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**Title:** What Does it Take to Be Agile? - Evidence from the Banking Industry

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## **Abstract**

Digitalization, shorter innovation cycles and frequently changing customer needs characterize the current situation in many industries. In order to cope with these complex conditions, increasingly more companies from various industries started using agile methods. In this context, the banking industry is a prime example: Innovative and less regulated FinTechs as well as BigTechs and the ongoing period of low interest threaten the banks' existence. Unfortunately, little research exists about agile methods in the banking industry. Since a deep understanding of the banks' decision motives and way of using agile methods could provide valuable learnings for the literature and practitioners, this study aims to investigate internal and external factors that influence the initial implementation, successful use and the scaling of agile methods in the banking industry. Therefore, multiple expert interviews with banks and one management consultancy are conducted and substantiated with a secondary data analysis, leading to findings that are twofold: First, a rich body of influencing factors is obtained and classified into seven major groups. Second, a theoretical framework describing the dynamic relationships of these influencing factors is created. Based on this, it turns out that the decision about implementing and scaling agile methods should depend on the type of tasks performed and the business model of the respective bank, which is why a hybrid approach is the best-suited solution for most banks. Therefore, they should take care to make rational and individual decisions regarding agile methods and not to be overly influenced by their ubiquitous promotion. Furthermore, the results allow the provision of important advice for practitioners on how to successfully design an agile transformation. Additionally, implications for various streams of research are presented, in the course of which evidence is found that the obtained results might be generalizable for other industries.

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## **List of Abbreviations**

BigTech	Big technology company
CEO	Chief Executive Officer
FinTech	Financial technology company
HR	Human resources
IEEE	Institute of Electrical and Electronics Engineers
IT	Information technology
LeSS	Large Scaled Scrum
OLB	Oldenburgische Landesbank
SAFe	Scaled Agile Framework
SMS	Short message service
VUCA	Volatility, uncertainty, complexity, ambiguity

## 1. Introduction

In today's world, companies are exposed to permanent changes in their environment (Hamel & Välikangas, 2003; Meyer et al., 1990; Wheeler, 2002). Back in 1989, Jack Welch, the former CEO of General Electric, already said that “the world moves so much faster today” (Tichy & Charan, 1989, p. 114). Almost 15 Years later, this phenomenon still shaped the market environment: In 2003, Hamel and Välikangas described that “the world is becoming turbulent faster than organizations are becoming resilient” (Hamel & Välikangas, 2003, p. 52). The omnipresence of this trend continues to the present day: During the past years, for example, telecommunication companies lost a considerable stake of their income to comparatively young competitors such as Skype and WhatsApp (Berke, 2014; Heinrich, 2014; Kambayashi, 2015) and various large companies, such as Kodak and Nokia, suffer from disruptive digital innovations (Kollmann & Schmidt, 2016; Lucas & Goh, 2009). These are just a few of many cases which show, that in the current, uncertain and volatile world, “nothing is more certain than the predominance of uncertainty over the consequences of any economic decision” (Hernández, 2017, p. 71). The term *VUCA*, which is an acronym for volatility, uncertainty, complexity and ambiguity, is often used to characterize these dynamic environmental circumstances (Bennett & Lemoine, 2014b; Deeken & Fuchs, 2018). In order not to be blown away by this storm of rapid and vast changes, companies of all sizes and from all industries had to find ways to deal with these circumstances.

Peter Drucker described a way of dealing with these changes as follows: “Nobody can manage the change. But we can be one step ahead of it” (Drucker, 2005, p. 109). One way of staying one step ahead was described by Kotter in 2012, when he called on organizations to *accelerate* and therefore to abandon their hierarchical structures. *Agile methods*, or *agile methodologies*, bring about such fundamental structural changes, and turned out to be a potential remedy to cope with any kind of complex environmental conditions (Deeken & Fuchs, 2018; Kane et al., 2015). Especially the *scaling* of agile methods (i.e. expansion of agile methods to several parts of the company) is described to be beneficial by many scholars (e.g. Deeken & Fuchs, 2018; Rigby et al., 2018) and practitioners (Komus, 2020). The basic idea behind agility is to ensure a high pace of change and therefore to stay ahead of the environmental changes (Deeken & Fuchs, 2018). When using the agile method *Scrum*, for example, the planning horizon is reduced down to a minimum to strengthen the ability of adapting to sudden changes and to minimize losses caused by a changing organizational environment (Schwaber & Sutherland, 2017). Especially the increased capability to innovate is often a central objective when adopting agile

methods. Rigby et al. even state that "innovation is what agile is all about" (Rigby et al., 2016, p. 42). The following definition will be used for the terms *agile* and *agile methodology*: "Agile is the ability to create and respond to change. It is a way of dealing with, and ultimately succeeding in, an uncertain and turbulent environment" (Agile Alliance, n.d., n.p.), whereas "agile methodologies are the conventions that a team chooses to follow in a way that follows agile values and principles" (Agile Alliance, n.d., n.p.).<sup>1</sup>

Some agile methods, such as Scrum, date back to the early 1990s (Schwaber & Sutherland, 2017), but only seem to have had their breakthrough after the publishing of the *Agile Manifesto* in 2001 (Agile Alliance, n.d.), which postulates the twelve core principles for agile software development (Beck et al., 2001). It was published in 2001 by 17 software developers who form the so-called *Agile Alliance* (Highsmith, 2001). During the past few years, the trend towards the use of agile methods is clearly visible: The percentage of companies that use agile methods for the planning and execution of projects or development processes increased from 78% to 92% between 2012 and 2019 (Komus, 2020). Particularly within software development and IT, agile methods are being used extensively (VersionOne, 2020). Even large software companies such as Spotify, Netflix, Google and SAP have integrated agile methods in their organizations (Rigby et al., 2018).

Although originally created for software development, some large companies from industries that do not traditionally focus on software development, such as Bosch and John Deere, also decided to use agile methods (Rigby et al., 2016; Rigby et al., 2018). The idea of applying agile methods in areas apart from software development and IT has also been discussed extensively in the literature (e.g. Cappelli & Tavis, 2018; Morton et al., 2018; Rigby et al., 2020). Especially the financial services industry is having a strong dependency on external factors and is experiencing a great pressure for change through decreasing margins caused by low interest (Claessens et al., 2018; Rafat et al., 2017), less regulated and highly innovative FinTechs (Chen et al., 2019; Goldstein et al., 2019; Walter, 2016) as well as digitalization in general (Deeken & Fuchs, 2018) and is therefore subject to an unstable and complex business environment (Rafat et al., 2017; Walter, 2016). The financial crisis from 2008 and 2009 forced banks to focus more on the reduction of risks and costs rather than on innovations, which is why their innovative capacity decreased, and why it is even more difficult for them to adapt to the current

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<sup>1</sup> The term *agile method* will be used synonymously for *agile methodology*.



upheaval in their market environment (Deeken & Fuchs, 2018; Smolinski & Gerdes, 2017). However, a study which investigated the use of agile methods in the banking industry found that the vast majority of financial service providers in the German-speaking area use agile methods, but only to a very limited extent (Gans et al., 2019). In connection with the fact that many scholars and practitioners consider the scaling of agile methods to be beneficial, this tendency is surprising, particularly in the complexity-threatened banking industry. Therefore, various questions arise: Do banks act irrationally? Are there reasons against the scaling of agile methods that have not yet been discussed in the literature? Are there obstacles that impede a widespread use of agile methods in practice? A look behind the scenes of the banks' decision-making regarding agility could provide answers to these questions.

Unfortunately, a glance at the literature shows that little research exists on agile methods in the banking industry and especially on the decision-making of banks concerning agile methods. Therefore, this thesis investigates what internal and external factors influence banks<sup>2</sup> (a) in the decision-making regarding the initial implementation, (b) in the successful use as well as in (c) the decision-making concerning the scaling of agile methods. The goal is to create an in-depth understanding of the banks' decision motives to answer the following research question: *What internal and external factors influence the use of agile methods in the banking industry?* Findings on this topic could provide valuable implications for practitioners, especially from the banking industry, who already use or plan to implement agile methods by preparing them for potential obstacles and catalysts on their agile journey.

In order to answer this question and therefore to close the research gap, qualitative empirical research will be conducted, including interviews with banks as well as one management consultancy and a secondary data analysis. A rich series of influencing factors as well as a theoretical framework describing the dynamic relationships of the key influencing factors will result from this study, providing several implications for practitioners and the literature. These results will provide evidence on banks using agile methods as a remedy to cope with an uncertain and complex environment on the one hand, while being influenced by other agile companies acting as role models on the other. Nevertheless, it will be found that a lack of suitability often proves to be a reasonable motive against the scaling of agile methods. In this context, it will turn out that the decision of scaling agile methods on an entire bank should

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<sup>2</sup> In the following, the term *banks* will always include savings banks.

depend on the suitability of the respective bank's product portfolio and on the type of tasks performed in the respective departments. In fact, the use of a hybrid approach will be found to be a proper way of using agile methods for many banks. Furthermore, if suitability is given, full commitment of employees and management will turn out to be crucial as well as a proper balance between giving employees freedom and taking them by the hand. Finally, evidence will be found that these results might also be applicable to industries other than the banking industry.

The thesis will be structured as follows: In the second chapter, an overview of the relevant literature aiming at the wider and closer context of the research question will be provided, finally leading to the research question itself. In chapter three, the methodology and criteria for the data collection will be presented and explained. In the course of this, an overview of the research setting and sampling will be provided, followed by a presentation of the methodology used for data collection and data analysis. Thereafter, the primary and secondary data obtained from the qualitative empirical research will be presented and used to build a theoretical framework in chapter four. These results as well as their implications for the literature and practitioners will then be critically discussed in chapter five. Additionally, this chapter presents the limitations of this thesis and possibilities for further research. Finally, chapter six will summarize the results of this study.

## **2. Literature Review**

Agility is a frequently discussed topic in the literature since the beginning of this millennium and has found its way into many journals, especially those which focus on software development, IT and management such as *IEEE Software* and *Information Systems Research* as well as the *Harvard Business Review*. Another considerable amount of relevant literature about agility originates from conferences on agility, software development, and computer science, such as the *International Conference on Agile Software Development* or the *Federated Conference on Computer Science and Information Systems*. The following literature review aims to provide an overview about the state of the art in research on agile methods and to finally point out a research gap which leads to the research question.

## 2.1 The Emergence of Agility

By predicting the speed of computer chips to double every two years in his publications from 1965 and 1975, Moore successfully predicted the fast technological advances that would emerge in the course of digitalization. Appropriately, Bower and Christensen described the increased occurrence of market-changing technological innovations in 1995, coining this type of innovation as disruptive technology. Hence, many problems arose for companies from various industries, since the world became increasingly more complex (Bennett & Lemoine, 2014a; Hamel & Välikangas, 2003; Meyer et al., 1990). During projects, environmental factors such as customer behavior and technology started changing constantly, making requirements and project plans obsolete, especially in software development (Williams & Cockburn, 2003). Therefore, companies had to find a way to deal with the frequently occurring changes.

Stacey (1996), by developing the Stacey Matrix, was the first one to draw a connection between the nature of change of a certain situation and the appropriate form of control or decision-making. According to him, complex situations are situations in which there is uncertainty about what to do and how to do it, and they require a certain way of dealing with them. In the same year, Volberda (1996) tried to find a solution for companies to survive in the highly competitive environment, and thus presented the approach of organizational flexibility. The breakthrough followed a couple years later, when a group of 17 software developers presented the Agile Manifesto (Highsmith, 2001) and laid down the principles of agile software development (Beck et al., 2001). The publication of these principles brought fundamental changes to, at least, the large field of software engineering, and therefore many scholars started writing about agility (Dingsøyr et al., 2012). The idea behind the use of agile methods was rather to embrace and adapt to change and to foster flexibility, than to reject it (Abrahamsson et al., 2002; Conboy, 2009; Dingsøyr et al., 2012; Williams & Cockburn, 2003). Many companies liked the idea of agility and thus started adopting agile methods for software development and had great success in terms of productivity, quality and time to market (Rigby et al., 2016). Nowadays, “agile is (...) the mainstream software development method of choice worldwide” (Hoda et al., 2018, p. 58). But not only practitioners describe agile methods to be helpful. Many scholars, such as Kotter (2012), Teece et al. (2016) and Kane et al. (2015) see agility as a potential remedy for companies to cope with the complex situations and technological disruptions. Teece even explains that “the net benefits (i.e., benefits minus costs) of organizational agility increase with the degree of uncertainty in the organization’s competitive environment” (Teece et al., 2016, p. 28).

## 2.2 Agile Methods

There are several agile methods that are being used in practice. According to a serial study conducted among 642 primarily German companies from various industries by the University of Applied Sciences Koblenz (Komus, 2020) and Kuhrmann et al. (2018), who conducted international quantitative research on the use of agile methods, Scrum is the most frequently used agile method. In terms of frequency of use, Scrum is then followed by *Kanban*, *Lean*, *DevOps* and *Design Thinking* (Komus, 2020). The official guide to Scrum was developed and published by two founders of the Agile Alliance, Schwaber & Sutherland (2017). Among other things, their guide describes the composition of a *Scrum Team* (including the *Product Owner*, *Scrum Master* and *Development Team*), the *Scrum events* (e.g. *Sprints* and *Daily Scrums*) and the *Scrum artifacts* (e.g. *Product Backlogs* and *Increments*). Additionally, a tremendous amount of further literature has been published regarding all aspects of Scrum, such as research regarding the adoption of Scrum by Hanslo et al. (2019; 2020) and Hanslo & Mnkandla (2018) as well as case studies on Scrum (e.g. Moe et al., 2010).

