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Master thesis

How do vehicles of innovation match the capability building needs for competitive survival in the future?

A closer look at the emerging context of the banking industry and the action taken by two incumbents

MSc Finance & Strategic Management

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Abstract

The thesis seeks to explore how strategic measures taken by banks enable them to build the capabilities that will be required in the future context of the financial services industry. The theoretical framework underlying the analysis is mainly based on dynamic capability theory, and further extended with theory on dual business model and open innovation. To explore how incumbent banks can develop capabilities, the thesis combines two research methods in a two-stage analysis. First, the thesis explores developments in the financial services industry and the future roles of banks. Based on the future scenarios of banks, and drawing on dynamic capability view, the thesis provides a categorisation of dynamic capabilities that could enable banks' competitive survival. The second stage of the thesis' analysis explores how two incumbent banks use vehicles of innovation and how these vehicles contribute to the banks' dynamic capabilities. The individual case analyses are followed by a cross-case discussion that aggregates and compares the findings from the two cases.

The scenario analysis uncovered three potential roles of banks in the future; distributed bank, disintermediated bank and bank as a utility. By applying theories of dynamic capability to these scenarios, three categories of dynamic capabilities required for competitive survival was conceptualised; act, protect and discover. Danske Bank's use of vehicles was primarily found to enable the pursuit of capabilities to act. Santander engages in a broader range of activities, which were found to enable a more diverse set of capabilities.

The thesis provides an initial framework for holistically considering banks' dynamic capabilities, by conceptualising them into three categories. The research also provides insight into how current developments in the financial services industry might impact the capabilities necessary for incumbent banks' competitive survival.

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List of abbreviations

AI – Artificial intelligence
AISP – Account Information Service Providers
API – Application Programming Interface
App - Application
BaaP – Banking as a Platform
BaaS – Banking as a Service
CI – Closed innovation
CVC – Corporate venture capital
CLC – Capability life cycle
DB – Danske Bank
DCV – Dynamic capability view
DKK – Danish kroner
DLT – Distributed ledger technology
Fintech – Financial technology
GAFA – Google, Apple, Facebook and Amazon
IoT – Internet of things
IP – Intellectual property
KYC – Know your customer
ML - MobileLife
OI – Open innovation
P2P – Peer-to-peer
PISP - Payment Initiation Service Providers
PSD - Payment Services Directive
USD – US Dollars
R&D – Research and development
RBV – Resource-based view
SME – Small and midsize enterprise
WEF – World Economic Forum

1 INTRODUCTION

This chapter introduces the context and theme of the thesis. The first section presents current developments in the financial services industry that actualise and motivate further research on the topic. Furthermore, the research questions and their purposes are presented. The chapter concludes by presenting the scope and delimitations, followed by an overview of the structure of the thesis.

1.1 BACKGROUND AND MOTIVATION

Innovate, according to the Oxford dictionary, means to make changes to something established. What makes a sector that has been the ultimate incumbent for centuries (Selgin, 2017) take such an interest in changing the status-quo?

Already in 1994, Bill Gates labelled banks as 'dinosaurs', arguing that the technology company Microsoft could bypass the incumbents and provide banking services without banks. 23 years later and the topic is still of large interest in the popular and especially in the business media. Since then the financial crisis in 2008 tarnished the reputation of these incumbents that once represented the epitome of reliability and stability. As banks' reputation changed, they began associating themselves with terms like innovation, disruption and technological change. The term disruption was introduced by Harvard Business School Professor Clayton Christensen to describe the process where simpler and cheaper emergent offerings take over market share and ultimately the market position of an established product or service. The use of this term has ballooned, countless reports and industry experts are predicting different versions of disruption in the future of the banks. The term has been extended to include seemingly any and all new threats to the competitiveness of incumbent products, organisations, sectors and industries, especially if that threat is rooted in technology. For banks, the source of these disruptions ranges from changed customer behaviour and new technologies removing the need for intermediation to regulation inviting non-traditional players into banks value chain.

One of the sources of these disruptions is financial technology companies. Fintechs have emerged amass in the wake of layoffs and tainted reputations in the financial services industry, as well as cheaper and progressing technology. A recent research intelligence platform has identified over 1,200 active fintech companies globally with a combined value of more than 879 billion USD (Baptiste Su, 2016). Some popularisations predict that these companies are the Airbnb or Uber of the financial services industry, on the verge of turning the sector upside down, leaving only scraps for incumbents. According to a McKinsey report (2015), consumer finance, small and midsize enterprise (SME) lending, retail payments and wealth management are the services most vulnerable to these innovations. The report estimates that around 10-40 percent of revenues and 40-60 percent of profits within these sectors are vulnerable to disruption.

