittelstand 2018." 2019. https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-Innovationsbericht/KfW-Innovationsbericht-Mittelstand-2018.pdf, accessed August 2019.
[329] "Hidden Champions: Der Markt für Business-Anwendungen in Deutschland." https://idc.de/de/research/viewpoints/hidden-champions-der-markt-fur-business-anwendungen-in-deutschland, accessed November 2018.
[330] "Kurzinformation 2018." https://www.datev.de/web/de/m/ueber-datev/das-unternehmen/kurzprofil/, accessed November 2018.
[331] Federal Statistical Office, Söllner, R. "The german mittelstand in the age of globalisation." WISTA, no. 2 (2016): 107 et seq.

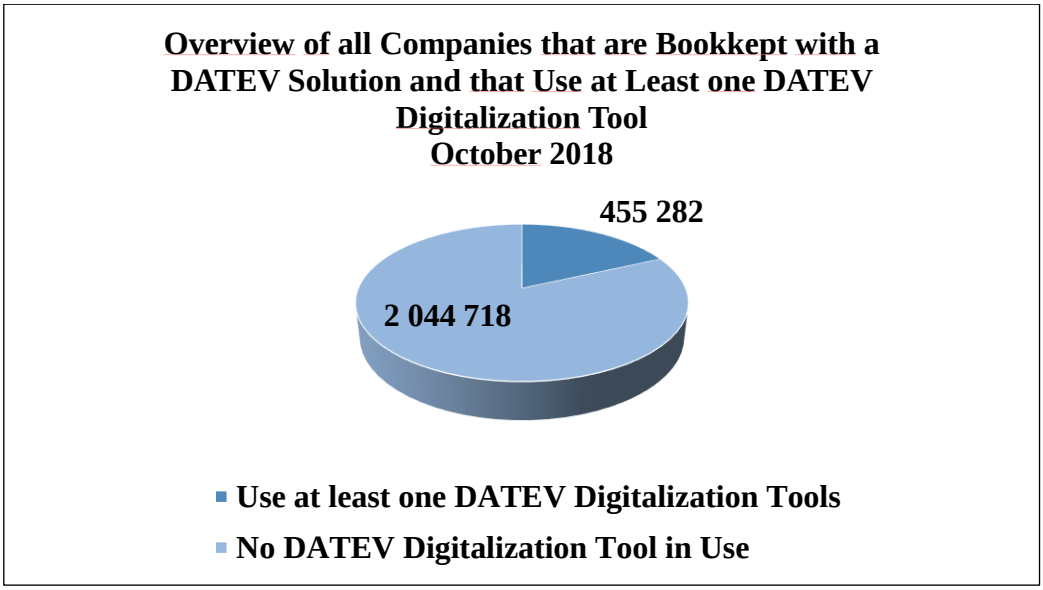

Figure 2.5.1: Overview of all Companies that are Bookkept with a DATEV Solution and that Use at Least one DATEV Digitalization Tool, October 2018
Source: Author's creation; for evaluated data see Appendix

In the figure above, all companies that are bookkept with a DATEV eG software solution and that use at least one DATEV eG digitalization tool are shown. According to current company facts, there are a total of 2.5 million companies. Digitalization tools are the products mentioned in the Appendix (see the table in the Appendix: Table Appendix 1: Overview of the Digitalization Tools in Use by DATEV Customers in October 2018). It is clear that a minority of less than a fifth of all companies use digital tools for their internal processes. In regard to the customer structure of DATEV, which manly represents small and medium-sized German companies, the research results from this secondary survey by the author show what the authors from the studies before also found out: Small and medium-sized enterprises do not use the full potential that digitalization offers.

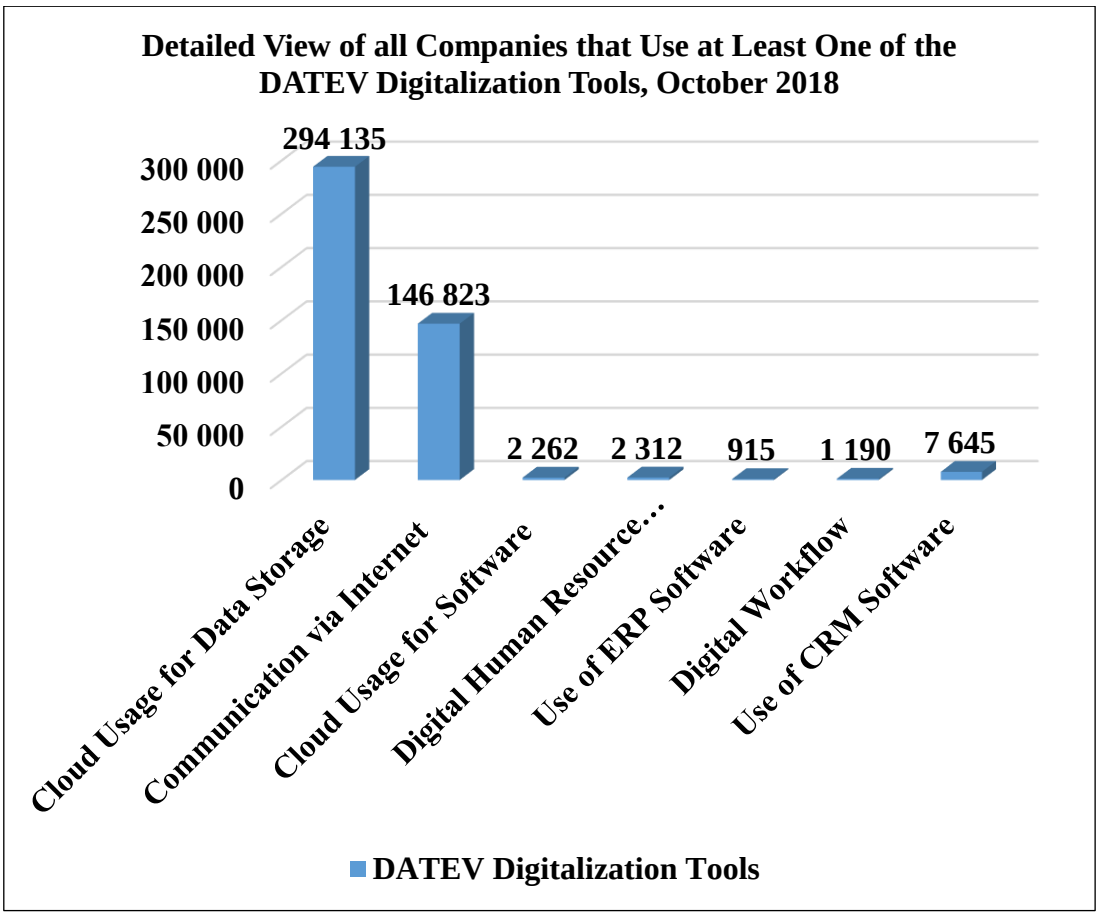

Figure 2.5.2: Detailed View of all Companies that Use at Least One of the DATEV Digitalization Tools, October 2018
Source: Author's creation; for evaluated data see Appendix

The figure above shows the investigated companies that have digitalization tools in use that are in accordance with the relevant tools for digitalization processes:

- Use of Customer Relationship Management Software
- Digital Workflow
- Use of Enterprise Resource Planning Software
- Digital Human Resource Process
- Cloud Usage for Software as a Service
- Communication via Internet
- Cloud Usage for Data Storage

The figure shows how the use of the different tools is spread among the observed companies. Most of them (nearly 295,000 out of 455,000 individuals) use a web-based cloud platform to store data

like invoices or accounting evaluations there ("cloud usage for data storage"), followed by "communication via Internet" with a platform for document exchange. This evaluation shows that small and medium-sized enterprises in Germany approach the use of digitalization tools slowly, starting with tools that are easy to use and also cheap in terms of monthly cost and simple to install. The previous literature review of this work in the field of digitalization tools that lead to business success showed that beside the use of analytical software within the field of "big data," mobile technology (which can be categorized as "communication via Internet") and the use of private clouds (which can be categorized as "cloud usage for data storage") are key performance indicators for sales growth.

2.6 Reasons for the Selection of the Independent Variables to Analyze the Influence on Business Success

Results of the Conceptual Framework that Leads to the Research Question

There are different gaps in the current management science literature in the field of small and medium-sized enterprises in the tertiary industrial sector, and due in particular to the new appearance of this business model, there are some research gaps in regard to FinTech companies. These gaps combined with the estimation of the Kreditanstalt für Wiederaufbau[332] that the ongoing internationalization and the growing digitalization will have an influence on the business success of small and medium-sized enterprises lead the author to the main research question:

RQ0: To what extent does a high degree of managerial digitalization, internationalization and strategic innovation have an impact on the business results of small and medium-sized enterprises like FinTechs?

Extent and way FinTechs internationalize their business

To find out whether, how and to what extent FinTechs are international, taking a look at existing literature and studies is not that helpful. There are almost no analyses of the import and export volume of FinTechs. Consequently, the author of this promotional thesis has to find other indicators. One indicator is the service offered by the FinTech enterprise. Only if the service can be used in foreign markets can it be exported. In a study in 2019, PricewaterhouseCoopers analyzed

[332] KfW Bankengruppe. "Mittelständische Wertschöpfungsketten werden internationaler: Europa bleibt wichtig." KfW Research, no. 137 (2016).

the product range of German FinTechs. The service range offered differed in: property management, alternative financing, insurance, investment, payments, accounting, application programming interfaces, bitcoin and blockchain, finance aggregation, gastronomy, online identification and risk analyses.[333] The author of this promotional thesis grouped the offered services into international services that could be exported and national services that could only be used in the domestic markets. International and thus exportable products were: alternative financing (70 out of 233 FinTechs in Germany in 2019), investment (20), payments (29), accounting (4), application programming interfaces (none), bitcoin and blockchain (11), finance aggregation (2) and risk analyses (1). Out of the 233 analyzed small and medium-sized companies from the financial service sector in Germany, 137 could offer their services on foreign markets, which corresponds to an internationalization degree of 58%. Compared to the current internationalization rates measured by branches and subsidiaries of German small and medium-sized enterprises (unfortunately there are no existing numbers yet especially for financial small and medium-sized enterprises), for 2005 only 3% of small and medium-sized enterprises in Europe had subsidiaries, branches or joint ventures in other countries, which is exactly the same number as for Germany in 2005 (see Figure Appendix 1: European Small and Medium-Sized Enterprises Having Subsidiaries / Branches / Joint Ventures Located Abroad in % in 2005).[334] The degree of the investments abroad by German small and medium-sized enterprises in the period 2007–2011 was analyzed by the Kreditanstalt für Wiederaufbau (abbreviation KfW) in 2012 and they found out that 20% of the investigated companies made foreign investments.

So, to sum up the findings, German small and medium-sized enterprises tend to export their services across national borders, but looking at the organization itself it is more nationally oriented, with just a small number of subsidiaries.

Extent and way FinTechs are innovative

To analyze how innovative FinTechs are, the before presented approaches by Schumpeter were analyzed. To measure how innovative an enterprise is, he differentiates between two variables and

[333] "PwC FinTech-Kooperationsradar: Kooperationen können herausfordernd sein: Immer mehr FinTechs stellen ihr Geschäft ein." 2019. https://www.pwc.de/de/finanzdienstleistungen/pwc-fin-tech-kooperationsradar-2019.pdf, accessed July 2019.
[334] OECD, ed., Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards A More Responsible And Inclusive Globalisation (Istanbul, Turkey, 2004).

the correlating indicators thereof. These are input and output indicators. Input indicators are: capital, human resources, know-how, technology, organizational concepts. Output indicators show the economic effects of the innovation, they are: product, costs, quality, flexibility, time.[335] There is less evidence of how innovative FinTechs are in regard to the mentioned indicators and to other, not before mentioned indicators as well PricewaterhouseCoopers found out in a study in 2019 about FinTechs that in terms of the output factor "product" FinTechs deliver different services with different degrees of innovation. This offered service range comprises: property management, alternative financing, insurance, investment, payments, accounting, application programming interfaces, bitcoin and blockchain, finance aggregation, gastronomy, online identification and risk analyses.[336] According to these categories, the author of this promotional thesis groups the following as innovation products: alternative financing, application programming interfaces, bitcoin and blockchain, and online identification. The rest are seen as classical services that other branches already offer. Out of the analyzed 233 FinTechs in Germany in 2019, 70 operate in alternative finance, 11 in bitcoin and blockchain, and three in online identification services. Application programming interface was not an offered service in 2019. Thus only 84 out of 233 FinTechs offered innovative products, which corresponds to 36%. To sum up the findings regarding how, and the extent to which, FinTech enterprises are innovative, the statistics show that according to the offered services in the financial service sector of small and medium-sized enterprises, only a third are innovative. More than 70% of the small and medium-sized companies are investing in innovative products (unfortunately there were no detailed data for the financial sector).[337]

Extent and way FinTechs digitalize their business

The willingness to invest in digital infrastructure within the enterprise is important. In its report about "Digital Offices" from 2018, Bitkom analyzed the willingness of firms to invest and found

[335] Schumpeter, J. A. The Theory of Economic Development: An Inquiry into Profits, Capital, Credit, Interest and the Business Cycle. Cambridge: Harvard University Press, 1934.
[336] "PwC FinTech-Kooperationsradar: Kooperationen können herausfordernd sein: Immer mehr FinTechs stellen ihr Geschäft ein." 2019. https://www.pwc.de/de/finanzdienstleistungen/pwc-fin-tech-kooperationsradar-2019.pdf, accessed July 2019.
[337] "Vorsicht versus Vision: Investitionsstrategien im Mittelstand." 2014. https://www.unternehmerperspektiven.de/portal/media/unternehmerperspektiven/up-studien/up-studien-einzelseiten/up-pdf/Studie14-2014-Vorsicht-versus-Vision.pdf.

that there is a high level of willingness.[338] Nearly every second company (45%) wants to invest in the current year. But large-scale enterprises are more willing to invest than small and medium-sized enterprises (51% of large-scale enterprises compared to 44% of small and medium-sized enterprises). Another finding of the study from Bitkom was that to invest in digital workflow, digitalization tools are worth it. To date, a large number of small and medium-sized enterprises have not been able to reap the benefits of the technological transition due to limited adoption of digital technologies. For instance, enterprise resource planning software applications to manage business information flows are popular among large firms (93% adoption rate in 2016) but used less frequently by small and medium-sized enterprises (less than 43%) as can be seen in the next figure. In many countries, a large adoption gap is also observed for cloud computing (as shown in the Appendix with Figure Appendix 3: Enterprises Using Cloud Computing Services in 2015 in the European Union), like the renting of computer power from an external provider, which can allow smaller firms to use big data, while overcoming some of the barriers associated with the high fixed costs of information and communication technology investments.[339] In Germany in 2015, more than 40% of large-scale enterprises used cloud technology for their business but less than 25% of all small and medium-sized enterprises did so.

[338] Grimm, F. "Bitkom Digital Office Index 2018: Eine Studie zur Digitalisierung von Büro- und Verwaltungsprozessen in deutschen Unternehmen." Bitkom Research GmbH 2 (2018).
[339] OECD, ed., Going Digital: Making the Transformation Work for Growth and Well-Being (2017).

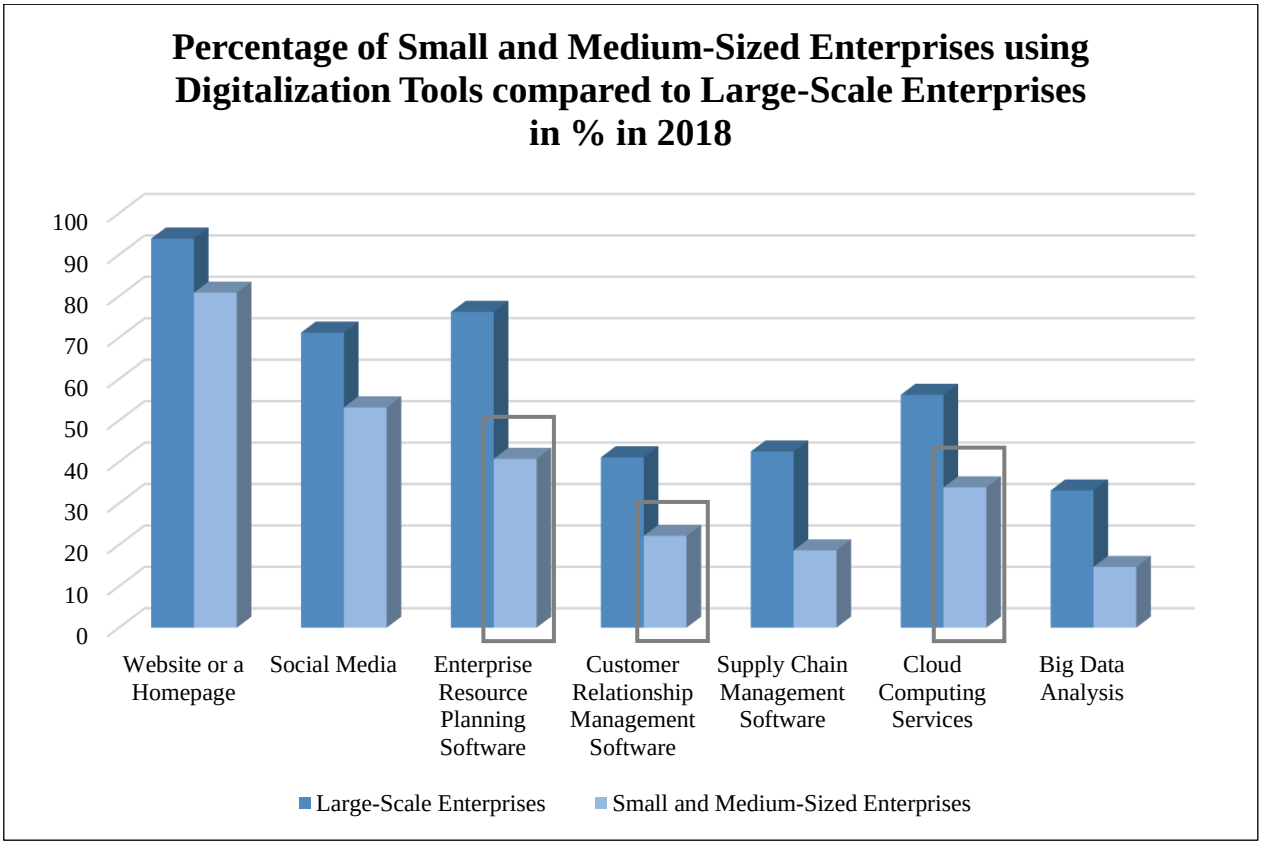

Figure 2.6.1: Percentage of Small and Medium-Sized Enterprises Using Digitalization Tools Compared to Large-Scale Enterprises in % in 2018
Source: Author's creation, based on Organisation for Economic Co-operation and Development (2019)

What can be seen in the figure above is that compared to German small and medium-sized enterprises, which use mostly the digitalization tool "Cloud Use for Data Storage," followed by "Communication via Internet" and then "Customer Relationship Management Software," the average small and medium-sized enterprise from the European Union uses mostly "Enterprise Resource Planning Software" to digitalize its business, followed by "Cloud Use for Software as a Service" and then "Customer Relationship Management Software". The tools "Website" and "Social Media" are not relevant in this research approach of this promotional thesis because they are not digitalization tools according to the definition of this work. These two tools do not digitalize an administrative process.

According to the "Digital Business Survey" in 2018 by the IDG Communications Media AG, small and medium-sized organizations say their biggest obstacles to achieving success with digital business initiatives include an insufficient budget (39%), a lack of staff and/or correct skill sets

(36%), the need to replace legacy systems (34%) and cultural issues (33%).[340] The Organisation for Economic Co-operation and Development finds in its studies about the digitalization of small and medium-sized enterprises that at the firm level, where many large firms use digital technologies quite widely, barriers to access and use are particularly prevalent for small and medium-sized enterprises.[341] Small and medium-sized enterprises come behind large firms in their use of digital technologies at every level of economic development. For these firms, the cost of digital technologies, combined with a lack of adequate financing, are important barriers that help explain why they are less likely to adopt digital technologies. Such costs do not just involve the digital technologies themselves, but also the associated costs and investments needed to ensure successful implementation – for example, costs of related services, and investment in training and in process innovation.

[340] "State of Digital Business Transformation." 2018. https://cdn2.hubspot.net/hubfs/1624046/Digital%20Business%20Executive%20Summary_FINAL.pdf, accessed January 2019.
[341] OECD and German Presidency, eds., Key Issues for Digital Transformation in the G20: Report prepared for a joint G20 (2017).

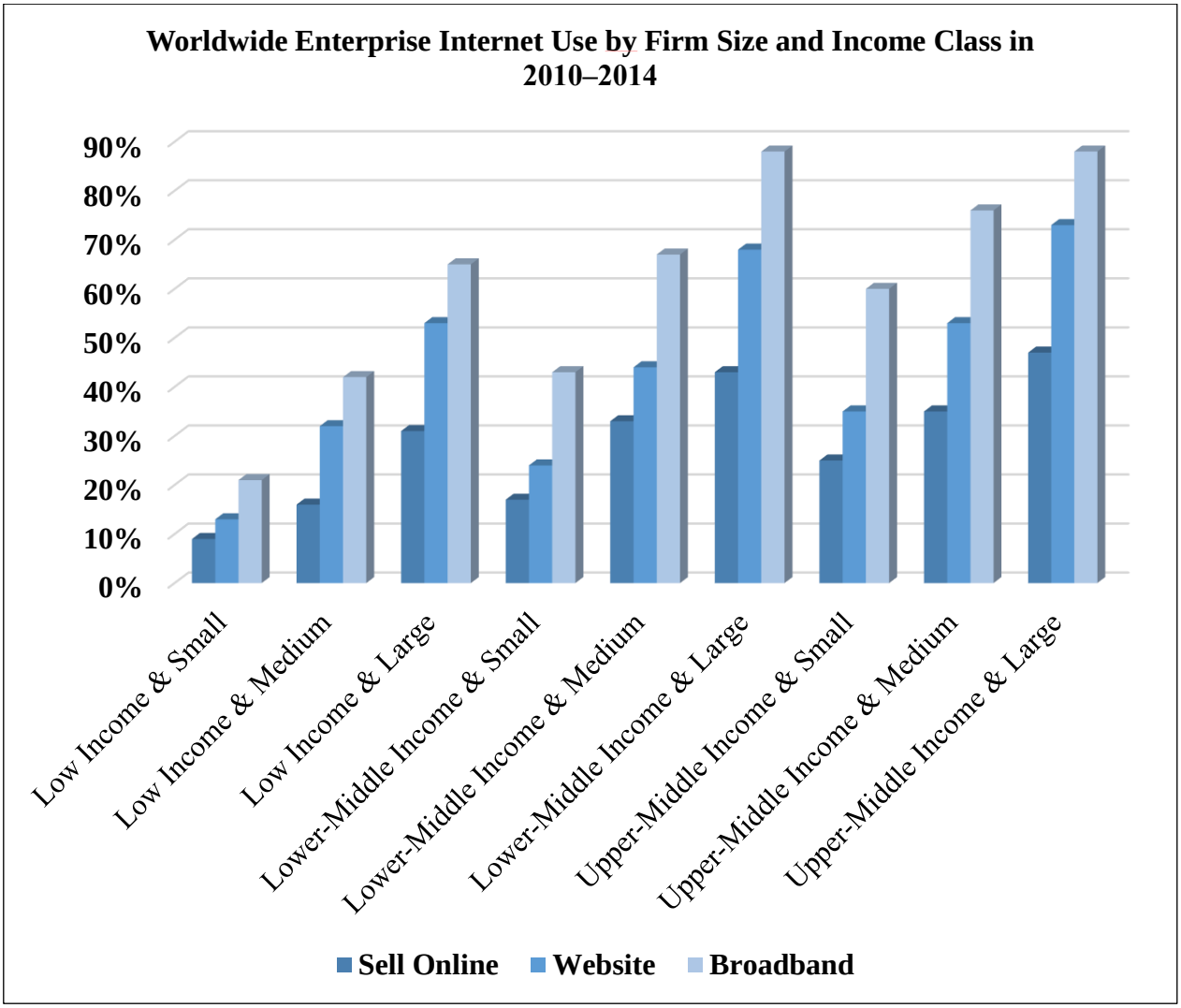

Figure 2.6.2: Worldwide Enterprise Internet Use by Firm Size and Income Class in 2010–2014

Source: Author's creation, based on World Bank (2016)

As can be seen in the figure above, the World Bank has investigated the use of the Internet according to the size of the enterprises in general.[342] They figured out three criteria to define the term "use of Internet," namely sell online, website and broadband. The results show that the larger a company is, the more intensive is its use of the Internet and the benefits thereof. Possible reasons for this lower degree of use of the Internet among small and medium-sized enterprises were analyzed by the United Nations Conference on Trade and Development in 2017. They show that analysis of the uptake of e-commerce among small and medium-sized enterprises, in particular across borders, confirms these barriers and highlights some additional ones. One third of Internet

[342] World Bank. World Development Report 2016: Digital Dividends: The World Bank, 2016.

users in the European Union cite worries about security as their primary concern, with the legal and regulatory framework influencing the level of trust online.[343] Consumer mistrust also stands in the way of cross-border purchases, confirming the importance of trust for tapping into the great potential of cross-border e-commerce. But besides the topic of e-commerce and cross-border purchases, there is also a gap between small and medium-sized enterprises and large-scale enterprises in the adoption and usage of information and communication technologies – specifically having the resources to acquire the necessary knowledge-based assets like human capital. Small and medium-sized enterprises are lacking in their adoption of cloud computing and other sophisticated digital technologies.[344]

Derivation of the Findings according to the Components of the "Double I-D Model"

Derived from the findings of the success factor research, the biggest growth drivers for business success are, according to the "resource-based view" by Wernerfeldt:[345] tangible resources, which include, on the one hand, financial and physical assets,[346] intangible resources, which are assets that include intellectual property assets[347] and organizational assets,[348] and additional intangible resources, which are skills that include capabilities.[349] While other resource categories may exist, the above constructs are largely used because they have been tested in previous research.[350] And combining these findings with the analyses of the current status of small and medium-sized enterprises from the financial service sector in Germany, internationalization (organizational assets) caused by the ongoing globalization, strategic innovation (intellectual property assets) caused by rising competitive constraints, and managerial digitalization (skills and capabilities) caused by the ongoing process of digitalization in all aspects of business, these three independent variables were determined and selected for the model.

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[343] UNCTAD. "B2C E-commerce Index." (2016). http://unctad.org/en/PublicationsLibrary/tn_unctad_ict4d07_en.pdf.

[344] OECD and German Presidency, eds., Key Issues for Digital Transformation in the G20: Report prepared for a joint G20 (2017).

[345] Wernerfelt, B. "A resource-based view of the firm." Strategic Management Journal 5, no. 2 (1984): 171–180.

[346] Grant, R. M. "The resource-based theory of competitive advantage: Implications for strategy formulation." California Management Review, no. 33 (1991): 114–135.

[347] Hall, R. "The strategic analysis of intangible resources." Strategic Management Journal, no. 13 (1992): 135–144.

[348] Barney, J. "Firm Resources and Sustained Competitive Advantage." Journal of Management 17, no. 1 (1991): 99–120.

[349] Amit, R., Schoemaker, P. "Strategic assets and organizational rents." Strategic Management Journal 4 (1993): 33–47.

[350] Galbreath, J. "Which resources matter the most to firm success?: An exploratory study of resource-based theory." Technovation 25, no. 9 (2005): 979–987.

Additionally, Boratyńska's adapted corporate diplomacy approach "DIPLOMA" was used for the derivation of the independent variables.[351] According to her, the seven characteristics of FinTech companies constituting her approach are as follows:[352]

- Digital: Digitalization describes the act of converting information from analog to digital, which can lead to changes in a business model and provide new value propositions as well as new revenues.[353]
- Innovation: Stakeholders expect innovative ideas and solutions. Innovation is the multistage process whereby organizations transform ideas into new or improved products, services or processes in order to advance and compete successfully in the marketplace.
- Pricing: FinTech-induced credit modeling has enhanced financial inclusion and has allowed some borrowers to be assigned better loan ratings while receiving lower-priced credit than before. FinTech allows companies to reduce costs.
- Learning: Fintech adapts and changes based on feedback from stakeholders. No plan or strategy is perfect, and none can be static.
- Openness: Perceptions matter. Openness entails conveying information in a manner that reinforces trust and reputation, ensures accountability and creates realistic expectations.
- Modernity: FinTech requires a new way of thinking about policy and product development within a corporation. Being modern entails being connected with or related to the present or at least to relatively recent events and developments as opposed to being connected with or related to the remote past.
- Openness: Openness refers to a set of principles for software development. When applying these principles, solutions evolve. Openness promotes iterative work cadences and empirical feedback and thus encourages rapid and flexible response to change.

[351] Boratyńska, K. "Impact of Digital Transformation on Value Creation in Fintech Services: An Innovative Approach." Journal of Promotion Management 25, no. 5 (2019): 631–639.
[352] Boratyńska, K. "Impact of Digital Transformation on Value Creation in Fintech Services: An Innovative Approach." Journal of Promotion Management 25, no. 5 (2019): 631–639.
[353] "The concise fintech compendium." 2017. http://www.heg-fr.ch/EN/Pages/School-of-Management-Fribourg.aspx, accessed July 2019.