Likewise, challenges and success factors of using agile methods for agile software development have been investigated in the literature. Some very frequently described success factors are an agile mindset (e.g. Manen & Vliet, 2014; Miler & Gaida, 2019, 2020) and extensive training of employees (e.g. Dikert et al., 2016; Misra et al., 2009), while management commitment (e.g. Pikkarainen et al., 2012; Rigby et al., 2016) as well as stakeholder commitment (e.g. Boehm & Turner, 2005; Vidgen & Xiaofeng, 2009) are among the most frequently described challenges. Furthermore, although some scholars discuss the combination of agile and traditional methods,<sup>3</sup> others very frequently describe challenges that arise when using agile methods only in parts of a company because of a lack of alignment between agile and traditional working departments (e.g. Dikert et al., 2016; Richter et al., 2016; Rigby et al., 2018; Waardenburg & Vliet, 2013). However, some companies (e.g. Birkinshaw, 2018) scale agile methods to every part of the organization and are thus not exposed to such conflicts. There are several scaled agile methods, with *SAFe* being the most commonly used scaled agile method according to Komus' (2020) survey, followed by own creations, *LeSS*, and the *Spotify Model*.

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<sup>3</sup> E.g. in course of the HELENA Study, which stands for Hybrid dEveLopmENt Approaches in software systems development, a substantial amount of research has been conducted regarding the combination of agile and traditional methods, e.g. by Klünder et al. (2017), Kuhrmann et al. (2018) and Noll & Beecham (2019).

Additionally, about three quarters of the participants of Komus' (2020) survey stated that the introduction of scaled agile methods brought benefits in terms of results and efficiency, which 90% of them considered to be greater than the effort required to apply and implement the respective scaled agile method. These observations are consistent with those of Rigby et al. (2018), who describe the scaling of agile methods to be beneficial in many cases. The slight majority of the participants of Komus' survey also state that they did not replace all the company's traditional structures when scaling agile methods and only 15% consequently stick to the chosen framework. Hence, it can be said that most companies that use scaled agile methods design the use individually and usually have successful and rewarding experiences with them. Scaled agile methods have also been addressed in further articles and case studies. Ebert & Paasivaara (2017), for example, discuss scaled agile frameworks and their best practices. Moreover, Putta et al. (2018) conducted a multivocal literature review about general benefits and challenges with the specific case of adopting SAFe, in the course of which they provide an overview about benefits and challenges as a result. Furthermore, Limaj & Bernroider (2019) created an overview about case studies regarding scaled agile transformations. Few articles exist about how and where scaled agile frameworks work best, and about related challenges and success factors. Nevertheless, in their articles, Rigby et al. (2018) and Poth et al. (2019, 2020), for example, provide advice for companies on how to scale agile methods. Additionally, challenges and success factors of scaled agile methods have been examined in a structured literature review by Dikert et al. (2016).

### **2.3 Agility in Different Business Areas**

As already mentioned, Kane et al. (2015), Kotter (2012), and Teece et al. (2016) describe the level of complexity and therefore uncertainty to decide about whether a task should be solved using agile methods, which is consistent with Stacey's findings (1996). Therefore, companies and scholars started thinking about using agile methods in complex and uncertain business areas apart from software development. In the literature, for example, the use of agile methods for information systems (Abrahamsson et al., 2009), project management (Ceschi et al., 2005), human resource management (Cappelli & Tavis, 2018), strategy (Morton et al., 2018) as well as top management (Rigby et al., 2020) and many more is discussed and partly perceived to be suitable. This perception can also be found in practice: In Komus' (2020) survey, 52% of the participating companies use agile methods for IT-related topics, 39% for non-IT related topics (e.g. marketing and strategy development) and 19% for physical product development.

Agile methods are also being used by companies from various industries, that do not traditionally focus on software development, such as Bosch (Rigby et al., 2018), John Deere (Rigby et al., 2016), Ericsson (Paasivaara et al., 2018) and the ING (Barton et al., 2018; Birkinshaw, 2018). Additionally, Elkins et al. (2004) and Qamar et al. (2018), for example, discuss the possibility of agile manufacturing or production in the automotive industry. Gerster et al. (2018), by providing a case study about how traditional companies adapt scaled agile methods, builds a bridge between the scaling of agile methods and their use in a non-software context. When it comes to unstable and complex business environments, especially banks are a prime example. Goldstein et al. (2019) and Chen et al. (2019), for example, describe highly challenging aspects in banks' environments. They both agree on FinTechs being new and powerful competitors for banks. Chen et al., for example, say that FinTechs "have the potential to radically transform financial services by making transactions less expensive, more convenient, and more secure" (Chen et al., 2019, p. 2062). Therefore, they have the potential to decrease the margins of banks (Buch, 2018). Additionally, FinTechs are quite young companies (Danker, 2016), which is why they often use agile methods right from their foundation. Banks, in contrary, are mostly much older and more traditional companies, and thus their culture and way of working is often deeply entrenched. Thus, they have a disadvantage against FinTechs, as they need to change the whole structure and work against an existing culture (Teece et al., 2016). Additionally, it is easier for FinTechs to cope with legal regulations since they are less restrictively regulated than banks (Goldstein et al., 2019). Yet another factor that endangers the survival of banks in the market are decreasing margins because of the current low interest period (Claessens et al., 2018). Furthermore, BigTechs (i.e. big technology companies) intensify the competition as they bring a broad customer base and develop products that compete with products from financial services companies (Buch, 2018). Therefore, it is not surprising, that profits of less digitized banks fell by about 10% between 2013 and 2018 (Gans et al., 2019). Claudia Buch, Vice President of the German Central Bank, is convinced, that "the development of competition in the German banking sector will be decisively influenced by how well new technologies and competitors succeed in gaining a foothold in the financial system and how quickly the traditional players in the financial system can adapt to new technologies" (Buch, 2018, pp. 10–11). Similarly, Chen et al. (2019) describe that if market leaders in the financial industry invest strongly in their own innovations, they can avoid negative effects from disruptive technologies. Hence, since the use of agile methods increases the ability to adapt to change and the ability to innovate (Rigby et al., 2018), it might be the perfect remedy to cope with these conditions. Financial service providers have already reacted to these circumstances:

According to the *Agile Readiness Study*, which was conducted in 2019 by the management consultancy zeb, 90% of financial service providers use agile methods to some extent (Gans et al., 2019).

The use of agile methods in the banking industry has also been examined at few points in the literature. Case studies have, for example, been conducted for the ING (Barton et al., 2018; Birkinshaw, 2018) as well as the French Central Bank (Berkani et al., 2019). Some further literature focuses on the examination of well-suited conditions for the use of agile methods in the financial services industry. In the course of his case study at the French Central Bank, Berkani (2019), for example, studied motives for adopting and scaling agile methods. He describes that especially the viral adoption of agile practices, positive experimentation in projects and top management support drive banks towards the use of agile methods. Birkinshaw (2018) describes some further factors for a successful agile transformation in his case study. He considers it as very important to talk to stakeholders and especially the works council early, to “give employees the right balance of oversight and autonomy” (Birkinshaw, 2018, p. 42) and provide growth opportunities as well as to shift the power from the top. Unfortunately, these two case studies only investigate one bank each. Furthermore, their results often only scratch the surface and lack explanation or systematization, since the case studies do not focus on the investigation of influencing factors. Therefore, the literature lacks a systematic and especially a dynamic overview of factors influencing the use of agile methods in the banking industry.

However, especially the scaling of agile methods is perceived to be beneficial by many scholars. The scaled agile transformation of the ING proved that this can also be the case for large banks (Barton et al., 2018). Surprisingly, the Agile Readiness Study found that about 94% of the financial service providers in the German-speaking area use agile methods, but only to a very limited extent and that banks are far below the average level of agile maturity (i.e. the extent, to which an organization has competencies in agile) (Gans et al., 2019). Possible explanations for this could be that banks either act irrationally, that there are reasons against scaling agility that have not yet been discussed in the literature, or that there are obstacles which impede the widespread use of agile methods in practice. Unfortunately, little research exists on motives of banks regarding the use of agile methods. Therefore, further systematizing research is necessary regarding factors that influence the use of agile methods in the banking industry in order to provide insights into the banks’ decision-making regarding the scaling of agile methods. The scaling of agile methods could be either hampered if agile methods are not implemented at all,

not successfully used, or successfully used, but not scaled. Therefore, factors influencing (a) the decision to implement agile methods for the first time, (b) the successful use of agile methods, and (c) the decision to scale agile methods will be examined in this thesis. Some scholars already pointed out similar research gaps. According to Limaj & Bernroider (2019, p. 81), “there is little investigation on the capabilities needed to succeed in the agile way of working”, and in their article from 2016, Dikert et al. expressed the need for papers examining the perception of practitioners on challenges and success factors when scaling agile methods. Hence, to fill this research gap, this thesis aims to answer the following research question: *What internal and external factors influence the use of agile methods in the banking industry?*

### **3. Methodology**

To examine the motives for the banks’ behavior, semi-structured expert interviews have been conducted in the German-speaking area, which were substantiated by a keyword research. The methodology of this thesis is generally based on Gioia et al. (2013), while the data analysis was particularly based on the qualitative content analysis according to Mayring (2000, 2010) with the aim of synthesizing information regarding the research question and achieving a generalization of the gained knowledge by disaggregating the obtained data into codes and groups.

#### **3.1 Research Setting and Sample**

As already described, the banking sector environment is complexity-driven and changing rapidly since BigTechs, low margins as a result of the low interest rate period, digitalization, and young and innovative FinTechs threaten the survival of banks. The need for theory-building for agile methods in the complexity-surrounded banking industry, in combination with the lack of research regarding motives for scaling agile methods make it necessary to create a database to identify internal and external factors influencing the initial introduction, the successful application and the decision to scale agile methods. In order to do so, several banks were investigated, since the most valid information about the banks’ motives can be provided by the banks themselves. During the time of data collection, the corona crisis was omnipresent. However, these circumstances were hardly thematized in the data collection and were too new at this time to influence the use of agile methods in the investigated banks. Therefore, these circumstances will not be discussed further since they barely influenced the results.



In order to receive valuable and well-founded findings, certain requirements have been predefined for the investigated banks. The first prerequisite was an exposure to a complex environment as a reason for considering the use of agile methods. This condition is not difficult to meet, since, as previously described, the banking industry in general is exposed to VUCA conditions and therefore all banks must deal with the market's complexity. Nevertheless, this condition is of high importance, as this thesis aims to investigate agility as a remedy to deal with a complex environment. Solely central banks do not meet this criterion, since they differ substantially from other banks as they are governmental organizations that pursue political goals. Second, the bank must use agile methods or have at least considered doing so. This requirement was established in order to ensure that the collected information is founded on practical experience, since this is the desired type of information. Third, all banks must have commonly used business models, as the results of the study aim to be representative, valuable and relevant for many banks. In contrast, an analysis of specialized banks operating in niche markets, such as banks that focus exclusively on wealth management, would be of low value to most banks. Consequently, banks that focus on retail and/or corporate banking were chosen as the target group, because those are the most common business models in the banking industry. Finally, the banks needed to have different sizes and geographical ranges of business in order to prevent results that are only true for specifically sized or geographically ranged banks. Also, the extents to which agile methods are being used needed to differ between the selected banks. The importance of this requirement derives from the goal to shed light on the perception of agility from miscellaneous perspectives and to ensure relevance for retail and corporate customer banks of all sizes and agile maturity levels.

Based on these criteria, the Sparkasse Bremen, Oldenburgische Landesbank (OLB), HypoVereinsbank/UniCredit, Commerzbank, DZ Bank, ING Group and Deutsche Bank were selected (Appendix Table 1). Most of these banks operate in the German-speaking area. Since none of these banks are federal banks or central banks, all of them met the first condition. The Sparkasse Bremen transformed to an agile network organization in early 2020, whereas the OLB is already using Scrum in the Digital Banking department for four years (Own findings). Similar to the OLB, the DZ bank has already used agile methods for more than four years, but in contrast, established a new business section called *Innovation Lab*, in which all departments can participate, rather than establishing agility in an already existing department (Own findings). The Commerzbank, with the establishment of its *Digital Campus 1.0* in 2017 and the *Digital Campus 2.0* in 2019, limits the use of agile methods to one specific part of the

organization (Own findings). Nevertheless, they aim to transform to a purely digital technology company within the next years (Thorand & Birke, n.d.). The HypoVereinsbank also started using agile methods in 2017 and has recently established a permanently agile working organizational structure (Own findings). The ING Group is the probably most popular example for the scaled use of agile methods in the banking industry. Using an own created scaled agile method, the whole organization started working in an agile way during 2015 (Birkinshaw, 2018). By using SAFe since 2017, the Deutsche Bank also adopted a scaled agile approach (Own findings). Therefore, the second condition was also met by all investigated banks. Furthermore, all selected banks, apart from the DZ Bank, operate both as a retail bank and corporate customer bank. Only the DZ Bank, which operates as the mother of all German cooperative banks, is solely operating in the corporate banking business and not in the retail banking business. Hence, the third condition was also met. As already described, all chosen banks use agile methods in different ways and to different extents. Furthermore, the banks are sized significantly different. The Sparkasse Bremen and the OLB can be considered as small banks, with total assets of €12 billion and €18 billion respectively. The HypoVereinsbank, Commerzbank and DZ Bank, with total assets of €304 billion, €551 billion, and €559 billion respectively, can be classified as medium-sized. The UniCredit, ING Group, and Deutsche Bank are the largest investigated banks with total assets of €873 billion, €890 billion, and €1407 billion respectively. Hence, the sizes and agile maturity levels of the selected banks differ to a satisfactory extent. As the business of the OLB is, in most parts, limited to the city of Oldenburg and the Sparkasse Bremen to the Federal State of Bremen, they are regional banks. In contrast, the ING Group, Deutsche Bank, UniCredit, and Commerzbank operate in multiple nations, whereas the remaining selected banks all operate nationwide in Germany. Therefore, all predefined criteria are met by the sample. In the following, the banks were coded from B1 to B7 according to their size, B1 being is the smallest and B7 being the largest bank (Appendix Table 1). Additionally, the UniCredit and HypoVereinsbank were merged into one code (B3), since the UniCredit is the mother bank of the HypoVereinsbank.