The relationship between banks and financial technology companies has possibly gone from a competitive to a collaborative one. In 2016 fintech companies received funding to the tune of 24,7 billion USD, 8.5 billion of this came from corporate venture capital arms (KPMG & CB Insights, 2016).

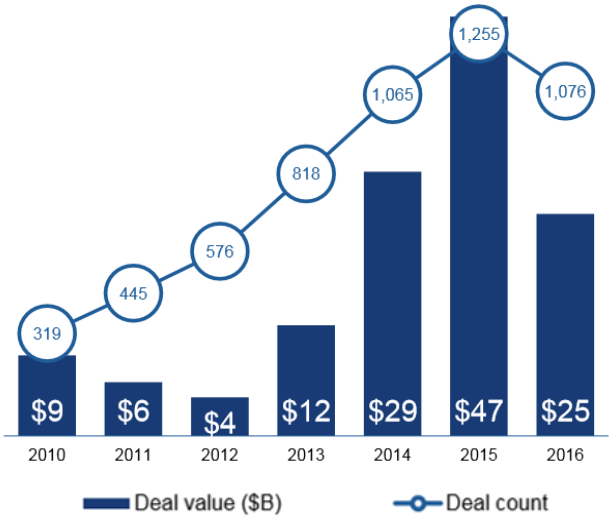

Figure 1: Global investment in fintech
Reprinted from KPMG & CB Insights, 2016 p. 9

However, investments in fintechs are far from the only measure banks take to mitigate the threat of disruption. Major banks are taking a loud and proud approach in their efforts to remain innovative, become agile and so on, and the substantial amount of talk is translating into some tangible efforts. Large banks are reserving entire floors in their offices to accommodate budding entrepreneurs, holding hackathon's and establishing multi-million-dollar investment funds to get a piece of the action. In addition to the external vehicles, the internal innovation department based on models like Google X or Nike's Sparq, are becoming popular vehicles. The most central vehicles employed in the name of innovation, and to meet the future within banks and other companies are presented in the graphic below:

	Description	Company involvement	Business Model	Stage	Life cycle
Incubators [1]	*Designed to accelerate the growth and success of start-ups through business support resources and services* [2]	Ad-hoc mentorship	Non-profit or rent	Early, late	1 to 5 years
Accelerators [1]	*Accelerator programs are programs of limited-duration that help cohorts of start-ups with the venture process*	Organised mentoring in cohorts	Investment or non-profit	Early	3 to 6 months
Corporate Venture Capital [2]	*Equity investment by an established corporation in an entrepreneurial venture*	Customer-client or collaborative	Equity investment	Early, mid	3-6 years [3]
Internal innovation departments/labs [4]	*Department tasked with business model, process and/or product development on behalf of the parent*	Strategic, operational or little direct	Integrated department or dual-business model	All	n/a

Figure 2: Common vehicles of innovation
Authors' contribution
Note: 1. Cohen (2013) 2. Entrepreneur (2015) 3. Bou & Lou (2015) 4. Basu, Benson & Dushnitsky (2016)

There are several discussions taking place on both the need to take action and methods to take these actions, however the reasoning for the specific vehicles of innovation employed seems to be taking a back seat. Although there may be similarities from one internal innovation department or accelerator to the next, the differences are likely bigger. The details of these vehicles and the specific intentions and goals that underlie them are less discussed and constitute and important part of the picture. As there seems to be a consensus on the emergence of substantial changes in the banking sector and the importance of taking decisive action to meet these changes, this thesis is motivated by a need to look closer at the action taken.

Furthermore, there are plenty of reports and opinions regarding the future that these changes could materialise into. However, the existing information is mostly specific to business areas or technologies. In addition to this, the terminology used differs from company to company and industry expert to industry expert. Although operational and descriptive information about fragments of these possible futures exists there is little discussion surrounding the more fundamental impact these developments may entail for the capability and resource bases of banks.

In the dynamic capability view, the role of strategic research should be to explore structural principles for the appropriate design of capabilities, components that make up capabilities and on techniques that build capabilities (Makadok, 2001). The research done on the practical applications of these vehicles for the purpose of developing dynamic capabilities is also limited in the existing scientific literature. This motivates the exploration of dynamic capabilities and techniques to build them in the context of the financial services industry.

The much discussed, but rarely specified, future of banks presents an interesting and useful basis to explore the strategic efforts that are being employed by some of the most impactful institutions in our society. Vast amounts of company resources are devoted to these efforts, thus exploring the effectiveness as vehicles of innovation could contribute to efficient allocation and utilisation of efforts. Furthermore, as discussions of disruption and innovation touch more and more industries, exploring how the strategic vehicles at the centre of the response to these developments contribute to the organisations that employ them, serves as the main motivation for the thesis.