With these two approaches the author of this promotional thesis is able to derived from the sum of the different factors for business success of small and medium-sized enterprises to those three that are used in the following work.

Resource-Based View	Components of the ResourceBased-View Model			**Components of the Author's Double I-D Model**			Components of the Diploma Model	Diploma
	Intangible Resources	Intellectual property assets	→	STRATEGIC INNOVATION	←		Innovation & Learning	
		Organizational assets	→	ECONOMIC INTERNATIONALIZATION	←		Openness	
		Skills and capabilities	→	MANAGERIAL DIGITALIZATION	←		Digital & Modernity	
	Tangible Resources (Excluded)	*Financial Assets*					*Pricing (Excluded)*	
		Physical Assets						

Figure 2.6.3: Derivation to the Components of the Author's Double I-D Model through the Resource-Based View and the Diploma Model
Source: Author's creation

As the reader can see, the "resourced-based view" and the "DIPLOMA Model" have three factors in their intersection that are identified by the author of this promotional thesis for the author's "Double I-D Model." The "resource-based view" has "intellectual property assets," which are named under "strategic innovation" in the author's model as well as "innovation and learning" in the "DIPLOMA Model." The "DIPLOMA Model" has "openness" listed as a key performance indicator, which is named under "internationalization" in the "Double I-D Model" as well as "organizational assets" in the "resource-based view." "Managerial digitalization" in the author's model is the intersection of "skills and capabilities" as well as "digital and modernity." The factor "financial assets" is excluded because the financial sourcing model of small and medium-sized startup companies such as FinTechs often are, differs greatly from other small and medium-sized companies and for reasons of general use of the model for more than this sector it is excluded.[354] "Physical assets" are also excluded due to the reason that the focused sector depends on the so-called "tertiary sector of industry," which sells services that are intangible products in contrast to hardware products. Services mostly do not need many physical assets to be produced, and because of this, to save the comparability to other small and medium-sized enterprises, this factor is also

[354] According to a study by Pricewaterhouse Coopers in 2019 89% of all German FinTech companies are venture capital financial sourced. "PwC FinTech-Kooperationsradar: Kooperationen können herausfordernd sein: Immer mehr FinTechs stellen ihr Geschäft ein." 2019. https://www.pwc.de/de/finanzdienstleistungen/pwc-fin-tech-kooperationsradar-2019.pdf, accessed July 2019.

excluded. The factor pricing should be excluded because within the range of the different services offered by FinTechs the pricing model differs greatly, and even more so when looking at other small and medium-sized enterprises from other sectors. So this factor is also excluded to guarantee the usability of this model for other sectors.

2.7 Cause-Effect Relations between the Degrees of Managerial Digitalization, Internationalization and Strategic Innovation in Business Success

Tentative Theoretical Research Outline of Investigated Cause-Effect Relations

With the findings from the literature research, which show the missing considerations among the theories and strategies, combined with the demarcation of relevant terms like "small and medium-sized FinTech" and "digitalization of internal administrative processes," and in addition the results from the secondary data analyses, the three variables for the research questions and the hypothesis later could be defined. This chapter aims to explain the tentative theoretical research outline of the investigated cause and effect relations. Therefore, the author created an overview of the assumed cause and effect relations among the investigated variables. The figure shows the following aspects:

- As previously analyzed, different circumstances lead the author to the conclusion that beside the international business activities of a company and the strategic degree of innovation of the services offered, digitalization plays an important role in regard to business success. They are described as "impact factors" in the following figure. The factors are considered to be growth drivers for enterprises.
- The relevance for the German economy of small and medium-sized enterprises has already been demonstrated. The choice to focus on FinTechs was also explained. Small and medium-sized enterprises have a huge influence on the German national economy, and FinTech enterprises, which are established in a digital age, that provide digital products and services seem to be on the surface fully digitalized and adapted to the requirements of digitalization as a key performance indicator for companies.

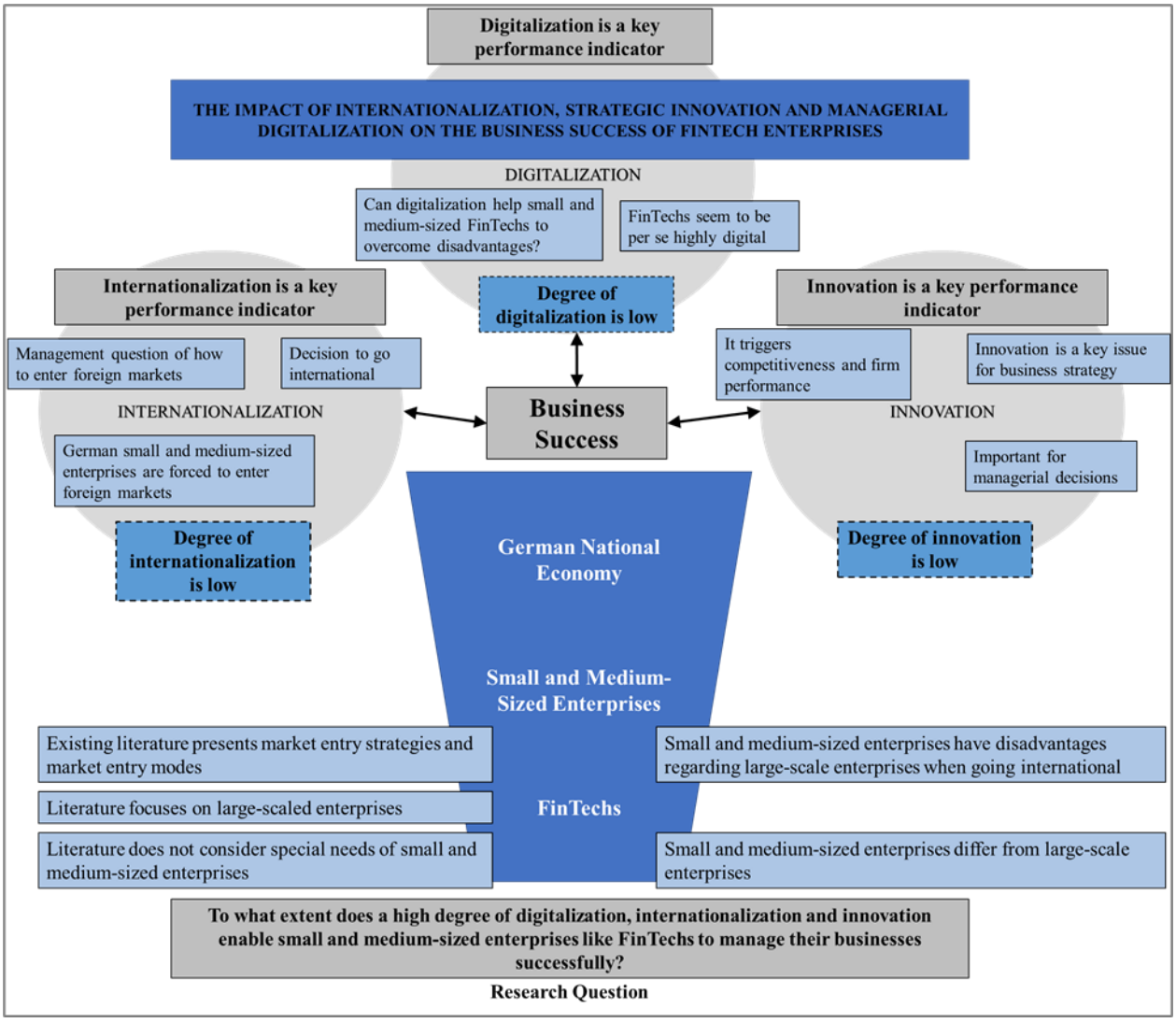

Figure 2.7.1: Investigated Cause and Effect Relations
Source: Author's creation

The figure above shows how the different aspects and assumed cause and effect relations lead the author to the research question. With the research question the base ground for the hypothesis formulation is built. With the tentative theoretical research outline of the investigated cause-effect relations, the variables that will be relevant for the hypothesis could be found. These are: the managerial digitalization, the business success, the strategic innovation and the internationalization. None of the three independent variables could be measured directly. So further indicator variables will be necessary. These indicator variables together with the relations, assumed correlation and effects will be shown in the path model later. The path model can be seen as a further development of the figure above.

To summarize the findings to this point here: First, the literature review for defining the target group, here the small and medium-sized enterprises in Germany. Additionally, the special focus on the financial service sector and the FinTech enterprises within it. Second, the determination of the parameters to analyze the business success of the target group had to be considered. The high importance of the factor "internationalization", "strategic innovation" and "managerial digitalization" in terms of business success was demonstrated. These insights allow us to identify cause and effect relations among the independent variables and their dimensions. Due to the novelty of the target group, the FinTech enterprises, and the growth drivers of their business success, a development of the author's research models follows in Chapter Three and with this an attempt to fill a part of the gap in existing research.

3. EMPIRICAL INVESTIGATION OF DEPENDENCIES OF SELECTED FACTORS ON THE BUSINESS SUCCESS OF FINTECH ENTERPRISES

This chapter starts with the development of a research model to investigate the impact of internationalization, strategic innovation and managerial digitalization on the business success of small and medium-sized enterprises in the financial service sector (3.1) in order to be able to test empirically the postulated hypotheses. After choosing the methodology, an operationalization of the variables is discussed (3.2). An empirical evaluation of the research model by experts was achieved through the use of semi-structured interviews, which are presented in the following part (3.3). Afterward, empirical testing of the model through the use of quantitative data is conducted (3.4). The third chapter concludes with the main considerations of the research model and the results of the empirical testing (3.5).

3.1 Formulation of the Research Question, Derivation of the Hypothesis and Establishment of the Causal Model

Derived from the findings about the current state of the FinTech enterprises in Germany, their impact on the German economy and the influence of the presented impact factors on the business results in the previous chapter, the research question and with this the model development and the hypothesis could be formulated. In the first chapter a preliminary research question was formulated because of the insights into the literature gap regarding the theories and strategies in the field of success factor research of small and medium-sized businesses in the financial service sector.

The **main research question** is as follows:

RQ0: To what extent does a high degree of managerial digitalization, internationalization and strategic innovation have an impact on the business results of small and medium-sized enterprises like FinTechs?

Derived from the main research question the following subresearch questions could be formulated:

Research Questions for the Exploration of the "Double I-D Model" Using Expert Interviews

RQ1a. Does managerial digitalization benefit the business success of German small and medium-sized enterprises from the financial sector?

RQ1b. Will managerial digitalization be a success factor in the future of German small and medium-sized enterprises from the financial sector?

RQ2. Does internationalization benefit the business success of German small and medium-sized enterprises from the financial sector?

RQ3. Which impact factor is more important for the success of German small and medium-sized enterprises from the financial sector?

RQ4. Which impact factor will be more important for the success in the future of German small and medium-sized enterprises from the financial sector?

Research Questions for the Exploration of the Double I-D Model using Quantitative Survey:

RQ5. To what extent are FinTechs digitalized in their internal administrative processes?

RQ6. To what extent are FinTechs international with their business?

RQ7a. How innovative are German small and medium-sized enterprises from the financial sector?

RQ7b. Does a high degree of innovation benefit the business success of German small and medium-sized enterprises from the financial sector in terms of entering international markets?

The main research question and the sub-research questions were developed with the insights which are gained with the work before. Starting with the previously described gap of scientific research. Then the fact that it is crucial for the success of the observed companies to internationalize themselves to stay competitive. Additionally, it is crucial for the success to keep customers and build their growth. Moreover, the fact that German small and medium-sized enterprises are important for the German economy and beside this the increasing number of FinTechs in Germany and with this their growing importance for the economy. Accompanied by information like the very low degree of foreign operating small and medium-sized companies. Then the disadvantages they have compared to large-scale enterprises. Moreover, the missing consideration of the special needs of small and medium-sized enterprises in the literature towards the economic theories and the market entry strategies. This leads to the question of whether the advantages of digitalization could help small and medium-sized enterprises to overcome the disadvantages they have compared to large-scale enterprises when it comes to the question of selling services and products abroad. Additionally, there is the point that FinTechs are typically seen as being highly digital due to the

fact that they sell digital products.

This promotional thesis is based on success factor research and thus the deductive logic dominates the procedure. Deductive logic begins with theory, moving from the general to the specific. The role of theory as a verification or validity instrument varies throughout the process of abduction, from theory testing to theory generation to discovering patterns to refining theory over the whole deductive research.[355]

Hypotheses

To investigate the cause and effect and interpret the results of the research to validate 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.[356]

The **basic hypothesis** in this approach is:

H_{basic}: The higher the degree of managerial digitalization, internationalization and strategic innovation the greater the business success of a German small or medium-sized enterprise from the financial service sector.

Due to the number of variables and the complex relationship of interest for this research, the author summarized individual dependences between the variables into meaningful higher-order aggregations, as overarching subhypotheses, in order to be able to structure the constructs when building the causal model in a subsequent step.

Derived from the basic hypothesis the following **subhypotheses** could be formulated:

H_{1a} The higher the degree of internationalization through trading activity the higher the positive impact on business success.

[355] Sandberg, S. Internationalization processes of small and medium-sized enterprises: Entering and taking off from emerging markets. Kalmar: School of Business and Economics, Linnaeus University, 2012.
[356] Polit, D. F., Beck, C. T. "Generalization in quantitative and qualitative research: Myths and strategies." International journal of nursing studies 47, no. 11 (2010): 1451–1458.

H_{1b} The higher the degree of internationalization through foreign market entry the higher the positive impact on business success.

H_{2a} The higher the number of different managerial digitalization tools in use the higher the positive impact on business success.

H_{2b} The higher the frequency of use of managerial digitalization tools the higher the positive impact on business success.

H_3 The higher the degree of strategic innovation the higher the positive impact on business success.

Construction of a Causal Model for the Empirical Testing of the Impact of Selected Factors on the Business Success of FinTech Enterprises

As the theoretical framework and the deeper insights in the chapters above have shown, the focus has four aspects:

1. The degree of strategic innovation (w)
2. The international business market entry (x)
3. The business success in general (y)
4. The degree of digitalization of internal administrative processes (z)

These aspects build the independent and dependent variables and can be seen as the basis for the indicator variables.

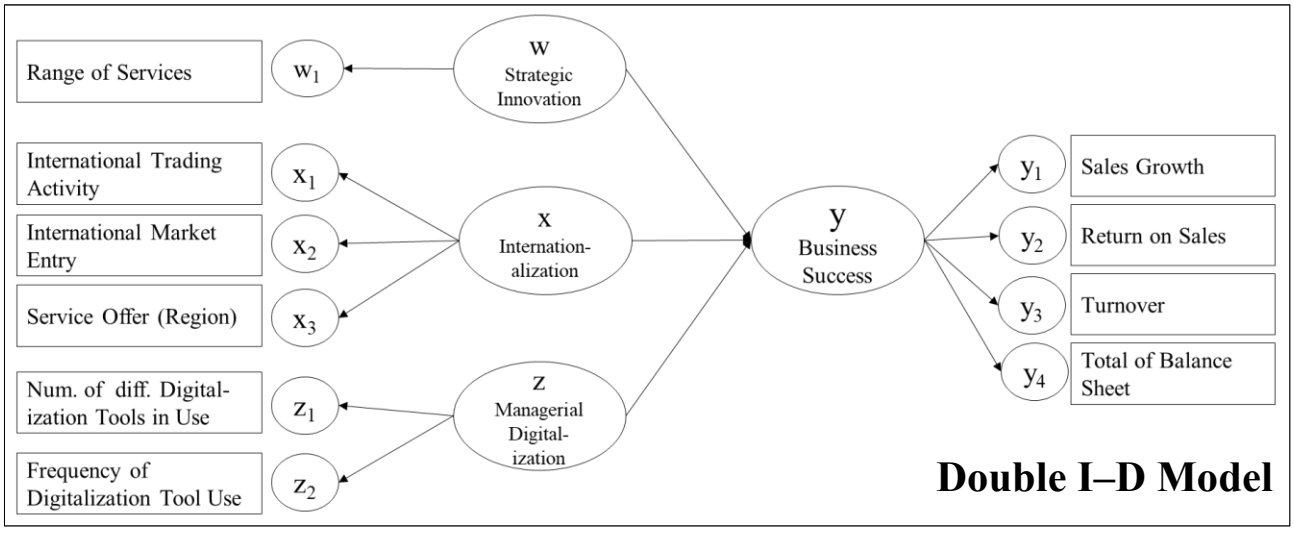

Figure 3.1.1: Author's Double I-D Model
Source: Author's creation

With the above-described aspects the assumed dependences between the variables can be identified and lead the author to her own created and named "Double I-D Model." The first "I" in the model stands for "internationalization," the second one for "strategic innovation." The "D" stands for "managerial digitalization". These three variables are the independent variables. The dependent variable in this model is "business success." All the findings are related to the research subject, i.e. German small and medium-sized FinTech enterprises.

3.2 Methodical Framework to Analyze the Dependences between Internationalization, Strategic Innovation and Managerial Digitalization on Business Success

Methodical Triangulation and Research Setting

The methodological literature suggests the use of qualitative research using case studies for theory development, whereas quantitative research is used for theory testing.[357] As a result of this, for international business research, as in this promotional thesis, quantitative researches are mainly being undertaken. Of course, one disadvantage of quantitative research is that it may force the objects into categories, and it cannot go into much depth about subjects and issues. For this reason, in addition to the quantitative research, a qualitative research approach was undertaken. But before both surveys were done the findings from the literature review that leads to the conceptual framework combined with two secondary data analyses were analyzed to prove the relevance of the asked and to gain a better understanding of the findings. With these three parts a so-called "triangulation of research" is gained. In science a triangulation is often used to indicate that two (or more) methods are used in a study in order to check the results of one subject. The idea is that one can be more confident with a result if different methods lead to the same result.

Triangulation is a research technique that facilitates validation of data through cross-verification from two or more sources. In particular, it refers to the combination of different research methods in one study of the same phenomenon.[358] By combining multiple methods researchers hope to overcome the weaknesses that come from a single method. In this dissertation a methodological

[357] Eisenhardt, K. M., Graebner, M. E. "Theory Building From Cases: Opportunities And Challenges." Academy of Management Journal 50, no. 1 (2007): 25–32.
[358] Given, L. Triangulation: SAGE Publications Inc, 2008.

triangulation was performed, which involves using more than one method to gather data, such as interviews, observations, questionnaires and documents.

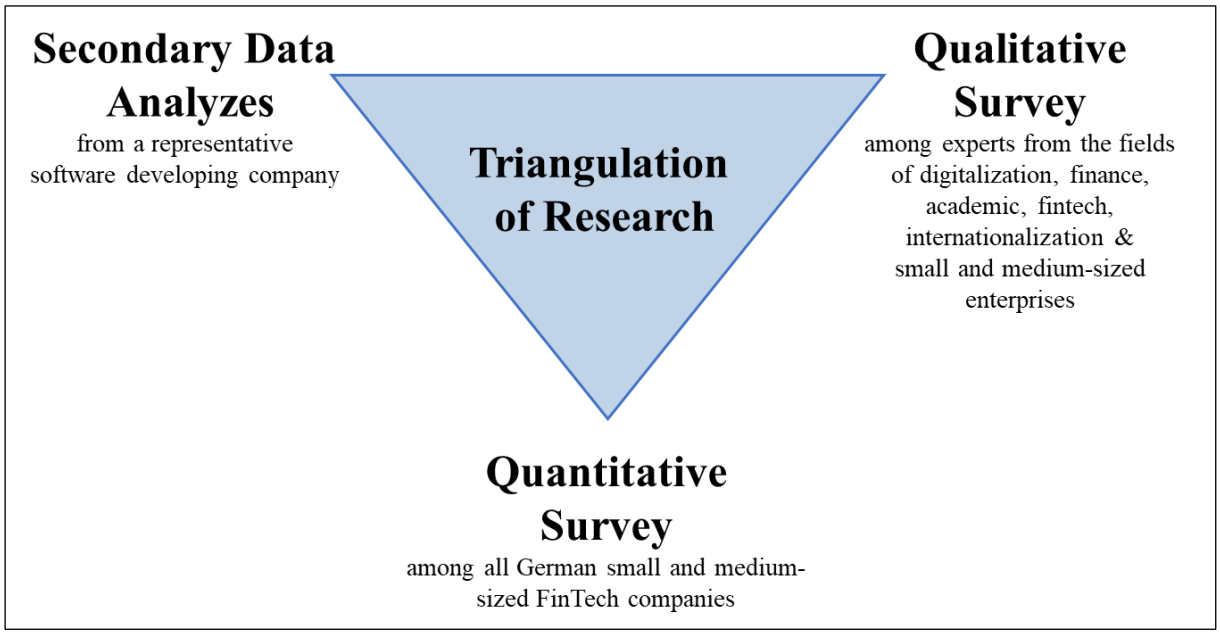

Figure 3.2.1: Methodical Triangulation in the Present Promotional Thesis
Source: Author's creation

Quantitative and Qualitative Research

Quantitative research focuses on cause and effect. To analyze the results from research, statistics are usually needed. The two main forms of statistical analyses are: 1) descriptive, which means the statistics will either be used to reveal patterns or show differences among variables; and 2) inferential, which means the statistics will be used to draw conclusions, explain cause and effect, and make predictions.[359] Descriptive research such as case studies, naturalistic observations and surveys is often used when it would be impossible or difficult to conduct an experiment. Once a researcher has collected data using descriptive methods, a correlational study can then be used to look at how the variables are related. This type of research method might be used to investigate a hypothesis that is difficult to test experimentally. Under the given circumstances of this promotional thesis, a descriptive strategy is used to present quantitative descriptions in a manageable form. This helps to simplify large amounts of data in a sensible way. Each descriptive statistic reduces lots of data into a simpler summary.[360]

[359] Jiao, Q. G., Onwuegbuzie, A. J. "Dimensions of library anxiety and social interdependence: Implications for library services." Library Review 51, no. 2 (2002): 71–78.
[360] Yates, D., Moore, D. S., Starnes, D. S. The practice of statistics. 2nd ed. New York, Basingstoke: W.H. Freeman; Palgrave Macmillan, 2002.

Qualitative research, for example in the form of expert interviews, helps to develop ideas for potential quantitative research. Qualitative research is used to uncover trends in thought and opinions.[361] To gain a better understanding of the underlying reasons and development of the quantitative research, a qualitative research was undertaken beforehand. An additional aim of the expert interviews was to gain estimations of future trends and gain deeper insights into the field of quantitative research.

3.2.1 Sampling Considerations and Organization of the Empirical Survey

A population is a set of similar items that 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.[362]
In this research approach the population for the quantitative survey are all enterprises in Germany that are defined as small and medium-sized. The number of these enterprises is estimated for 2018 to be nearly 3.45 million.[363] To define which enterprises in Germany relate to the group of small and medium-sized enterprises, the criteria as mentioned in the chapter "Demarcation of Small and Medium-Sized Enterprises" were used and will be repeated in the overview at the end of this chapter. A subconcept 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.[364] Descriptive statistics may yield different results for different subpopulations. Similarly, one can often estimate parameters more accurately if one separates out subpopulations.[365] In this promotional thesis the number of subpopulation sampling units was 289 in May 2018. The criteria that characterize the subpopulation of FinTech companies have already been mentioned in the previous chapter. Due to

[361] University of Vienna. "Forschungsmethoden." Approach, 2008. https://docplayer.org/7583203-Forschungsmethoden-von-josua-handerer-kontakt-josua-handerer-t-online-de.html.
[362] Dane, E., Pratt, M. G. "Exploring Intuition and its Role in Managerial Decision Making." Academy of Management Review 32, no. 1 (2007): 33–54.
[363] Institut für Mittelstandsforschung. "Die IfM-Statistiken." 2018. https://www.ifm-bonn.org/statistiken/.
[364] Dane, E., Pratt, M. G. "Exploring Intuition and its Role in Managerial Decision Making." Academy of Management Review 32, no. 1 (2007): 33–54.
[365] Yates, D., Moore, D. S., Starnes, D. S. The practice of statistics. 2nd ed. New York, Basingstoke: W.H. Freeman; Palgrave Macmillan, 2002.

the fact that 289 is a manageable number of objects for a full census, the subpopulation could ask by survey for the research question. No sampling within the subpopulation is needed.

Table 3.2.1: Characteristics of the Subpopulation

Parent Population	**Number**	**Characteristics**
All Enterprises in Germany (estimated number for 2018)	3,470,000	
Number of Small and Medium-Sized Enterprises in Germany (estimated number for 2018)	3,450,000	- Headcount up to 249 full-time equivalents - Turnover up to 50 million euro - Total of balance sheet up to 43 million euro
Subpopulation	**Number**	**Characteristic**
Number of FinTechs in Germany in May 2018	289	Enterprises with a digital and Internet-integrated financial product service range

Source: Author's creation, based on the numbers of the German Federal Statistical Office (2018) and www.paymentandbanking.com (2018)

The following figure describes the selected research methods. The overview begins with the research question, explains how the author comes to the basic hypothesis and leads to the triangulation of research in this promotional thesis. The reason why the methods were chosen are derive from different research aspects and also shown in the figure.

After taking into consideration which sampling size and research participants are meaningful, this section is dedicated to the construction of the research methodology to gain an overview of the empirical steps that are undertaken.

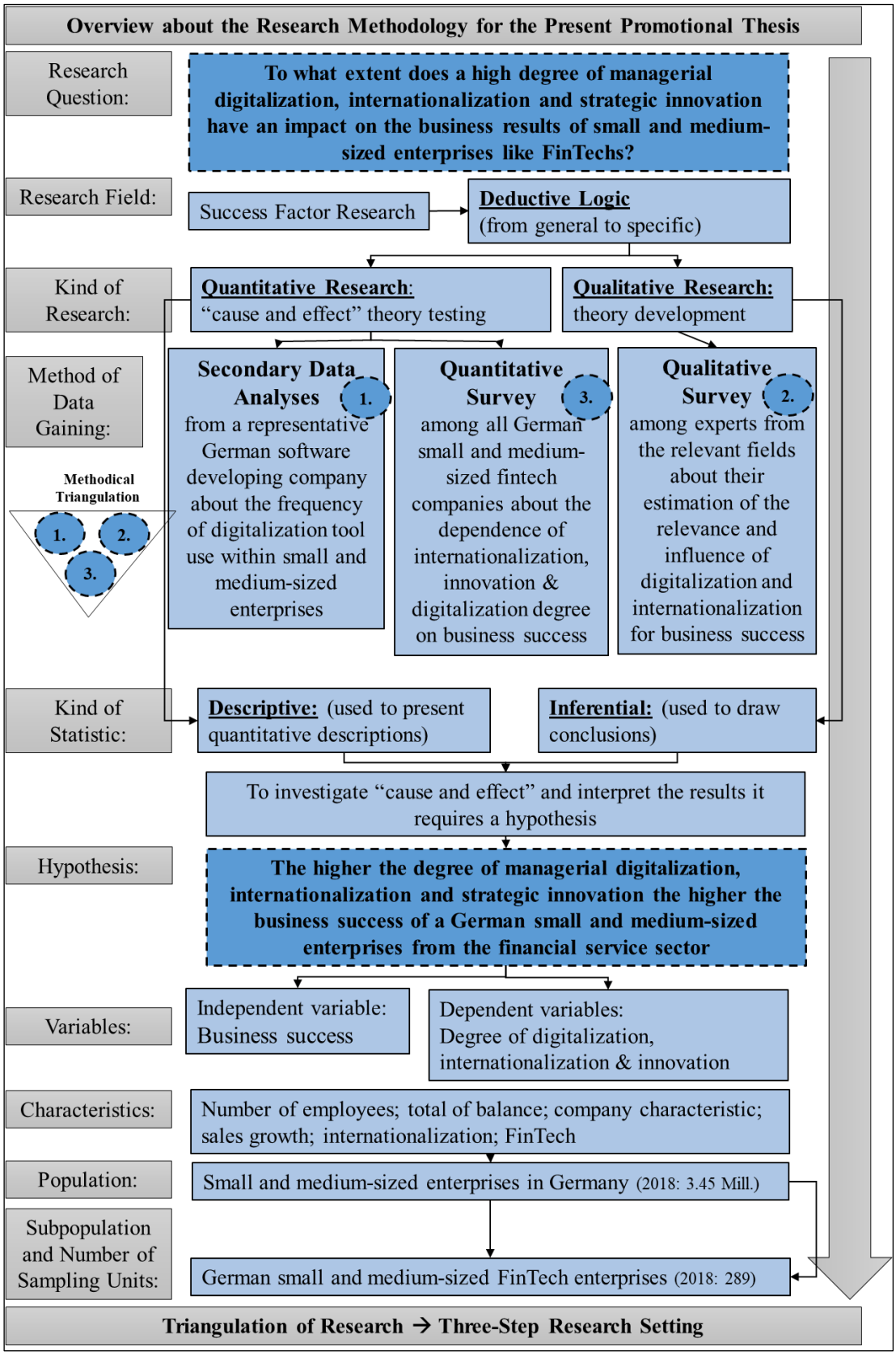

Figure 3.2.2: Overview of the Methodology Used in the Present Promotional Thesis
Source: Author's creation

To obtain empirical data, a data collection must be undertaken. A survey is a method that involves collecting a large amount of data from a large population, usually via questionnaires. Surveys can gather information through different methods of observation. Most surveys employ a questionnaire to measure specific characteristics of the population.[366] A survey involves closed questions with a predetermined number of answers. These are in fact much easier to fill in, and therefore more likely to get a high response rate, as does keeping the questionnaire short. It is suggested to trial the survey to ensure ease of completion and a lack of ambiguity. There are two different types of data: structured data, which are highly organized, and can easily be coded and analyzed using statistics, and unstructured data, which are disorganized and often generated by open questions or observation. As previously mentioned, for this approach a structured questionnaire is used and with this the structured technique of collecting data.[367] Questionnaires are used frequently in survey research, and can be printed and sent out by post, and completed over the telephone or via the Internet. They represent an economic way of contacting a large number of people. Very often they will be utilized to collect highly structured data and use closed questions. The literature suggests that to achieve a higher response rate, questionnaires should be short and easy to fill in.[368]

Qualitative data collection methods vary between using unstructured and semi-structured techniques. Common methods include group discussions, individual interviews and observations. The sample size is typically small and respondents are selected to fulfill a given quota.[369] The qualitative research in the form of expert interviews was carried out with different people from different relevant sectors and work environments. The individuals were asked to give their estimations and opinions regarding the trends and results from the secondary data analysis. These findings proved the correctness of the variables and the procedure to give the findings an even higher explanatory power.