### 3.2 Data Collection

To investigate the research question, data was collected from various sources. The goal was to determine factors that influence banks on their way to the scaled use of agile methods. Therefore, the research question was broken down into three aspects including internal and external factors, that (a) influence whether a bank adopts agile methods for the first time, (b) contribute to or inhibit the successful use of agile methods, and (c) either drive a bank towards the scaling of agile methods or prevent it from doing so. These three aspects were then investigated in three steps of data collection. The use of three different sources reduced the impact of error sources and increased validity (Voelzkow, 1995). Figure 1 provides an overview of the applied methodology.

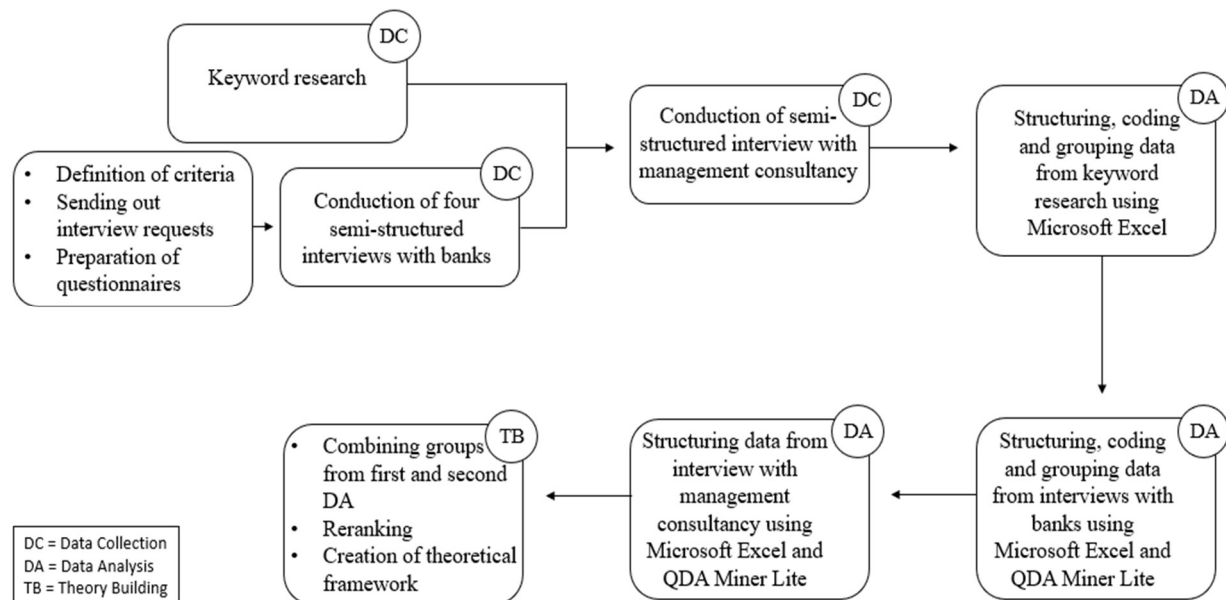


Figure 1: Overview of the methodology (Source: Own figure)

In the first step, secondary data were obtained in a keyword research with Nexis Uni and Google in order to form a first overview of potential influencing factors. For this purpose, 35 sources from five banks including press releases, presentations, interviews, website publications, annual reports and videos provided useful information (Appendix Table 2). The keywords mostly included the term *agile* and the name of a bank or an employee who is experienced with agile methods and openly spoke about their use in the respective bank in the past. Selection criteria for the sources were the title and whether it suits the research question as well as the person providing the information, that needed to be a (former) employee of the respective bank with experience and decision-making authority regarding agile methods. Finally, an overview of the keywords and sources was created using Microsoft Excel.

In a second step, which partly overlapped with the first one, primary data were collected. As already mentioned, little research has been conducted regarding the research question and information about the decision-making of the banks can be obtained best by interviewing practitioners. Hence, in the second step, semi-structured expert interviews qualified as the best suited method to gain a deep understanding of the banks' motives concerning agile methods (Kaiser, 2014). A total of five semi-structured expert interviews with four different banks and one management consultancy were conducted in German language during June and July 2020 and lasted between 25 and 50 minutes. The interviewees from the banks were then coded as I1, I2, I3 and I5 to match the coding of the banks (Appendix Table 3). The interview with the management consultancy, zeb, was conducted after the analysis of the other interviews had already started, in order to allow the consultant to evaluate some of the results from the other interviews. In the following, the management consultancy zeb will be coded as C. Due to the omnipresence of the coronavirus during the time of interview conduction, all interviews were conducted via phone or Zoom. However, although interviews via phone or video calls in general are often less valuable than interviews in person, they can be recommended for semi-structured interviews according to Misoch (2019). The interview via telephone was recorded using a recording device, while the interviews via Zoom were recorded using the integrated recording function. Subsequently, to ensure transparency, all interviews were transcribed using the software f4transkript and stored as Rich Text Files on an internal hard drive.

The interview partners were selected with respect to four criteria to ensure authenticity of the obtained information. The first prerequisite is practical experience with agile methods. Second, the use of agile methods on a regular basis and/or having the responsibility to ensure that others work in an agile way is necessary. Third, the interview partner must have witnessed the introduction of agile methods in the bank and last, have background knowledge concerning the internal decision-making regarding agile methods. All approached interviewees from the banks met these requirements (Appendix Table 3). The interview partner from the management consultancy also met these conditions, as he accompanied several agile transformations in banks and therefore gathered a substantial amount of experience with the motives of banks regarding agile methods.

The approach of the interview partners was conducted four to six weeks before the interviews. For this purpose, a total of eighteen interview partners from twelve banks and one management consultancy were approached via LinkedIn, press departments and personal connections either

via email or via phone. In order to ensure objectivity and to reduce bias, care was taken to ensure that interview partners who were recruited through personal connections were treated in the same way as the other interview partners. Press releases, information on the banks' websites as well as job offers for Scrum Masters were used to indicate whether a bank uses agile methods. Unfortunately, the previously mentioned omnipresence of the coronavirus impeded the acquisition, leading to the acceptance of only four requests from banks. Nevertheless, these four interviewees suited the above-mentioned criteria and therefore allowed the obtaining of authentic results.

The questionnaire aimed to gather information about factors influencing the initial implementation, successful use and scaling of agile methods. Therefore, these three core aspects were subdivided into several core questions (Appendix Figure 1; Appendix Figure 2). Additional questions concerning these core aspects as well as questions regarding general issues, e.g. the extent to which agile methods are being used in the bank or the relation of the interview partner's job to agile methods, were included in the questionnaire to allow a well-founded classification of the results. Within the questionnaire as well as in the following analysis no distinction was made between different agile methods, since most companies individualize the use of agile methods (Komus, 2020) and therefore inhibit comparability of the distinct practices, even when using the same agile method. The questionnaire for the management consultancy was similar to the one for the banks, but missed out the general questions and was reformulated, as the interview aimed to classify the statements of the banks (Appendix Figure 3; Appendix Figure 4). Since some of the questions were very specific, it needed preparation for the interview partners to prevent them from giving superficial answers. Therefore, the questions were provided to the interview partners in advance. Prior to his interview, one interview partner asked for clarification for some questions. Since the questions were already worded as comprehensive as possible, exemplifying answers were provided for some of the questions for clarification. However, in order to reduce bias, the interviewees were explicitly informed that these examples are no predetermined answer options and only serve the purpose of understanding. Additionally, all interview partners received the exact same set of examples prior to their interviews to prevent unequal preconditions.

### **3.3 Data Analysis**

The data analysis was subdivided into four stages, the first three being based on the qualitative content analysis according to Mayring (2000, 2010). First, the secondary data from the keyword

research was analyzed. For this purpose, columns for internal and external influencing factors regarding the three core aspects were added to the previously created table in Microsoft Excel. Subsequently, the selected sources were scanned in detail for influencing factors from top to bottom regarding the three above-mentioned aspects. Resulting influencing factors were then allocated to the appropriate source and keyword in Microsoft Excel, to make the results traceable and transparent. The resulting influencing factors were then inductively coded to ensure openness to results. Afterwards, the codes were merged into groups, which were also created in an inductive way and were revised after approximately 30% of the material. Finally, the resulting influencing factors were ranked by importance, according to the context (e.g. special emphasis within the data source) and the total number of mentions.

In the second stage, the interviews with the banks were analyzed. For this purpose, QDA Miner lite was used to scan the transcripts for valuable information from top to bottom. The first step was to create a systematic overview of information about the interviewees as well as the investigated banks and especially about their relation to agile methods. Therefore, words and sentences that answered according questions of the questionnaire were highlighted and allocated to the appropriate question. Afterwards, similar to the first stage, the transcripts were scanned for factors which influence the initial implementation, successful use or scaling of agile methods. The results were again allocated to the appropriate questions and subsequently coded. Additionally, the context of the answers was highlighted using comments (e.g. regarding a specific emphasis or description of certain points) in order to facilitate the subsequent classification of the results. Thereafter, all allocated codes were exported to Microsoft Excel and categorized into groups, which were again revised after approximately 30% of material. In a last step, the influencing factors were ranked according to their relevance, using the previously prepared comments to classify the context as well as the number of mentions.

The third stage consisted of the analysis of the interview with the management consultancy. As already mentioned, it was analyzed separately after the analysis of the other interviews in order to allow an interpretation of previous results by the consultant. The answers of the interview partner were again allocated to the appropriate question using QDA Miner lite. Although similar questions were asked in this interview, the goal was to classify the results of the other interviews, and not to obtain new influencing factors. Hence, in contrast to the second stage, the results were neither coded nor grouped, but only exported to Microsoft Excel and used to evaluate, contextualize, interpret and classify the results from the banks.

In the fourth and last stage, the obtained results were consolidated and put into relation for theory building. In order to do so, the groups deriving from the influencing factors mentioned in primary and secondary data sources were consolidated by regrouping and reranking them. For reranking, the data from the interviews was of primary importance, as the context was clearer, the criteria for the person providing the information were higher, and the sources were more recent than in the secondary data analysis. The subsequent process of theory building was based on the framework developed by Gioia et al. (2013). In order to build a theory from the obtained data, the dimension of dynamic relationships among the previously grouped influencing factors was added. Therefore, the groups were distilled to overarching theoretical dimensions in a first step. Afterwards, the data structure (i.e. the groups which were previously ranked and allocated to the appropriate type of influencing factor) was reviewed for any types of theoretical relationships. The resulting relationships were then used to create a theoretical framework which displays the relationships of factors that influence the use of agile methods in the banking industry.

#### **4. Results**

In the following, the results from the secondary data analysis and from the interviews will be presented. The presentation of results will be structured according to the three above-mentioned core aspects of the research question. In addition, the results of the respective core aspects are broken down into internal and external factors.

##### **4.1 Factors Influencing the Initial Implementation of Agile Methods**

In a first step, the results from the data collection regarding factors that positively or negatively influence the initial implementation of agile methods in banks will be presented.

##### **Internal Factors**

Although all investigated banks have already implemented agile methods in their organization, the ways of how these banks came to the decision of adopting agile methods were manifold. In B5, for example, managers proposed the use of agile methods to the executive board. In B1, the decision was made by the top management, while the framework conditions were developed by the employees. In B2, the first contact with agile methods was initiated by a service provider, who forced a department to provide a Product Owner. Nevertheless, some of the internal factors that were drivers or obstacles on the way to the first use of agile methods turned out to play a

role in multiple investigated banks. For example, each of the banks (B1-B7) as well as C stated, that the expectation of increased efficiency or operating speed as a result of agile methods use is a crucial factor for agile adoption. I2, for example, reported that they could introduce new online banking much faster than without the use of agile methods. I3 also described the expectation of efficiency as a crucial factor for B3's decision to use agile methods, even though this expectation turned out to be wrong, since the use of agile methods did not improve the operating speed in B3. Nevertheless, according to I3, agile methods are still valuable in banks as they increase the quality of products. B4, B6 and B7 agree on I3 regarding the increased product quality when using agile methods. On the other hand, the decision to use agile methods seems not be solely triggered by economical motivations. In fact, according to B1-B3, B6, B7 and C, many employees seem to expect advantages from the use of agile methods. Therefore, they often put pressure on managers to introduce agile methods, as they expect less political processes, increased self-determination and freedom of design as well as more responsibility. B1 even points out that the use of agile methods in a bank can increase the number of job applications. Moreover, according to B1 and B2, the openness of top management is of great importance to enable the first use of agile methods. In this context, I2 points out that the increasing publicity of agile methods might decrease the average resistance of top management. Furthermore, B2, B5 and B6 hoped to increase the innovative capacity and release frequency by implementing agile methods, since the products often became obsolete before they were fully developed and launched on the market. C also agreed on this phenomenon to be a crucial driver for the adoption of agile methods.

Primary Data	Influencing Factors	Secondary Data
B1-B3	Expected efficiency and operating speed	B3-B7
B1-B3	Expected advantages for employees	B6, B7
B1, B2	Openness of top management	-
B3	Product quality	B4, B6, B7
B2	Increased innovative capacity and release frequency	B5, B6

Table 1: Internal factors positively influencing the initial implementation of agile methods (Source: Own figure)

On the other hand, practitioners also pointed out some arguments against the introduction of agile methods in banks. Change resistance seems to be by far the greatest obstacle. It was mentioned by B1-B3, B5, B6 and approved by C. According to I5, approximately 20% of the employees do not understand the advantages of the change and therefore try to resist to it. C



agrees that in most situations of change a part of employees will not commit and points out that “in an agile transformation, similar to every other transformation, always one part of the employees won’t be taken with”<sup>4</sup> (C, l. 63-64). On the other hand, he observed that this resistance is often temporary and dissolves as soon as success is perceptible. I1 points out that especially in banks it is a problem when managers are reluctant to change because they are usually organized hierarchically and therefore a lot of power is attributed to managers. Nevertheless, according to C, it is also a major problem when managers, even though they do not resist the change, do not fully commit to it by using agile methods themselves. On the other hand, I2 points out, that if management commits to the change, but the employees do not want to change, they might also have the power to prevent it, as they are the executing force. Moreover, confused employees that were not taken by the hand enough can be problematic according to B2 and B5 and therefore impede a successful implementation of agile methods in a bank. Furthermore, B3 described problems with finding a competent management consultancy that could guide them during their agile transformation. Yet another crucial point, which is mentioned by B6, is a lack of suitability of agile methods to every part of the bank. According to B6 this barely happens, as it is only the case when customer needs are clear, the bank knows how to satisfy this need, and nothing changes during the development process.