1.2 PURPOSE AND RESEARCH QUESTION

Based on the presented context, the overall purpose of the thesis is to explore how the use of vehicles of innovation enable banks to stay relevant in the much-debated future of the financial services industry. The following overall research question will serve as a to guide the direction of the thesis:

How does banks' use of vehicles of innovation impact their ability to remain competitive in the future context of the industry?

The explore the overall research question, we will divide its components into two analyses. The first analysis will explore what capabilities are likely to be required to remain competitive in the emerging context of financial services to answer the following research question:

Research question 1: ***How does the development of the financial services industry impact the capabilities required for competitive survival?***

To analyse what capabilities will be required in the future, we must first explore how the financial services industry is likely to develop. The main purpose is not to investigate future scenarios of banking, but doing so enables the extraction of what future capabilities will be needed in the future, and thus contributes to the research question. We therefore perform an initial scenario analysis using the grounded theory approach to answer the following sub-question:

Sub-question 1.a: ***What are the possible roles of banks in the future?***

The research objective of this the sub-question is descriptive, generating a description of current developments of the industry based on existing knowledge.

After we have broadly outlined how developments in the industry will aggregate towards future scenarios, we will proceed to analyse what the scenarios will require of banks in terms of dynamic capabilities. The purpose of this section is to apply existing theoretical frameworks to the developed scenarios, in order to answer the following sub-question:

Sub-question 1.b: ***What capabilities will be required by banks for competitive survival?***

This sub-question is thus explorative as it seeks to contribute to a theory of the capabilities needed by banks in the future (Bitsch Olsen & Pedersen, 2003).

The purpose of the second part of the analysis is to answer the part of the overall research question that refers to developing dynamic capabilities. Case study research will be undertaken to explore the following research question:

Research question 2: ***How do banks use vehicles of innovation to develop capabilities for the future?***

To answer research question 2, we investigate two sub-questions which need to be answered. The first part of the respective case studies will explore the case companies' innovation strategies and answer the following sub-question:

Sub-question 2.a: ***Which vehicles of innovation are being employed?***

This section seeks to create a more comprehensive description of phenomena that are previously incompletely known. The research objective of this sub-question is descriptive.

Secondly, we will analyse how the employed vehicles of innovation help banks to remain competitive. The case analysis will combine the answer to the first research question regarding future scenarios and dynamic capabilities to answer the following sub-question:

Sub-question 2.b: ***How do these vehicles contribute to developing dynamic capabilities?***

The above research question seeks to discuss and describe connections between phenomena, observations and theories by taking the theory of dynamic capabilities and applying it to the case companies. Therefore, the final research question has an explanatory research goal (Bitsch Olsen & Pedersen, 2003).

1.3 Scope and Delimitations

This thesis's research takes place within the context of the financial services industry. Although this paper draws on literature and theories about the financial services industries, the focus of this thesis will be on banks and banking services. Due to time and space constraints, the focus will specifically be on incumbent banks, and the industry will be explored from their perspective. The two case companies are universal incumbent banks operating within retail as well as wholesale banking. This thesis is mainly focused on retail banking.

The objective of the scenario analysis is to explore what the future of banking may hold in order to analyse what dynamic capabilities banks may need in the future. The observations and trends in the scenarios analysis are not intended to be exhaustive. Rather, based on research on the industry, we have chosen to present the observations and trends we see as the most significant and that there is some consensus around. The objective is not to provide a comprehensive description of the financial industry, to develop a preliminary tool for analysing what the future for banks may hold, by aggregating the observations into trends, which are further generalised into scenarios. The scenario development is used as a tool to analyse what capabilities banks will need in the future, and our objective is not to verify or examine the credibility of the scenarios. The scenarios will only serve as the base for examining how the case companies' efforts and methods contribute to building dynamic capabilities. Furthermore, the scenarios should not be considered to be exhaustive of banks' possible roles in the future. They do however encompass significant trends and views on the future of banking. We choose to look closer at trends and scenarios that experts and the banking industry itself observe and take an interest in. Thus, we establish a way of checking banks' efforts against their own ambitions, rather than evaluating their efforts based on developments in the industry that they do not recognise themselves.

The capability analysis is limited to establishing groups of dynamic capabilities. Specific capabilities, dynamic or otherwise, are presented to justify and exemplify the categories.

With regards to the case companies, it is important to mention that the analysis is carried out on a group level, and not on individual branches or businesses. The vehicles of innovation analysed are limited to those pursued by either Danske Bank or Santander, a discussion of further vehicles is outside the scope of this thesis. The theoretical objective is primarily to explore the effects of using vehicles of innovation to develop dynamic capabilities, and we do not intend to discuss other aspects of these vehicles. Therefore, the thesis will not consider literature and theories that discuss different models for how these vehicles most efficiently are organised. Flowingly, this thesis does not intend to analyse the effectiveness of the vehicles employed by Danske Bank and Santander. Rather, the thesis is limited to explore the case companies' intentions for the vehicles and the potential these strategic measures have in contributing to building dynamic capabilities. The thesis is limited to exploring and analysing the bridge between the vehicles of innovation and the possibility of generating new dynamic capabilities. The thesis will not analyse what capabilities already exist within the firm, or are generated outside of efforts to innovate.