[366] Yin, R. K. "The Case Study as a Serious Research Strategy." Knowledge 3, no. 1 (2016): 97–114.
[367] Kuo, C.-H., Dunn, K. D., Randhawa, S. U. "A case study assessment of performance measurement in distribution centers." Industrial Management & Data Systems, no. 2 (1999): 54–63.
[368] Jiao, Q. G., Onwuegbuzie, A. J. "Dimensions of library anxiety and social interdependence: Implications for library services." Library Review 51, no. 2 (2002): 71–78.
[369] University of Vienna. "Forschungsmethoden." Approach, 2008. https://docplayer.org/7583203-Forschungsmethoden-von-josua-handerer-kontakt-josua-handerer-t-online-de.html.

3.2.2 Operationalization of the Variables: Business Success, Internationalization, Strategic Innovation and Managerial Digitalization for the Hypothesis Testing

Coming back to the basic hypothesis: The higher the degree of managerial digitalization, internationalization and strategic innovation the higher the business success of a German small or medium-sized enterprise from the financial service sector:

The independent variable in this context is the business success.

Business Success (y):

The definition of success depends on many different circumstances. In this promotional thesis **business success** can be described as follows:

Financial business success is the achievement of a constant, increasing positive business result, measured by key performance indicators like return on sales and sales growth.[370]

To prove whether a company is successful in business, different criteria can be used. The best criteria would be the profit measured by the key performance indicator "EBIT," which means earnings before interest and tax. But this information is difficult to get from the companies. For this reason, other universal valid – and throughout the literature and science of economics acceptable – key performance indicators for company success were asked for. These indicators were spread over the company business units from finance to customers and processes in general. For the financial part, the increase and respective decrease compared to the previous year of the return on sales was asked about with the variable:

$$y_1 = \textit{Return on Sales in the Last Five Years Compared to Previous Year}$$

The given choices were "increase," "decrease" and "constant." This indicator is also known as a firm's operating profit margin; it is a ratio used to evaluate a company's operational efficiency.

Additionally, the sales growth ratio in percentage in the last five years was asked about with the variable:

[370] Author's definition of the term "business success."

y_2 = *Sales Growth in the Last Five Years*

The possible answers range in this case from negative, 0–5 %, 5–7 %, 7–10 % and more than 10%. If there was an increase in the return of sales and the sales growth in the last few years a company could be seen as doing business successfully and in this case the characteristic of success in the dependent variable is given.

y_3 = *Turnover*

An additional indicator variable for the business success is the turnover. This was asked about with the question: "What was the Turnover of your Company in the Last Year?" The answers could range from < 500,000 euro up to > 50 million euro.

y_4 = *Total of Balance Sheet*

This indicator variable was asked about with the question: "What was the Total of the Balance Sheet Last Year?" The possible answers range from < 1 million euro up to > 43 million euro.

The dependent variables are the degree of digitalization, innovation and internationalization, which are described as:

Strategic Innovation (w):

The degree of innovation in this promotional thesis was measured by the service range the companies offer as well.

w_1 = *Range of Services*

The definition of the term **strategic innovation** is formulated by the author in this promotional thesis as follows:

Strategic innovation describes the (technical) economic development of a new service caused by a changing environment.[371]

Therefore, the same range as above was categorized in a different way: Instead of having a look at

[371] Author's definition of the term "strategic innovation."

the products that could be offered without international adjustments, this time the range was categorized against the background of the innovation factor the service has:

- API Banking (Application Program Interface)
- Accounting / Controlling / Cost Calculation
- Banking
- Bitcoin*
- Credit
- Donations*
- Factoring / Collection
- Identity Checks*
- Insurance
- Ordering Process
- Payment-Handling Tools
- Portfolio Management*
- Property Finance
- Savings

Additionally, they could select "Others" and type in the service they offer. The services that are marked with an * are defined as innovative service, because they differ from established services bank offer their customers.

Internationalization (x):

The degree of internationalization was asked about with two questions and connected with these two conditions that indicate an international operating business.

$$x_1 = \textit{International Trading Activity}$$

First, if the company is internationally oriented there must be at least one positive match towards the questions with the title "Trade" where the import or export regions (European Union, United States of America, worldwide or no international trade) and directions (only import, import and export or only export) were asked about.

$$x_2 = \textit{International Market Entry}$$

Furthermore, at least one positive match toward the market entry mode (agency, direct agent, distributor, export cooperation, alliance, sector office and contracts: technical, service, management or others, franchise, joint venture, licensee, representative office, export authorized dealer, sole ventures, new establishment, greenfield investment, equity project, subsidiary, other way of internationalization) and where it is located (European Union, United States of America or other locations worldwide) must be given. If there are two positive matches towards the internationalization part, one in each question, a company can be seen as operating internationally, and with this, the characteristic of internationalization in the dependent variable is given.

$$x_3 = \textit{Service Offer (Region)}$$

A third indicator variable to measure the degree of internationalization was found in the range of the offered services. The services of a FinTech differ and therefore were categorized by the author before the survey. The participants were asked to choose which service offer the service range of their company fits best. They could select from:

- API Banking (Application Program Interface)*
- Accounting / Controlling / Cost Calculation
- Banking
- Bitcoin*
- Credit
- Donations*
- Factoring / Collection*
- Identity Checks
- Insurance
- Ordering Process
- Payment-Handling Tools
- Portfolio Management*
- Property Finance
- Savings

Additionally, they could select “Others” and type in the service they offer. The services that are

marked with an * are defined as international services, because they can be offered without adjustments of the service in international markets.

The definition of the term **internationalization** is formulated by the author in this promotional thesis as follows:

Internationalization is the increasing economic transformation of business activities to operate in international markets.[372]

Managerial Digitalization (z):

The definition of digitalization in this context means the extent of internal administrative processes that are already covered by digital measures. Therefore, the number of digital tools that are implemented in the company were asked about along with the frequency of use of these tools. For further comprehension digitalization in this promotional thesis is described as follows:

Digitalization defines opportunities to convert analog data into digital data. Managerial digitalization describes digital processes within an organization. Digital internal administrative processes replace paper-based workflows within an organization.[373]

The digital processes within a company were asked about in terms of different business tools and their frequency of use. The range was from "never" to "only".

1. Use of Enterprise Resource Planning Software (for example, for Warehousing or Project Calculating)
2. Cloud Usage for Data Storage (for example, Dropbox, Apple Cloud)
3. Cloud Usage for Software (for example, Microsoft 365, software as a service, application service provider)
4. Use of Online Shop for Sales Activity (for example, Amazon, Alibaba, eBay, Own Shop System)
5. Digital Workflow (for example, Approvals or Signatures)

[372] Author's definition of the term "internationalization."
[373] Author's definitionof the term "managerial digitalization."

6. Communication via Internet (for example, Skype, WhatsApp, Lync, TeamViewer)
7. Use of Digital Knowledge Database (for example, Confluence or Zendesk)
8. Digital Human Resource Process (for example, a search via LinkedIn or advertisement on StepStone)
9. Digital Travel Management (for example, Expense Report via Rydoo or HotelBooking)
10. Digital Fleet Management (for example, Electronic Drivers Logbook or Car Rental)

On the one hand, the number of positive matches, thereby "positive," means a match by seldom / particular, often / mostly, only and not by "never" characterizes the degree of digitalization, and on the other hand, the frequency itself shows how digitalized a company is.

To measure the managerial digitalization degree within a company, in a first step the variety of digitalization tools used within the company was asked about:

$$z_1 = \textit{Number of Different Digitalization Tools in Use}$$

And additionally, the frequency of the tool use was asked about:

$$z_2 = \textit{Frequency of Digitalization Tool Use}$$

With the definition of the dependent and independent variables the author could carry out a further development of the research model in the form of a path diagram.

3.2.3 Development of a Path Diagram against the Background of the Double I-D Model

The following path diagram is a statistical model that allows us to estimate and test correlations among dependent and independent variables. With the results from the "Double I-D Model," the variables within the hypothesis "The higher the degree of managerial digitalization, internationalization and strategic innovation the higher the business success of a German small or medium-sized enterprise from the financial service sector" can be proven if they correspond to each other.[374] The diagram contains for this reason all variables that should be examined and connects them with arrows when the theory assumes a relation between them. Latent variables are also known as "factor variables." They cannot be measured directly and for this reason they need

[374] Kaplan, D. "The impact of specification error on the estimation, testing, and improvement of structural equation models." Multivariate Behavioral Research 23, no. 1 (1988): 69–86.

indicators to make them measurable and observable. Factor or latent variables are distinguished in exogenous and endogenous variables, depending on the independent or dependent variable they are connected to.[375] An endogenous variable is one that is a dependent variable in at least one linear equation in the path diagram under consideration; an exogenous variable is one that is never a dependent variable.

Path diagrams and their further development as a structural equation model often invoke a measurement model that defines latent variables using one or more observed variables, and a structural model that imputes relationships among latent variables. They are used to assess unobservable latent constructs. Latent variables are variables that are not directly observed but are rather inferred.[376]

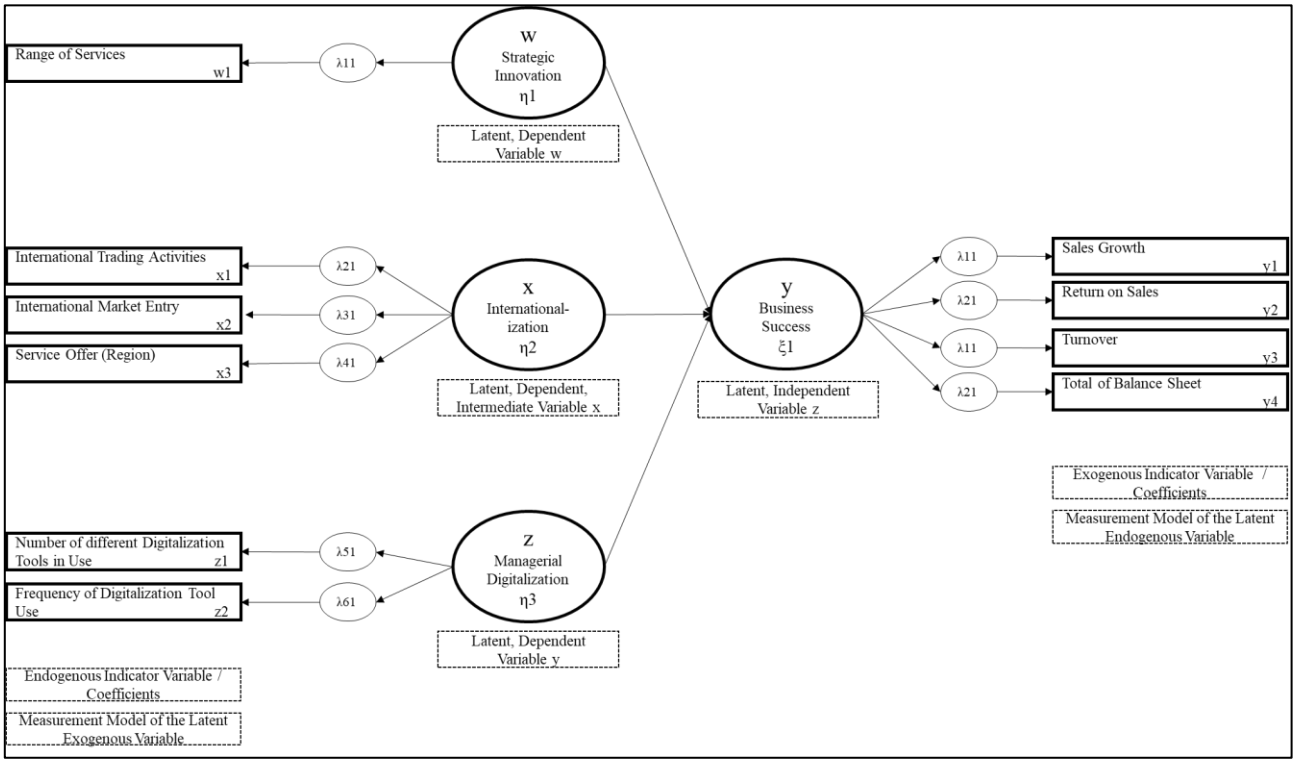

Figure 3.2.3: Graphic Model of the Research Question "To what extent does a high degree of managerial digitalization, internationalization and strategic innovation have an impact on the business results of small and medium-sized enterprises like FinTechs?" in a Path Diagram.
Source: Author's creation

[375] Cochran, W. G. "Errors of Measurement in Statistics." Technometrics 10 (1968): 637–666.
[376] Kline, R. B. Principles and practice of structural equation modeling. 3rd ed. New York: Guilford Press, 2011. http://site.ebrary.com/lib/academiccompletetitles/home.action.

What is shown in the figure above is that the paths are used to indicate the direct relationship between the variables. In the case shown, the three variables (x, y, z) are the degree of digitalized work process (z) within an enterprise and a successful business (y) as well as an international business market entry (x). The arrow from Z to Y and X indicates a linear relationship where X and Y are the dependent variables and Z the independent variable. As presented in the path diagram above, the dependent variables X and Y are a successful business and a successful international market entry. The independent variable X in this promotional thesis is the degree of digitalized work processes. The independent variable is on the left side of an equation and has an arrow pointing to the dependent variables. Latent variables are placed in a circle (contrary to manifest variables that would be placed in boxes) in the path diagram.

The endogenous indicator variables are these that are related to the independent variables W, X and Z and in this case are:

- w_1 = Range of Service
- x_1 = International Trading Activity
- x_2 = International Market Entry
- x_3 = Service Offer (Region)
- z_1 = Number of Different Digitalization Tools in Use
- z_2 = Frequency of Digitalization Tool Use

The exogenous indicator variables are related to the dependent variable Y and in this case are:

- y_1 = Sales Growth
- y_2 = Return on Sales
- y_3 = Turnover
- y_4 = Total of Balance Sheet

On both sides of the diagram, the measurements errors (also called "residuals") for the indicator variables (exogenous and endogenous) are listed. Arrows pointing at the variables show that every indicator variable could be influenced by measurement errors.[377] The effects of the exogenous variable on the endogenous variables are drawn with γ. The path diagram is divided into three parts.

[377] Everitt BS, D. G. "Applied multivariate data analysis." Statistical Methods in Medical Research 2, no. 1 (2016): 114–115.

In the middle, the path with the assumed relation and effect of the independent on the dependent variable can be seen. The left part of the model is called the "measurement model of the latent exogenous variable" and the right part of the model is called the "measurement model of the latent endogenous variable."

3.3 Validation of the Causal Model using Qualitative Research Methods

The methodological literature suggests the use of qualitative research using case studies for theory development, whereas quantitative research is used for theory testing.[378] Therefore, in a first step, the theoretical model will be proved by expertise-based evidence using the tool of expert interviews, which are undertaken via an online survey. With the help of the experts it should be tested whether the impact factors "managerial digitalization" and "internationalization" are success factors for the business results of German small and medium-sized enterprises from the financial service sector as well.

Focus Group for the Expert Interviews

For the interviews, people who have a wide knowledge of the relevant areas were asked about their estimations in different fields among the research questions of this work. The interview was created in a web-based online platform called "umfrageonline.de" and the questions were written in German as well as in English language. Beside the questionnaire to the experts in the Appendix, there is also the introductory e-mail to them that includes critical terms and definitions like what a FinTech company is and what digitalization in the context of this work means. In the period from 3rd January 2019 to 3rd February 2019 the interview partners had the time to fill in the online questionnaire.

Defined as experts are people who have a wide knowledge in at least one of the following fields:

- Digitalization
- Finance
- FinTechs
- Internationalization
- Small and Medium-Sized Enterprises

[378] Eisenhardt, K. M., Graebner, M. E. "Theory Building From Cases: Opportunities And Challenges." Academy of Management Journal 50, no. 1 (2007): 25–32.

– Academic Work

These individuals could be CEOs of companies in relevant areas like finance, FinTechs or taxation with a focus on small and medium-sized enterprises as well as academic interview partners like professors of business faculties with a focus on the research interest fields, for example digitalization or internationalization.

The following figure presents an overview of the distribution of the fields of research interest of the experts; sometimes experts are categorized in more than one research field. The author of this promotional thesis knows most of the interview partners and met them in person. The few who were indirectly known were contacted via e-mail, telephone or LinkedIn. The number of experts totaled 20 and all of them completed the questionnaire. The questionnaire comprised eight questions, all closed questions, based on a Likert scale.

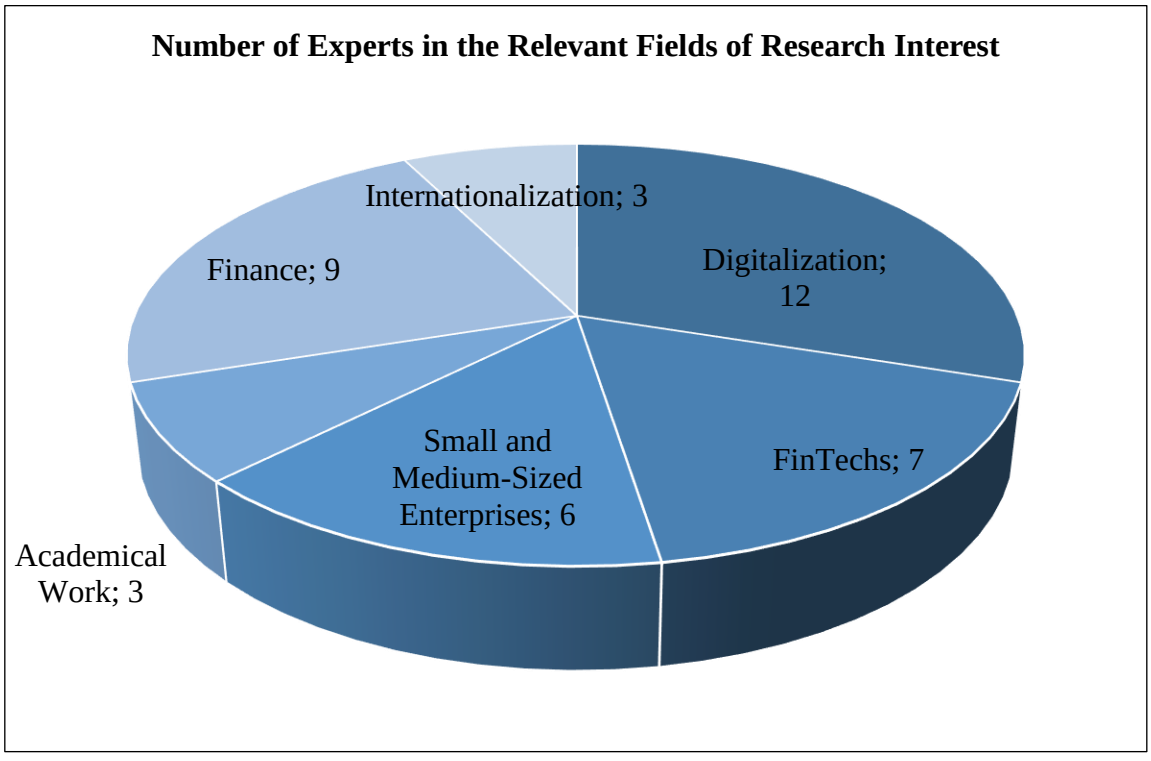

Figure 3.3.1: Number of Experts in the Relevant Fields of Research Interest
Source: Author's creation

Integrated Research Questions in the I-D Model for the Interviews

The experts were asked to give their estimation in different statements in relation to the research question. With their answers the author of this promotional thesis expects a validation of the research model. The adaption of the research model is shown in the following figure.

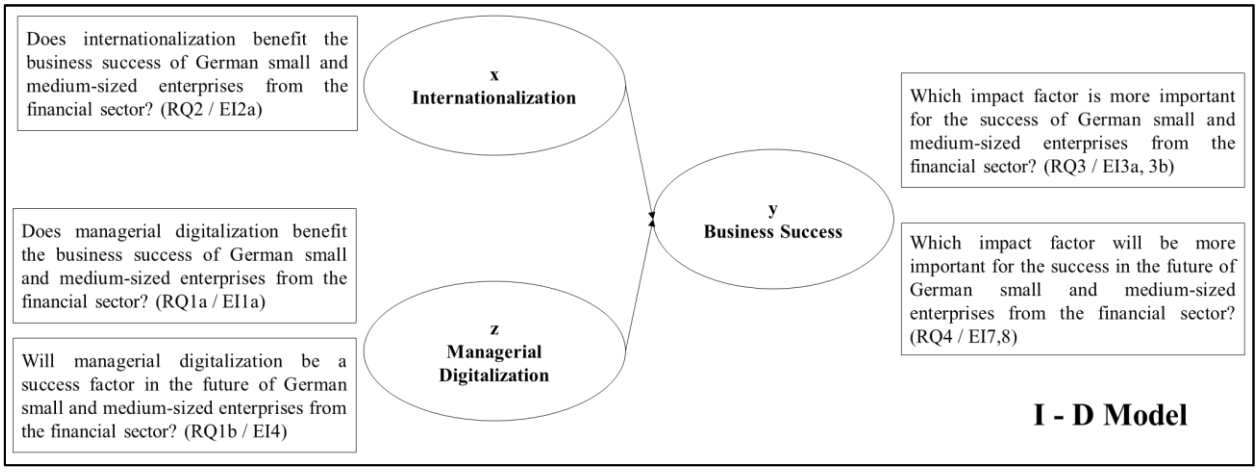

Figure 3.3.2: Research Questions Integrated into the I-D Model.
Source: Author's creation

In this first step of the empirical analysis the author of this promotional thesis pursues the aim to identify whether the impact factors "internationalization" and "managerial digitalization" are also success factors for the business results of small and medium-sized enterprises from the financial service sector in Germany.

Results of the Expert Interviews

In regard to the results of the previous secondary data analysis, two impact factors of the business success of a German small or medium-sized enterprise from the financial service industry were tested via the expert interviews as to whether they have the potential to be success factors. The factors "internationalization" and "managerial digitalization" were analyzed against the background of the business success of the service industry in the financial sector. An overview of all results from this analysis can be found in the Appendix. In the following table, the research questions answered by the experts and the confirmation status are presented.

Table 3.3.1: Overview of the Research Questions Answered through the Expert Interviews

Research Question	Expert Interview Question	Variable	Research Question Regarding the Expert Interviews	Confirmation Status
RQ1a.	**EI1a.**	**z_1**	Does managerial digitalization benefit the business success of German small and medium-sized enterprises from the financial sector?	Confirmed
RQ1b.	**EI4.**	**z_2**	Will managerial digitalization be a success factor in the future of German small and medium-sized enterprises from	Confirmed

			the financial sector?	
RQ2	**EI2a.**	**x_1**	Does internationalization benefit the business success of German small and medium-sized enterprises from the financial sector?	Confirmed
RQ3	**EI3a/3b.**	**x_2/y_2**	Which impact factor is more important for the success of German small and medium-sized enterprises from the financial sector?	Managerial Digitalization
RQ4	**EI7/8.**	**z_3/x_2**	Which impact factor will be more important for the success in the future of German small and medium-sized enterprises from the financial sector?	Managerial Digitalization

Source: Author's creation

Research Question 1a

Research question 1a "Does managerial digitalization benefit the business success of German small and medium-sized enterprises from the financial sector?" attempts to find out whether managerial digitalization is more than an impact factor and could be a success factor as well in the results of companies. For this reason, the experts were asked whether it had a positive impact on the business success of FinTech enterprises. What can be stated is that the experts estimate that an already highly digital business in the financial service sector should be very successful in their economic business (expert interview question 1a).

Research Question 1b

Research question 1b "Will managerial digitalization be a success factor in the future of German small and medium-sized enterprises from the financial sector?" attempts to find out the relevance of managerial digitalization in the future. The experts were asked to predict whether managerial digitalization will remain a success factor for FinTech enterprises. The experts confirmed that managerial digitalization will have a positive influence on the business results in the future (expert interview question 4).

Research Question 2

Research Question 2 "Does internationalization benefit the business success of German small and medium-sized enterprises from the financial sector?" attempts to find out whether internationalization is more than an impact factor and could be a success factor as well in the results of companies. For this reason, the experts were asked whether it had a positive impact on the

business success of FinTech enterprises. What can be stated is that the experts predict that an already highly internationally oriented enterprise from the financial service sector should be very successful in their economic business (expert interview question 2).

Research Question 3

The experts were also asked to say which of the two impact factors is more important for the business results of a FinTech enterprise. Here, research question 3 "Which impact factor is more important for the success of German small and medium-sized enterprises from the financial sector?" should be answered. The majority of the experts held the opinion that managerial digitalization is a bigger impact factor than internationalization (expert interview questions 3a and 3b).

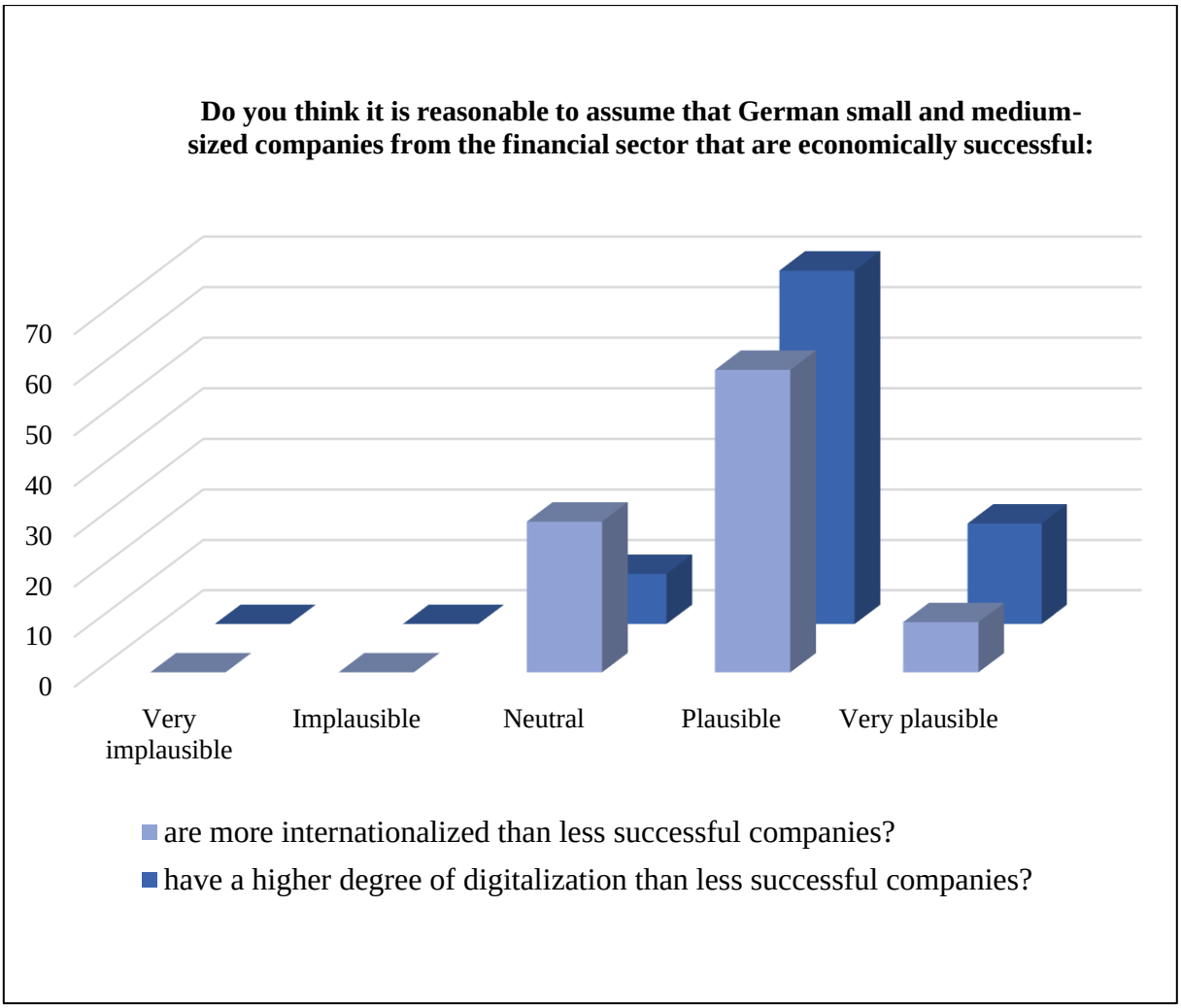

Figure 3.3.3: Importance of the Impact Factors "Internationalization" and "Managerial Digitalization" for the Business Results of FinTechs in % in 2018
Source: Author's creation

Research Question 4

The experts were also asked to give an estimation about the future importance of the impact factors for the business success of small and medium-sized enterprises from the financial service sector. Thus, research question 4 “Which impact factor will be more important for the success in the future of German small and medium-sized enterprises from the financial sector?” should be answered. Again, the majority of the experts were of the opinion that managerial digitalization will be in the future a more important impact factor than internationalization (expert interview questions 7 and 8).