Primary Data	Influencing Factors	Secondary Data
B1, B2, B5	Resistance to change	B3, B6
B2, B5	Confusion of employees	-
I3	Incompetent management consultancy	-
-	Lack of suitability	B6

Table 2: Internal factors negatively influencing the initial implementation of agile methods (Source: Own figure)

### External Factors

The data collection provided several external factors that drive a bank towards the first implementation of agile methods. All investigated banks (B1-B7) as well as C agree on other companies being a driving factor. They are perceived either as role models for the use of agile methods (B1, B2, B5, B6) or are competitors that contribute to a fast-moving market environment and therefore justify the implementation of agile methods (B3, B4, B6, B7). Especially FinTechs seem to be competitors that banks try to keep up with by implementing agile methods (B4, B6). However, as B5 was an early adopter regarding agile methods in banks,

<sup>4</sup> All direct quotations from the interviews were translated from German to English.

I5 did not see competing banks as role models when they implemented agile methods for the first time. Nevertheless, he still perceives it to be a potential influencing factor for other banks. According to I1, on the other hand, competitors were role models for the use of agile methods. Especially FinTechs and BigTechs are often mentioned as role models (e.g. B1, B5, B6). I5 assumes that banks which take agile BigTechs as role models hope becoming equally successful if they start working agile as well. There also seems to be a ubiquitous promotion of agile methods in the banking industry, which even goes so far that it is almost seen as a “quasi-standard” (I2, l. 111) or “narrative” (I5, l. 134). Another major influencing factor is the digitalization (B1, B3-B6). According to B6, the digitalization leads to shorter innovation cycles, and therefore accelerates the change of markets and business models. Banks then try to adapt to this faster changing environment by using agile methods (e.g. I1, I3, B6). Hence, customer expectations are shaped by companies from other industries that are constantly bringing new innovations to the market (B6). Furthermore, the expectation that client orientation will increase through using agile methods seems to be another important factor, as it is mentioned by six of the investigated banks (B1, B3-B7). In contrast, changes in regulation seem not to be perceived as a driving factor. I1 points out, that “the legal changes in the framework conditions have always existed” (I1, l. 234-235) and therefore do not contribute to the trend of the increasingly fast changing environment. I3, although mentioning some external factors that could contribute to the decision to implement agile methods, states that in B3 mostly internal reasons led to this decision. C agrees on BigTechs, FinTechs and competitors being role models as a driving factor for banks. He also describes a complex and fast-moving environment and an increased pressure on results through competitors such as FinTechs, BigTechs and banks, which therefore force banks to think about new ways of working. Moreover, he describes agility to be a trend in the banking industry, which supports the statement that agility has become a narrative or quasi-standard. Furthermore, he agrees on permanently changing customer needs being a driver for the use of agile methods.

Primary Data	Influencing Factors	Secondary Data
B1, B2, B5	Other companies as role models, ubiquitous promotion	B6
B1, B5	Shorter innovation cycles through digitalization leading to rapidly changing customer needs	B3- B6
B1, B3	Client orientation	B4-B7
B3	Other companies as competitors	B4, B6, B7

Table 3: External factors positively influencing the initial implementation of agile methods (Source: Own figure)

In contrast, B6 was the only bank to mention an external factor which rather decreases the will of banks to implement agile methods. According to B6, there might be difficulties to convince stakeholders to fully commit to the use of agile methods.

Primary Data	Influencing Factors	Secondary Data
-	Stakeholder commitment	B6

Table 4: External factors negatively influencing the initial implementation of agile methods (Source: Own figure)

**4.2 Factors Influencing the Successful Use of Agile Methods**

In the following, results concerning factors that positively or negatively influence the successful use of agile methods will be presented.

**Internal Factors**

Internal factors that positively influence the successful use of agile methods were mentioned very frequently. Nevertheless, some factors turned out to be more important than others. The most important factor seems to be taking employees by the hand by training, coaching and sufficiently communicating (B1-B7). I3, for example, suggests ensuring empathy towards the employees by clearly communicating that the traditional way in which employees worked for decades was not wrong. A general openness and courage to change was also described to be an important factor (B1-B3, B5-B7). Additionally, management commitment was mentioned to be one of the key influencing factors (B2, B3, B5-B7). According to I3, managers must even commit to such a radical extent, that they question their own role. C consented to managers playing an important role and added that the provision of tool and methodology kits as well as acting as consultants and sparring partners is important. Nevertheless, he pointed out that managers should not train employees. Rather, employees should train each other and act as multipliers (I1, C). Additionally, an agile mindset was described to be important by B2-B4, B6 and B7. Regarding this, I2 points out that people are more committed if they have an agile mindset. Freedom and collaboration in teams was another frequently mentioned factor by B1 and B3-B7. According to I1, teams should be self-organized and have own responsibility in order to ensure acceptance of this new way of working. C also agrees on the importance of freedom for teams but points out that managers still need to set the framework and the main processes. Moreover, the careful composition of teams and selection of motivated and high-skilled employees is described to be an important factor (B2-B7). Especially people who worked with traditional methods for a long time probably need longer to adapt to agile methods

than others and should therefore be thoughtfully assigned to a suitable team (I1). In this context, B6 emphasizes the importance of building cross-functional teams that include members from the IT as well as from other departments. Additionally, an error culture is perceived as important by B1, B2 and B4-B6, whereas C stresses that he would more likely refer to a “culture of trying out” (C, l. 152) rather than an error culture. He points out that when using agile methods, it is not a mistake to try things out and realize that some things do not work well at some point. Finally, setting examples and conducting a pilot project is frequently mentioned to be important for a successful use of agile methods (B1, B3, B6). In this context, C pointed out that a set of standards is important, quoting coding standards and periodical meetings as examples.

Primary Data	Influencing Factors	Secondary Data
B1-B3, B5	Taking employees by the hand with training, coaching, communication	B3-B7
B1, B2, B5	Openness and courage to change	B3, B5-B7
B2, B3, B5	Management commitment	B3, B5-B7
B2, B3	Agile mindset	B4, B6, B7
B1, B2	Error culture	B4-B6
B1, B3	Freedom and collaboration in teams	B3-B7
B2	Selection of employees and composition of teams	B3-B7
B1, B3	Setting examples / pilot projects	B6

Table 5: Internal factors positively influencing the successful use of agile methods (Source: Own figure)

Besides positive influencing factors, some internal factors impeding the successful use of agile methods could be identified. Conflicts and communication problems between agile and traditionally working departments are often described as a problem (B1-B3, B6). According to I3, traditional departments slow agile departments down. For example, if a traditional working employee and an agile working employee collaborate, the traditional working employee, unlike the agile working employee, has to wait for the approval of his or her supervisor before making certain decisions, which slows down the agile employee's work (I3). Additionally, I3 compares agile departments with the earth’s core: “The earth's core is spinning very fast. And there's a layer of magma around it. If the inside is turning and the rest is viscous on top, then the viscous is turning with it, but not at the same speed. This is the problem” (I3, l. 118-121). Regarding to this phenomenon, I2 points out that the support of managers is needed and suggests that people from traditional working departments should be integrated in agile teams to foster transparency, enable understanding from other departments and create an agile interface. C describes a similar

approach and suggests that traditional departments appoint a representative, who then acts as a personified interface between agile and traditional departments to ensure successful communication and collaboration. I2 also pointed out, that a bank-wide agile mindset could help overcoming the barriers between agile and traditional departments. Furthermore, he describes timing problems between agile and traditional working departments in B2, as agile working departments have a less fixed planning horizon. I1 describes interhuman conflicts to be more problematic than methodological conflicts. In contrast, I5 has no knowledge about problems between agile and traditional working departments. Similar to I2, C describes timing problems that might occur when agile and traditional departments work together, as they usually plan in the form of user stories or sprints. According to him, therefore they also struggle with common reporting standards. Furthermore, according to C, problems occur very frequently when employees from traditional departments collaborate in agile teams for a limited time horizon and therefore leave their usual workplace for several weeks. Hence, he points out that it can be difficult for the respective department to find a substitute for the employee in this time period. Another major problem exists when employees are not completely convinced of agility (B1, B3, B5). In this case, the works council might get involved and internal regulations could be introduced which impede the use of agile methods (B1, B3, B4). Additionally, it might happen that managers do not change their current way of working and thus prevent the effective use of agile methods (B3, B5). B1, B6 and B7 also describe problems that occur when it lacks technical support. I1, for example, mentions that a Kanban Board is more helpful when used as a software. Finally, B3 and B5-B7 point out that the strategic alignment of teams and products might decrease when using agile methods.

Primary Data	Influencing Factors	Secondary Data
B1-B3	Conflicts and communication problems between agile and traditional departments	B6
B1, B3, B5	Lack of conviction of agility	-
B1, B3	Works council / works constitution	B4
B3, B5	Lack of management commitment	-
B1	Lack of technical support	B6, B7
-	Lack of strategic alignment of products and teams	B3, B5-B7

Table 6: Internal factors negatively influencing the successful use of agile methods (Source: Own figure)

## External Factors

In contrast to internal factors that influence the successful use of agile methods, external factors were hardly mentioned. While external drivers were not mentioned at all, the only barrier to a successful use pointed out is legal regulation (B1, B2, B5, B7). In this context, especially BaFin and ECB regulations and documentation obligations must be considered in Germany (I5). I2 explained that legal regulations often require clarity concerning the planned project before starting it, which is not well-suitable to agile methods. Furthermore, I1 points out that legal regulations often bring processes that need to be complied with. Nevertheless, although legal regulations are often described to slow the working with agile down (B1, B2, B5, B7), most of the banks explicitly stated that they still figured out ways to stick to the legal regulations when using agile methods (B2, B3, B5, B6). I5, for example, explains that agile teams can easily cope with legal regulations by consequently implementing documentation obligations parallel to the working process, while B6 even states that any concerns of regulators are unfounded. I3 goes so far as to say that documentation obligations can be fulfilled better when working agile, as they can be implemented in the working process, and therefore the provided information is more recent than if the documentation is done after the project is finished. I1 provides another point of view by describing legal regulation as a market entry barrier which therefore works against the accelerating market change and reduces the need to use agile methods. He furtherly describes regulatory issues to generally complicate the work in a bank, but not the application of agile methods in particular. C agrees and points out that B6 is working entirely agile and still has no problems with regulators.

Primary Data	Influencing Factors	Secondary Data
B1, B2, B5	Legal regulation	B6, B7

Table 7: External factors negatively influencing the successful use of agile methods (Source: Own figure)

### 4.3 Factors Influencing the Scaling of Agile Methods

Finally, factors influencing the scaling of agile methods in banks which derived from the data collection will be presented. The research concerning internal factors that influence the scaling of agile methods led to various results. First, research has been conducted regarding the general opinion regarding the scaling of agile methods. According to B6, for example, all departments can use agility, but some might need to use it in a different way. Legal, operational risk and finance, for example, could then start doing stand ups and could be given more responsibility. All interviewees from the banks agree that agile methods should be scaled to other departments

than software development. I1 adds, that scaling, especially to those departments which are not obviously suitable, is important to prevent them from becoming too slow, as the speed of teams and companies can be increased in this way. Nevertheless, he points out that the fit of the product portfolio is very important and that agile methods are, for example, not suitable for tasks with direct customer touching points. I2 mentions that agile methods are not suitable to every business area and agrees on I1 concerning the need of suitability of agile methods to the corresponding departments. He describes the use to be suitable if the environment is innovative and changing. As examples, he mentions product development, product management, product support and sales management, especially for products that adapt to fast changing markets, to be suitable. In contrary, he mentions customer service, compliance, regulatory issues, wealth management and work in branches as not suitable. Therefore, he points out that it is easier for entirely digitally positioned banks to scale agile methods on the entire bank, as they have no branch system. Nevertheless, in his perception, having an agile mindset throughout the entire bank is the key success factor. Moreover, he explains that using agile methods in the entire bank becomes more difficult the wider the product portfolio is and that a tailored solution is always necessary. I3 explicitly emphasized the importance of scaling agile methods to each department of the bank and even stated that “if we [the banks] do not do this, we will soon disappear from the market” (I3, l. 426), since the resulting inertia and waste of time would become substantial problems. I5 agrees on I1 concerning the suitability of agile methods, which must be considered when scaling them on the whole bank and additionally describes that regulatory projects can be suitable for agile methods. C also agrees that some departments (e.g. credit processing units, IT-production and sales units) should not work with agile methods, especially if they just need to work efficiently and error-free and therefore just need optimized processes. He argues that these departments should use their time primarily to work, and the number of meetings that need to be attended to when using agile methods is a waste of time for them. According to him, departments such as controlling or legal advisory can successfully work with agile methods, but it is questionable whether this results in any advantages. Additionally, he points out that interactions with other departments as well as stakeholders might become more complicated for some departments if they introduce agile methods. Moreover, according to him, agile methods are easier applied to IT than to other departments, as sticking to standards by choosing common programming languages, platforms, definitions and interfaces is easy. Nevertheless, similar to I2, he mentions product management and product development as departments where agile methods are well-suited, since they need to define the development speed of the bank and need to adapt to customer needs. In general, C explicitly advocates the use of a hybrid model

and suggested that departments where agile methods do not suit perfectly could only use single agile elements, e.g. meetings or tools, instead of entirely working agile. According to him, a successful management of the interfaces between agile and traditional working departments is crucially important. He furthermore agrees to I2, that a bank-wide agile mindset is important.