1.4 STRUCTURE

The methods selected for the thesis and the considerations and justifications for the chosen research design is presented in the methodology chapter (see Figure 3 below). After that, the theoretical foundations for the later analysis is presented. Moreover, contextual terminology and concepts used throughout the thesis are presented in Appendix I.

The first part of the thesis's analysis is a Scenario and Capability Analysis. The Scenario Analysis investigates observations and trends in the financial services industry and develops possible future scenarios for banking. Flowingly, the Capability Analysis section developes groups of dynamic capabilities that will be instrumental in the established scenarios. The chapter serves multiple purposes; it provides the reader with an overview of characteristics and recent developments in the 21st-century financial services industry, however not intended to be exhaustive. Secondly, it provides the context and basis for analysis of the case companies.

The second part of the thesis's analysis is a Case Study, which explores and analyses two case companies' efforts to build capabilities for the future, with a focus on vehicles of innovation, first Danske Bank and then Santander. The individual case analyses will be followed by a cross-case discussion of the two case studies and how they relate to the three categories of dynamic capabilities. Finally, the thesis will conclude with a conclusion which discusses implications of the results as well as limitations and gives suggestions for further research.

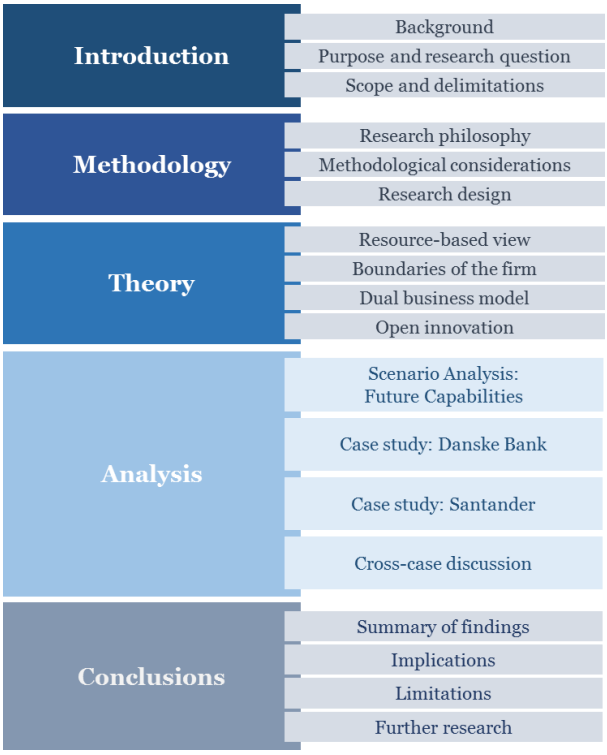

Figure 3: Structure of thesis
Authors' contribution

2 METHODOLOGY

The methodology chapter presents the methodological deliberations. In the first section, the research philosophy underlying the thesis is described. Flowingly, the methodological approaches are explained. Lastly, a section is devoted to a discussion of the validity and reliability of the research design.

2.1 RESEARCH PHILOSOPHY

This thesis aims to examine what capabilities banks will need in the future and how vehicles of innovation will help banks develop these. The first part of the thesis seeks to explore the possible future of banks and adheres to the constructivist paradigm (Guba & Lincoln, 1994). The purpose is not to present a single, universal and lasting objective truth, but to develop a theory of the future of the bank based on interpretations made from the observations and perspectives presented and gathered in the thesis (Khan, 2014).

The case study research is founded on the ontological view that knowledge about banks' internal and external vehicles of innovation exists, however, limitations are inhibiting the generation and discovery of complete information about the efforts. One clear example of these limitations is the case companies' concealment of their strategic efforts. Some choices or efforts might not materialise in the way

management intended, thus their perception and conveyed knowledge might not be reflective of the true nature of these efforts. The case studies are therefore founded on critical realism ontology. The reality of how companies use vehicles of innovation to build dynamic capabilities exist, but flaws in human cognition among other factors cause the apprehension of reality to be imperfect (Guba & Lincoln, 1994). Furthermore, the thesis authors strive towards objectivity in describing, assessing and exploring the strategic efforts of the banks, however acknowledging objectivity as an ideal, not an attainable absolute.