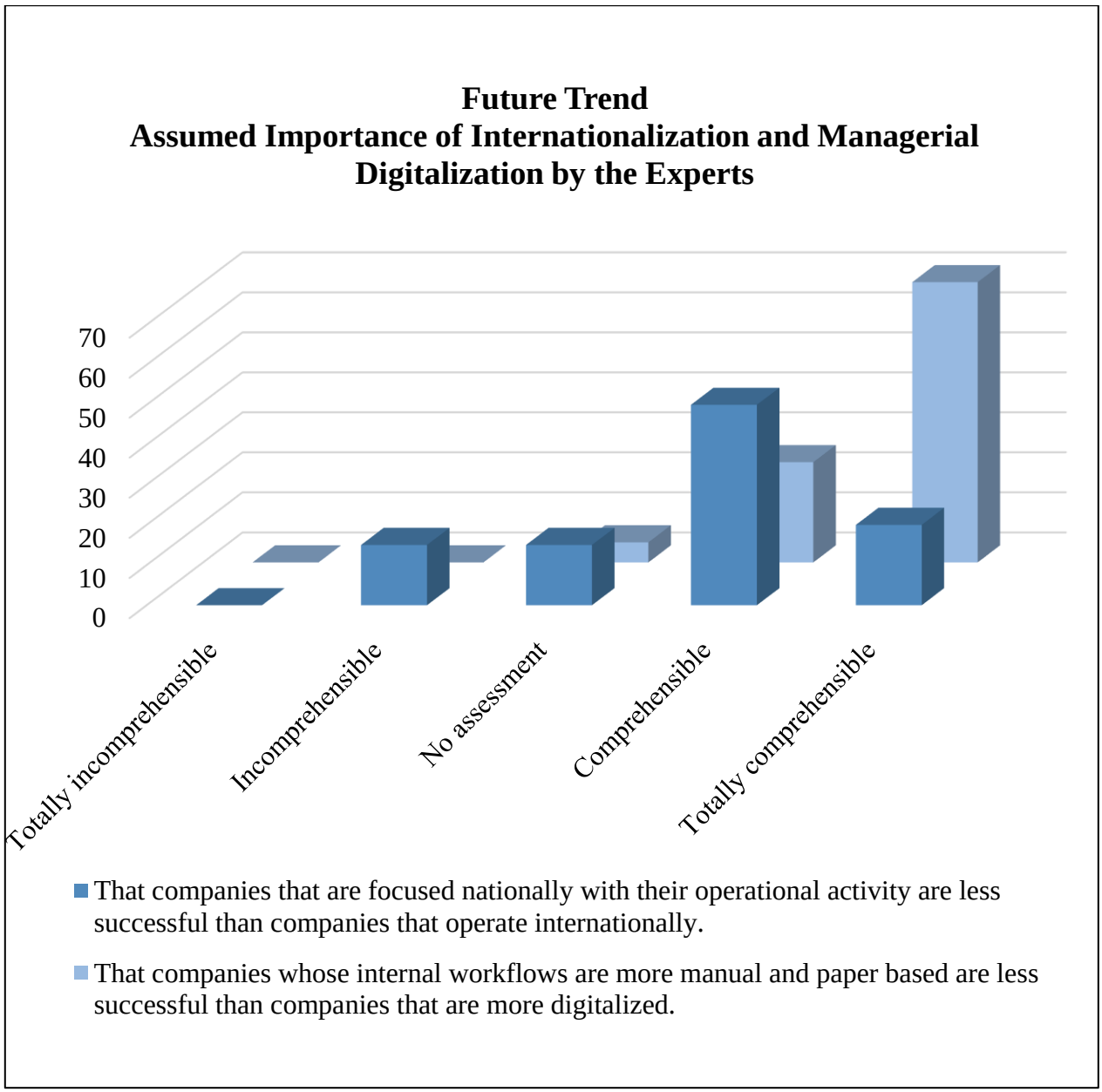

Figure 3.3.4: Assumed Future Importance of Impact Factors for the Business Success of FinTechs in %
Source: Author's creation

Evaluation of the Results from the Expert Interviews for the Proof of the Causal Model

What can be found in the results of the expert interviews is that internationalization and managerial digitalization support the business success of small and medium-sized enterprises in the financial service sector. With this, what was assumed after the literature review and the secondary data analyses can be confirmed: "Internationalization" and "managerial digitalization" are success factors. Thus, the results deliver a rough answer as to why some FinTechs are more successful than

others and which factors have the most (positive) impact on business success. But to obtain more detailed information in this research field and for further research questions a quantitative survey among all German FinTechs was conducted. Limitations of the results from the expert interviews lie in the disadvantages of qualitative research methods themselves. The quality of the data gathered is highly subjective. The widespread fields of knowledge of the experts should compensate for this but there is always a remaining risk. In this part, the research model of this thesis was proved through expert interviews from different fields of expertise and areas of working activity. Findings and interpretation of the results from the interviews showed that internationalization and managerial digitalization have a high impact on the dimension of business success.

3.4 Proof of the Causal Model using Quantitative Research Methods

After validating the research model through the expert interviews in the previous part, the results and insights thereof can be used in what follows. In this section the developed causal model of the author of this promotional thesis, the "Double I-D Model," will be proved a through quantitative survey among German small and medium-sized enterprises from the German financial service sector to find out whether the identified impact factors have the potential to be success factors for the business results of FinTech enterprises.

3.4.1 Operationalization of the Indicator Variables: Internationalization, Strategic Innovation and Managerial Digitalization

The quantitative survey was created in a web-based online platform called "umfrageonline.de" and the questions were written in German as well as in English. The survey was conducted among all German small and medium-sized FinTechs in 2018 (status May 2018). All of the annex-listed companies were contacted. The participants were contacted via e-mail with a personal letter from the author and the hyperlink to the online survey. The survey fielded online between 17 October 2018 and 29 November 2018 with the objective of gaining a better understanding of how organizations evolve to a digital business model in regard to how they enter foreign markets and in what scope. The author of this promotional thesis collected the e-mail addresses and contact persons in person. Therefore, responsible persons in the FinTechs were identified in relation to the content of the web pages of the companies or other information from the Internet like articles or

blogs. Then the persons were contacted via social media platforms like LinkedIn, XING or Facebook or personally at forums, conferences or exhibitions. To be considered as qualified the respondents must work in a FinTech company that is listed among the enterprises of the annex and, due to the fact that balance sheet numbers and sales rates will be asked, must have at least five years of working experience, so that their knowledge and job positions allow each person to answer this question. Out of the whole population of 289 firms, 60 questionnaires were answered, which corresponds to a response rate of 21%, which can be seen as a meaningful result.

Inquiry of the Frame Conditions for the Survey

The first six questions of the questionnaire were to prove that the person who answered had the required knowledge about the theme and the company to answer seriously. For this reason, age, academic degree and working experience in the financial sector, inter alia, were asked about. With these findings the author of this promotional thesis could expect that the people who answered the survey were on average sufficiently qualified to give the following answers. The next questions should qualify the company as being part of the population of German small and medium-sized FinTech companies. For this reason, company headquarters, and different qualitative and quantitative characteristics of a small or medium-sized company as previously demarked in this work as well as questions aimed at categorizing a FinTech were considered. Companies that have their headquarters outside Germany with more than 250 employees, a turnover of over 50 million euro or a balance sheet with more than 43 million euro were excluded.

Data Collection for the Indicator Variables

Indicator for Innovation (w_1)

The measure the innovation degree of a company as an indicator variable must be found. In this promotional thesis, the focus lies on the strategic innovation of the product and service range.

w_1: The indicator variable for innovation was measured by a binary coding of the answers from survey question 12 “Where is the focus of the company’s product/service range?” The answers were grouped into products and services with innovation character and with classic business model.

Table 3.4.1: Binary Coding of the Answers in Innovative and Classic Business Models of German FinTech Enterprises in 2018

Classic Business Models of Financial Services	Innovative Services and Products of Financial Services
– Accounting / Controlling / Cost Calculation – Banking – Credit – Factoring / Collection – Insurance – Ordering Process – Portfolio Management – Property Finance – Risk Management / Rating – Savings – Payment-Handling Tools	– API Banking (Application Program Interface) – Bitcoin – Donations – E-Commerce – Identity Checks – Peer-to-Peer Payment (Mobile Payment via Smartphone)

Source: Author's Creation

Indicator for Internationalization (x_1, x_2, x_3)

To measure the degree of internationalization of an enterprise, indicator variables must also be found. In this case, three variables were found.

x_1: An indicator for internationalization is the trading activities of the FinTechs. This indicator was asked about in different forms. The FinTechs should answer in survey question 16 "With which countries does your company trade (import and export)?" where they trade (Europe, USA, other countries) and whether they only import products and services from the countries or if they export only in the country or both.

x_2: After this, the market entry modes were asked about. With survey question 17 "In what way does your company act internationally?" the FinTechs could check boxes with ten different market entry modes. Afterwards the most used market entry modes as well as the number of different market entry modes were analyzed.

x_3: The third way in this promotional thesis to measure the degree of internationalization of

products and services was to analyze whether they were international or only national usable services and products. To obtain the results for this, survey question 12 was again binary coded with the region in which the services could be offered, and the "range of service" was categorized into "national" and "international" products. National products could only be offered in the domestic market, in this case in Germany. This limitation was for different reasons: On the one hand, there could be legal restrictions in other countries or regulations that demand a product adjustment to offer it in the foreign market; on the other hand, it could be simply not needed in other countries.

Table 3.4.2: Binary Coding of the Answers in National and International Product and Services of German FinTech Enterprises in 2018

"National" Product and Services of FinTech Enterprises	"International" Product and Services of FinTech Enterprises
– Accounting / Controlling / Cost Calculation – Banking – Credit – Factoring / Collection – Insurance – Property Finance – Payment-Handling Tools	– Ordering Process – Portfolio Management – API Banking (Application Program Interface) – Bitcoin – Donations – E-Commerce – Identity Checks – Peer-to-Peer Payment (Mobile Payment via Smartphone) – Risk Management / Rating – Savings

Source: Author's Creation

Indicator for Digitalization (z_1, z_2)

In the third part of the online survey the degree of digitalization was asked about. For this, survey question 18 "Which of the following digitalization tools already exist in your company and how often are they used?" asked for different digitalization tools that could be used in daily business to be listed.

z_1: To measure the number of digitalization tools that are in use in the enterprises, in a first step

the results were analyzed regarding whether the tools are used: 1 = no matter how often, 0 = never used. The range of possible answers could be from 0 (no tools were ever used) to 11 (all tools were at least "seldom" in use).

z_2: In the second step, the results were analyzed as to which tools were used and how often. The frequency of their usage could range from "never" to "only."

To analyze the correlations within the "Double I-D Model," the analyses were performed using SPSS software for statistical data processing. Descriptive statistics were used in order to characterize the sample.

3.4.2 Research Accomplishment and Process of the Online Survey among Small and Medium-Sized Companies from the Finance Area

Deduced from the steps before, the **research process** has seven steps:

1. **Coding of the Questionnaire**

   After the integration of the indicator variables in the research model, the coding of the questionnaire through operationalization of the variables was carried out. For the "internationalization" part the variable x was given. With x_1 the trading directions, like import, export or both, were asked about. With x_2 the market entry modes like subsidiary or licensee were asked about. With x_3 the focus on the offered service was done. Only services with a product that could be offered without adjustments to the product offered in Germany were categorized as "international." For the "business success" part the variable y was given. With y_1 the return on sales over the years 2013 to 2017 was asked about. With y_2 the sales growth compared to the previous year for the years 2013 to 2017 was measured. With y_3 the turnover of the last year and with y_4 the total of the balance sheet of the last year were asked about. For the "managerial digitalization" part the variable z was given. With z_1 the digitalization tool and with z_2 its frequency of use were asked about. With w_1 the innovation character of the offered service was asked about. The indicator variables w_1 and x_3 are only binary scaled. For this reason, some analyses had to be done twice to analyze the correlations. When it comes to the question of the correlation to these two variables, the others had to be binary as well.

2. Summarize Data for Calculation

Descriptive statistics were used to summarize the data for the calculation in SPSS. Beside this necessary step to proceed with the analyses, descriptive statistics are also used for comparison, if the sample presents a representative population and with this a comparison to similar studies to place the results of this dissertation in perspective to others.[379]

3. Testing of Normal Distribution

The "Shapiro-Wilk test" is a test of normality in frequentist statistics. It is, in contrast to other test methods, more appropriate for small sample sizes. For this reason, the Shapiro-Wilk test was used for assessing normality. If the significance level (p-value) is less than the chosen alpha level, then the null hypothesis is rejected and there is evidence that the data tested are not normally distributed.[380] In this promotional thesis the alpha level for the quantitative survey is 0.05. So, a data set with a p-value of less than 0.05 rejects the null hypothesis that the data are from a normally distributed population. The Shapiro-Wilk test shows that results from several questions are normally distributed.

4. Factor Analysis of Similar Variables

With the help of a factor analysis, similar variables were grouped into dimensions. This process was used to identify the latent variables (internationalization, managerial digitalization and strategic innovation). The purpose of the factor analysis was to reduce the individual items into a lower number of dimensions, to simplify data.

5. Correlation Analyzes

In what follows the results of the "correlation analyses" will be explained as well as the method with which the correlation analyses were tested. There was a two-step query and both whole tables of the results can be found in the annex. In the first step the scale ranks from 1 to 5 and in the second step the scale was only binary. This was needed because the "strategic innovation" results were only available in binary form. The correlation analyses were tested

[379] Morgan, G. A., Gliner, J. A., Harmon, R. J. "Measurement and descriptive statistics." Journal of the American Academy of Child & Adolescent Psychiatry 38, no. 10 (1999): 1313–1315.
[380] Shapiro, S., Wilk, M. "An analysis of variance test for normality (complete samples)." Biometrika 52, 3-4 (1965): 591–611.

with "Pearson's test." Pearson's chi-squared test is a test of sets of categorical data to evaluate how likely it is that any observed difference between the sets arose by chance. It is suitable for nonpaired data from large samples.[381] It is the most widely used of many chi-squared test statistical procedures whose results are evaluated by reference to the chi-squared distribution.[382] In contexts where it is important to improve a distinction between the test statistic and its distribution, names similar to Pearson's χ-squared test or statistic are used. It tests a null hypothesis stating that the frequency distribution of certain events observed in a sample is consistent with a particular theoretical distribution. The events considered must be mutually exclusive and have a total probability of one. The results show that there are significant correlations as described in the following table.

Table 3.4.3: Overview of the Proven Hypotheses with the Results from the Quantitative Survey

Hypotheses	Analyzed Hypotheses through the Quantitative Survey
H_{1a}	The higher the degree of internationalization through trading activity the higher the positive impact on business success.
H_{1b}	The higher the degree of internationalization through foreign market entry the higher the positive impact on business success.
H_{2a}	The higher the number of different managerial digitalization tools in use the higher the positive impact on business success.
H_{2b}	The higher the frequency of the use of managerial digitalization tools the higher the positive impact on business success.
H_3	The higher the degree of strategic innovation the higher the positive impact on business success.

Source: Author's creation

In comparing internationalization (x_1) to business success (y_1) a negative significant correlation for several years could be observed. This could be interpreted as: The higher the international trading activities the worse the sales numbers. And with this, hypothesis 1a "A high degree of internationalization through trading activity has a positive impact on business success" must be rejected. In comparing internationalization (x_2) to business success (y_1) the

[381] Gosall, N. K., Gosall, G. S. Critical appraisal. Knutsford, Knutsford: PasTest, 2012.
[382] Pearson, K. "X. On the criterion that a given system of deviations from the probable in the case of a correlated system of variables is such that it can be reasonably supposed to have arisen from random sampling." The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science 50, no. 302 (2009): 157–175.

return on sales for the last five years compared to the market entry modes was analyzed. And a highly positive significant correlation was found for some of the asked about years. And with this, hypothesis 1b "A high degree of internationalization through foreign market entry has a positive impact on business success" can be confirmed. This might be because the more ways a company operates internationally the more efficiently the company can operate.

When having a look at the correlation between business success measured through sales growth, the total of the balance sheet and turnover compared to the degree of managerial digitalization again a positive significant correlation can be found. Maybe, the higher the sales growth, the more digitalization tools are needed. This confirms hypothesis 2.

Hypothesis 3 was analyzed by comparing successful and unsuccessful FinTechs (in terms of turnover, total of balance sheet, sales growth and return on sales) and the degree of innovative products and services they offer and a negative impact was found. So, with this finding the conclusion could be drawn that innovation is an impact factor but not a success factor for small and medium-sized enterprises from the financial service sector like FinTechs are. Obviously it does not play an important role in what FinTechs offer whether it is a conservative service or an innovation service, the business success depends more on digitalization than on innovation.

After the two analyses it was considered a good idea to test the results through a multiple regression analysis, but the results only show small effects, therefore there are no further details to this analysis.

6. Proof of the Goodness of Fit of the Research Model via Coefficient of Determination

In statistics, the coefficient of determination, denoted R^2 or r^2 and verbalized as "R squared," is the proportion of the variance in the dependent variable that is predictable from the independent variables.[383] It is a statistic used in the context of statistical models whose main purpose is either the prediction of future outcomes or the testing of hypotheses, on the basis of other related information. It provides a measure of how well observed outcomes are replicated by the model, based on the proportion of total variation of outcomes explained by

[383] Glantz, S. A., Slinker, B. K. Primer of applied regression and analysis of variance. New York: McGraw-Hill, 1990.

the model.[384] An R^2 of 1 indicates that the regression predictions fit the data perfectly. In what follows, all significant correlating variables will be analyzed by the coefficient of determination to check the goodness of fit of the research model and the degree of influence of the independent variables on the dependent variables. Significant correlations and correlations without significance can be found in several years for the analyses of internationalization compared to business success. With most $R^2 \geq 0.2$ it shows that with a degree of nearly 20% the independent variable business success, measured by sales growth, influences internationalization, which is measured by trading activity. In science all values with a higher degree than 10% can be seen as an impact factor with the potential to be a success factor. When analyzing internationalization and business success, the coefficient of determination shows that with a degree of higher than 10% the dependent variable business internationalization, measured by market entry modes. influences in a large degree business success, which is measured by return on sales. And, when having a look at managerial digitalization compared to market entry modes, these correlation that indicates the degree of internationalization, their coefficient of determination meets a quantifier degree of 16%, which shows that with a degree higher than 10% the independent variable digitalization degree within a company influences the dependent variable internationalization, measured by market entry modes in a large degree. When comparing managerial digitalization to business success the measurements were done again to the use and frequency of tool use for the digitalization degree and success measured by the sales growth rate for the last five years a coefficient of determination with more than 10% shows that the independent variable digitalization degree within a company influences to a large degree the dependent variable business success, measured by sales growth. Also, comparing managerial digitalization to business success the measurements were done again to the use and frequency of tool use for the digitalization degree and success measured by the total of balance sheet shows an $R^2 > 0.2$, which underlines the influence of the dependent variable digitalization on business success.

[384] Draper, N. R., Smith, H. Applied regression analysis. New York, Chichester, Weinheim, Brisbane, Singapore, Toronto: Wiley, 1998. http://dx.doi.org/10.1002/9781118625590.

7. Mann-Whitney U Test to Test the Null Hypothesis

To test the null hypothesis a Mann-Whitney U test was conducted. In statistics, the Mann-Whitney U test is a nonparametric test of the null hypothesis that it is equally likely that a randomly selected value from one sample will be less than or greater than a randomly selected value from a second sample. Unlike the t-test it does not require the assumption of normal distribution. It is nearly as efficient as the t-test on normal distribution.[385] This test can be used to determine whether two independent samples are selected from populations with the same distribution; a similar nonparametric test used on dependent samples is the Wilcoxon signed-rank test.[386] For this promotional thesis the question is whether a high degree of internationalization and a highly successful business influence each other when analyzing the degree of digitalization within the internal administrative processes. For this, the group of all digitalization degrees with a mean of more than three in the descriptive statistics were grouped into "S1" and all with less than 2.5 were grouped into "S2." The second group were chosen with < 2.5 to increase the precision of the separation. The results can be found in the annex. If $p \leq 0.05$ a significant difference can be found. For several years a significant difference could be seen between sales growth and managerial digitalization.

3.4.3 Answering the Research Questions with the Results of the Quantitative Survey

In regard to the results of the expert interviews and the previous secondary data analyses, two "impact factors" on the business success of a German small or medium-sized enterprise from the financial service industry were analyzed and proved to be "success factors" as well. The positive influence of "managerial digitalization" and "internationalization" was tested with the expert interviews against the background of the business success of the service industry in the financial sector. With these gained insights the quantitative survey attempts to find out whether there is another "impact factor" that has the potential to be a success factor: strategic innovation. Further research questions that should be answered with the help of the quantitative survey provide insights into the characteristics of FinTechs in Germany, like "To what extent are FinTechs digitalized in their internal administrative processes" or "How innovative are German small and medium-sized

[385] Mann, H. B., Whitney, D. R. "On a Test of Whether one of Two Random Variables is Stochastically Larger than the Other." The Annals of Mathematical Statistics 18, no. 1 (1947): 50–60.
[386] Fay, M. P., Proschan, M. A. "Wilcoxon-Mann-Whitney or t-test? On assumptions for hypothesis tests and multiple interpretations of decision rules." Statistics surveys 4 (2010): 1–39.

enterprises from the financial sector?" An overview of all the research questions in connection with the expert interviews is presented in the following table. Research questions 1a and 2 are similar to those from the expert interviews. In regard to the amount of this work, only positive and negative correlations with a meaningful result ($p > 0.390$ and $p < -0.390$) are described in the following table.

Table 3.4.4 Evaluation of the Research Questions Regarding the Quantitative Survey

Research Question	Survey Question	Variable	Research Questions Regarding the Quantitative Survey
RQ1a.	**SQ 10/11/ 14/15/18.**	$z_{1,2}/y_{1–4}$	Does managerial digitalization benefit the business success of German small and medium-sized enterprises from the financial sector?
RQ2.	**SQ 10/11/12/ 14/15/ 16/17.**	$x_{1–3}/y_{1–4}$	Does internationalization benefit the business success of German small and medium-sized enterprises from the financial sector?
RQ5.	**SQ 18.**	$z_{1,2}$	To what extent are FinTechs digitalized in their internal administrative processes?
RQ6.	**SQ 12/16/17.**	$x_{1–3}$	To what extent are FinTechs international with their business?
RQ7a.	**SQ 12.**	w_1	How innovative are German small and medium-sized enterprises from the financial sector?
RQ7b.	**SQ 10/11/12 14/15.**	$w_1/y_{1–4}$	Does a high degree of innovation benefit the business success of German small and medium-sized enterprises from the financial sector in entering international markets?

Source: Author's creation

With this, the questions from the survey in correlation to the research questions can be integrated into the research model to give an overview of which survey questions and which research questions should be answered. The integrated research model can be found in the Appendix. In what follows the research question should be tested with the findings from the survey.

RQ1a. Does managerial digitalization benefit the business success of German small and medium-sized enterprises from the financial sector?

What can be found in the results of the correlation analyses of the quantitative survey is that there

are positive correlations between managerial digitalization (SQ18; z1,2) and different indicator variables for business success. For example, a strong positive correlation for different years of p = 0.402 and p = 0.408 between the sales growth rates (SQ15; y1) and the frequency of tool use (SQ18; z2) can be found. With survey question 18 in a first analysis the number of different internal administrations tools used (SQ18; z1) was asked about. The results show a significant positive correlation between “total of balance sheet” (SQ11; y4) and “number of tools used” with p = 0.434. A medium positive correlation can also be found between “turnover” and the “number of different digitalization tools” with p = 0.304 (SQ18/10; z1/ y3). To verify the tendency that successful FinTech companies use digitalization tools for their internal administrative processes to a greater extent than unsuccessful companies, another analysis was carried out to prove this correlation.

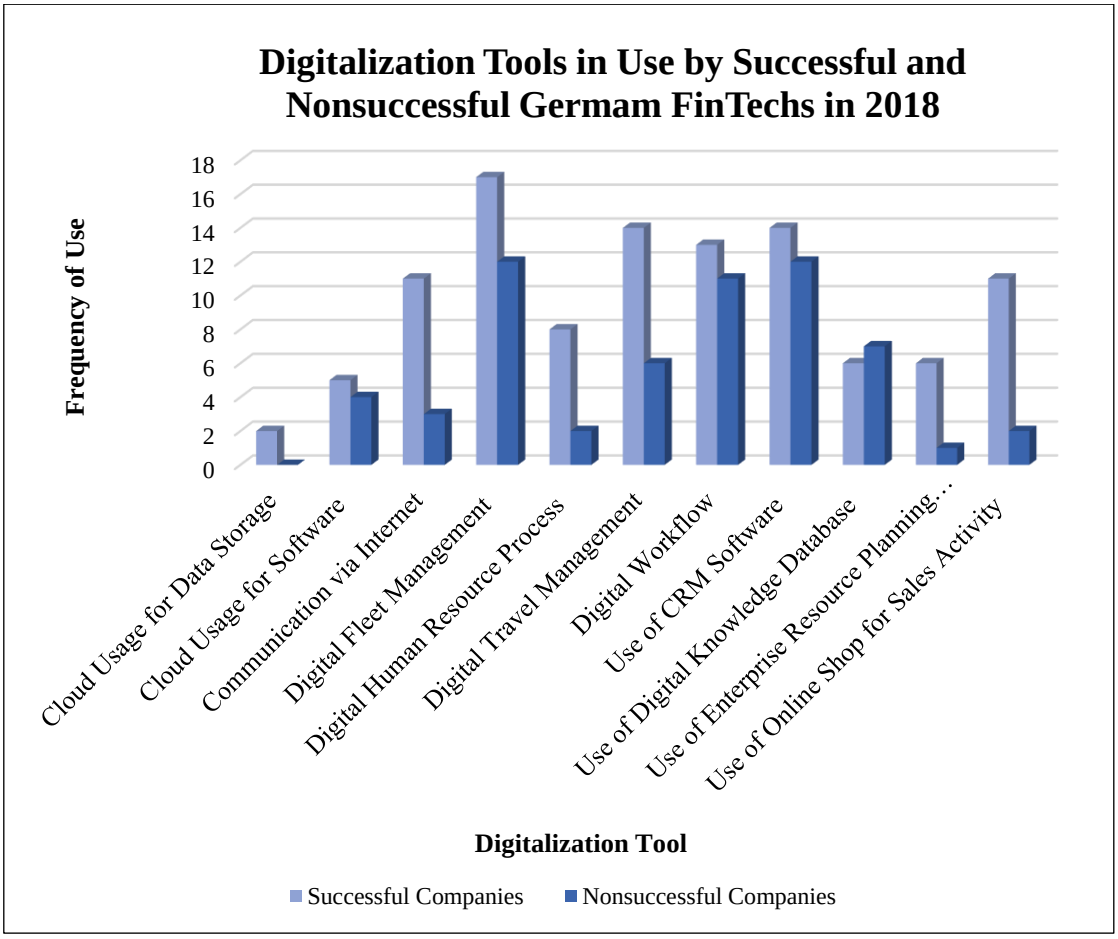

Figure 3.4.1: Which Digitalization Tools are Used by Successful and Nonsuccessful Small and Medium-Sized Companies from the Financial Service Sector in Germany in 2018 in %[387], [388]
Source: Author's creation

The analysis of the correlation between successful companies and the digitalization tools used shows the biggest difference in the tool "use of online shops for sales activity." "Use of online shops for sales activity" is also the second-most important digitalization tool for business success regarding the secondary data analyses from the data of the "Institut für Mittelstandsforschung." Additionally, a huge difference can be found within the tool "communication via Internet." All but one tool are more used in terms of frequency by successful companies. Only "use of digital database" is used more by nonsuccessful companies.

RQ2. Does internationalization benefit the business success of German small and medium-sized

[387] Companies with (1) sales of more than 500,000 euro in 2017, (2) more than a 1,000,000 euro total on their balance sheet, (3) more than 5% sales growth over the last five years, and (4) more than a 5% return on sales over the last five years are rated as "successful."
[388] The frequency of use was asked about in a range from „never" to „seldom" to „often" to „mostly" to „only".

enterprises from the financial sector?