### **Internal Factors**

Moreover, internal factors that contribute to the scaling of agile methods were found in secondary data sources and mentioned in several interviews. First and foremost, good examples and stories of success contribute to the spreading of agile methods throughout the bank according to B1-B3, B5 and B6. According to I1, I2 and I5, if one department sees the success of other departments with agile methods, it is likely that they also want to use them. I3, in contrast, does not see it as an influencing factor, as different departments face different circumstances and they might therefore assume that agile methods might not suit to their specific department, although it works well in others. C agrees on this factor being crucial and gives the example of positive experience reports from an agile working IT department. Second, management support and commitment are perceived to be important for the scaling of agile methods by B1-B3, B6 and B7. According to I3, especially if managers enable and inspire people by setting examples, this facilitates the scaling of agile methods. Nevertheless, C agrees to top down support being important for an agile transformation but emphasizes that support from the employees is crucial as well. Another factor that is frequently described to contribute to the scaling of agile methods is to start with small, highly accepted things when scaling agile methods (B1-B3, B6). I1, for example, suggests Kanban Boards as an example for such a highly accepted agile method that could contribute to the scaling. C also clearly prefers step-by-step transformations. Moreover, employees training each other and acting as propagators is described by B1 and B3 to contribute significantly to the scaling of agile methods. According to I1, the acceptancy regarding agile methods can be increased if employees provide the training for agile methods and therefore spread agility throughout the organization. Furthermore, giving employees the responsibility to freely try out agile methods by themselves can contribute to the scaling of agile methods according to B1 and B6.



Primary Data	Influencing Factors	Secondary Data
B1, B2, B5	Spreading through success and good examples	B3, B6
B1-B3	Management support and commitment	B6, B7
B1, B2	Start with small things with high acceptance	B3, B6
B1, B3	Employees train each other / act as propagators	-
B1	Letting employees try out	B6, B7

Table 8: Internal factors positively influencing the decision-making regarding the scaling of agile methods (Source: Own figure)

When investigating internal influencing factors which inhibit the scaling of agile methods, management barriers again turned out to be a of high relevance (B1, B2, B5, B6). I5, for example, describes emotional barriers in management, as it can be difficult for managers to lose responsibility and to give it to employees, such as a newly assigned Product Owner. Furthermore, he points out that most banks are very hierarchy-oriented and therefore reluctant managers might have the power to stop a scaled agile transformation. I1 also describes that the high decision-making power of managers has the potential to become problematic for agile transformations, and thus agrees with I5. In addition, B6 points out that another management barrier can be a lack of trust towards employees. Moreover, the suitability of agile methods to the departments which they are being scaled to is described to be of high importance (B1, B2, B5). As previously mentioned, a lack of suitability of agile methods to every single department of a bank turned out to be highly unlikely. Nevertheless, it might impede the scaling of agile methods to certain departments. I1 emphasizes that it is problematic to use agile methods just for the sake of the method and gives the use of Scrum in HR and for regulatory issues as an example, where, according to him, Sprints cannot be performed as easily. I2 agrees to this statement and doubts the unlimited benefits of scaling agile methods by asking “how many more advantages can one draw from this?” (I2, l. 304), pointing out that the answer to this question is very individual. Additionally, I5 explains that agile methods do not guarantee success per se. Besides being an influencing factor for the first implementation of agile methods, change resistance has also been explicitly mentioned by B2, B5 and B6 to impede the scaling of agile methods for similar reasons. B6, for example, reported that during their scaled agile transformation many employees did not commit to the new way of working. Furthermore, barriers between business units turned out to be another obstacle when scaling agile methods (B3, B6, B7). I3 for example, describes internal emotional barriers between departments, while B6 describes the alignment of different cultures in international projects to be difficult.

Moreover, I1 explains that different profiles of competencies can become a problem when scaling agile methods. Finally, I2 emphasizes that it is inevitable to always find an individual solution for establishing a new agile process and not doing so hampers the scaling of agile methods.

Primary Data	Influencing Factors	Secondary Data
B1, B2, B5	Management barriers	B6
B1, B2, B5	Lack of suitability	B5
B2, B5	Resistance to change	B6
B3	Emotional and cultural barriers between business units	B6, B7
B2	Individual solutions necessary	-

Table 9: Internal factors negatively influencing the decision-making regarding the scaling of agile methods (Source: Own figure)

**External Factors**

Only few external factors that influence the decision-making regarding the scaling of agile methods derived from the data collection. In fact, the results were limited to influencing factors that support the decision to scale agile methods, while factors that impede the scaling were not mentioned at all. Competitors as role models turned out to be the major external factor that drives banks to scale agile methods and was mentioned by B1-B3 and B6. I2, for example, describes that the high quality of agile competitors’ products leads to other banks wanting to use agile methods as well. Furthermore, I1 emphasizes that only comparable competitors qualify as role models, and competitors such as FinTechs, which have a much smaller product portfolio, do not. Moreover, C points out that competitors such as B6, through their success with scaled agile methods, might strengthen the courage of other banks to do the same. He continues, that apart from that, external factors similar to the ones for the first implementation as well as internal factors are the driving force regarding the scaling of agile methods. The second factor, which was mentioned by B1 and B3, is customer demand. According to I3, banks must react to the rapidly changing customer demand by scaling agile methods to the whole company.

Primary Data	Influencing Factors	Secondary Data
B1-B3	Other companies as role models	B6
B1, B3	Customer demand	-

Table 10: External factors positively influencing the decision-making regarding the scaling of agile methods (Source: Own figure)

## **4.4 Theory Building**

### **Dimensions of the Influencing Factors**

The previously discussed influencing factors for the use of agile methods in the banking industry were consolidated to seven dimensions (Appendix Figure 5). These seven dimensions provide a summarizing overview of the most striking impact factors when using or planning to use or scale agile methods in the banking industry. The first factor that turned out to be of central importance is the intrinsic motivation of managers and employees (I). Especially management commitment and a general openness to change within the bank were very frequently mentioned to be of high importance for the initial implementation, successful use and scaling of agile methods. Moreover, employees training each other and therefore acting as propagators can increase the acceptance of agile methods and therefore the intrinsic motivation of employees. Additionally, the expectation of advantages for employees is an important factor and can increase the conviction of agile methods within the bank. Finally, an agile mindset within the bank turned out to be important for the use of agile methods and to ensure an intrinsic motivation of managers and employees. The second crucial factor is that employees should be taken by the hand within all stages of an agile transformation (II). Especially setting examples, as well as coaching, training and communication can be used to ensure that employees are not getting confused or left behind. On the other hand, it was found that employees and especially agile teams need freedom to try things out to enable a successful use and a scaling of agile methods (III). Furthermore, it became apparent that traditional departments slow agile departments down and timing problems as well as interhuman conflicts might emerge between them. Therefore, conflicts between agile and traditional departments (IV) turned out to be one of the most significant factors that impede the successful use of agile methods. During the research it quickly became evident that agile methods are generally perceived as not being suitable for all types of tasks and that the suitability of scaling them depends on the product portfolio of the bank. Therefore, suitability (V) was found to be of high relevance when banks think about implementing or scaling agile methods. In this context, it also turned out that the use of agile methods and the introduction of an agile process always requires individual solutions. Nevertheless, even if the suitability is an important criterion for the decision-making regarding agile methods, it was often mentioned that the ubiquitous promotion of agile methods, especially in form of other banks acting as role models (VI), positively influence banks to implement and/or scale agile methods. Finally, the rapidly changing market environment (VII) turned out to be a central factor for banks, particularly for the decision-making concerning the initial implementation of agile methods. In this context, it was found that shorter innovation

cycles as a result of digitalization cause other companies, such as FinTechs and BigTechs, to become dangerous competitors to banks, thus accelerating changes in customer demand and forcing banks to increasingly focus on customer needs. Therefore, banks hope to increase their innovative capacity, release frequency, efficiency and operating speed by using agile methods to cope with the VUCA market environment.

### **Theoretical Framework**

In the following, a theoretical framework based on the results and especially the emerging dimensions will be presented. This framework aims to explain the dynamics of the internal and external factors that influence the initial implementation, successful use and scaling of agile methods in the banking industry (Figure 2).

If banks want to use agile methods successfully and rationally, several factors are relevant, some of which can be influenced by the bank's own behavior, while others cannot. However, in order to use agile methods, every bank has to start with an initial implementation in a certain part of the bank at some point. Factors that influence banks during this first contact with agile methods turned out to be manifold. Probably the most important factor is the rapidly changing market environment. As already described, the digitalization leads to shorter innovation cycles and higher release frequencies. This in turn causes the customer needs to change rapidly, as they are used to frequent product releases by other companies such as BigTechs and therefore expect the same innovative capacity from banks. In addition, other companies, especially FinTechs, with their innovations and new ways of working, are also themselves accelerating the change in the market environment of banks. Banks then try to cope with these market conditions by using agile methods, since they expect them to increase their efficiency, operating speed, innovative capacity and release frequency. Moreover, the role of other companies in this context is twofold, as it became evident that they are often seen as role models by banks if they successfully use agile methods and might therefore trigger banks to use agile methods themselves. When deciding where to implement agile methods, the suitability plays an important role. In fact, they are described to be suitable to only specific types of tasks. Especially software development, but also other tasks that define the development speed of a bank and need to adapt to customer needs are suitable for the use of agile methods. On the other hand, tasks that only need to be performed quickly and error-free are not suitable. Appendix Table 4 provides an overview of the departments mentioned to be suitable. Since all banks at least have some of these departments, a general lack of suitability of agile methods to every

part of a bank is highly unlikely. Nevertheless, the suitability should be considered, when deciding where to initially implement agile methods. In this context, it is particularly important that always an individual solution is necessary when implementing a new agile process. Another factor that triggers banks to implement agile methods is the expectation of advantages in form of less political processes, increased self-determination, freedom of design, and more responsibility for employees. Moreover, stakeholders and top management need to be open to the use of agile methods, since they might otherwise use their power to impede it. Nevertheless, using agile methods should normally be in the interest of the top management and stakeholders, as it is often perceived to be necessary in order to survive on the rapidly changing market. In general, an openness and courage to change is important for the initial implementation of agile methods. To conclude, it can be said that some of the mentioned factors, such as the perception of other companies as role models, can be controlled, whereas some other factors, such as a complex business environment and the suitability of the tasks, must be regarded as given.

Obviously, the initial implementation of agile methods is necessary to allow a successful use of agile methods. Nevertheless, some further factors decide on the success. First of all, technical support can facilitate the use of agile methods (e.g. by enabling the use of digital Kanban Boards) and therefore increase their success. Furthermore, employees should be motivated and high-skilled in order to avoid them from working in an undesirable way. In this context, not only the individual employees are important, but also the cross-functionality of teams. The most crucial point for a successful use of agile methods turns out to be an intrinsic motivation of employees and managers to use agile methods, including an openness to change. Unfortunately, the intrinsic motivation of managers might be hampered by the fact that they often lose most of their responsibilities and competencies when using agile methods and therefore it remains unclear how managers can be motivated to commit to the use of agile methods. However, managers which act in the interest of the bank might rather commit to the use of agile methods than those which primarily pursue their own interests. This is particularly important, because managers that commit to the use of agile methods can contribute to trigger employee commitment. As already mentioned, managers can contribute to employee commitment by providing good examples of agile method use, coaching, training and communication in order to take employees by the hand. By doing so, it can be prevented that employees are confused by the agile way of working. The training should ideally be performed by employees themselves in order to increase the acceptancy and therefore increase their intrinsic motivation. Additionally, managers should grant freedom to employees and especially teams to try things

out, as it increases the acceptance of agile methods. An error culture guaranteeing employees not to be punished if they move in the wrong direction is also of utmost importance in this context, since one core idea behind agility is to try things out in order to cope with an uncertain environment. Hence, it is important to find a good balance between granting freedom for employees on the one hand and taking them by the hand and providing them with a framework within which they have to move on the other. Furthermore, conflicts between agile and traditional departments can severely hamper the success of agile methods. As previously mentioned, traditional departments often slow agile departments down when collaborating, as their way of working differs significantly, especially in terms of planning. Additionally, timing problems and interhuman conflicts might occur between these departments.

These conflicts therefore provide a reason for banks to scale agile methods, since it implies a reduction of traditional departments, which in turn diminishes possibilities for problems between agile and traditional departments. This reduction of traditional departments might also occur naturally: If traditional departments witness agile departments drawing benefits and positive results from using agile methods, they might also want to start using them. In addition, if employees from agile departments enjoy the new way of working, they might tell employees from other departments about it, which could lead to a gradual scaling by word of mouth. These two factors can also help to cope with a general resistance to change. Another factor driving banks to scale agile methods is, once again, that other companies are seen as role models. Especially the ING (B6) is often seen as a role model among banks, since they successfully transformed to an entirely agile organization using a radical big bang approach. In this context, it is important to consider that banks might be comparable but not identical, and therefore each bank needs its own customized way of working agile. Furthermore, the success with scaling agile methods to several parts of the bank depends on the suitability of agile methods to the business model because it substantially influences the types of tasks that arise in the bank. Again, Appendix Table 4 can be consulted in order to get an idea whether a department is suitable for agile methods. For entirely digitally focused banks without branch offices, such as B6, for example, it is easier to scale agile methods to several or even all parts of the bank since a substantial amount of their tasks include software development, making agile methods suitable for more areas. Therefore, most banks advocate the scaling of agile methods only to the suitable departments and to establish an agile mindset in the remaining in order to increase the understanding of how agile departments work, thereby reducing conflicts between agile and traditional departments.