2.2 METHODOLOGICAL CONSIDERATIONS

Due to the explorative nature of the research questions, the qualitative research method is utilised. The qualitative research method pertains to the "meanings, concepts, definitions, characteristics, metaphors, symbols and descriptions of things" (Berg, 2001, p. 3). The qualitative method allows for the use of an inclusion rationale enabling the inclusion of elements that are deemed interesting and informative for the exploration of the theme. Thus, the qualitative method permits the utilisation of emergent perspectives and provisional interpretations, allowing the researchers to include the subjects in their explorative analysis and interpretation of the themes (Bjerg & Villadsen, 2006). In line with the qualitative method, interview subjects are chosen due to their valuable knowledge of various aspects of the research field, rather than for their statistical representativeness. Utilising the qualitative research method allows a more inductive approach and the inevitably subjective understanding required to explore the research questions.

Due to the explorative nature of the research questions, an inductive approach will contribute to generating the discussions desired. An inductive approach is used as the purpose of the thesis is to generate observations and explore the phenomena based on secondary data and data collected by the thesis authors (I. Andersen, 2008). A deductive approach would be beneficial if the goal had been to test one or more hypothesis' generated from existing science. However, the thesis seeks to transition from empirical evidence to theory, and not the other way around. Although, it should be noted that the aim of the thesis is not to generate new theory, but to explore and contribute to further research and perhaps theory development at a later stage.

The thesis takes a systematic holistic approach, viewing the research field as parts of a whole, rather than a compounded collection of single parts. As these various parts will impact one another, it would be unsuitable to treat them in isolation. It is substantial to consider the context and developments in the industry to explore how the strategic efforts of banks contribute to meeting the uncertain future. The systematic holistic approach allows for exploration of the research field and interactions between the studies elements.

2.3 RESEARCH DESIGN

The research design of the thesis is the methods used to research the subject field is. This thesis adopts a multi-method qualitative research design using a combination of two research strategies: grounded theory and case study. The grounded theory research is applied to create context required in the case study later presented.

2.3.1 Scenarios analysis

To evaluate what measures banks should take to prosper in the future context of the industry it is necessary to take a stance on the future developments. As we develop the research questions to establish a broader, more systematic and extensive view of how the industry could develop and what might be required of banks, we have chosen the qualitative method of scenario development. The scenarios presented "illustrate journeys to possible futures [...] reflecting different assumptions about how current trends will unfold, how critical uncertainties will play out and what new factors will come into play" (United Nations Environment Programme, 2002, p. 320). Using a scenario-based approach to analyse the future capability needs of the banking industry allows us to not rely on past observations, trends, behaviours and developments to remain valid to model the future (see Figure 4 below).

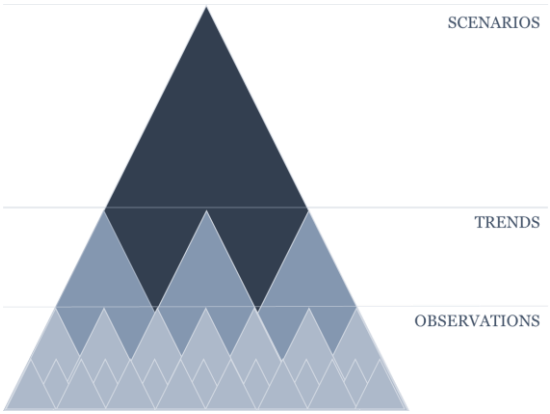

Figure 4: Scenario development
Authors' contribution

The research strategy used to develop scenarios is grounded theory (GT); a procedure for carving out and building theory from data. GT investigates the real world without preconceiving hypothesises of what concepts or theories may appear (Allan, 2003) and is particularly useful for research that aims to predict and explain behaviour (Saunders, Lewis, & Thornhill, 2016), which makes it well applicable for the thesis's scenarios analysis. The GT process is an interplay of research, data collection and simultaneous analysis and interpretation, which enable us to go from describing the financial services industry to abstracting theoretical concepts, or scenarios (Kovalainen & Eriksson, 2008). The constant reference to data to develop theory makes GT a combined deductive/inductive approach (Saunders et al., 2016).

The scenario analysis follows the GT procedure. First, data is collected and analysed by looking for issues and points important to our investigation and area of research (Allan, 2003). After thorough research on the financial services industry, the data and information is conceptualised, taken to a higher order of commonality by grouping it into concepts (Allan, 2003). This process resulted in the three sets of observations, which represents our selection of the most noteworthy issues and points discovered. The chosen observations are thereafter aggregated and conceptualised into several trends, which are analysed to gain new cumulative knowledge about the categories and their relations (Kovalainen & Eriksson, 2008). Finally, the scenarios are generated by connecting our trends with industry experts' perspectives on the future of banking. By doing so, we establish a set of scenarios that encompass out analysis as well as the views of others.

It should be noted that by following the GT approach, the scenarios are bounded by subjectivity. The data collection and development of observation and trends reflect a subjective selection of the observations and trends we deem have the most significant impact on the future role of banks. However, by encompassing our scenario analysis with established theories on the future of banking, we add validity to the analysis.