As regards the question of whether internationalization benefits business success, there are negative correlations between the indicator variable for business success "sales growth" (SQ15; y_1) and the indicator variable for internationalization "international trading activity" (SQ16; x_1). Most years the value for p is $p < -0.437$. With $p = -0.396$ a negative correlation between internationalization and business success can be found between the indicator variable "service offer regarding region" (SQ12; x_3) and the indicator variable for business success "turnover" (SQ10; y_3). In contrast to these negative correlations, a few positive correlations can also be found: The number of different "international market entries" (SQ17; x_2) shows a positive correlation with the business success indicator variable "return on sales" (SQ14; y_2), $p = 0.490$ and $p = 0.459$. And also, a medium positive correlation between the number of different "international market entries" (SQ17; x_2) and the business success indicator variable "sales growth" (SQ14; y_2), $p = 0.307$, can be found.

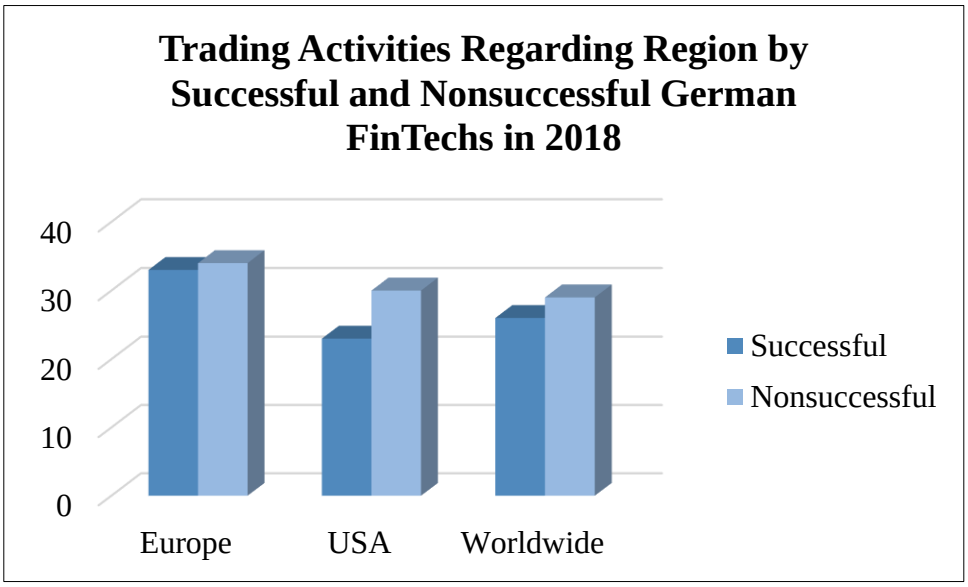

Figure 3.4.2: Trading Activities by Successful and Nonsuccessful[389] Small and Medium-Sized Companies from the Financial Service Sector in Germany in 2018 in %
Source: Author's creation

After grouping the German small and medium-sized companies from the financial service sector into two groups of "successful" and "unsuccessful" companies, the results show that no matter in

[389] Companies with (1) sales of more than 500,000 euro in 2017, (2) more than a 1,000,000 euro total on their balance sheet, (3) more than a 5% sales growth over the last five years, and (4) more than a 5% return on sales over the last five years are rated as "successful."

which region or whether it is import, export or both directions, unsuccessful companies trade more. Companies with (1) sales of more than 500,000 euro in 2017, (2) more than a 1,000,000 euro total on their balance sheet, (3) more than a 5% sales growth over the last five years, and (4) more than a 5% return on sales over the last five years are rated as "successful."

RQ5. To what extent are FinTechs digitalized in their internal administrative processes?

The results of the survey show, when asking which digitalization tools German small and medium-sized enterprises from the financial service sector use, that all German small and medium-sized FinTechs are digitalized in their internal administrative processes. All of them use at least one internal administrative digitalization tool ("communication via Internet"), and nearly all, with 95%, use "cloud as data storage" as well. Additionally, 85% use a "digital travel management" tool and 77% use web services like StepStone and others for their internal human resource processes. The least used digitalization tool is "digital fleet management." Some 21% of German small and medium-sized enterprises uses 10 or 11 out of 11 possible digitalization tools for their internal administrative processes.

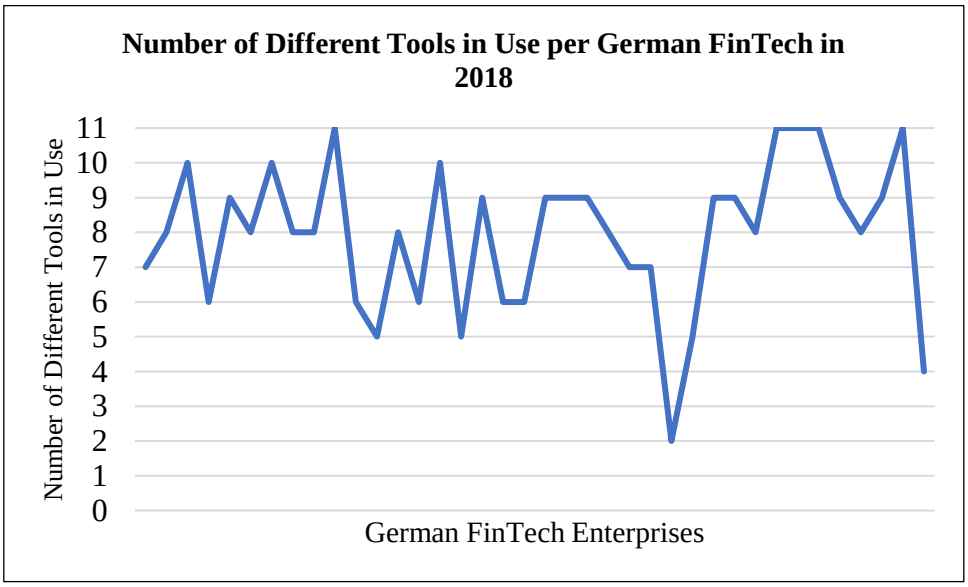

Figure 3.4.3: Number of Internal Administrative Digitalization Tools in Use in German Small and Medium-Sized Enterprises in 2018
Source: Author's creation

The results of survey question 18 show that communication via the Internet (like "Skype") followed by cloud-based data storage (like "Dropbox") and with the same frequency cloud usage for

software (like “Microsoft365”) are the most used tools. And with the frequency of use the indicator variable z_2 was defined. The following figure shows the spread of tools used and the frequency.

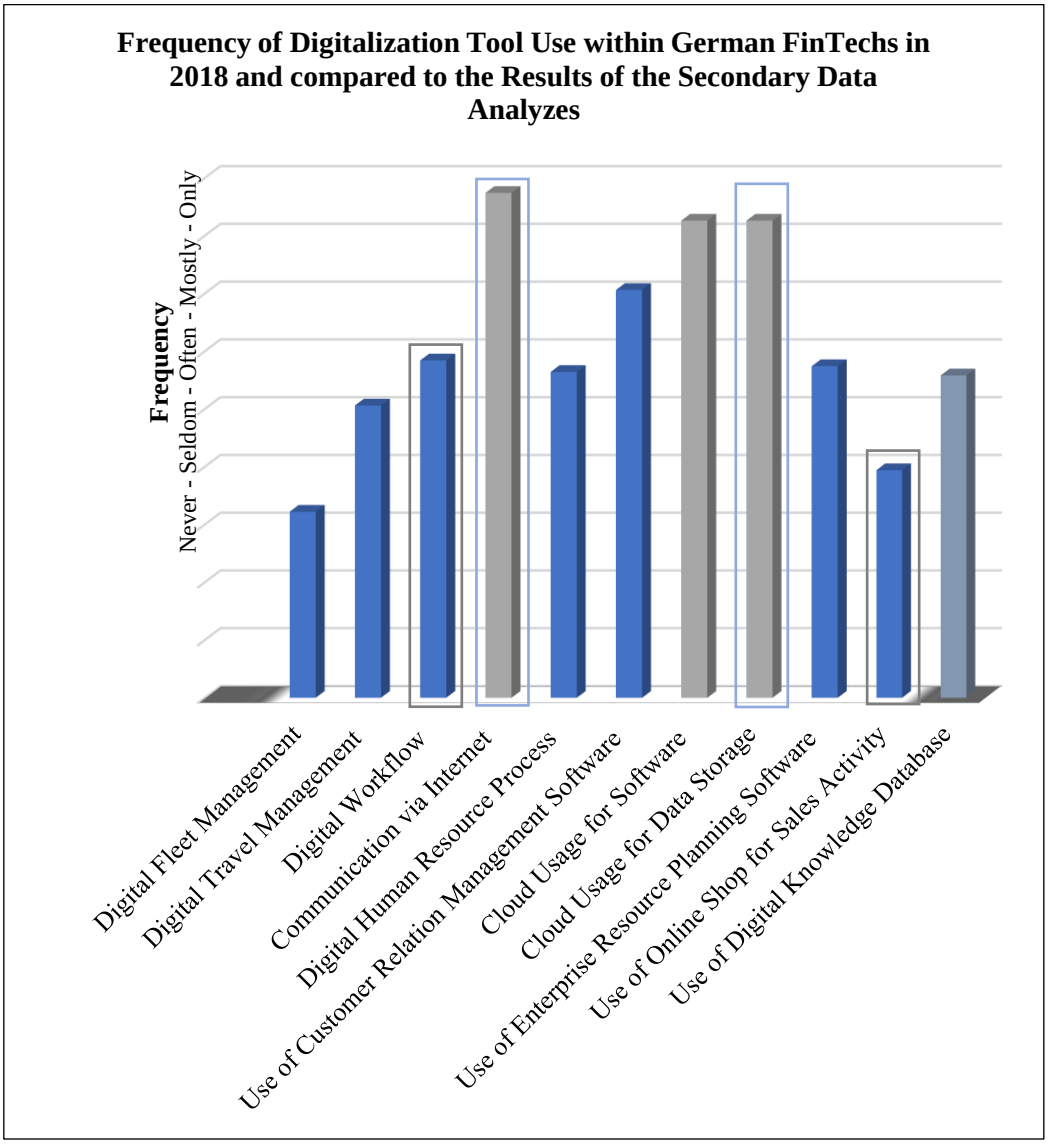

Figure 3.4.4: Frequency of Digitalization Tool Use among German FinTechs in 2018
Source: Author’s creation
The pillars in blue rectangles are the two most used digitalization tools regarding the secondary data analyzed before.
The pillars in gray rectangle are the two most important digitalization tools regarding the literature review.

This part of the survey can be compared to the results of the secondary data analyses conducted by the author in the previous chapter (see the figure with the detailed view of all companies that use at least one DATEV digitalization tool) as well as the results from the literature research based on the importance of the different digitalization tools for business success (see the table “Importance of the Different Digitalization Tools for Business Success in %” in the chapter “Parameters to

Measure the Degree of Managerial Digitalization"). The secondary data analysis has at its top the two most used digitalization tools; likewise the survey has shown: communications via internet and cloud-based data storage. Both mentioned tools are circled in the figure above. These findings also correspond, beside the secondary analyses, to the results from the Federal Statistical Office and the OECD surveys that were presented before. The literature review has shown that the digitalization tools in the gray rectagle in the figure above are the most important ones for business success. Digital workflows like the proof and payment approval of incoming bills or the registration and follow-up of new leasing contracts are "often" used in small and medium-sized enterprises. In contrast to the use of online shop systems for sales activity, this digitalization tool has the second-most important influence on the business success of a small or medium-sized enterprise, but is used a lot less within German small and medium-sized enterprises from the financial service sector; this is reasonable because often a shop is not needed for the services the FinTechs offer – often only a single app or software is needed for the service.

RQ6. To what extent are FinTechs international with their business?

With survey question 16 "With which countries does your company trade (import and export)?" the indicator variable x_1 to define the degree of internationalization was asked about. Import and export activities could are an indicator for the internationalization activities of an enterprise. German small and medium-sized companies from the financial service sector are not as internationalized as presumed.

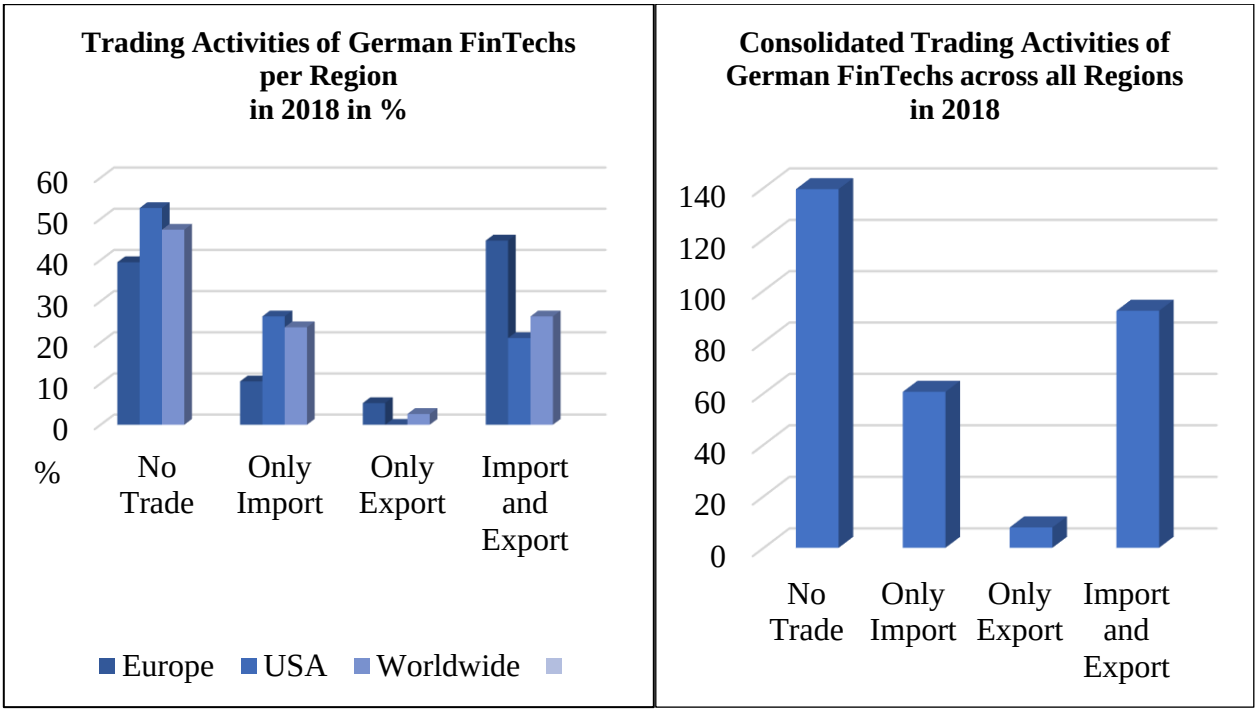

Figure 3.4.5: Trading Activities Regarding Regions and across all Regions of German FinTechs in 2018
Source: Author's creation

What can be seen is that the majority do not trade at all, neither imports nor exports, and this is true for all regions. In contrast to this group, the next largest group is the trading activity in the direction of import and also export regarding the region "Europe."

After this, another method to measure the degree of internationalization was used. The number of market entry modes and which market entry mode is the most common among the FinTech enterprises were analyzed. To define the indicator variable x_2 "market entry modes," survey question 17 "In what way does your company operate internationally?" was asked. What can be seen is that subsidiaries and contractual cooperation were the most common ways for German FinTechs to enter foreign markets in 2018. The most frequently entered foreign markets are in Europe.

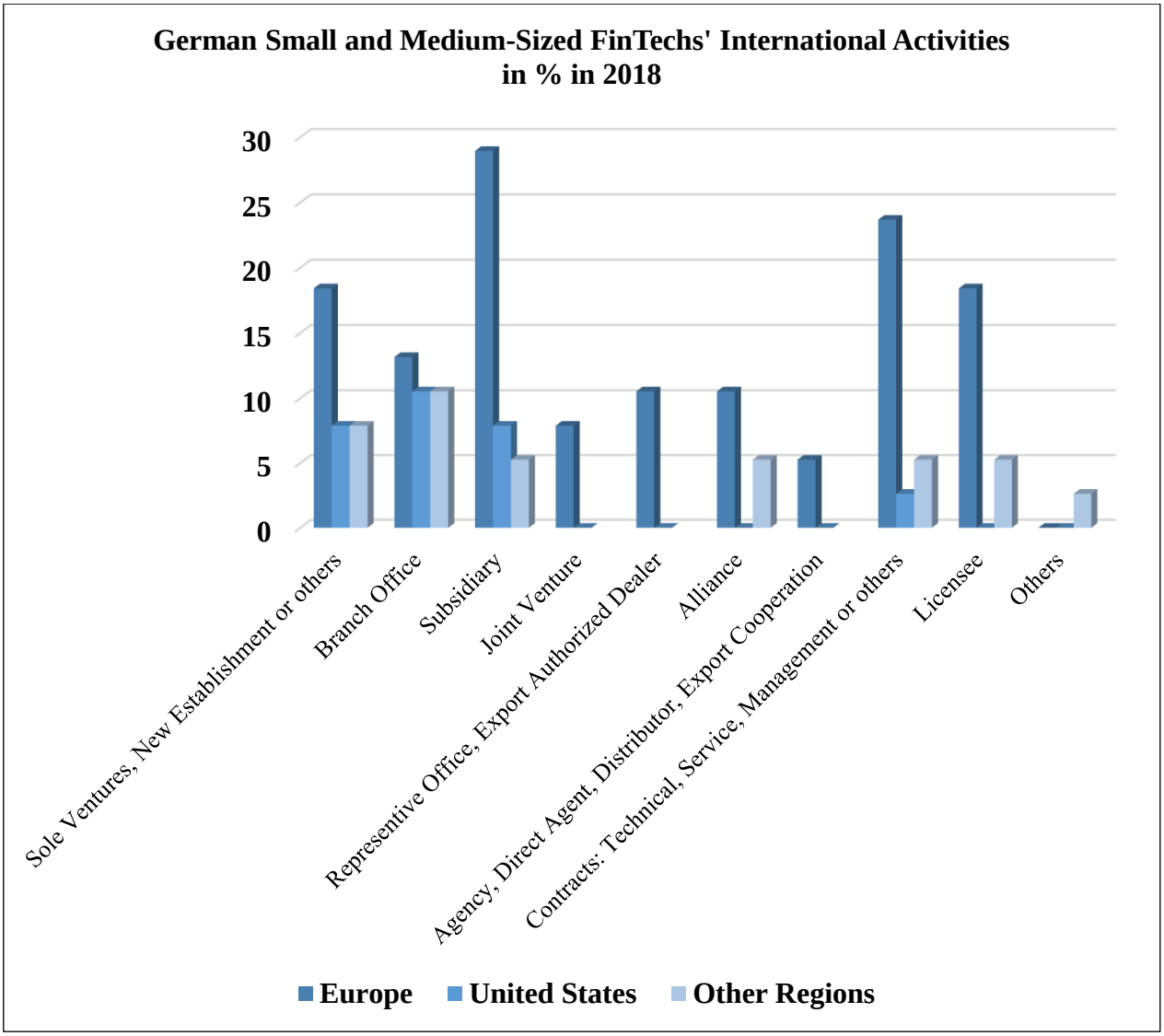

Figure 3.4.6: German Small and Medium-Sized FinTechs' International Activities in Percentage in 2018
Source: Author's creation

What can also be analyzed is the number of different market entry modes, due to the fact that some FinTechs enter different foreign markets with different methods. Some 15% of the German small and medium-sized enterprises from the financial service sector do not enter foreign markets at all. And only 5% have more than six different methods of entering foreign markets.

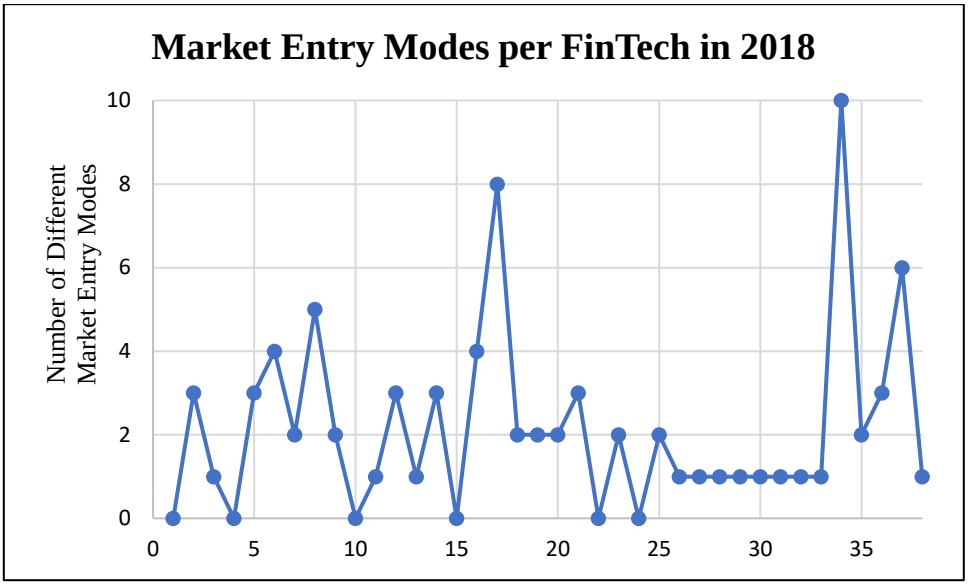

Figure 3.4.7: Number of Different Market Entry Modes per FinTech in 2018
Source: Author's creation

On average, two market entry modes per German FinTech can be seen. This shows again that FinTechs are not as internationalized as presumed.

The third way to define the degree of internationalization, the indicator "region of service offer," was asked about (SQ12, x_3). Some 35% of all German FinTech enterprises offer a service or product that can be used across borders. This means that the majority of German small and medium-sized enterprises from the financial service sector do not offer a service or product that can be seen as international.

RQ7a. How innovative are German small and medium-sized enterprises from the financial sector?

On the surface, FinTechs do look innovative, because they are a new business model next to the classic businesses in the area of financial services like banks and insurance companies. And looking at the service range offered by the FinTechs asked, the largest product group offer an "application program interface" (an innovative, not conservative established service) but these comprise only 10% of all German FinTech companies. The next three largest groups operate in a very classical area with insurance, credit and property finance, and these three groups together make up nearly 25% of all German FinTechs (SQ12a; w_1).

The following graphic shows the different product and service groups within the financial sector

the companies offer. The largest group within the product and service range is the category "savings," followed by solutions that offer an application provider service for banking applications, which means an application program interface to connect different banking systems.

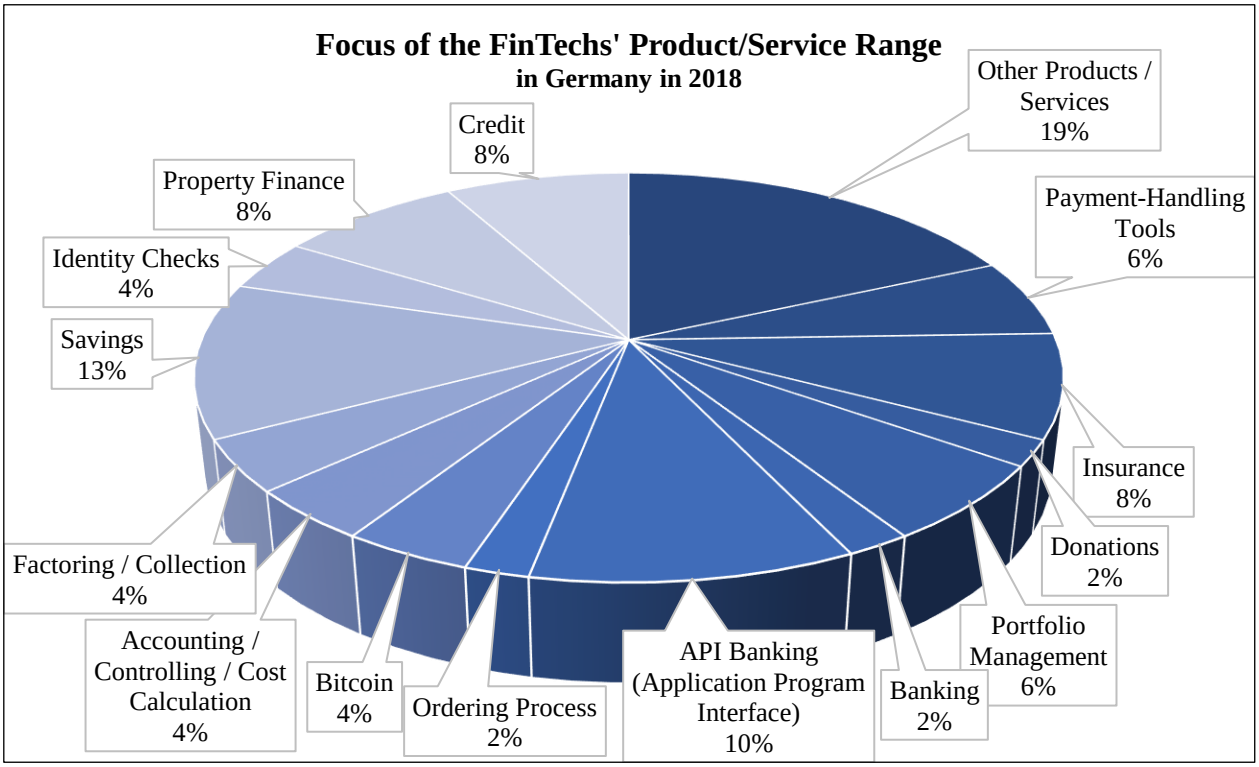

Figure 3.4.8: Focus of the Questioned Companies' Product/Service Range within the Financial Sector
Source: Author's Creation

The offered financial services differ in their innovation character. Some of the services are very conservative and established products in the classical service industry like credit or insurance. Other products are newly created by the FinTech companies like "online identity checks" or "Bitcoin." With a classification in "conservative" services and "innovative" services the innovation degree can be indicated; the indicator variable behind this is named w_1.

RQ7b. Does a high degree of innovation benefit the business success of German small and medium-sized enterprises from the financial sector in entering international markets?

Looking at the influence of the strategic innovation of the offered services regarding the indicator variable for business success "turnover" there can be seen a medium negative effect with p = -0.396. A high total of balance sheet compared to innovation does not show any correlation, which could be interpreted as meaning that only bigger companies can achieve new cost-extensive

products because they are connected with high research and development costs.

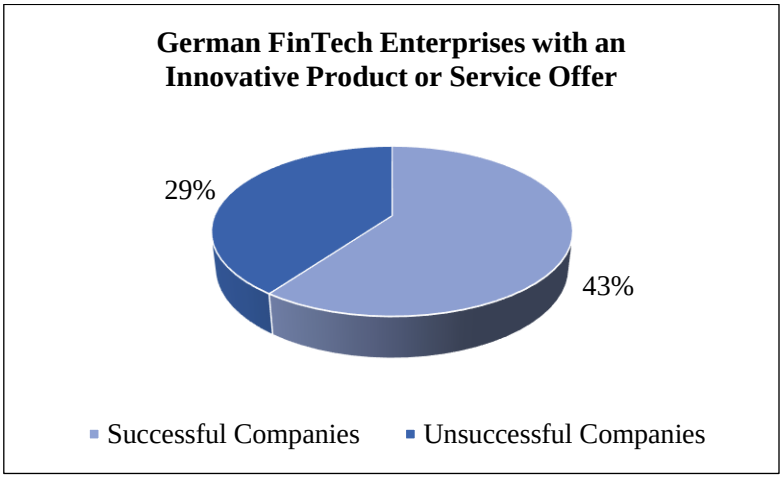

Figure 3.4.9: Percentage of Successful German FinTechs that Offer an Innovative Product or Service
Source: Author's Creation

When grouping German FinTechs again into "successful" and "unsuccessful" enterprises (regarding their results in 2017) only 29% of the successful companies offer an innovative product.

Further Analyses of the Results

For the test of the null hypothesis a Mann-Whitney U test was conducted and showed that in terms of sales growth the hypotheses showed a significance. This means that the basic hypothesis can be confirmed. It is important to mention that the frequency of the digitalization tool use is a subjective evaluation, because the survey participants' own estimation in this case is asked for. This could result in some uncertainties.

In this part the research model of this thesis was validated through a full census quantitative survey among all German small and medium-sized enterprises from the financial service sector. Findings and interpretation of the results from this survey show that internationalization and managerial digitalization have a high impact on the dimension of business success.

3.5 Evaluation of the Conceptual Model through the Empirical Results Derived from the Findings

The last part of the third chapter evaluates the findings from all the previous research steps and formulates the main findings. The outcome for this promotional thesis is that the "Double I-D

Model" has shown that the business success of German small and medium-sized FinTech companies is dependent on the degree of digitalization, internationalization and innovation, with the highest dependence for the success of the business being on digitalization.