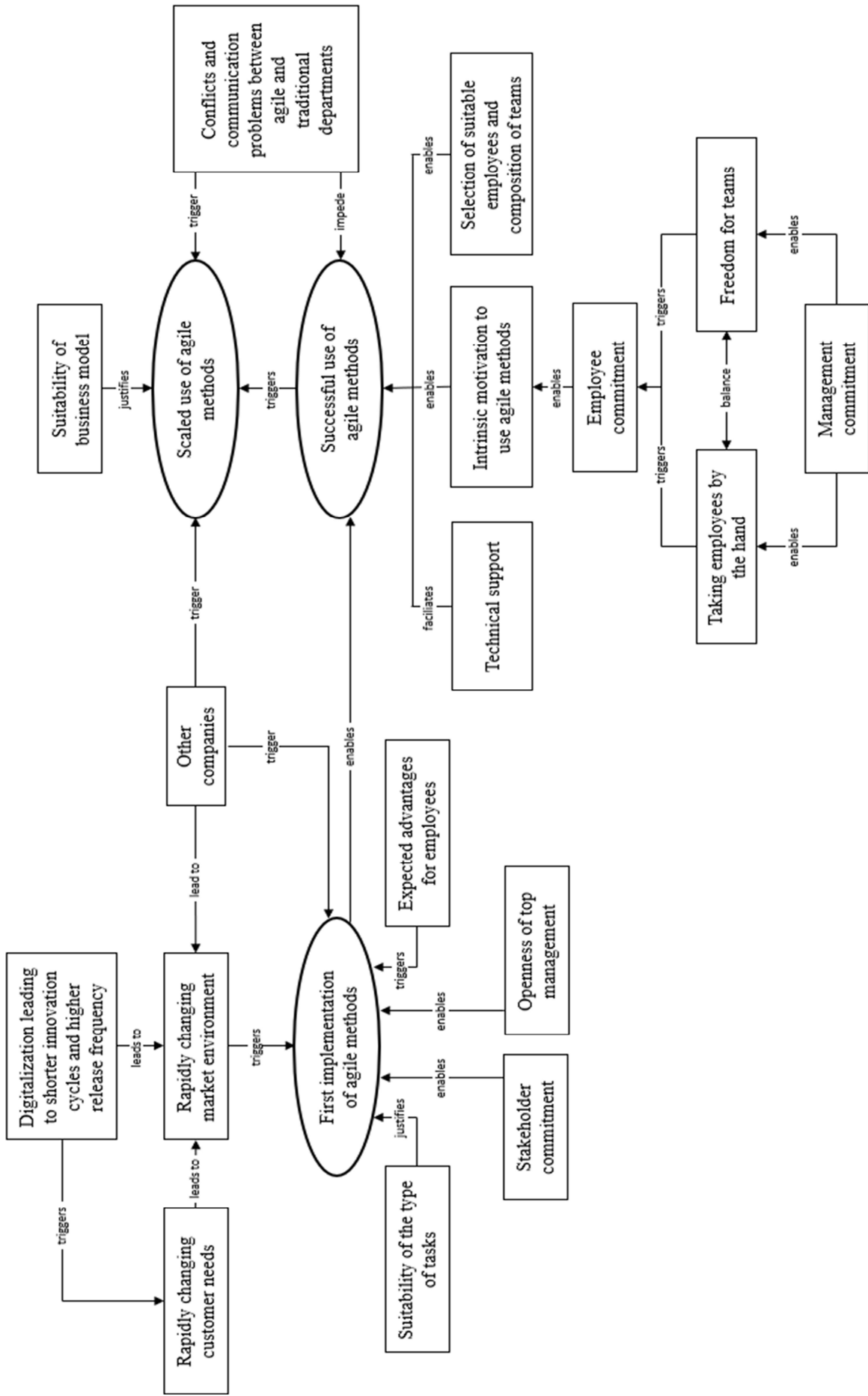


Figure 2: Theoretical Framework describing the factors which influence the use of agile methods in the banking industry (Source: Own figure)

## **5. Discussion**

The resulting influencing factors and framework target to contribute to the existing literature regarding agile methods in banks as well as to provide implications for practitioners in banks. Therefore, implications for literature and practitioners as well as limitations and possibilities for future research will be discussed in the following.

### **5.1 Implications for the Literature**

The conducted research adds further dimensions to the literature from different streams of research: The results contribute to the research on the use of agile methods in the banking industry and to the literature discussing factors that influence the non-sector-specific use of agile methods. Additionally, the results advance the research on the hybrid approach as well as on the scaling of agile methods. By bringing these streams of research together, this study draws findings that are twofold: On the one hand, a rich body of data enabled the creation of an overview about the factors that influence banks when initially implementing, successfully using and scaling agile methods. On the other hand, a theoretical framework was created by investigating the dynamic relationships between the derived influencing factors and by setting them into context. In the following, the contributions to the literature will be examined more closely.

#### **Implications of the Resulting Influencing Factors**

By providing deep insights into the process of initially implementing, using and scaling agile methods, the conducted research provides significant contributions to the existing literature on agile methods in the banking industry. In this context, it is the first study to provide a structured and evidence-based overview of factors influencing the use of agile methods in banks. Therefore, it provides unique findings to the literature. Nevertheless, some factors were occasionally mentioned in the relevant literature about agility in banking: A positive experimentation in projects, top management support and a viral adoption of agile methods, for example, are mentioned to be important by Berkani et al. (2019) in his case study about the French Central Bank. Birkinshaw (2018), in his case study about the ING, mentioned shifting power from the top to be crucial, which could be seen as consistent with the findings that employees should be given freedom to try things out since managers need to give them the power to do so. Furthermore, he describes a good balance of oversight and autonomy as well as early buy-in from the works council and stakeholders to be important when using agile



methods. Moreover, Rafat et al. (2017) emphasize learning from mistakes to be crucial, which is consistent with the findings regarding an error culture. In addition, the findings from the banks confirmed Dorschel (2018) and Mahadevan et al. (2019) in their statements that management commitment is a crucial factor for the successful use of agile methods in banks. Furthermore, Dorschel (2018) agrees on legal regulation being an obstacle which can easily be coped with by, for example, making documentation obligations a component of the desired product. Consequently, all these influencing factors were substantiated by structured evidence from the banking industry. Moreover, the finding from the Agile Readiness Study, showing that only 11% of the participating banks deny the use of agile methods (Gans et al., 2019), allows the conclusion that for most banks, the factors that positively influence the decision to use agile methods outweigh the factors influencing it negatively. One possible explanation could be that the respective enablers (i.e. managers and stakeholders) do not resist to an introduction of agile methods as they understand the benefits of reacting to the rapidly changing environment and especially the respective managers value these benefits higher than the retention of their own power. Additionally, this study contributes to the existing literature on agile methods in banks by providing evidence on some entirely new influencing factors. For the initial implementation of agile methods, especially other companies acting as role models and expected benefits for employees are factors that are new contributions to the relevant literature. Regarding the successful use, technical support and the composition of teams are newly discovered influencing factors for the banking industry. Finally, the finding of other companies acting as role models for scaling agile methods is a new discovery.

Furthermore, connections can be drawn to more general literature regarding change and agile methods: A rapidly changing market environment and complex problems, as well as generally unknown conditions, for example, have been found by Rigby et al. (2016) to be conditions that justify the use of agile methods. These observations are also consistent with the descriptions by Stacey (1996), Drucker (2005) and Kotter (2012) regarding change, complexity and agile methods and were proven to have a significant practical relevance in the banking industry. The literature investigating factors which influence the use of agile methods in a non-sector-specific manner was also enriched by the results from this study. Again, these factors partly overlap with the banking-specific findings from this study. In Komus' (2020) survey, for example, it was found that most companies expect benefits in terms of results and efficiency when using agile, which is consistent with the findings from the banking industry. In fact, it even turned out to be a major factor driving the banks towards an implementation of agile methods.

Additionally, Misra et al. (2009), by describing extensive training of employees to be important, as well as Manen & Vliet (2014) and Miler & Gaida (2020), by describing an agile mindset to be important, mention influencing factors that were found to be true for the banking industry as well. Evidence on management commitment being crucial for the use of agile methods was found in Komus' (2020) survey, where 19% of the participants that do not use agile methods at all, and even 41% of the participants that did not scale agile methods on the entire company explain one reason for it to be an overwhelmed management. Therefore, a connection can be drawn to our study, finding that management commitment is one of the most important influencing factors for the use of agile methods in banks. In contrary, modularity of work, impact of interim mistakes and rapid feedback from customers are suitability circumstances mentioned by Rigby et al. (2016), which were not explicitly mentioned by the investigated banks. Nevertheless, the condition of mistakes providing valuable learning instead of catastrophic results is consistent with the results, since it is of high importance for an error culture to be beneficial. Moreover, the continuous and frequent availability of customer feedback is also consistent with the results, since it is necessary for focusing on customer needs. Additionally, the results of this thesis support Rigby et al. (2016) in discouraging companies from using agile methods for routine operations, naming sales calls as example. Furthermore, Rigby et al., describing the spreading of agile methods through word of mouth and success and in their article from 2018, were provided with evidence from the banking industry. Additionally, they are provided with further evidence regarding conflicts between agile and traditional departments being problematic in agile companies. The findings regarding conflicts between agile and traditional departments also draw a connection to the work by Waardenburg & Vliet (2013) and Theobald & Diebold (2018) concerning challenges when using agile and traditional methods simultaneously in a company. Hence, it shows that for several factors which were mentioned to influence the use of agile methods in the literature, qualitative empirical evidence was found from the banking sector.

Another crucial implication of this study for the literature is that it provides a response to a call for research by Dikert et al. (2016): In their systematic literature review, which investigates challenges and success factors that occur on the way to a scaled use of agile methods, they encourage researchers to “study how the challenges and success factors recognized in this study are experienced in the companies: which ones they have experienced and which ones they consider most important” (Dikert et al., 2016, p. 106). The influencing factors found in this thesis answer this call for literature by supplementing the theoretical results obtained in their

literature review with assessments from practice based on the case of the banking industry. For instance, Dikert et al. (2016) found change resistance (especially from management), a lack of coaching and training, misunderstandings, as well as integrating non-development functions to be some of the most frequently mentioned challenges. Management support, a commitment to change, customizing the chosen agile approach, piloting, engaging people, communication, mindset and alignment, as well as team autonomy, on the other hand, are found to be among the most frequently mentioned success factors in the literature. It shows that these results are quite similar to the findings from the qualitative research. In fact, almost all groups of challenges and success factors which were found by Dikert et al. also resulted from the qualitative research: From the eleven groups of success factors which derived from the literature review by Dikert et al. (2016), only *requirements management* is not covered by the results from the qualitative research. Furthermore, six out of nine groups of challenges are covered by the findings from the qualitative research: Even though most of the investigated banks have multiple agile teams, none of them reported the use of different approaches by these teams to be a challenge. Moreover, quality assurance challenges and requirements engineering challenges did not arise in the investigated banks. Therefore, this thesis proved the results of the literature review by Dikert et al. (2016) to be true for practice in most parts. The remaining groups of influencing factors which do not overlap might be explained by the fact that they are partly specific issues for software development (e.g. requirements engineering and requirements management) and by the limited sample size. Hence, these differences might not prove a lack of practical relevance of the respective influencing factors and might still be found in studies which investigate companies from other industries, or which focus on agility in software development. Furthermore, the conducted research contributes to the literature review by Dikert et al. by classifying the influencing factors into the initial implementation, successful use and scaling of agile methods and by putting these into dynamic relationships. Since the influencing factors identified for the banks are very similar to the results from the non-sector-specific literature review by Dikert et al., a universal applicability seems plausible not only for the influencing factors, but also for the resulting theoretical framework.

### **Implications of the Theoretical Framework**

Furthermore, a dynamic picture of the key influencing factors was painted, explaining relationships and therefore enabling implications for practitioners and the literature. This framework extends the discussion about influencing factors by adding a highly relevant dimension, which has been missing in the existing literature so far. As already mentioned, the

subsequently described implications of the theoretical framework might also be applicable to branches besides the banking industry, since the associated influencing factors are also being described in a non-sector-specific context.

One of the key aspects of the framework is the explanation why management commitment is of utmost importance for the use of agile methods. It became evident that it is a key prerequisite for two reasons: First, since banks are often hierarchically organized, managers can impede an agile transformation if they do not commit. Second, if they commit to the use of agile methods, they can increase employee commitment by ensuring a proper balance of taking employees by the hand and granting them freedom. Therefore, this aspect of the framework supports and enhances the findings by Birkinshaw (2018), describing a proper balance between oversight and autonomy to be crucial for the use of agile methods. The commitment of management and employees is in turn crucial for enabling an intrinsic motivation to use agile methods throughout the entire organization. Moreover, evidence on why most banks do not scale agile methods to the entire organization (Gans et al., 2019) was obtained. Since the suitability of agile methods turned out to depend on the type of task and therefore on the business model, a hybrid approach was found to be well-suited for most banks, especially because the daily business in branches is rather not suitable for agile methods. The use of a hybrid approach has already been extensively discussed in the literature in the course of the HELENA Study (e.g. Klünder et al., 2017; Kuhrmann et al., 2018). This study therefore links to the literature aiming at the examination of using a hybrid approach by providing evidence on its relevance for many banks. In this context, the findings suggest the implementation of an agile mindset throughout the whole company in the case of a scaled use of agile methods, which is consistent with the work of Manen & Vliet (2014). Nevertheless, a scaling of agile methods throughout the entire bank might be suitable for digitally focused banks, since their business models include many tasks that are suitable to agile methods. This is also consistent with the fact that the ING is a digitally oriented bank and successfully scaled agile methods on every part of the company, while most other banks are reluctant to do so. Thus, the proper degree of scaling is highly individual for banks. Hence, a connection can be drawn to Rigby et al. (2016), who presented suitability conditions for the use of agile methods and state that “agile is not a panacea” (Rigby et al., 2016, p. 44). Assuming the need of suitability to be valid for other sectors, this could be an explanation for only a good half of the companies which use scaled agile methods and took part

in Komus' (2020) survey to state that they replaced all traditional departments with agile ones.<sup>5</sup> Finally, Rigby et al. (2018), describing conflicts between agile and traditional departments to be a driver for scaling agile methods in companies, was supported with evidence from the banking industry.

## **5.2 Implications for Practitioners**

This study provides significant value for practitioners concerning the initial implementation, successful use and scaling of agile methods. Again, the following findings might also be generalizable for industries apart from the banking industry. Since the initial implementation of agile methods is often the first touching point of a bank with agile methods, special attention should be paid on the suitability and therefore on the type of tasks performed in the respective department. Since agile methods were originally created for software development, departments that perform such tasks are particularly suited for the initial implementation of agile methods.