2.3.2 Multiple Case Study

For the second part of the thesis, a multiple case study is presented. Yin (2013) defines the method as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context" (p. 13). The case study approach is preferred when examining a contemporary phenomenon where the researcher does not have the possibility to control or manipulate behaviour, and the research question is of explorative nature (Yin, 2013). The thesis focuses on a contemporary phenomenon; the current challenges banks face in the dramatically changing landscape. Yin (2013) highlights the case study's ability to deal with a wide array of evidence as the method's key strength. The case study explores various themes of interest that exceed the data points. Therefore multiple sources of data are used, and results rely on the convergence of these data points (Yin, 2013).

Yin (2013) argues that using multiple cases is preferable to single case study because it generates more powerful conclusions and allows for generalisation. Therefore, the analysis will be based on the case studies of two banks. A multiple case study does not entail that all features of each case are analysed in the same detail as in a single-case research design (Kovalainen & Eriksson, 2008). The issues and topics studied were predefined, and the case companies were chosen accordingly.

In the multiple case study, each case company will first be described and analysed individually Yin (2013). The two within-case analyses contribute to an understanding of the two banks' use of vehicles of innovation and a discussion of how the vehicles contribute to building dynamic capabilities. As suggested by Eisenhardt (1989), the within-case analyses will be coupled with a cross-case discussion and search

for patterns. The purpose of the cross-case discussion is to go beyond initial impressions to enhance the probability to capture novel findings (Eisenhardt, 1989).

2.3.2.1 Case selection

Yin (2013) suggest that the focus of case selection in a multi-case study is to establish external validity in terms of generalizability of findings. Cases should be selected to follow a replication logic, either through literal or theoretical replication. However, because of the explorative nature of this thesis, it was not possible to choose the most appropriate logic for case selection beforehand the analysis. Instead, the cases were selected based on their observable approaches to innovation, with the aim to have two contrasting cases. The use of polar or contrasting cases is suggested to be beneficial as comparisons allow the researchers to develop contrasting patterns and develop a holistic understanding of a phenomenon in its context (Eisenhardt, 1989; Mills, Durepos, & Wiebe, 2010). Thus, the main criterion for case selection was to have contrasting cases, to explore how different approaches can have different effects on the ability to develop capabilities through vehicles of innovation. Other criteria for selecting the cases were convenience, geography and accessibility.

Danske Bank and Santander have two contrasting strategies and approaches to the topic explored in this thesis, thereby the choice of the banks enables a deeper understanding of the issues at hand and a more entailing cross-case.

Danske Bank has an outspoken use of one particular vehicle for innovation, an internal innovation division. The case represents a strategy focused and reliant on one initiative. Danske Bank has a strong Nordic presence, and thus a geographic proximity well suited for this thesis. Danske Bank was also chosen because of accessibility of information. The bank publicly communicates its intentions and strategic efforts related to innovation and disruption, in a variety of channels; interviews, press releases, annual reports and at conferences. This information is relevant and useful when answering the sub-question 2.a, regarding which vehicles of innovation the bank employs.

Santander was primarily chosen as it serves to contrast Danske Bank. As suggested by Yin (2013), a screening preceded the selection of Santander. The screening investigated which vehicles of innovation European banks employ, and Santander was found to pursue a broad range of vehicles and efforts, internal as well as external, global as well as local, which makes the bank a relevant case to investigate in this thesis. In line with Danske Bank, Santander was further chosen because of accessibility. The bank openly communicates its strategic direction and intentions behind its pursued strategic efforts. Although Santander primarily was chosen as a polar case to Danske Bank, the bank was also chosen because it, like Danske Bank, has an internal innovation department, and thereby allowing for cross-corroboration to strengthen the findings (Mills et al., 2010).

2.3.2.2 Criticism of case study as research design

One of the loudest criticisms of the case study as a research method is that it does not permit generalisation. However, Yin (2013) argues that theoretical generalisation rather than scientific generalisation is a possible and valuable goal for the case method. Another criticism of the case study is that results and conclusions from these studies are not suited for generalisation (Flyvbjerg, 2006; Yin, 2013). Flyvbjerg (2006) questions the view that generalisation should be the main component or source of progress in the scientific field. The case study method has also been criticised for allowing biased views to impact the findings and conclusions, or a bias for verification (Flyvbjerg, 2006; Yin, 2013). Although other research methods, such as surveys and experiments, are also susceptible to biases, the problem has been encountered more often within the case study method (Yin, 2013).

2.3.3 Data sources

The data in this thesis is qualitative and comprise a combination of primary data and secondary data. The primary data collected for the thesis are derived from interviews with company representatives and industry professionals. Furthermore, the secondary data sources vary and include company presentations, reports from private and public organisations and interviews.