Structure and Steps of the Evaluation of the Conceptual Model

To give an estimation about the degree of the impact of managerial digitalization, internationalization and strategic innovation on the success of small and medium-sized businesses from the financial service sector in Germany, the literature review of this promotional thesis showed that throughout the existing literature in the parental research field of success factor research many theories exist that point out the influence of different impact factors for the business success of companies. Afterwards, the target group was presented. Beginning with the precondition that the companies are located in Germany, the focus was set on small and medium-sized enterprises. This is reasonable because of the high relevance for the German economy of small and medium-sized enterprises when looking at the facts and figures of the last few years in regard to the number of small and medium-sized enterprises in contrast to large-scale enterprises as well as the number of employees. The importance of internationalization, digitalization and innovation for companies was underlined by facts and figures from official statistical institutions like the German Federal Office of Statistics and results from current researches. With the obtained findings the main research questions could be formulated. First, the question of the digital tool use within the group of German small and medium-sized enterprises was examined. With the help of secondary data, the diversity of the use of digitalization tools among German small and medium-sized enterprises could be defined. The most frequently used tools were taken for the query in the quantitative research later. What could be found with the secondary data analysis was that the majority of German small and medium-sized enterprises use digitalization tools. These findings correlate to the findings from the literature research. The same is true for the kind of digitalization if there are digital processes within the company. Internet communication and cloud use are the two most frequently mentioned tools in the current researches shown by the literature review as well as the results from the secondary data analyses. With these findings the author could clearify the research question through creating her own model, the "Double I-D Model." This model shows the assumed dependences between the variables "managerial digitalization," "internationalization," "strategic innovation" and "business success." A path diagram was created to estimate and test the correlations between the dependent and independent variables. The diagram contains for this

reason all exogenous and endogenous variables that should be examined and thus can be seen as a measurement model that defines latent variables using observed variables, and a structural model that imputes relationships between latent variables. With the help of the "Double I-D Model" and the path diagram behind it, the experts and questions for the qualitative research in the form of expert interviews could be found and formulated. The qualitative research was used to validate the Double I-D Model and help to formulate the questions for the quantitative research. The experts should give an estimation if the three independent variables are "only" impact factors or if they have the potential to be success factors for FinTechs as well. With the results from both surveys the hypotheses could be tested.

Results of the Empirical Study

After the pre-steps for the empirical study – the literature review, the two secondary data analyses and the expert interview – had been carried out, the findings from the empirical research among the sampling size of small and medium-sized enterprises from the financial service sector could be analyzed. The quantitative research among all German small and medium-sized enterprises from the financial service sector indicated that there is a negative correlation between sales growth and trading activity. A possible reason for this could be that FinTechs with a product or service that can be used across the German borders offer a service that is not that highly demanded in the market. In addition to this finding, when grouping the FinTechs into successful and unsuccessful companies, the majority of the trading activity, with 55%, was done by unsuccessful companies. In contrast to these results, a high positive significant correlation regarding the influence of the degree of internationalization through market entries on the return on sales could be seen. The return on sales, in contrast to the sales growth, shows how efficiently a company sells its products. One possible interpretation could be that the more ways a company uses to operate internationally the more efficiently the company does its business. The positive significant correlation between managerial digitalization and sales growth with a determination of coefficient of more than 16% shows that it should be noted that if a small or medium-sized FinTech company starts to digitalize its internal administrative processes the sales numbers increase. Only a medium effect could be found between the variable innovation and business success. Only in the indicator "turnover" to business success can a correlation be found. This means the higher the innovation degree of a product, the higher the turnover is. This could be interpreted as meaning that a small or medium-sized company from the financial service sector will only increase its business success through

turnover by differentiating itself from the classic banks and other companies in this sector like insurance companies with innovative products.

Assessment of the Dependences: Hypothesis Testing of the Impact of Internationalization, Strategic Innovation and Managerial Digitalization on the Business Success of FinTech Enterprises

Following the assessment of the measurement model's quality criteria, this part is dedicated to hypothesis testing through quantitative criteria. The criteria for acceptance or rejection of a hypothesis are:

1. The Shapiro-Wilk test must show that there is a normal distribution.
2. Pearson's chi-squared test has a correlation significance level of $\chi^2 = 0.01$.
3. Proof of the goodness of fit via coefficient of determination with $R^2 \geq 0.1$.
4. The Mann-Whitney U test must show a significance of ≤ 0.05.

With these assumptions the basic hypothesis as well as the subhypotheses could be tested.

Table 3.5.1: Overview of the Confirmation Status of all Tested Hypotheses from the Thesis

#	Hypotheses	Confirmation Status
H_{Basic}	The higher the degree of managerial digitalization, internationalization and strategic innovation the higher the business success of a German small or medium-sized enterprise from the financial service sector.	Partly Confirmed
H_{1a}	The higher the degree of internationalization through trading activity the higher the positive impact on business success.	Rejected
H_{1b}	The higher the degree of internationalization through foreign market entry the higher the positive impact on business success.	Confirmed
H_{2a}	The higher the number of different managerial digitalization tools in use the higher the positive impact on business success.	Confirmed
H_{2b}	The higher the frequency of the use of managerial digitalization tools the higher the positive impact on business success.	Confirmed
H_3	The higher the degree of strategic innovation the higher the positive impact on business success.	Rejected

Source: Author's creation

Interpretation of the Research Results

There is a correlation between success and internationalization, innovation and digitalization. The

main research question “To what extent does a high degree of digitalization, internationalization and innovation enable small and medium-sized enterprises like FinTechs to manage their businesses successfully?” is graphically represented in the author’s own created research model, the so-called “Double I-D Model” (internationalization, innovation, digitalization). With the help of this model and the findings of the promotional thesis the extent of the correlation can be analyzed.

The “Double I-D Model” leads to the basic hypothesis “The higher the degree of managerial digitalization, internationalization and strategic innovation the higher the business success of a German small or medium-sized enterprise from the financial service sector.” With the findings of the empirical part of this promotional thesis the basic hypothesis can be proved and confirmed.

1. Hypotheses 1a and 1b

Internationalizing a business does not fully ensure to benefit the success of a company, when analyzing across some different indicator variables for internationalization. The findings thereof correspond to hypotheses 1a and 1b. The literature review of this promotional thesis has shown that throughout the existing literature on the topic of internationalization there are many theories that point out the key performance indicators for the business success of companies: international trading and foreign market entry.

a. What can be found in the results of the expert interviews is that internationalization of the business among German small and medium-sized enterprises from the financial sector supports business success. There is a significant positive correlation between business success and internationalization, which shows that the impact factor internationalization can be a success factor for FinTech companies.

b. Additionally, the quantitative research among all German small and medium-sized enterprises from the financial sector indicated that there is a positive significant correlation regarding the influence of the degree of internationalization through market entries on the return on sales rates. This correlates to hypothesis 1b “The higher the degree of internationalization through foreign market entry the higher the positive impact on business success.”

c. In contrast to the general estimation of the experts that internationalization benefits

business success, the experts rank “managerial digitalization” today and in the future as a more relevant success factor for business results than internationalization.

d. Additionally, offering international tradable products and services and the trading activity itself does not benefit the results, which has been proved through the quantitative survey among FinTech enterprises. Thus, hypothesis 1a “The higher the degree of internationalization through trading activity the higher the positive impact on business success” must be rejected.

2. Hypotheses 2a and 2b

Digitalizing the internal administrative processes helps small and medium-sized enterprises overcome disadvantages compared to large-scale enterprises and increase business success. The literature review has outlined the advantages and success factors for enterprises when they digitalize the processes. Digitalization benefits the business success of companies. The different tools and technologies that could be used to increase the degree of internal digital administrative processes were described as impact factors. FinTechs resample small and medium-sized enterprises from other industrial sectors in the field of digitalization. The digitalization tools used by FinTech companies in Germany do not differ from those of other small and medium-sized companies in terms of the kinds of tools (that are used) and how often they are used (frequency). This information allows conclusions to be drawn in terms of the insights gained being transferred to the whole area of small and medium-sized enterprises, not only the FinTechs in regard to the degree of digitalization.

a. What can be found in the results of the expert interviews is that managerial digitalization of the business of German small and medium-sized enterprises from the financial sector supports business success. There is a significant positive correlation between business success and managerial digitalization, which shows that the impact factor managerial digitalization could be a success factor for FinTech companies as well (beside internationalization).

b. Additionally, the experts believe that the success factor managerial digitalization benefits business success today, and in the future, more than the success factor internationalization.

c. Furthermore, the findings of the quantitative survey among all German small and medium-sized enterprises from the financial service sector indicated a positive significant correlation between managerial digitalization (frequency of tool use) and sales growth. These findings confirm hypothesis 2b “The higher the frequency of the use of managerial digitalization tools the higher the positive impact on business success.”

d. Additionally, the findings of the quantitative survey among all German small and medium-sized enterprises from the financial service sector indicated a positive significant correlation between managerial digitalization (number of different tools in use) and the total of the balance sheet. These findings confirm hypothesis 2a “The higher the number of different managerial digitalization tools in use the higher the positive impact on business success.”

3. Hypothesis 3

Strategic innovation degree has a low negative impact on business success. Strategic innovation is an impact factor but not a success factor for small and medium-sized enterprises from the financial service sector like FinTechs. FinTech business models are new on the markets and thus are often seen as highly innovative. But their business itself often represents classic and well-known services like insurance and credit. Innovative FinTechs with new services like blockchain technology or application program interface development make up only half of all German small and medium-sized enterprises from the financial service sector. A negative correlation can be found between strategic innovative products and services and successful enterprises, in line with the analyses of hypothesis 3 “The higher the degree of strategic innovation the higher the positive impact on business success.” So this hypothesis must be rejected.

CONCLUSIONS AND SUGGESTIONS

Conclusions

The findings from the literature review, the secondary data analyses as well as the qualitative and quantitative survey have been critically reflected in a manner, that allows to draw holistic conclusions.

1. The performed research demonstrates that small and medium-sized enterprises have an increasingly huge relevance for the German economy. The number of small and medium-sized enterprises and the employees that work for them in contrast to large-scale enterprises increases steadily and emphasizes the relevance of the results from the doctoral thesis for economic institutes, companies and academic fields as well as publicity such as politics.
2. The analysis of academic literature demonstrates that there is no clear definition of the term "FinTech" and even no generally applicable definition of the term "small and medium-sized enterprise". Further the specific requirements those enterprises have attracted no or too little attention in the scientific field of success factor research. Consequently, success factor research for these businesses might increase in the relevance for research, but also for business management practice.
3. Derived from the theoretical background the steadily increasing number of new business models of small and medium-sized enterprises in the financial service sector can be reflected. In contrast to this development, many of them also disappear from the market after a short period of time, because they are ineffective with their business. This leads to the conclusion that the business model "FinTech" itself is not specific enough to be characterized as a success factor for business.
4. Evaluation of the theoretical part has revealed that small and medium-sized enterprises differ from large-scale enterprises. Consequently, success factor research in general is not or almost not applicable for those enterprises. The perceptions of scientists' regarding success factors have focused mostly on large scale enterprises and neglected the specials needs that small and medium sized enterprises might have. The review of pertinent literature shows that FinTech enterprises in detail are not recognized in the research literature in this context until today. The existing literature in this research field has focused on conservatively established businesses and industries and has neglected new business models like those of FinTech

companies. Therefore, approaches which combine different attributes of impact factors are needed. This approach underlines the purpose of the research and also outlines further studies in this area.

5. The business success of small and medium-sized enterprises from the financial service sector is dominantly influenced by the degree of internal digital administrative processes and an internationally oriented business strategy. To have advantages towards large-scale enterprises it is crucial for a successful business strategy to invest in a digital infrastructure and to examine the possibilities to internationalize the service offer. The results of the empirical part underline this conclusion. Comparing successful and non-successful small and medium-sized enterprises, the results reveal that successful enterprises have a higher degree of internal administrative digitalization and more international activities.
6. There are different attributes small and medium sized enterprises comes with resulting from the size which generates advantages and also disadvantages medium-sized in comparison to large-scale enterprises.

   The most important advantages for FinTechs are:

   a. A fast possibility to react to changing conditions of the environment due to flat hierarchy which enables small and medium-sized enterprises to react much faster than large-scale enterprises to changing conditions of the environment.
   b. A higher service individualization degree due to the difference in regard to the size of the company. Operating in niche markets and a great opportunity to individualize their services to the demand of their customers are advantages in comparison to large-scale enterprises.

   Most important disadvantages for FinTechs relating to the size are:

   a. Fewer resources such as limited capital, experience and information resources.
   b. A lower risk-bearing capacity due to a smaller equity ratio.
   c. Greater difficulty in finding good employees.
7. The literature research and the empirical research have shown that the higher the number of market entries of a FinTech enterprise the higher the return on sales rate is. As a consequence, higher degree of internationalization through entering foreign markets could increase the business success of small and medium-sized enterprises of the financial service sector.
8. In contrast to this trend, the quantitative survey indicated that trading activities have a

negative impact on the indicator variable for business success "sales growth." As a consequence, higher degree of internationalization through international trading activity could decrease the business success of small and medium-sized enterprises of the financial service sector.

9. Additionally, FinTech enterprises with nationally oriented product and services are more successful than others with international tradable services. This shows, that success depends on the way FinTechs internationalize their business to achieve a better business results and that there are different advantages and conditions depending on the outlined market entry modes, which favor the internationalization plans of enterprises in general.

10. Analysis of the factors for business success in the empirical research part have revealed that the degree of innovation of the offered services and products has a negative impact on the business success of small and medium-sized enterprises from the financial service sector like FinTechs. This means that strategic innovation is certainly an impact factor in business success but not a success factor. Offering highly innovative services instead of conservative, established services in the area of financial services could endanger a positive business result.

11. When analyzing the factors for business success of the final measurement model, in line with previous research, it can be concluded that digitalizing the internal administrative processes helps small and medium-sized enterprises overcome some disadvantages compared to large-scale enterprises and increase business success. The sales growth rates of small and medium-sized enterprises increase with a higher level of tool use and the frequency of their use in order to digitalize with their help the internal processes within an enterprise. FinTech enterprises that use different digitalization tools more than their competitors are on average more successful in terms of the indicators for business success: sales growth rate, turnover, return on sales rate and a higher balance sheet total.

12. The most important managerial digitalization tool for business success can be found in the superordinate category "accounting," followed by the superordinate category "sales". As a result, it can be concluded, that the dimension of managerial digitalization in these two categories could improve the business performance.

13. The explanatory power of the causal model in the empirical part was tested with the R^2 value. As expressed by the R^2 value of business success as the dependent research variable, its variance is explained to a degree of 20% by the other variables in the model. By established

conventions, this value constitutes a very satisfactory explanatory power of the model which underlines the validity of the research results of this doctoral thesis.

14. What can be revealed through the empirical part of this work is that the way FinTechs digitalize their business is comparable to other small and medium-sized enterprises in Germany as well as small and medium-sized enterprises in the whole European Union. The research framework showed to be empirically applicable in the chosen industry context. These findings allow comparable conclusions to be drawn to other industries beside the financial service sector industries among small and medium-sized enterprises in countries other than Germany.
15. The results regarding the frequency and variety of use of digitalization tools by the research subject allows conclusions to the transfer possibilities of the gained insights to the whole area of small and medium-sized enterprises, not only the FinTechs in regard to the degree of digitalization.
16. The results provide empirical evidence regarding the main research question "to what extent does a high degree of managerial digitalization, internationalization and strategic innovation enable small and medium-sized enterprises like FinTechs to manage their businesses successfully?" that managerial digitalization has the highest positive impact, followed by internationalization. Strategic innovation has a negative impact on business success.
    a. The higher the extent of digital tool use for managerial processes the more successful the enterprise manage their business.
    b. The internationalization degree does not give an answer to how successful small and medium-sized enterprises manage their businesses. The results of this empirical work have shown, that it depends on the type of internationalization.
    c. The higher the extent of strategic innovation in regard to the (technical) economic development of a new service the less successfully the enterprises manage their businesses.
17. The research contributes to management science as a broad interdisciplinary field of business success factor research in organizations and to management practice in general in the following way: there exists lack of awareness regarding the importance of being highly digitalized for business success. This has led to a long-standing notion that managerial digitalization is a strategy that large-scale enterprises follow, but the advantages thereof

would be immensely important for the competitiveness of small and medium-sized enterprises in overcoming the disadvantages regarding their size compared to large-scale enterprises.

Suggestions

After the conclusions suggestions for different audiences based on the findings of the empirical work can be formulated. Based on the research study findings there is a broad variety of suggestions that can be presented to institutions and individuals who are decision-makers in public and private organizations.

Suggestions to Small and Medium-Sized Enterprises:

The results from this research are very useful for all managers of small and medium-sized enterprises in the financial service sector like FinTechs as well as every other sector.

1. General Managers and chief executive officers of small and medium-sized enterprises should consider foreign markets as one of the opportunities to obtain a higher degree of internationalization in order to increase their return on sales rate and with this achieve better business results and stay competitive. Managers should obtain information about the local demands for their products and services, about local competitors as well as the local commercial laws and subsidies and with this information make decision about entering foreign markets.
2. Managers of sales departments of small and medium-sized enterprises and especially FinTech enterprises have to understand that offering services and products that could be sold internationally like application program interfaces or blockchain technology as well as the trading itself of these products are two factors that could have a negative impact on particular indicators for business success such as sales growth rates. More nationally focused products and services like credits and insurance turn out to be a greater success factor.
3. Based on the current research managers of sales departments from small and medium-sized enterprises should bear in mind that the empirical research results show that services and products with local demand like insurances or accounting solutions sold via an online sales channel like an online shop raise the turnover rates of the businesses. Responsible persons in the companies should therefore proof the possibilities to offer their services and products in online shops.
4. Managers of administrative departments like the human resource department or the finance department should take into consideration that according to the results of the present empirical study business performance and efficiency could be improved by digitalizing office papers like invoices, contracts or applications. With the support of document-management

systems the legal storage periods and audit safety could be granted.

5. Beside the digitalization of office papers, administrative departments such as the travel department, the IT department or the fleet department should consider possibilities of software use to make their work flow processes like the room booking process for international travel or the ordering process for IT supplies more efficient and to avoid media discontinuities. With the help of software especially for the particular requirements of every process within the department needs, the end-to-end process could be sped up, it could become leaner and with a lower error rate.
6. Investing in digitalization processes and changing the approach to business among enterprises that are ready for Industry 4.0 is crucial. There are many advantages and needs that the Industry 4.0 phenomenon and digitalization in general come with. Responsible individuals like the chief product officer should be aware that investing in digital processes within the production line and replacing analog-based work streams like cloud data storage or software for enterprise resource planning and customer relation management is important to stay competitive and be successful, starting with simple and cheap tools such as internet communication to increase the degree of digital processes steadily.
7. Hiring employees with an understanding of information technology or international business experience is worth it and makes it easier to implement processes in these business areas in the company like remote working or online conferences. This also increases the acceptance of change among the employees. As the results of this doctoral thesis have shown, there are currently high costs involved when implementing digitalization tools connected with the missing know-how of staff.
8. FinTech enterprises must be aware of offering highly innovative services like application program interfaces or blockchain technology instead of conservative, established and well-known services in the area of financial services such as credit or portfolio management. As the present research has pointed out, innovative products are not a success factor today; moreover, innovative services in the financial sector could have a negative impact on business success. In regard to the limited resources a small or medium-sized enterprise from the financial service sector has, it is important to develop the comprehension of the advantages of classical services like banking. However, the advantage of a small or medium-sized enterprise in general is that it can serve innovative products that fill niches on the markets. So, the right balance between the two must be found.

Suggestions to the Scientific Community and Especially Researchers in the Field of Business Success Factor Research:

9. Researchers should use the "Double I-D Model" developed in this work to gain more empirical evidence in other areas of the tertiary sector of the economy, the service sector, like business consultancy or IT service provider. The contextual variables employed in the causal model will assist in the classification and comparison of the respective industry context to related research and eventually help broaden the stream of knowledge of this still relatively new business model of FinTech enterprises.
10. The overall research model with its causal dependences among the variables is very generic, while some of the measurement items have been developed to suit specific FinTech enterprises. Refining the measurement items to suit other businesses may be necessary. These could be content based items in regard to the offered services for the measurement of innovativeness and internationality, for example the specific content of the business consultancy (is it an established model or a new created approach) and in which languages this consultancy is offered.
11. This study represents German FinTech enterprises and marks an initial attempt to understand the key performance indicators for their business. The consistency of the findings across the empirical part of this doctoral thesis could encourage other countries to draw conclusions about them. In regard to the biggest accumulation of FinTech enterprises: the so-called "Silicon Valley" in the United States of America, this market seems to be very interesting for further empirical research as well as countries of developing nations.

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APPENDIX

European Small and Medium-Sized Enterprises Having Subsidiaries / Branches / Joint Ventures Located Abroad in % in 2005

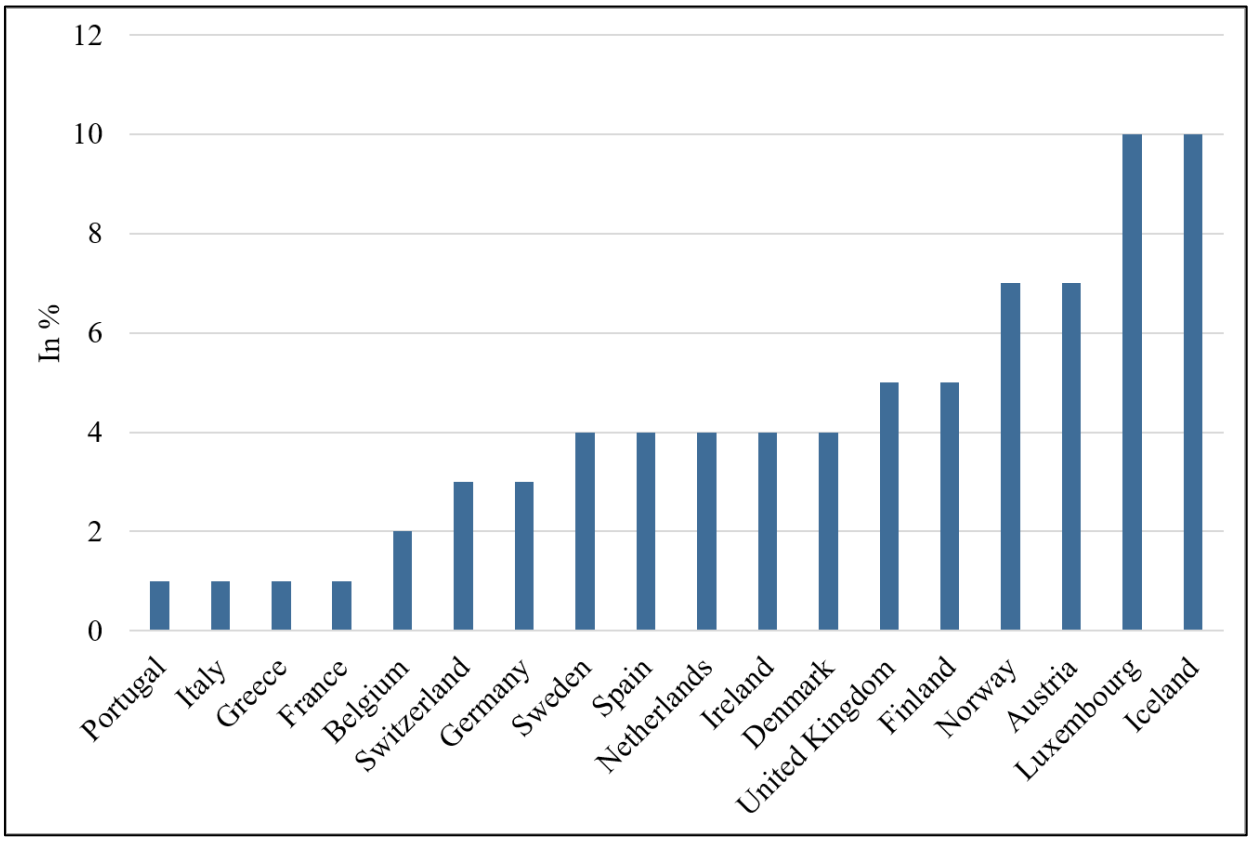


Figure Appendix 1: European Small and Medium-Sized Enterprises Having Subsidiaries / Branches / Joint Ventures Located Abroad in % in 2005
Source: Author's creation, in dependence on OECD (2004) p. 15[390]

[390] OECD, ed., Promoting Entrepreneurship and Innovative SMEs in a Global Economy: Towards A More Responsible And Inclusive Globalisation (Istanbul, Turkey, 2004).

Importance of the different digitalization tool for internal administrative processes for small and medium sized companies in %

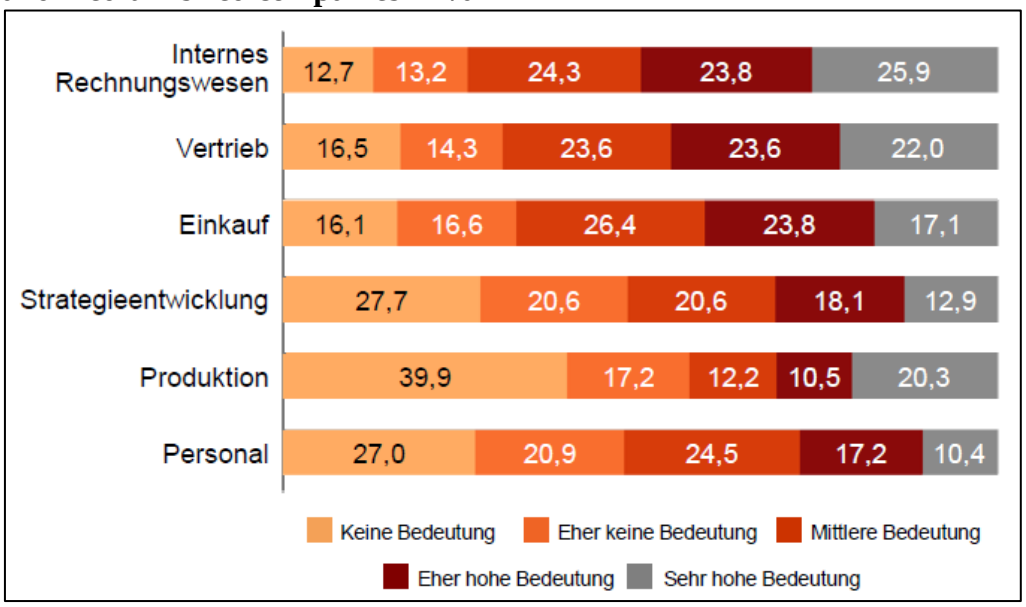


Figure Appendix 2: Importance of the different digitalization tool for internal administrative processes for small and medium sized companies in %
Source: Schroeder, Schlepphorst and Kay. Bedeutung der Digitalisierung im Mittelstand, p. 9[391]

[391] Schroeder, C., Schlepphorst, S., Kay, R. Bedeutung der Digitalisierung im Mittelstand. Bonn, 2015

Enterprises Using Cloud Computing Services in 2015 in the European Union

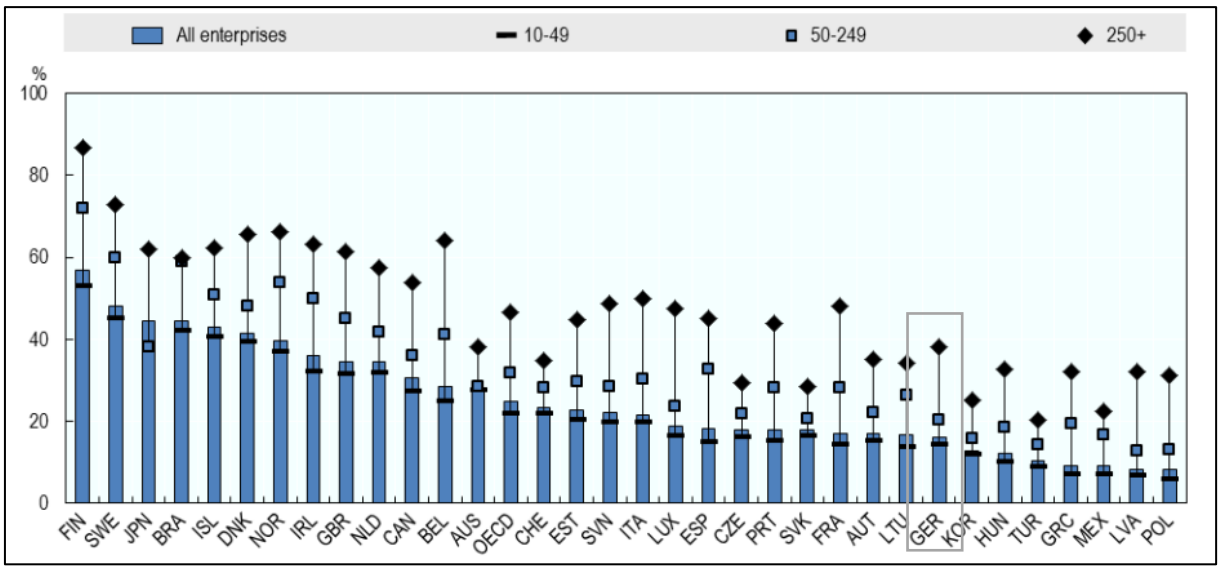


Figure Appendix 3: Enterprises Using Cloud Computing Services in 2015 in the European Union
Source: OECD (2017) p. 15 [392]

[392] OECD and German Presidency, eds., Key Issues for Digital Transformation in the G20: Report prepared for a joint G20 (2017).