Upon using agile methods, it should be considered that this always requires tailored procedures. Thus, drawing conclusions from other companies, even if they operate in the same industry, might not be advisable, since the same procedures might lead to deviating results in the own bank. Legal regulations, and especially documentation obligations might seem to complicate the use of agile methods in the first place but consequently fulfilling them parallel to the working process by treating them as a part of the finished product can provide remedy. Furthermore, when using agile methods, an intrinsic motivation to do so throughout the entire bank is of crucial importance. In order to support such an intrinsic motivation, a proper balance of taking employees by the hand and granting them freedom to try things out should be ensured. For taking employees by the hand, it is highly advisable to provide employees with training, coaching, sufficient communication and practical examples. On the other hand, an error culture which allows employees to freely try things out is important to enhance the acceptancy of agile methods and to foster innovations. Additionally, sufficient technical support should be ensured for the use of agile methods. Nevertheless, in order to enable alignment with the business goal, a framework should be predefined for employees to operate in. Moreover, agile teams should always be composed wisely, and special care should be taken for them to be cross-functional.

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<sup>5</sup> This number might appear high compared to the banking industry, but in Komus' survey the majority of the participants were IT/Software companies and therefore primarily have tasks that are suitable to agile methods.

When using agile methods, problems between agile and traditional departments might occur due to the different way of working. One way to decrease these conflicts might be to designate department representatives who regularly communicate with the other departments to ensure transparency and coordination.

However, as soon as some experience with agile methods was gained, they can also be expanded to other departments or business sections. This is particularly advisable if many problems occur between agile and traditional departments. Nevertheless, the extent to which agile methods should be used in a bank depends on the respective business model. Once again, the type of tasks, which depends strongly on the product portfolio of the respective bank, is particularly important in this context and should therefore be considered. As a rough guide, it can be said that an extensive scaling of agile methods is particularly suitable for digitally focused banks that do not have a branch system, since they often perform tasks that are related to software development (for further guidance on suitability see Appendix Table 4). If the scaling of agile methods is desired by the management, employees from traditional departments should be motivated by openly communicating success stories from departments that already work with agile methods in order to trigger a spreading through the word of mouth. When scaling agile methods, banks should again take care not to let themselves be influenced too excessively by other companies since these are often not comparable and therefore individual and bank-specific solutions are necessary.

In general, it has been shown that agile methods are not a panacea, but if used wisely they can bring substantial benefits to banks, especially when dealing with a complex and uncertain business environment. Thus, practitioners should pay particular attention to the advice on suitability. If this has been considered, the foundation is laid for the previously discussed tools and advice to pave the way for an appropriate and successful application of agile methods.

### **5.3 Limitations and Future Research**

This study has some limitations which partly provide possibilities for future research. First, the number of investigated banks is limited to seven (or eight, if UniCredit and HypoVereinsbank are seen separately) and geographically limited to Germany and the Netherlands. Although criteria were predefined for the chosen banks in order to gather significant results for retail and corporate banks, a larger sample including banks from different countries around the world could probably allow more precise and more generalizable results. Hence, future research

should investigate banks from different countries around the world in order to allow a more reliable generalization and an inclusion of country-specific influencing factors. Second, although care was taken to treat all interviewees the same, the possibility of bias prevails. Especially the interviewees that were recruited through personal contacts and the provision of examples for answers to the interview questions may be potential sources of bias. Third, no distinction was made between different agile methods. Instead, a general definition of agile methods was chosen in order to allow a generalization of the results for all agile methods. Nevertheless, some agile methods might have special features that could add or omit certain influencing factors. Therefore, further studies should focus on influencing factors regarding specific agile methods such as SAFe, Design Thinking or the Spotify Model in the banking industry. Moreover, the derived model lacks explanation about how management commitment can be increased. Since management commitment turned out to be one of the most important influencing factors, future studies about how it can be increased when using agile methods would be of high interest, especially for a top management that plans an agile transformation. Furthermore, case studies which investigate general suitability conditions or the suitability of agile methods to specific departments could be of high interest. In the course of this thesis as well as by Rigby et al. (2016), some rough information on suitability were presented, but it lacks a definitive and field-tested guide. Especially for practitioners, studies concerning this topic could be of high interest in order to rationally decide whether the use and scaling of agile methods is appropriate in a certain situation. Finally, it remains unclear whether all results can be generalized for industries other than the banking industry. As already described, some of the resulting influencing factors have already been described in literature aiming at general influencing factors for the use of agile methods. Thus, it is quite likely that the developed theoretical framework can at least partly be applied to other industries. Nevertheless, since banks were investigated exclusively, future research should be conducted investigating the dynamics and relationships of factors influencing the use of agile methods in industries apart from the banking industry in order to prove the generalizability of the framework.

## **6. Conclusion**

The main objective of this study was to determine factors that influence the use of agile methods in the banking industry. In order to do so, a distinction was made between factors that influence the initial implementation, the successful use and the scaling of agile methods. Various influencing factors were identified and synthesized in the course of semi-structured expert interviews and a secondary data analysis. Finally, a theoretical framework describing

relationships between the resulting influencing factors was created on the basis of the obtained results, adding a further dynamic dimension to the obtained results. An investigation of the existing literature on challenges and success factors of agile methods indicated that the obtained results might also be generalizable for other industries. These results granted insight into the motives of banks regarding the decision-making for agile methods, allowing the conclusion that banks which do not scale agile methods to every part of the company do not necessarily act irrationally, since there can be significant reasons against doing so. Although the use of agile methods was found to be helpful in order to cope with an uncertain and complex business environment and scaling them can reduce conflicts between agile and traditional departments, they cannot be seen as a panacea since the suitability of their implementation and scaling depends on the business model and the type of tasks. In this context, it turned out that a hybrid approach is best-suited for most banks. Therefore, banks should pay attention to making rational decisions regarding the use of agile methods, and not be overly influenced by the ubiquitous promotion of agile methods or other companies acting as role models, since the use of agile methods should be individualized for every bank. Furthermore, the importance of ensuring an intrinsic motivation to use agile methods throughout the bank is a key finding for practitioners, since managers can contribute to it by finding a good balance of taking employees by the hand and giving them freedom to try things out. Moreover, it turned out that the strict regulatory requirements which apply to banks do not impede their use of agile methods. The influencing factors as well as their interrelationships additionally provided significant implications for the literature. They particularly contributed to the literature on the use of agile methods in banks, on challenges and success factors regarding the non-sector-specific use of agile methods and to literature investigating the hybrid approach and the scaling of agile methods. Finally, opportunities for future research on suitability conditions of agile methods and management commitment as well as some further topics were pointed out that could provide interesting results for practitioners and the literature.



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Company	Code*	Regionality	Size	Extent of agile method usage**	Way of agile working	Duration of agile method usage	Interview/Secondary Data Analysis	
Sparkasse Bremen	B1	Federal State	Small	Medium, scaled	Self-designed network organization and Scrum	0,5 Years	Interview	
OLB	B2	City	Small	Low	Scrum	4,5 Years	Interview	
Hypo Vereinsbank/UniCredit	B3	National/multinational	Medium/large	Medium, scaled	Self- designed agile working organizational structure	3 Years	Interview	
Commerzbank	B4	Multinational	Medium	Medium, scaled	Digital Campus (Scrum and Design Thinking)	3,5 Years***	Secondary data analysis	
DZ Bank	B5	National	Medium	Medium, scaled	Innovation Lab (Scrum and Design Thinking)	4,5 Years	Interview	
ING	B6	Multinational	Large	Large, scaled	Self-designed scaled agile method	5 Years	Secondary data analysis	
Deutsche Bank	B7	Multinational	Large	Medium, scaled	SAFe	3,5 Years***	Secondary data analysis	
zeb (Management Consultancy)		Accompanied various agile transformations of banks						Interview

\* The banks were coded with B for bank and then sorted by size and numbered consecutively

\*\* The term scaled does only characterize the type of agile method used, but not the extent to which it is practiced in every part of the organization

\*\*\* First public communication of agile method usage

Appendix Table 1: Overview of investigated banks (Source: Own figure)

Keyword	Deutsche Bank	Results
Deutsche Bank agil	Sam macht agile Arbeitsmethoden für alle möglich Deutsche Bank goes live as one of the first truly global Agile wealth managers, with three key ambitions #GreatPlaceToWork – #ValueToClients – #MoreWithLess	
John Plumptre agile	John Plumptre, Laura Grau - Deutsche Bank's Agile Journey with SAFe en CAS Victoria 2016	
Commerzbank agil (Results include information by the ING)	ING Kleine Teams übernehmen das Sagen in der Finanzwelt ING- Die erste agile Bank Deutschlands „Annas agile Welt „I love Agile!“ Zusammenbringen, was zusammengehört „One Agile Way of Working, ING „Die erste agile Bank, ING ING's agile transformation (Interview mit Bart Schlatman und Peter Jacobs) Die agile Transformation der ING-DiBa (Interview mit Nadine Zosadzin) ING Deutschland: Unser Weg in die agile Zukunft ING's agile transformation - A great example of a successful Agile Transformation The Agile Transformation at ING Nick Jue on Transforming ING Netherlands and introducing an Agile Way of Working CEO Insights - Nick Jue from ING DiBa Agiles Arbeiten in der Vorzeigebank ING - Der radikalste Laborversuch der deutschen Unternehmenswelt Keynote by Peter Jacobs, CIO at ING bank 2017 annual report ING Groep NV 2018 annual report ING Groep NV Geschäftsbericht 2019 ING Deutschland schließt agile Transformation mit Kunden- und Gewinnplus ab HypoVereinsbank/UniCredit	
On company website: agil	Sparen ist kein Selbstzweck	
Unicredit agile	With Agile, Customer Experience Improvements Never End UniCredit's Take on Managing Change in the Digital Era DZ Bank	
DZ Bank agil	Innovationsblog der DZ Bank Gruppe   Why agile? Innovationsblog der DZ Bank Gruppe   IT und Digitalisierung – Existenzfrage für Banken Wie agiles Arbeiten in der DZ BANK Gruppe funktioniert. Dilution - Agile Entwicklung innovativer und digitaler Services Innovationsblog der DZ Bank Commerzbank	
Commerzbank agil	Die Digitale Transformation der Commerzbank: Technologieunternehmen wird man Schritt für Schritt Kleine Teams übernehmen das Sagen in der Finanzwelt EINE GROßBANK UND IHR WEG ZU EINER AGILEN ORGANISATION Presseinformationen	
On press releases section of the company website: agil		

Appendix Table 2: Keywords and resulting sources (Source: Own figure)

Bank	Interviewee Code	Role of interview partner	Relation of interview partner to agile methods	Time in company	Length of Interview
Sparkasse Bremen	I1	Senior Personnel Development Manager	Working agile	21 years	36 minutes
OLB	I2	Scrum Master, Digital Project Manager	Working agile, ensuring agility	10 years	48 minutes
Hypo Vereinsbank/UniCredit	I3	Leader of the Agile Transformation Team Germany, Responsible for ICT HI-Governance	Working agile, ensuring agility	28 years	49 minutes
DZ Bank	I5	Head of the Innovation Lab, Senior Manager Innovation and Digitalization	Ensuring agility	4 years	24 minutes

Appendix Table 3: Overview of interviewees from banks (Source: Own figure)

Suitable	Controversial	Not suitable
<ul style="list-style-type: none"> <li>• Tasks that define the development speed of a bank</li> <li>• Tasks related to products that adapt to fast changing markets/customer needs</li> <li>• Tasks which allow sticking to common standards</li> </ul>	<ul style="list-style-type: none"> <li>• Tasks that can be performed with agile methods, but doing so might not bring any advantages</li> </ul>	<ul style="list-style-type: none"> <li>• Tasks which only need to be performed error-free and efficient</li> <li>• Tasks with direct customer touching points</li> </ul>
Software development	Legal	Customer service
IT in general	Operational risk	Compliance
Product development	Finance	Wealth management
Product management	Human resources	Work in branch offices
Product support		Credit processing units
Sales management		IT-Production
		Sales units
		Controlling

Appendix Table 4: Overview of suitable departments and tasks for the use of agile methods (Source: Own figure)

Q1	Antwortbeispiel
<u>Q1-1</u> Was ist Ihre Aufgabe/Position im Unternehmen?	
<u>Q1-2</u> Wie lange arbeiten Sie bereits im Unternehmen?	
<u>Q1-3</u> Was für einen beruflichen Bezug haben Sie zum Thema Agilität/agile Methoden?	
<b>Q2</b>	
<b>Q2-1 Rolle agiler Methoden</b>	
<u>Q2-1-1</u> Welche Rolle spielen agile Methoden in Ihrem Unternehmensbereich?	
<u>Q2-1-2</u> Welche Rolle spielen agile Methoden in Bezug auf Ihr gesamtes Unternehmen?	
<b>Q2-2 Erstmalige Einführung agiler Methoden</b>	
<u>Q2-2-1</u> Wo lag der Ursprung des Einsatzes agiler Methoden und wie sah dieser genau aus?	
<u>Q2-2-2</u> Welche <b>unternehmensinternen Einflussfaktoren</b> haben dazu <b>beigetragen</b> , dass agile Methoden erstmalig eingeführt wurden?	Mitarbeiter in IT, der von Scrum gehört hat, regt Einführung in seiner Abteilung an
<u>Q2-2-3</u> Welche <b>unternehmensinternen Einflussfaktoren</b> haben die erstmalige Einführung agiler Methoden <b>gehemmt</b> ?	Führungskraft unterbindet die Einführung agiler Methoden durch Mitarbeiter in der Software-Entwicklung, da er hierfür Entscheidungskompetenzen abgeben müsste
<u>Q2-2-4</u> Welche <b>externen Einflussfaktoren</b> (Treiber und Barrieren) im Unternehmensumfeld haben die erstmalige Einführung agiler Methoden herbeigeführt, welche haben sie vorerst verhindert?	<i>Gesetze, Wettbewerber, Kunden, ...</i> <b>Barriere:</b> Wegen Niedrigzinsphase besser nicht auch noch interne „Experimente“ machen <b>Treiber:</b> Einem komplexen und sich schnell wandelndem Unternehmensumfeld mithilfe von agilen Methoden entgegenzutreten
<b>Q2-3 Erfolgreiche Anwendung agiler Methoden</b>	
<u>Q2-3-1</u> Welche <b>unternehmensinternen Faktoren</b> haben die erfolgreiche Anwendung agiler Methoden <b>erschwert</b> oder tun dies noch immer?	Nichteinhaltung der agilen Prinzipien
<u>Q2-3-2</u> Welche <b>unternehmensinternen Faktoren</b> haben zu einer erfolgreichen Anwendung agiler Methoden <b>beigetragen</b> oder tun dies noch immer?	Fähigkeit der Führungskraft, Menschen und Teams weiterzuentwickeln und zu Höchstleistungen anzuspornen
<u>Q2-3-3</u> Welche <b>externen Einflussfaktoren</b> (Treiber und Barrieren) im Unternehmensumfeld erschweren oder erleichtern die erfolgreiche Anwendung agiler Methoden?	<i>Gesetze, Wettbewerber, Kunden, ...</i> <b>Barriere:</b> Rechtliche Dokumentationspflichten