2.3.3.1 Choice and reasoning of empirical evidence

This thesis is founded on both primary and secondary sources of data. The primary data sources gathered and generated for the purpose of the thesis are the interviews. The interviews are semi-structures and conducted to provide a deeper understanding of the themes. Interviews were used to generate knowledge about the specific companies and the industry phenomena. The primary source of empirical evidence was interviews with company representatives and industry experts.

It has been essential to include a substantial amount of secondary data sources. The secondary data has been used to generate more information and insight and has enabled the explorative goals of the thesis (I. Andersen, 2008). The secondary sources of data used were company reports, annual reports, company presentations, academic articles and newspaper articles. Due to the emergent nature, the phenomena central to the thesis, a majority of the secondary data is process data collected on the current activities in the society. The secondary data, especially newspaper and magazine articles, are used to present current developments and perspectives. In addition to this, the secondary data collected as empirical evidence for was scientific research data or academic articles. However, it is important to note the secondary data primarily draws on acknowledged publications, as well as governmental and academic organisations.

2.3.3.2 The semi-structured interview

The qualitative research interview is defined by Kvale (1983) as “an interview, whose purpose is to gather descriptions of the life-world of the interviewee with respect to the interpretation of the meaning of the described phenomena” (p. 174). Thus, the goal of such an interview is to explore the topic from the

perspective of the interviewee (Cassell & Symon, 2004). Madill, Jordan and Shirley (2000) propose a two-dimensional distinction of qualitative interviews. The realist approach presents one epistemological end of the scale with the radical constructionist at the other. The phenomenological view is a middle ground between these two extremes and the foundation for the interviews conducted. This view emphasises the need of the researcher to set aside presumptions and consciously reflect on the impact of the context of the interviews (Madill et al., 2000).

The interviews conducted were of a semi-structured type; an outline of topics, issues and questions was prepared in advance to each interview, adapted to fit each interviewee's perspective and knowledge. See table 1 below for an overview of interviews. Questions were both factual (*what*) and explanatory (*how*) and intertwiningly open and closed ended, and were adapted throughout the interviews, while still aiming to cover each of the pre-specified topics. (Kovalainen & Eriksson, 2008)

Table 1: Overview of interviews

Person	Position/Organisation	Context	Style	Perspective
Alexia Arts	Analyst at Santander InnoVentures	Telephone	Semi-structured	Incumbent (CVC)
Lars Petersen	Nordic E-business Manager at Santander Consumer Bank	In person	Semi-structured	Incumbent (Corporate)
Lasse Jonasson	Senior Executive Advisor at Copenhagen Institute for Future Studies	In person	Semi-structured	External expert
Simon Haldrup	Head of MobileLife, Danske Bank	In person	Semi-structured	Incumbent (Internal innovation department)
Stephanie Mitchell	Delivery Manager at Customer & Innovation, Santander UK	Telephone	Semi-structured	Incumbent (Internal innovation department)
Susanne Hannestad	CEO of FintechMundi	In person	Semi-structured	New entrant (Fintech)
Tone Lunde Bakker	Global Head of Cash Management at Danske Bank	In person	Semi-structured	Incumbent (Corporate)

2.4 Quality of research design

Assessments of the components of the research design have been made throughout the methodology chapter. However, an assessment of the quality of the research design as a whole will be presented in this section as it is the combined design that determines the quality of the research design (Bitsch Olsen, 2003). Although the research design is chosen to promote validity and reliability, it should be noted that knowledge attained from case studies is situational and context sensitive by nature (Rendtoff, 2007).

2.4.1 Validity

The validity of the results is determined by whether the conducted research is comprehensive enough in relation to the research questions (Bitsch Olsen, 2003). To discuss the degree of validity in results, it is relevant to look at how the different data contribute to investigating the different aspects of the problem.

By combining different sources of primary and secondary sources of data we can better explore different aspects of the strategies, practices and organisations while supporting the validity of the primary data sources. Furthermore, multiple sources are used to both describe and explore the same or similar phenomena through the thesis. Examples of this are the use of multiple data sources to describe and analyse the observations and the use of interviews in combination with secondary data to describe the case companies. The accuracy of the primary data sources, interviews, were in most cases confirmed or supported by the use of secondary data. According to Yin (2013), the utilisation of multiple sources increases the technical validity of the research. Furthermore, having interview subjects from different backgrounds and with different perspectives also strengthens the validity. The interview subjects are chosen to balance out biases and subjectivity in addition to ensuring a comprehensive description of the problems. The validity of the scenario analysis is reinforced by extensive research and use of different data sources, as well as the ability to discuss reflections and observations with an external source such as Jonasson, Senior Executive Advisor at Copenhagen Institute for Future Studies.