DATEV as one of the leading German Software Provider in 2016

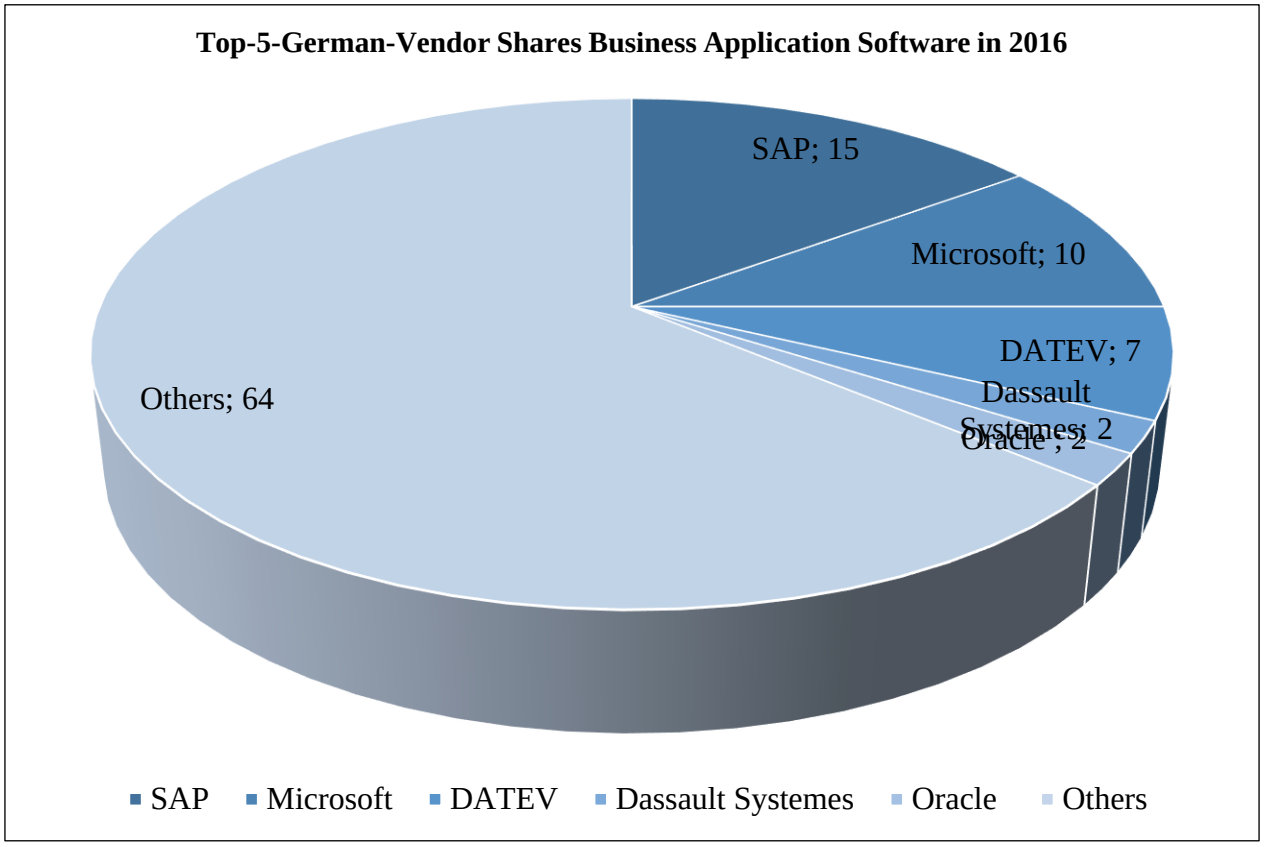


Figure Appendix 4: DATEV as one of the leading German Software Provider, Top-5-German-Vendor Shares Business Application Software in 2016
Source: https://idc.de/de/research/viewpoints/hidden-champions-der-markt-fur-business-anwendungen-in-deutschland, 15.11.2018

Table Appendix 1: Overview of the Digitalization Tools in Use by DATEV Customers in October 2018

Rechnungswesen	Oktober 2018 Bestand	
	IST	%-Ant.
DATEV Unternehmen online (Mandant) (Mandant / LV)	115.229	82,1
DATEV Unternehmen online (Mandant) (Mandant / mM)	25.115	17,9
DATEV Unternehmen online (Mandant) (Mandant)	140.344	100,0
DATEV Unternehmen online compact (Mandant) (Mandant / LV)	5.834	90,0
DATEV Unternehmen online compact (Mandant) (Mandant / mM)	645	10,0
DATEV Unternehmen online compact (Mandant) (Mandant)	6.479	100,0
Auftragswesen online (Mandant) (Mandant / LV)	6.007	78,6
Auftragswesen online (Mandant) (Mandant / mM)	1.638	21,4
Auftragswesen online (Mandant) (Mandant)	7.645	100,0

Personalwirtschaft	Oktober 2018 Bestand	
	IST	%-Ant.
PMS classic (Mandant / LV)	882	42,9
PMS classic (Mandant / mM)	1.175	57,1
PMS classic (Mandant)	2.057	100,0
PMS comfort (Mandant / LV)	5	25,0
PMS comfort (Mandant / mM)	15	75,0
PMS comfort (Mandant)	20	100,0
PMS comfort plus (Mandant / LV)	76	32,3
PMS comfort plus (Mandant / mM)	159	67,7
PMS comfort plus (Mandant)	235	100,0

IT & Organisation Businessprodukte	Oktober 2018 Bestand	
	IST	%-Ant.
DATEV DMS (Mandant / LV)	291	31,8
DATEV DMS (Mandant / mM)	624	68,2
DATEV DMS (Mandant)	915	100,0
DATEV DMS classic Individual (Mandant / LV)	109	27,5
DATEV DMS classic Individual (Mandant / mM)	288	72,5
DATEV DMS classic Individual (Mandant)	397	100,0
DATEV DMS Rechnungsprüfung classic (Mandant / LV)	246	32,6
DATEV DMS Rechnungsprüfung classic (Mandant / mM)	508	67,4
DATEV DMS Rechnungsprüfung classic (Mandant)	754	100,0
DATEV DMS Rechnungsprüfung comfort (Mandant / LV)	10	22,7
DATEV DMS Rechnungsprüfung comfort (Mandant / mM)	34	77,3
DATEV DMS Rechnungsprüfung comfort (Mandant)	44	100,0

DATEV DMS OCR (Mandant / LV)	280	31,9
DATEV DMS OCR (Mandant / mM)	598	68,1
DATEV DMS OCR (Mandant)	878	100,0

IT-Management	Oktober 2018 Bestand	
	IST	%-Ant.
DATEVasp (Mandant / LV)	34	12,6
DATEVasp (Mandant / mM)	235	87,4
DATEVasp (Mandant)	269	100,0
PARTNERasp (Mandant / LV)	771	100,0
PARTNERasp (Mandant / mM)	0	0,0
PARTNERasp (Mandant)	771	100,0
DATEV-SmartIT (Mandant / LV)	382	31,3
DATEV-SmartIT (Mandant / mM)	840	68,7
DATEV-SmartIT (Mandant)	1.222	100,0

Source: Author's creation, with data from customer database by DATEV eG

Table Appendix 2: Database and Derivation for Author's Secondary Survey

Secondary Survey		
Database provided by DATEV eG		
Data Request in October 2018		
Population (all DATEV company customers)		2.500.000
Source: DATEV eG 2018[393]		
Products in use in October 2018 (Source: Datarequest in October 2018)		
DATEV Product	Correspond Digitalization Tool	Number
DATEV "Belege Online"	Cloud Usage for Data Storage	294.135
DATEV "Unternehmen Online" and DATEV "Unternehmen Online Compact"	Communication via Internet (for data exchange with a tax consultant)	146.823
DATEV "ASP", DATEV "Partner ASP" and DATEV "SmartIT"	Cloud Usage for Software	2.262
DATEV "Personalmanagement", DATEV "Personalmanagement Comfort" and DATEV "Personalmanagement Comfort Plus"	Digital Human Resource Process	2.312
DATEV "Dokumentenmanagement classic"	Use of enterprise resource planning Software	915
DATEV "Dokumentenmanagement Rechnungsprüfung classic",	Digital Workflow	1.190
DATEV "Dokumentenmanagement Rechnungsprüfung comfort" and DATEV "Smart Transfer"		

[393] "DATEV eG, Kurzinformation 2018." 2018. https://www.datev.de/web/de/m/ueber-datev/das-unternehmen/kurzprofil/,.

Source for DATEV SmartTransfer: Geissler, Norbert (DATEV eG) via E-Mail, 2018-11-19		
DATEV "Auftragswesen Online"	Use of customer relationship management Software	7.645
		455.282
Number of partial amount of customers which have no listed digital tool in use		2.044.718

Source: Author's creation, with data from customer database by DATEV eG

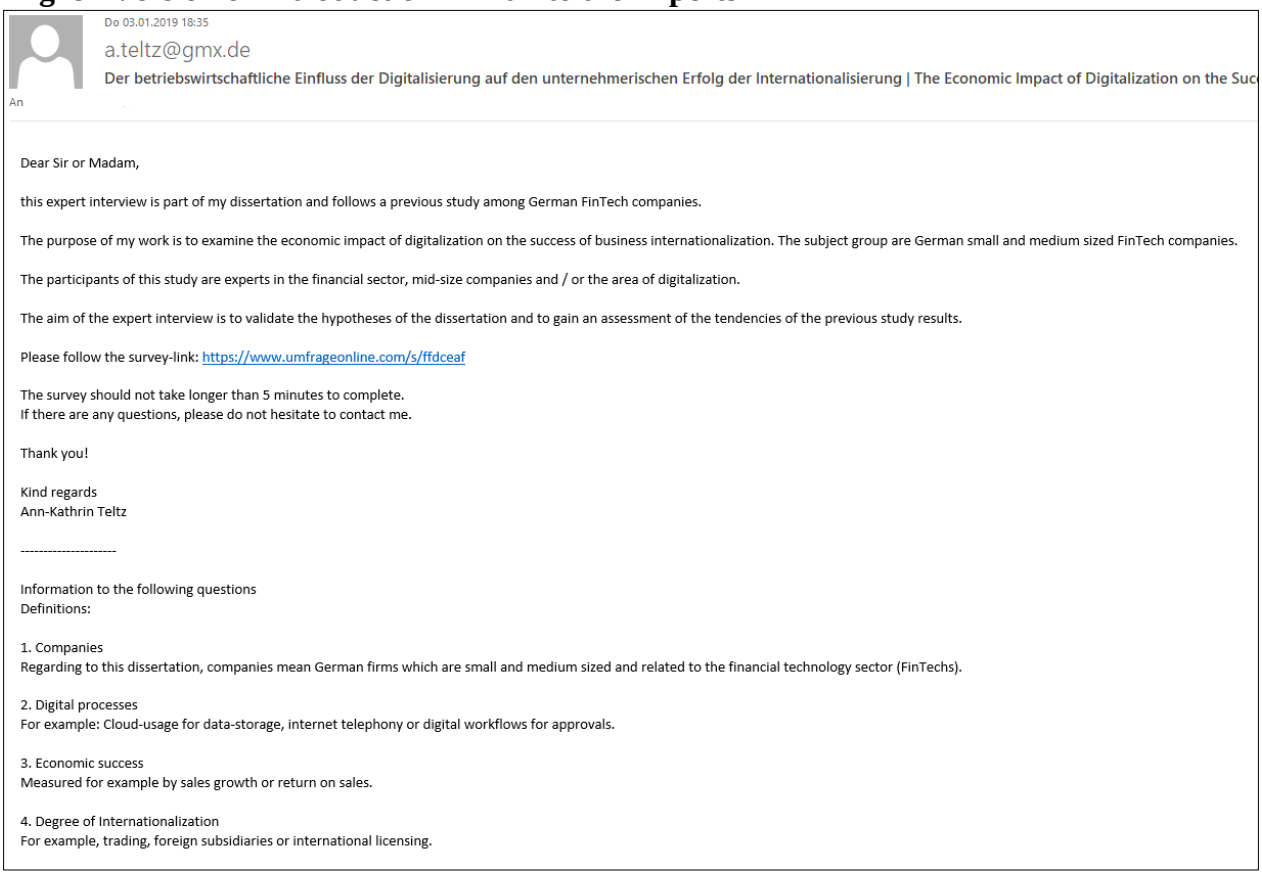
Table Appendix 3: Overview about the Experts Interview Partner

Overview about the Expert Interview Partners				
#	Position	Expert in the Field of		
1	CEO of a Fin Tech	Digitalization	FinTechs	-
2	CEO of a Fin Tech	Digitalization	FinTechs	-
3	Executive Manager	Digitalization	Small and Medium Sized Enterprises	-
4	Executive Manager	Digitalization	FinTechs	-
5	CEO of a Fin Tech	Digitalization	FinTechs	Small and Medium Sized Enterprises
6	Executive Manager	Internationalization	FinTechs	-
7	Executive Manager and Professor	Academical Work	Digitalization	Small and Medium Sized Enterprises
8	Professor	Academical Work	-	-
9	Executive Manager	Internationalization	Small and Medium Sized Enterprises	Digitalization
10	CEO	Finance	Digitalization	-
11	Executive Manager	Finance	Digitalization	-
12	Professor	Digitalization	Small and Medium Sized Enterprises	Academical Work
13	CEO of a Fin Tech	Finance	-	-

14	Executive Manager	Finance	-	-
15	Executive Manager	Finance	Digitalization	-
16	CEO	FinTechs	Finance	-
17	CEO of a Fin Tech	FinTechs	Finance	-
18	Executive Manager	Finance	Digitalization	-
19	Tax Consultant	Small and Medium Sized Enterprises	Finance	-
20	Professor	Internationalization	Academical Work	-

Source: Author's creation

English Version of Introduction E-Mail to the Experts



Do 03.01.2019 18:35

a.teltz@gmx.de

Der betriebswirtschaftliche Einfluss der Digitalisierung auf den unternehmerischen Erfolg der Internationalisierung | The Economic Impact of Digitalization on the Suc

An

Dear Sir or Madam,

this expert interview is part of my dissertation and follows a previous study among German FinTech companies.

The purpose of my work is to examine the economic impact of digitalization on the success of business internationalization. The subject group are German small and medium sized FinTech companies.

The participants of this study are experts in the financial sector, mid-size companies and / or the area of digitalization.

The aim of the expert interview is to validate the hypotheses of the dissertation and to gain an assessment of the tendencies of the previous study results.

Please follow the survey-link: https://www.umfrageonline.com/s/ffdceaf

The survey should not take longer than 5 minutes to complete.
If there are any questions, please do not hesitate to contact me.

Thank you!

Kind regards
Ann-Kathrin Teltz

Information to the following questions
Definitions:

1. Companies
Regarding to this dissertation, companies mean German firms which are small and medium sized and related to the financial technology sector (FinTechs).

2. Digital processes
For example: Cloud-usage for data-storage, internet telephony or digital workflows for approvals.

3. Economic success
Measured for example by sales growth or return on sales.

4. Degree of Internationalization
For example, trading, foreign subsidiaries or international licensing.

Figure Appendix 5: English Version of the Introduction E-Mail to the Experts
Author's creation

English Version of the Questionnaire for the Experts

Page 1

Do you think it is reasonable to assume, that German small and medium sized companies within the financial sector, with a high degree of internal digital workflows: *

		Very implausible	Implausible	Neutral	Plausible	Very plausible
1a	are more economically successful than less digitalized companies?	◯	◯	◯	◯	◯
1b	are more internationalized than less digitalized companies?	◯	◯	◯	◯	◯

Do you think it is reasonable to assume, that German small and medium sized companies of the financial sector, which are highly internationalized: *

		Very implausible	Implausible	Neutral	Plausible	Very plausible
2a	are more economically successful than companies which are more focused within a single nation?	◯	◯	◯	◯	◯
2b	have a higher degree of digitalization than companies which are more which are more focused within a single nation?	◯	◯	◯	◯	◯

Do you think it is reasonable to assume, that German small and medium sized companies of the financial sector, which are economically successful: *

		Very implausible	Implausible	Neutral	Plausible	Very plausible
3a	are more internationalized than less successful companies?	◯	◯	◯	◯	◯
3b	have a higher degree of digitalization than less successful companies?	◯	◯	◯	◯	◯

Page 2

4 **Do you agree with the statement, that in the future the economic success of a small and medium sized company within the financial sector will greatly depend on the degree of digitization of the administrative area of the company?** *

Totally disagree

5 **Do you agree with the statement, that in the future the degree of internationalization of a small and medium sized company within the financial sector will greatly depend on the degree of digitization of the administrative area of the company?** *

Totally disagree

6 **Do you agree with the statement, that companies which are already internationally successful, in the future must increase the digitalization of their internal administrative processes to remain successful?** *

Totally disagree

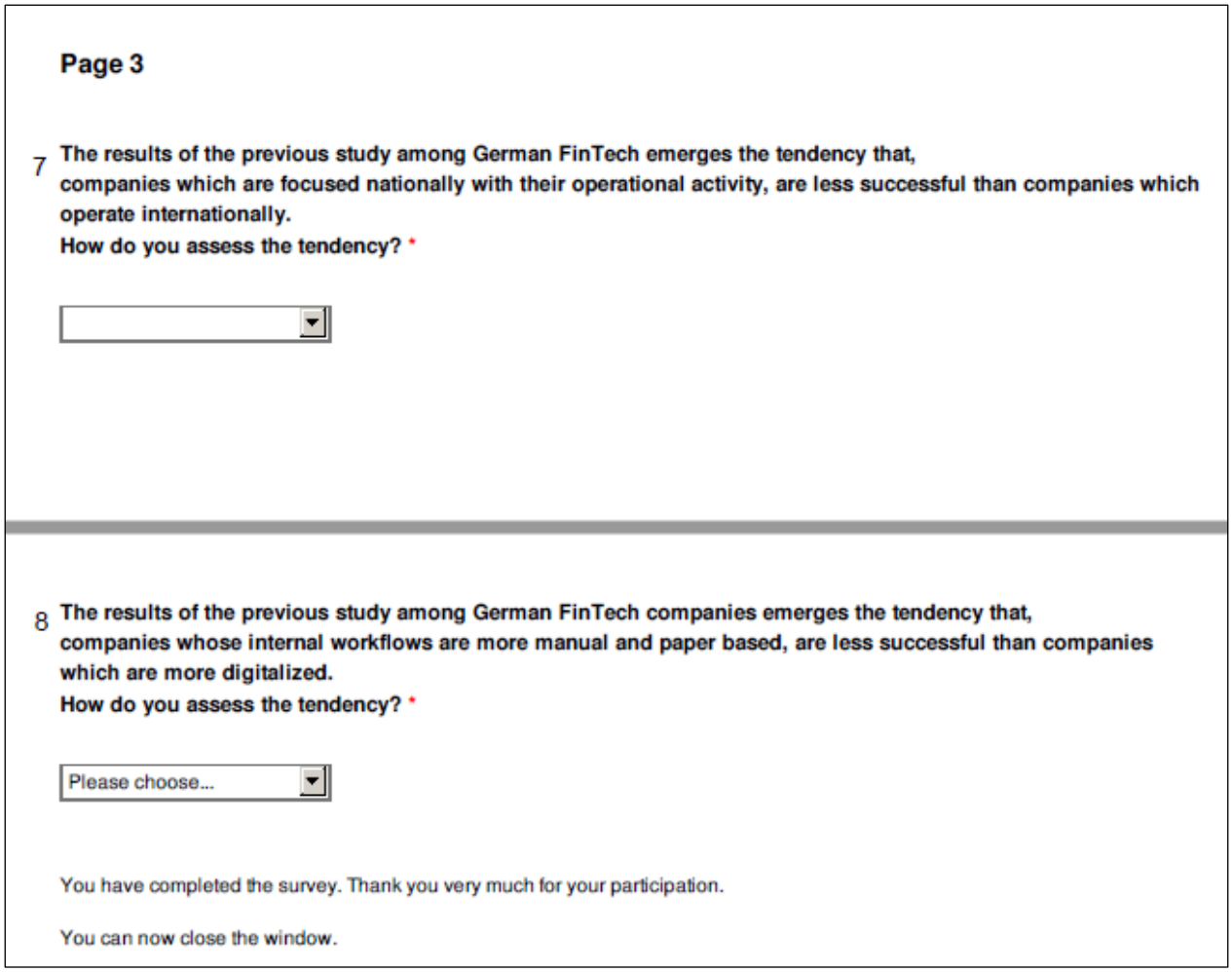


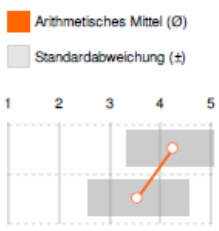
Figure Appendix 6: English Version of the Questionnaire for the Experts
Source: Author's creation

Results of the Expert Interviews

1. Do you think it is reasonable to assume, that German small and medium sized companies within the financial sector, with a high degree of internal digital workflows: *

Anzahl Teilnehmer: 20

	Very implausible (1)		Implausible (2)		Neutral (3)		Plausible (4)		Very plausible (5)			
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Ø	±
are more economically s...	1x	5,00	-	-	-	-	11x	55,00	8x	40,00	4,25	0,91
are more internationaliz...	-	-	4x	20,00	4x	20,00	9x	45,00	3x	15,00	3,55	1,00



2. Do you think it is reasonable to assume, that German small and medium sized companies of the financial sector, which are highly internationalized: *

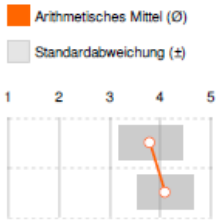
Anzahl Teilnehmer: 20

	Very implausible (1)		Implausible (2)		Neutral (3)		Plausible (4)		Very plausible (5)			
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Ø	±
are more economically s...	-	-	2x	10,00	9x	45,00	9x	45,00	-	-	3,35	0,67
have a higher degree of ...	-	-	-	-	6x	30,00	10x	50,00	4x	20,00	3,90	0,72

3. Do you think it is reasonable to assume, that German small and medium sized companies of the financial sector, which are economically successful: *

Anzahl Teilnehmer: 20

	Very implausible (1)		Implausible (2)		Neutral (3)		Plausible (4)		Very plausible (5)			
	Σ	%	Σ	%	Σ	%	Σ	%	Σ	%	Ø	±
are more internationaliz...	-	-	-	-	6x	30,00	12x	60,00	2x	10,00	3,80	0,62
have a higher degree of ...	-	-	-	-	2x	10,00	14x	70,00	4x	20,00	4,10	0,55



4. Do you agree with the statement, that in the future the economic success of a small and medium sized company within the financial sector will greatly depend on the degree of digitization of the administrative area of the company? *

Anzahl Teilnehmer: 20

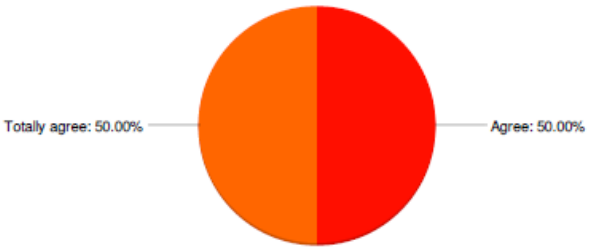
- (0.0%): Totally disagree

- (0.0%): Disagree

- (0.0%): No estimation

10 (50.0%): Agree

10 (50.0%): Totally agree



5. Do you agree with the statement, that in the future the degree of internationalization of a small and medium sized company within the financial sector will greatly depend on the degree of digitization of the administrative area of the company? *

Anzahl Teilnehmer: 20

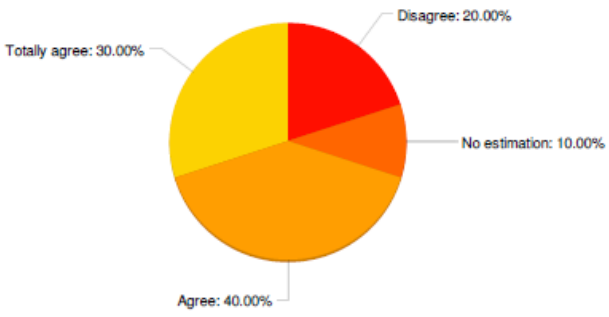
- (0.0%): Totally disagree

4 (20.0%): Disagree

2 (10.0%): No estimation

8 (40.0%): Agree

6 (30.0%): Totally agree



6. Do you agree with the statement, that companies which are already internationally successful, in the future must increase the digitalization of their internal administrative processes to remain successful? *

Anzahl Teilnehmer: 20

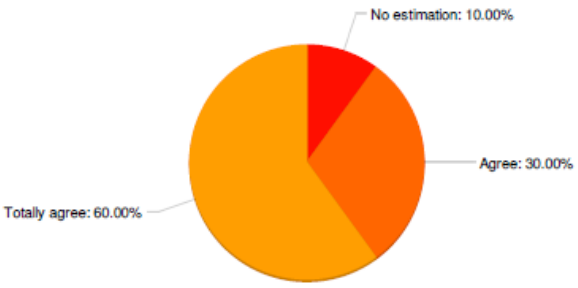
- (0.0%): Totally disagree

- (0.0%): Disagree

2 (10.0%): No estimation

6 (30.0%): Agree

12 (60.0%): Totally agree



7. The results of the previous study among German FinTech emerges the tendency that, companies which are focused nationally with their operational activity, are less successful than companies which operate internationally. How do you assess the tendency? *

Anzahl Teilnehmer: 20

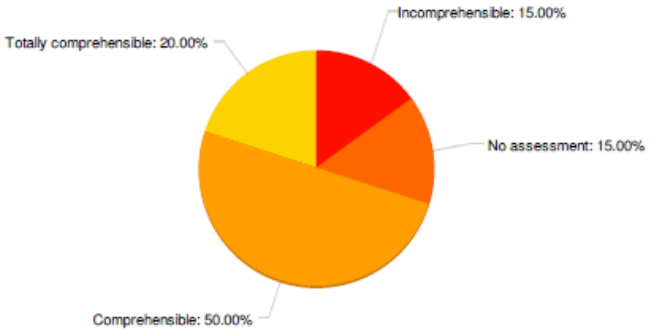
- (0.0%): Totally incomprehensible

3 (15.0%): Incomprehensible

3 (15.0%): No assessment

10 (50.0%): Comprehensible

4 (20.0%): Totally comprehensible



8. The results of the previous study among German FinTech companies emerges the tendency that, companies whose internal workflows are more manual and paper based, are less successful than companies which are more digitalized. How do you assess the tendency? *

Anzahl Teilnehmer: 20

- (0.0%): Totally incomprehensible

- (0.0%): Incomprehensible

1 (5.0%): No assessment

5 (25.0%): Comprehensible

14 (70.0%): Totally comprehensible

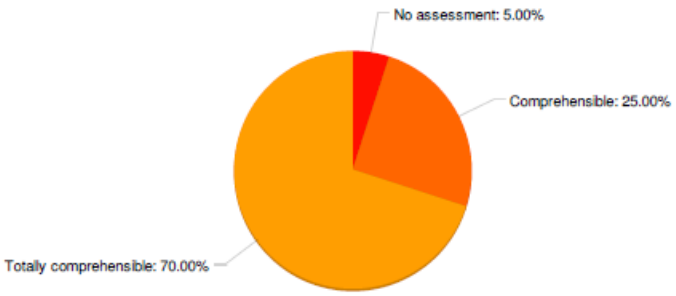


Figure Appendix 7: Results of the Expert Interviews
Author's creation

Table Appendix 4: Overview of German FinTechs in May 2018 regarding PBA GmbH

German FinTech Companies in May 2018			
#	**Category**	**Number**	**Name**
1	**Payment**	23	https:/+D3:D19/www.payleven.de
2			https://www.sumup.de
3			https://www.izettle.com/de
4			http://www.go4q.mobi
5			http://www.ipayst.com/de/
6			http://www.kesh.de (nur noch bis 30.11)
7			https://www.paycash.eu / àhttps://www.mercedes-pay.com/
8			https://sicherbezahlen.de/
9			www.umt.ag/de/
10			SQWallet
11			http://www.payworksmobile.com
12			https://www.billpay.de
13			https://www.laterpay.net
14			http://www.paywithatweet.com
15			https://www.payorshare.de
16			https://www.paylax.de
17			http://www.optiopay.com/de/
18			https://www.spendit.de
19			https://payment.billingmaker.com/
20			http://www.dimoco.at
21			https://www.transferwise.com/de
22			https://www.circle.com/de
23			https://www.easycarpay.com
24	**Bitcoins**	10	https://www.bitbond.com
25			https://www.bitcoin.de
26			https://www.satoshipay.io
27			https://www.draglet.com/en
28			coinzone = www.coinify.com(Acquisition)
29			http://www.dogecoin.com
30			https://www.pey.de
31			https://www.coinsnap.eu/de/public/
32			https://www.btcexpress.net/DE
33			https://www.cointed.com/
34	**E-Commerce**	9	https://www.paymill.com/de= http://klikandpay.com/de/
35			https://www.ratepay.com
36			https://www.payever.de
37			https://www.betterpayment.de