Appendix Figure 1: Questionnaire for the banks part 1 (Source: Own figure)

<b>Q2-4 Skalierung (Ausweitung) agiler Methoden</b>	
<u>Q2-4-1</u> Umfragen haben ergeben, dass die Anwendung agiler Methoden in den meisten Unternehmen auf die Software-Entwicklung begrenzt ist. Was denken Sie, insbesondere in Bezug auf die Bankenbranche, sind die Probleme bei einer Ausweitung der agilen Methoden auf andere Bereiche als die Software-Entwicklung?	
<u>Q2-4-2</u> Durch welche Maßnahmen können diese Probleme am besten überwunden werden?	
<u>Q2-4-3</u> In der Literatur werden viele Vorteile einer Skalierung agiler Methoden auf mehrere Unternehmensteile oder das gesamte Unternehmen mithilfe von Skalierungsmethoden wie SAFe oder dem Spotify-Modell beschrieben. Was denken Sie aus Sicht der Praxis dazu?	
<u>Q2-4-4</u> Welche <b>unternehmensinternen Faktoren</b> haben eine <b>Skalierung</b> agiler Methoden vorerst <b>verhindert</b> oder tun dies noch immer?	Unternehmensleitung sieht keinen Sinn darin, die agilen Methoden auf das gesamte Unternehmen zu skalieren
<u>Q2-4-5</u> Welche <b>unternehmensinternen Faktoren</b> haben eine <b>Skalierung</b> agiler Methoden <b>herbeigeführt</b> oder sind dabei sie herbeizuführen?	Erfolg der ersten agilen Abteilung wird durch andere Abteilungen wahrgenommen, woraufhin diese auch agil werden wollen
<u>Q2-4-6</u> Welche <b>externen Einflussfaktoren</b> (Treiber und Barrieren) im Unternehmensumfeld haben eine <b>Skalierung</b> agiler Methoden auf weitere Unternehmensteile bzw. das gesamte Unternehmen herbeigeführt bzw. verhindern dies?	Gesetze, Wettbewerber, Kunden Erfolg der Konkurrenz mit Skalierung agiler Methoden bringt Unternehmensführung zur Umsetzung einer Skalierung im eigenen Unternehmen
<b>Q3</b>	
<b>*Variabel: Explizite Nachfragen zu in der Literatur häufig genannten Einflussfaktoren*</b>	
<u>Q3-1</u> Wie kennzeichnet sich ein Führungsstil, welcher eine erfolgreiche Skalierung agiler Methoden begünstigt?	
<u>Q3-2</u> Inwiefern stellt in Ihrem Unternehmen die Anwendung agiler Methoden in einem ansonsten traditionellen Unternehmensumfeld ein Problem dar?	
<b>Q4</b>	
<u>Q4-1</u> Haben Sie abschließende Fragen?	
<u>Q4-2</u> Können Sie andere Mitarbeiter empfehlen, welche nähere Informationen zu den gestellten Fragen geben können?	

Appendix Figure 2: Questionnaire for the banks part 2 (Source: Own figure)

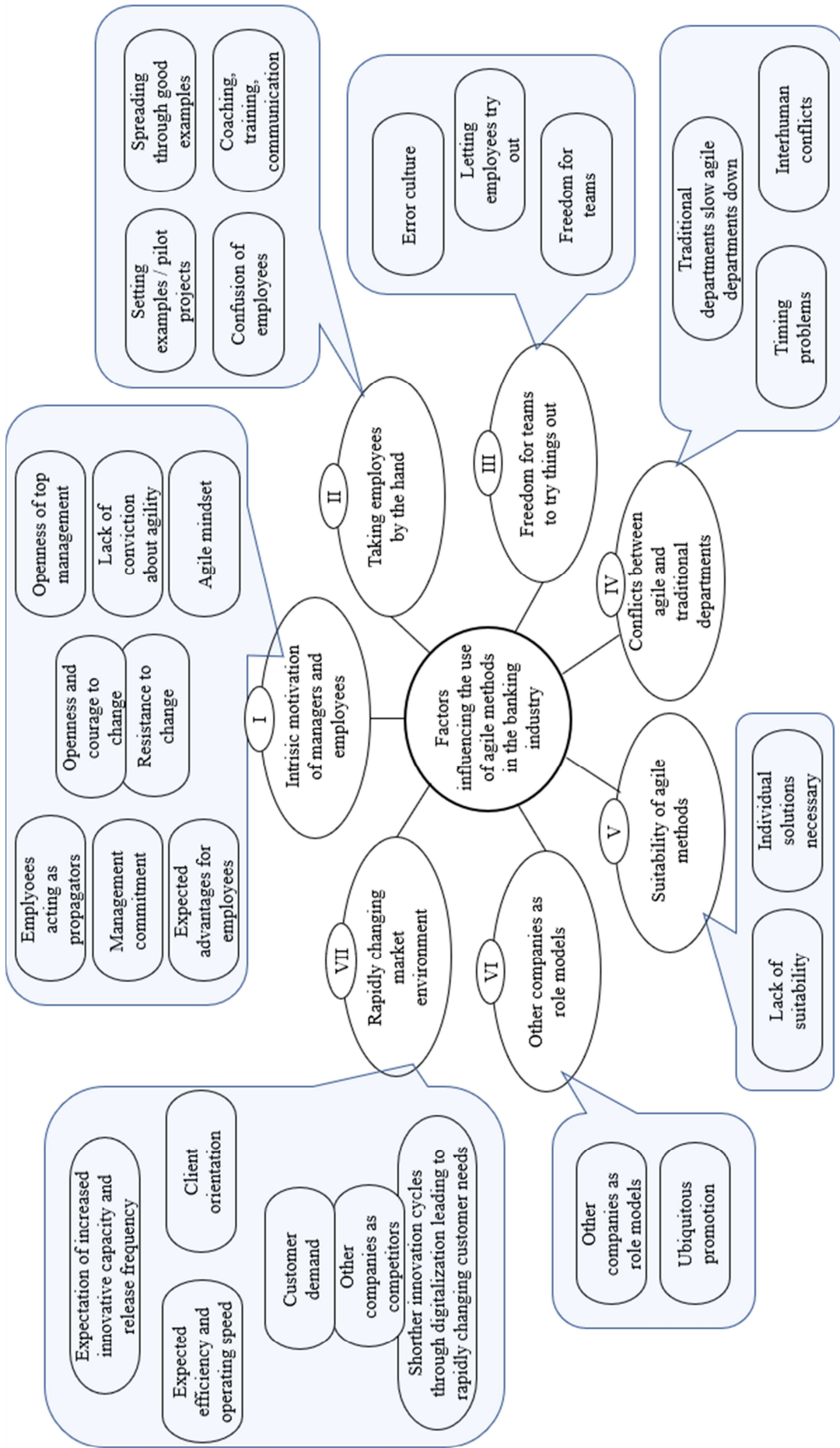
<b>Q1 Kernfragen</b>	
<b>Q1-1 Erstmalige Einführung agiler Methoden</b>	
<u>Q1-1-1</u> Wo liegt meistens der Ursprung des Einsatzes agiler Methoden?	
<u>Q1-1-2</u> Welche <b>unternehmensinternen Einflussfaktoren/Umstände begünstigen</b> , dass agile Methoden erstmalig in einer Bank/Sparkasse eingeführt werden?	Mitarbeiter in IT, der von Scrum gehört hat, regt Einführung in seiner Abteilung an
<u>Q1-1-3</u> Welche <b>unternehmensinternen Einflussfaktoren/Umstände hemmen</b> eine erstmalige Einführung agiler Methoden in einer Bank/Sparkasse?	Führungskraft unterbindet die Einführung agiler Methoden durch Mitarbeiter in der Software-Entwicklung, da er hierfür Entscheidungskompetenzen abgeben müsste
<u>Q1-1-4</u> Welche <b>externen Einflussfaktoren/Umstände</b> (Treiber und Barrieren) im Unternehmensumfeld <b>begünstigen</b> eine erstmalige Einführung agiler Methoden in einer Bank/Sparkasse, welche <b>hemmen</b> diese?	<i>Gesetze, Wettbewerber, Kunden, ...</i> <u>Barriere:</u> Wegen Niedrigzinsphase besser nicht auch noch interne „Experimente“ machen <u>Treiber:</u> Einem komplexen und sich schnell wandelndem Unternehmensumfeld mithilfe von agilen Methoden entgegenzutreten
<b>Q1-2 Erfolgreiche Anwendung agiler Methoden</b>	
<u>Q1-2-1</u> Welche <b>unternehmensinternen Faktoren/Umstände erschweren</b> die erfolgreiche Anwendung agiler Methoden in einer Bank/Sparkasse?	Nichteinhaltung der agilen Prinzipien
<u>Q1-2-2</u> Welche <b>unternehmensinternen Faktoren/Umstände erleichtern</b> eine erfolgreiche Anwendung agiler Methoden in einer Bank/Sparkasse?	Fähigkeit der Führungskraft, Menschen und Teams weiterzuentwickeln und zu Höchstleistungen anzuspornen
<u>Q1-2-3</u> Welche <b>externen Einflussfaktoren/Umstände</b> (Treiber und Barrieren) im Unternehmensumfeld <b>erschweren oder erleichtern</b> die erfolgreiche Anwendung agiler Methoden in einer Bank/Sparkasse?	<i>Gesetze, Wettbewerber, Kunden, ...</i> <u>Barriere:</u> Rechtliche Dokumentationspflichten
<b>Q1-3 Skalierung (Ausweitung) agiler Methoden</b>	
<u>Q1-3-1</u> Umfragen haben ergeben, dass die Anwendung agiler Methoden in den meisten Unternehmen auf die Software-Entwicklung begrenzt ist. Was denken Sie, insbesondere in Bezug auf die Bankenbranche, sind die Probleme bei einer Ausweitung der agilen Methoden auf andere Bereiche als die Software-Entwicklung?	
<u>Q1-3-2</u> Durch welche Maßnahmen können diese Probleme am besten überwunden werden?	
<u>Q1-3-3</u> In der Literatur werden viele Vorteile einer Skalierung agiler Methoden auf mehrere Unternehmensteile oder das gesamte Unternehmen mithilfe von Skalierungsmethoden wie SAFe oder dem Spotify-Modell beschrieben. Was denken Sie in Bezug auf die Bankenbranche dazu?	

Appendix Figure 3: Questionnaire for the management consultancy part 1 (Source: Own figure)

<p><u>Q1-3-4</u> Welche <b>unternehmensinternen Faktoren/Umstände verhindern</b> eine Skalierung agiler Methoden in Banken/Sparkassen oder <b>wirken dagegen</b>?</p>	<p>Unternehmensleitung sieht keinen Sinn darin, die agilen Methoden auf das gesamte Unternehmen zu skalieren</p>
<p><u>Q1-3-5</u> Welche <b>unternehmensinternen Faktoren/Umstände führen</b> eine Skalierung agiler Methoden in Banken/Sparkassen <b>herbei</b>?</p>	<p>Erfolg der ersten agilen Abteilung wird durch andere Abteilungen wahrgenommen, woraufhin diese auch agil werden wollen</p>
<p><u>Q1-3-6</u> Welche <b>externen Einflussfaktoren/Umstände</b> (Treiber und Barrieren) im Unternehmensumfeld <b>führen</b> eine Skalierung agiler Methoden auf weitere Unternehmensteile bzw. das gesamte Unternehmen in einer Bank/Sparkasse <b>herbei bzw. verhindern</b> dies?</p>	<p><i>Gesetze, Wettbewerber, Kunden</i> Erfolg der Konkurrenz mit Skalierung agiler Methoden bringt Unternehmensführung zur Umsetzung einer Skalierung im eigenen Unternehmen</p>
<p><b>Q2 Spezielle Fragen</b></p>	
<p><u>Q2-1</u> Wie kennzeichnet sich ein Führungsstil, welcher eine erfolgreiche Skalierung agiler Methoden begünstigt?</p>	
<p><u>Q2-2</u> Inwiefern stellt die Anwendung agiler Methoden in einem ansonsten traditionellen Unternehmensumfeld ein Problem dar?</p>	

Appendix Figure 4: Questionnaire for the management consultancy part 2 (Source: Own figure)





Appendix Figure 5: Dimensions of factors influencing the use of agile methods in the banking industry (Source: Own figure)

## Eidesstattliche Erklärung

Hiermit versichere ich an Eides statt, dass ich diese Arbeit selbstständig verfasst und keine anderen als die angegebenen Quellen und Hilfsmittel benutzt habe. Außerdem versichere ich, dass ich die allgemeinen Prinzipien wissenschaftlicher Arbeit und Veröffentlichung, wie sie in den Leitlinien guter wissenschaftlicher Praxis der Carl von Ossietzky Universität Oldenburg festgelegt sind, befolgt habe.

Oldenburg, 03.09.2020

Ort, Datum

S. Weber

Unterschrift