38			http://www.allpago.com
39			https://www.sepaone.com
40			http://www.fashioncheque.com/de/
41			http://klikandpay.com/de/
42			http.//getgrover.con/de-de
43	**Accounting**	15	https://www.smoice.com
44			http://www.billomat.com
45			https://www.weclapp.com/de/
46			https://www.debitoor.de
47			Pactas= https://www.billwerk.com(Rebranding)
48			https://www.fastbill.com/
49			https://www.zeitgold.com
50			http://www.smacc.io
51			https://www.albuswhite.com
52			http://www.candis.io/de/
53			Liquid Payment= http://www.isaac10.com(Insolvency)
54			Fastbill Automatic= http://www.monsum.com(Rebranding)
55			https://www.salesking.eu/
56			https://monsum.com/
57			https://www.buchhaltungsbutler.de
58	**Factoring / Collection**	14	https://www.billfront.com
59			http://www.rechnung48.de
60			https://www.pagido.de
61			https://www.decimo.de
62			https://www.ecollect.de
63			https://www.flexpayment.de
64			https://www.pairfinance.com
65			http://www.trustbills.com
66			https://www.collect.ai/
67			https://www.innolend.de/
68			http://www.factoringbörse.de
69			https://www.fundflow.de/
70			https://www.bezahlt.de/
71			https://www.bilendo.de/
72	**Donations**	5	https://www.elefunds.de/start/
73			http://www.twingle.de
74			http://www.helpingcents.info
75			http://www.fundraisingbox.com
76			http://www.altruja.de
77	**Order/Cash**	13	https://www.orderbird.com/de/

78			Pepperbill = https://www.orderbird.com/de/(Acquisition)
79			http://www.9cookies.com/de/
80			http://www.gastrofix.com/de/
81			http://www.opentabs.de
82			http://www.roc-kasse.de
83			https://www.quandoo.de
84			http://www.qnips.com
85			https://www.gastronovi.de
86			https://www.inventorum.com/de/
87			https://www.pepperkorn.com/
88			www.ready2order.com
89			https://getpenta.com/
90	**Credit**		www.compeon.de
91			https://www.kreditech.com
92			https://www.auxmoney.com
93			https://www.bankless24.de/de
94			https://www.smava.de
95			https://www.lendico.de
96			https://www.vexcash.com
97			https://www.companisto.com/de/
98			https://www.seedmatch.de
99			Zencap= https://www.fundingcircle.com/de/(Acquisition)
100			https://www.giromatch.com
101			https://www.fintura.de
102			https://www.spotcap.com
103			https://www.ferratumgroup.com/de
104			https://www.finanzcheck.de
105			https://www.ipfand.de
106			https://www.valendo.de
107			https://www.debitos.de
108			https://www.fundsters.de
109			http://www.crxmarkets.com/de/
110			https://www.crosslend.com
111			https://www.kapilendo.de
112			https://www.creditshelf.com
113			https://www.compeon.de/
114			http://www.tradi.co
115			https://www.valendo.de/
116			www.finnest.com/
117		33	https://www.cashpresso.com

118			https://www.entrafin.de
119			https://moneyfellows.com
120			https://cashcape.com/
121			https://www.loanboox.com/
122			https://www.commnex.de/
123	**Banking**	22	http://www.traxpay.com
124			http://www.mambu.com
125			https://www.fidor.de
126			https://n26.com/
127			http://www.ementexx.com
128			https://www.tullius-walden.com
129			https://www.mamooble.com
130			https://www.holvi.com/de/
131			http://www.finreach.de
132			http://www.fino.digital
133			http://www.bancalis.de
134			https://www.tis.biz
135			http://www.bringcashnow.com
136			https://www.baningo.com
137			http://www.dwins.de
138			http://www.treasuryview.com
139			http://www.compraga.de
140			http://www.getpenta.com
141			https://www.uphold.com/
142			https://www.kontist.com/
143			https://www.xware42.com/
144			https://finanzguru.de/
145	**Tools**	5	http://www.minnits.de
146			https://www.gini.net
147			https://www.xpenditure.com/de/
148			https://edgewonk.com/
149			https://www.finleap.com
150	**Portfolio Management**	8	https://www.kontoalarm.de
151			https://www.centralway.com/de/
152			http://www.qontis.ch
153			http://www.myfeelix.de
154			https://www.moneygarden.de
155			https://www.treefin.com
156			https://www.rentablo.de/
157			https://de.getzuper.com/

158	**API (Application Program Interface) Banking**		https://www.figo.io
159			FidorTecs= https://www.fidor.com (Rebranding)
160			http://www.openbankproject.com
161			https://www.fintecsystems.com
162			http://www.ebicsbox.com
163			http://www.finapi.io
164			https://www.solarisbank.de
165			https://banksapi.de/
166			https://nextdigitalbanking.com
167		10	https://www.yukkalab.com/
168	**Savings**		Senti-Trade= https://www.yukkalab.de(Rebranding)
169			https://www.vaamo.de
170			https://www.bergfuerst.com
171			https://www.moneymeets.com/
172			https://www.stockpulse.de/de/
173			https://www.wikifolio.com/de/de/home
174			https://www.voola.de
175			https://www.sharewise.com/de/
176			https://www.quirion.de
177			http://www.ayondo.com/de/home
178			http://www.modelogiq.com
179			https://www.bettervest.com/home
180			comonea = Deposit Solutions https://www.comonea.de(Rebranding)
181			https://www.zinspilot.de/
182			https://www.weltsparen.de
183			https://www.easyfolio.de
184			https://www.twindepot.de
185			https://www.united-signals.com
186			https://www.fairr.de
187			https://www.justetf.com/de/
188			http://www.boersenampel.com
189			https://www.truewealth.ch
190			https://www.savedo.de
191			https://www.ginmon.de
192			http://www.damantis.com
193			https://www.greenxmoney.com
194			http://www.minveo.de
195			https://www.smartdepot.de
196			http://www.anyonecan.de
197		57	https://www.simplefinance.de

198			https://www.liqid.de/de
199			https://www.swipestox.com/de/
200			https://www.scalable.capital
201			https://www.swanest.com
202			https://www.guidants.com
203			http://www.niiio.de
204			https://www.toptradeapp.com
205			https://www.savedroid.de
206			https://www.venture.kapilendo.de(Acqusition)
207			http://www.wertios.com
208			https://www.finatra.de/start/
209			https://www.whitebox.eu
210			https://www.investify.de
211			http://www.clincapp.com
212			https://www.ir-system.com
213			https://www.nextmarkets.com/de/home
214			https://www.growney.de/
215			https://www.zinsgold.de/
216			https://www.visualvest.de/
217			https://www.fintego.de/
218			https://www.werthstein.com/
219			https://elinvar.de/
220			https://www.weltsparen.de/
221			https://www.wiwin.de/
222			https://www.aktienassistent.de/
223			niiio.finance/?lang=de
224			https://www.fincite.de
225	**Ident**	6	https://www.idnow.de/
226			https://www.webid-solutions.de
227			https://www.liveident.com
228			https://www.verify-U AG.de
229			idvos= https://www.identity.tm(Acquisition)
230			https://www.authada.de
231	**Peer-to-Peer-Payment***	10	https://www.lendstar.io
232			https://www.cringle.net
233			https://www.cashcloud.com/de/
234			https://www.payfriendz.com
235			https://www.kittysplit.com/de/
236			http://www.tabbt.com
237			https://www.azimo.com/de/

238			https://www.payza.com
239			https://www.elopay.com/
240			http://www.colleqt.com
241	**Insurance**	34	https://www.schutzklick.de
242			https://www.friendsurance.de
243			https://www.appsichern.de
244			https://www.onlineversicherung.de
245			https://www.finanzchef24.de
246			https://www.vertragium.de
247			http://www.safeme.hamburg
248			https://www.passt24.de
249			https://www.knip.ch
250			https://www.virado.de
251			https://www.getsafe.de
252			https://www.communitylife.de/de/
253			https://www.yoursurance.de
254			https://www.clark.de/de
255			https://www.kasko.io
256			http://www.massup.de
257			https://www.asuro.de
258			https://www.wefox.de
259			https://www.ted-versicherung.de/#/
260			http://www.finanzritter.com
261			http://www.versicherix.ch
262			http://www.fanage.de/
263			http://www.mypension.de
264			https://getsurance.de
265			https://prio-app.de/
266			http://www.simplr.de/
267			http://www.schadenhelfer.de/
268			https://haftpflichthelden.de/
269			https://www.fin-klick.de/
270			http://www.myfeelix.de/
271			https://www.covomo.de/
272			http://www.allesmeins.de/
273			https://mylucy.com/
274			https://etherisc.com/
275	**Property Finance**	13	Imcheck24= https://www.maklaro.de(Rebranding)
276			https://www.zinsland.de
277			https://www.brickvest.com/en/

278			https://www.exporo.de
279			http://www.deutsche-kautionspartner.de/
280			https://www.ifunded.de
281			https://www.zinsbaustein.de
282			https://www.mezzany.com/
283			https://www.fundernation.eu/
284			https://www.homerocket.com/
285			https://www.immorocks.com
286			https://www.groupestate.de/
287			https://www.ev-capital.de/
288	**Risk/Rating**	2	http://www.bonify.de
289			https://www.scorekompass.de

* Peer-to-Peer-Payment means exchange money on a digital way between two parties. Contrary to classical payment transactions Peer-to-Peer-Payment is simpler and faster.

Source: Author's creation, in dependence on PBA Experts GmbH, https://paymentandbanking.com

English Version of the Questionnaire for the Quantitative Survey

The Economic Impact of Digitalization on the Success of Business Internationalization

Bitte wählen Sie eine Sprache aus.
Please choose a language.

- ◯ Deutsch
- ✔ English

Personal Details

1 **Please enter your age.**

☐

2 **What is your highest Level of School-Education?**

- ◯ No School-Leaving Qualification
- ◯ School-Leaving Qualification
- ◯ Secondary School-Leaving Certificate
- ◯ General Qualification for University Entrance

3 **What is your highest Alternance / Vocational Training?**

- ◯ Without a Vocational Training
- ◯ Vocational Training
- ◯ University of Applied Science
- ◯ Bachelor
- ◯ Master
- ◯ Doctor

4 **Please mention your current Employment Relationship.**

- ◯ Employee
- ◯ Executive
- ◯ Middle Management
- ◯ Top Management
- ◯ Director

5 **How many Years of Work Experience do you have?**

- ◯ < 3 Years
- ◯ 3 - 5 Years
- ◯ 5 - 10 Years
- ◯ > 10 Years

6 **How many years thereof were in the Financial Sector?**

- ◯ < 3 Years
- ◯ 3 - 5 Years
- ◯ 5 - 10 Years
- ◯ > 10 Years

German Small and Medium Sized FinTech Enterprises

7 **Where is the Headquarter located?** *

- ◯ Germany
- ◯ EU
- ◯ USA
- ◯ Other

8 **Which of the following Characteristics are true for your Company?** *

- [ ] The Company is predominant Equity Financed and / or independent from Outside Creditors
- [ ] The Owner of the Company is also the Majoritarian Owner and / or Main Responsible Person and / or Main Decisionmaker
- [ ] The Company's Organization has flat Hierarchies and / or high Flexibility within the Organizational Structure
- [ ] The available Financial Funds and Resources for Investments are low and / or the Risk Bearing Capacity is low
- [ ] The Product- and Service-Range is small and / or highly specialized and / or highly customized

9 **Please mention the Number of Employees within your Company.** *

- ◯ 0 - 9
- ◯ 10 - 49
- ◯ 50 - 249
- ◯ > 250

10 **What was the Turnover of your Company of the last Year?**

- ◯ < 500.000 Euro
- ◯ 500.000 Euro - 1 Million Euro
- ◯ > 1 Million Euro - 10 Million Euro
- ◯ > 10 Million Euro - 50 Million Euro
- ◯ > 50 Million Euro

11 **What was the Total of Balance Sheet last Year?**

- ◯ < 1 Million Euro
- ◯ 1 Million Euro - 10 Million Euro
- ◯ > 10 Million Euro - 43 Million Euro
- ◯ > 43 Million Euro

Business Success regarding to the Internationalization of the Company

Please mention the Return on Sales in the Last five Years Compared each compared to Previous Year.

Return on Sales means the Rate of Sales to Result of Operation
Calculation: Return on Sales = Result of Operation / Sales * 100%

14.1-14.5	Negative	0 - 2,5%	> 2,5 - 5%	> 5 - 7,5 %	> 7,5 %
2017	◯	◯	◯	◯	◯
2016	◯	◯	◯	◯	◯
2015	◯	◯	◯	◯	◯
2014	◯	◯	◯	◯	◯
2013	◯	◯	◯	◯	◯

Please mention the Sales Growth in the Last Five Years each compared to the previous Year.

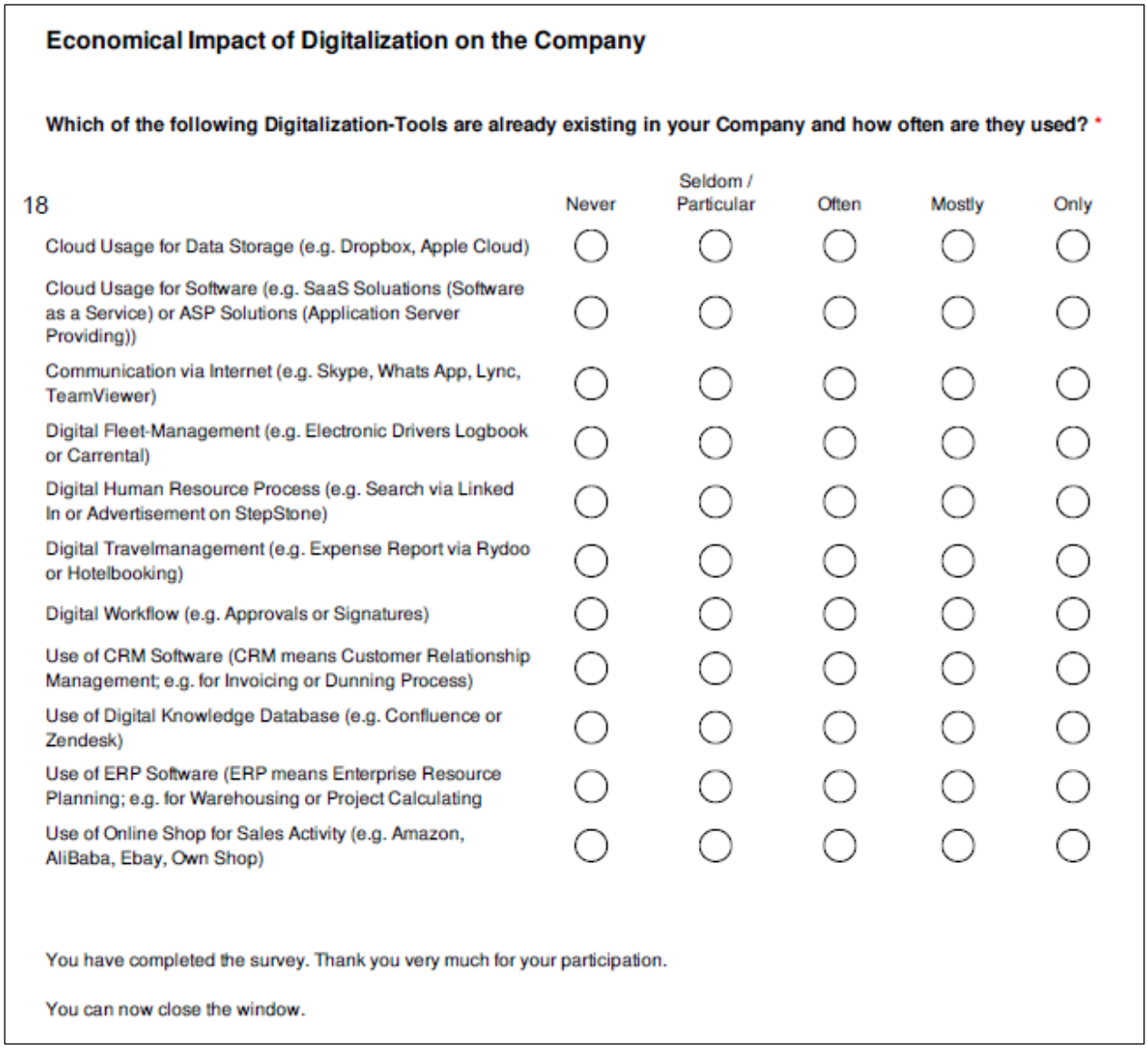
15.1-15.5	Negative	0 - 5%	> 5 - 7%	> 7-10%	> 10%
2017	◯	◯	◯	◯	◯
2016	◯	◯	◯	◯	◯
2015	◯	◯	◯	◯	◯
2014	◯	◯	◯	◯	◯
2013	◯	◯	◯	◯	◯

With which Countries does your Company Trade (Import and Export)? *

16	No Trade	Only Import	Only Export	Import and Export
Europe	◯	◯	◯	◯
USA	◯	◯	◯	◯
Worldwide	◯	◯	◯	◯

In which way do your Company act international? *

17	Not applicable	Located in EU	Located in USA	Other International Location
Sole Ventures, New Establishment, Greenfield Investment, Equity Project	☐	☐	☐	☐
Branch Office	☐	☐	☐	☐
Subsidiary	☐	☐	☐	☐
Franchise	☐	☐	☐	☐
Joint Venture	☐	☐	☐	☐
Representive Office, Export Authorized Dealer	☐	☐	☐	☐
Alliance	☐	☐	☐	☐
Agency, Direct Agent, Distributor, Export Cooperation	☐	☐	☐	☐
Contracts: Technical, Service, Management or others	☐	☐	☐	☐
Licensee	☐	☐	☐	☐
Other Way of Internationalization	☐	☐	☐	☐



Economical Impact of Digitalization on the Company

Which of the following Digitalization-Tools are already existing in your Company and how often are they used? *

18	Never	Seldom / Particular	Often	Mostly	Only
Cloud Usage for Data Storage (e.g. Dropbox, Apple Cloud)	◯	◯	◯	◯	◯
Cloud Usage for Software (e.g. SaaS Soluations (Software as a Service) or ASP Solutions (Application Server Providing))	◯	◯	◯	◯	◯
Communication via Internet (e.g. Skype, Whats App, Lync, TeamViewer)	◯	◯	◯	◯	◯
Digital Fleet-Management (e.g. Electronic Drivers Logbook or Carrental)	◯	◯	◯	◯	◯
Digital Human Resource Process (e.g. Search via Linked In or Advertisement on StepStone)	◯	◯	◯	◯	◯
Digital Travelmanagement (e.g. Expense Report via Rydoo or Hotelbooking)	◯	◯	◯	◯	◯
Digital Workflow (e.g. Approvals or Signatures)	◯	◯	◯	◯	◯
Use of CRM Software (CRM means Customer Relationship Management; e.g. for Invoicing or Dunning Process)	◯	◯	◯	◯	◯
Use of Digital Knowledge Database (e.g. Confluence or Zendesk)	◯	◯	◯	◯	◯
Use of ERP Software (ERP means Enterprise Resource Planning; e.g. for Warehousing or Project Calculating	◯	◯	◯	◯	◯
Use of Online Shop for Sales Activity (e.g. Amazon, AliBaba, Ebay, Own Shop)	◯	◯	◯	◯	◯

You have completed the survey. Thank you very much for your participation.

You can now close the window.

Figure Appendix 8: English Version of the Questionnaire for the Quantitative Survey
Source: Author's creation

Table Appendix 5: Quantitative Research Survey Results from the Correlation Test

Correlations

		Q14.1	Q14.2	Q14.3	Q14.4	Q14.5	Q15.1	Q15.2	Q15.3	Q15.4	Q15.5	Q16	Q17	Q18
Q14.1	Pearson Correlation	1	,927**	,729**	,784**	,770**	0,307	,381*	0,17	0,225	0,01	0,083	,490**	0,135
	Sig. (2-tailed)		0	0	0	0	0,088	0,038	0,368	0,233	0,958	0,65	0,004	0,46
	N	32	31	29	30	29	32	30	30	30	29	32	32	32
Q14.2	Pearson Correlation	,927**	1	,802**	,867**	,793**	0,084	0,311	0,106	0,17	-0,06	-0,013	,459**	0,014
	Sig. (2-tailed)	0		0	0	0	0,653	0,095	0,576	0,368	0,757	0,946	0,009	0,941
	N	31	31	29	30	29	31	30	30	30	29	31	31	31
Q14.3	Pearson Correlation	,729**	,802**	1	,648**	,848**	0,143	0,201	0,201	0,111	0	-0,06	0,185	0,138
	Sig. (2-tailed)	0	0		0	0	0,46	0,295	0,297	0,565	1	0,758	0,337	0,477
	N	29	29	29	29	28	29	29	29	29	28	29	29	29
Q14.4	Pearson Correlation	,784**	,867**	,648**	1	,762**	0	0,303	0,114	0,292	0,016	-0,01	,400*	-0,029
	Sig. (2-tailed)	0	0	0		0	1	0,104	0,55	0,117	0,935	0,959	0,029	0,878
	N	30	30	29	30	29	30	30	30	30	29	30	30	30
Q14.5	Pearson Correlation	,770**	,793**	,848**	,762**	1	0,222	0,295	0,2	0,224	0,139	-0,146	0,35	0,071
	Sig. (2-tailed)	0	0	0	0		0,246	0,121	0,299	0,243	0,471	0,451	0,063	0,714
	N	29	29	28	29	29	29	29	29	29	29	29	29	29
Q15.1	Pearson Correlation	0,307	0,084	0,143	0	0,222	1	,824**	,879**	,676**	,815**	-0,241	0,307	,402*
	Sig. (2-tailed)	0,088	0,653	0,46	1	0,246		0	0	0	0	0,163	0,073	0,017
	N	32	31	29	30	29	35	33	33	31	30	35	35	35
Q15.2	Pearson Correlation	,381*	0,311	0,201	0,303	0,295	,824**	1	,871**	,863**	,751**	-0,311	0,265	0,289
	Sig. (2-tailed)	0,038	0,095	0,295	0,104	0,121	0		0	0	0	0,078	0,137	0,103
	N	30	30	29	30	29	33	33	33	31	30	33	33	33
Q15.3	Pearson Correlation	0,17	0,106	0,201	0,114	0,2	,879**	,871**	1	,864**	,944**	-,437*	0,189	,408*
	Sig. (2-tailed)	0,368	0,576	0,297	0,55	0,299	0	0		0	0	0,011	0,291	0,018
	N	30	30	29	30	29	33	33	33	31	30	33	33	33
Q15.4	Pearson Correlation	0,225	0,17	0,111	0,292	0,224	,676**	,863**	,864**	1	,857**	-,426*	0,124	0,188
	Sig. (2-tailed)	0,233	0,368	0,565	0,117	0,243	0	0	0		0	0,017	0,506	0,311
	N	30	30	29	30	29	31	31	31	31	30	31	31	31
Q15.5	Pearson Correlation	0,01	-0,06	0	0,016	0,139	,815**	,751**	,944**	,857**	1	-,448*	0,128	0,332
	Sig. (2-tailed)	0,958	0,757	1	0,935	0,471	0	0	0	0		0,013	0,5	0,073
	N	29	29	28	29	29	30	30	30	30	30	30	30	30
Q16	Pearson Correlation	0,083	-0,013	-0,06	-0,01	-0,146	-0,241	-0,311	-,437*	-,426*	-,448*	1	,336*	0,106
	Sig. (2-tailed)	0,65	0,946	0,758	0,959	0,451	0,163	0,078	0,011	0,017	0,013		0,039	0,525
	N	32	31	29	30	29	35	33	33	31	30	38	38	38
Q17	Pearson Correlation	,490**	,459**	0,185	,400*	0,35	0,307	0,265	0,189	0,124	0,128	,336*	1	,399*
	Sig. (2-tailed)	0,004	0,009	0,337	0,029	0,063	0,073	0,137	0,291	0,506	0,5	0,039		0,013
	N	32	31	29	30	29	35	33	33	31	30	38	38	38
Q18	Pearson Correlation	0,135	0,014	0,138	-0,029	0,071	,402*	0,289	,408*	0,188	0,332	0,106	,399*	1
	Sig. (2-tailed)	0,46	0,941	0,477	0,878	0,714	0,017	0,103	0,018	0,311	0,073	0,525	0,013	
	N	32	31	29	30	29	35	33	33	31	30	38	38	38

* Correaltion Level Significant at 0,01 (2-tailed)
** Correlation Level Significant at 0,05 (2-tailed)

High Negative Effect		
Medium Effect		
High Positive Effect		

Source: Author's creation

Table Appendix 6: Further Correlation Analyses of the Quantitative Research with binary Coding of the Variables

Correlations

Question				10	11	12a	12b	14	15	16	18
	Variable			y3	y4	w1	x3	y1	y2	x1	z1
10	y3	Sig (2-tailed)				.0072**					
		N	32								
		Pearson Correlation	r	1		-0,396	-0,128			0,159	0,304
		Spearman's rho	ρ	1		-0,396	-0,118			0,159	0,152
		Coefficient of Determination	R^2	1		0,156	0,016			0,020	0,092
11	y4	Sig (2-tailed)									
		N	32								
		Pearson Correlation	r		1	-0,022	-0,202			-0,196	0,434
		Spearman's rho	ρ		1	-0,022	0,041			-0,249	0,329
		Coefficient of Determination	R^2		1	0,000	-0,202			0,038	0,188
12a	w1	Sig (2-tailed)	p	.0072**							
		N	32								
		Pearson Correlation	r	-0,396	-0,022	1					0,168
		Spearman's rho	ρ	-0,396	-0,022	1					0,168
		Coefficient of Determination	R^2	0,156	0,000	1					0,028
12b	x3	Sig (2-tailed)									
		N	32								
		Pearson Correlation	r	-0,128	-0,202		1	0,034	-0,169		-0,071
		Spearman's rho	ρ	-0,118	0,041		1	-0,008	-0,158		-0,071
		Coefficient of Determination	R^2	0,016	-0,202		1	0,001	0,029		0,005
14	y1	Sig (2-tailed)									
		N	29								
		Pearson Correlation	r				0,034	1			
		Spearman's rho	ρ				-0,008	1			
		Coefficient of Determination	R^2				0,001	1			
15	y2	Sig (2-tailed)									
		N	31								
		Pearson Correlation	r				-0,169		1		
		Spearman's rho	ρ				-0,158		1		
		Coefficient of Determination	R^2				0,029		1		
16	x1	Sig (2-tailed)									
		N	29								
		Pearson Correlation	r	0,159	-0,196					1	
		Spearman's rho	ρ	0,159	-0,249					1	
		Coefficient of Determination	R^2	0,020	0,038					1	
18	z1	Sig (2-tailed)									
		N	38								
		Pearson Correlation	r	0,304	0,434	0,168	-0,071				1
		Spearman's rho	ρ	0,152	0,329	0,168	-0,071				1
		Coefficient of Determination	R^2	0,092	0,188	0,028	0,005				1

* Correaltion Level Significant at 0,01 (2-tailed)
** Correlation Level Significant at 0,05 (2-tailed)
High Negative Effect
Medium Effect
High Positive Effect

Source: Author's creation

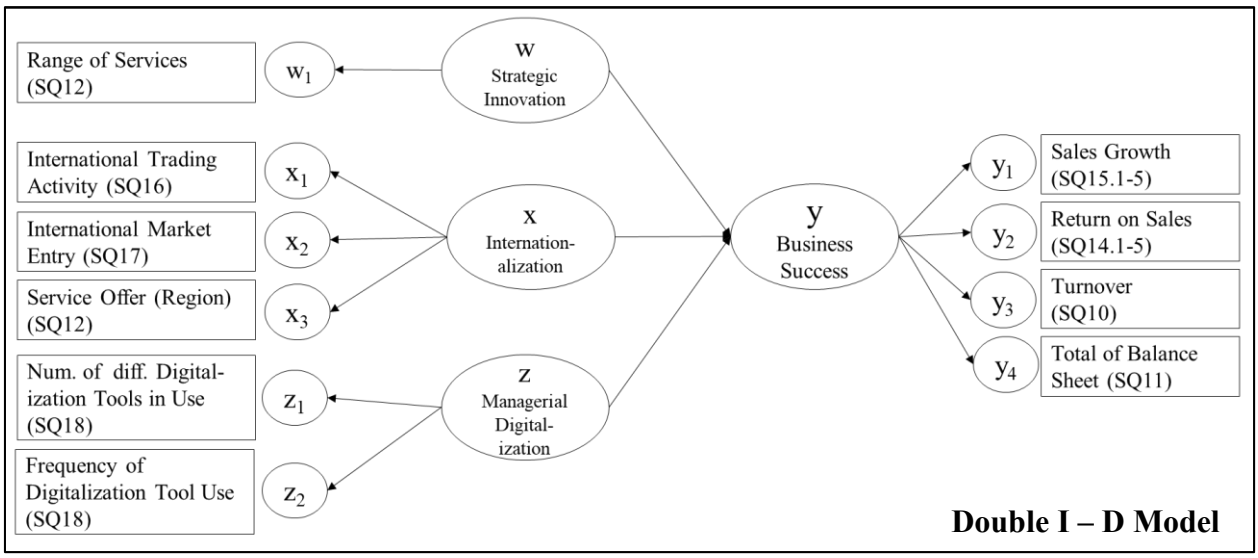


Figure Appendix 9: Survey Questions integrated into the "Double I-D Model"
Source: Author's creation