The validity of the research could be strengthened by receiving access to observe the inner workings of the vehicles of innovation. Regarding Santander, the validity of that case could benefit from interviews with more senior management. Interviews with senior management within the Danske Bank could also benefit the validity of the research, as well as the ability to conduct interviews with employees within Danske Bank's MobileLife vehicle. The use of the same approach and research questions on multiple case companies increases the external validity of the thesis results (Yin, 2013).

2.4.2 Reliability

Reliability in qualitative research lies in consistency, not necessary the possibility for direct replication. The reliability of the research refers to the production and treatment of the empirical data (Kvale, 1997). In the methodology and analysis chapters, choices of methods, research design and interview subjects are documented and argued for to increase the reliability of the thesis. The interviews were designed to avoid leading questions and to ensure common terminology to increase the reliability. To ensure that the description of company activities and phenomena was well founded, secondary sources were used to confirm the primary data, as well as other secondary data. This focus has been especially significant to ensure that information given by company representatives regarding company activities is not merely their convictions. This was done by combining the interviews with published company information (Bitsch Olsen, 2003).

3 THEORETICAL FRAMEWORK

This chapter presents a review of relevant theories, literature and terminology within the areas of interest for the thesis and serves as a reference point for the later analysis. The section will start with a review of literature to establish the underlying theoretical foundation for looking at firm capabilities. The review will cover the resource-based view, transaction cost economics and ambidexterity, moving on to literature on creative destruction and dynamic capabilities.

3.1 RESOURCE-BASED VIEW

The resource-based view (RBV) of industrial organisations emerged as an alternative to the neoclassical view. The term 'resource-based view' was coined by Wernerfeldt in 1984, but the foundations stem from Edith Penrose in 1959. Penrose (1959) argues that the resources a firm hold, utilise and organise are more significant than the external context or industry structure. In line with the neoclassical perfect competition model, RBV continues to see the firm as an input combiner (Conner, 1991). Rumelt (1991) found that the intra-industry differences in performance were more substantial than the inter-industry performance, supporting the view that firm heterogeneity is more central than industry structure in explaining firm performance.

RBV recognised that firms competing in the same industry have intrinsically heterogeneous resource bases and that the difference in resources constitutes different grounds for creating and maintaining competitive advantages (Barney & Clark, 2007; Mahoney & Pandian, 1992). Thus, the focus of strategy and management according to the RBV should be the exploitation of firm-specific assets (Teece, Pisano, & Shuen, 1997). Some resources enable firms to generate a competitive advantage, and a subgroup of the resources enable firms to create a sustainable competitive advantage (Barney, 1991; Grant, 1991; Penrose, 1959; Wernerfeldt, 1984). Barney (1991) argued that a resource must meet four criteria, labelled VRIN, to create sustainable competitive advantage:

- **V**aluable
- **R**are
- **I**nimitable
- **N**on-substitutable

3.1.1 Criticisms

Although RBV is accredited as one of the most influential management theories in history, it has received several criticisms (Kraaijenbrink, Spender, & Groen, 2010). A critique of the RBV is that core terminology within the theory is defined using self-evident definitions (Kraaijenbrink et al., 2010). Within RBV, the definition of what constitutes a resource is varied; Prahalad and Hamel (1990) refer to competencies, Grant (1991) talks about skills, assets (Ross, Beath, & Goodhue, 1996; Wernerfeldt, 1984) and strategic

assets (Amit & Schoemaker, 1993) are also used among others. The RBV has also been criticised for tautology, especially with regards to the use of value as a criterion in Barney's (1991) VRIN framework to determine a resource's potential to generate a value-creating strategy (Priem & Butler, 2001). Furthermore, the VRIN(O) framework has been criticised by Priem and Butler (2001) for the limited operational validity and practical implication, a critique practically recognised by Barney (2001).

Internal factors, as the determinants of firm performance and competitive advantage, are also central to other management theories. The knowledge-based view of the firm argues that it is the knowledge-based resources and capabilities that enable a firm to achieve competitive advantage. In contrast, the dynamic capability view (DCV) argues that firms should focus on building a set of competencies that enable them to create series of temporary competitive advantages, enabling competitive survival (Teece et al., 1997). However, the DCV is by some theorists regarded as a sub-section, development or part of the broader RBV (Helfat & Peteraf, 2003).

3.1.2 Economic rent

RBV regards resources as the source of performance heterogeneity, and thus, the question of how resources come to be within a firm becomes central. Makadok (2001) presents two separate mechanisms within the wider RBV explain this. Firstly, the *resource-picking mechanism,* supported amongst others by Barney (1986, 1991), Barney & Clark (2007), Peteraf (1993), Wernerfeldt (1984) and Conner (1991), and secondly, the *capability-building mechanism*.

The resource-picking mechanism is rooted in a Ricardian view of economic rent, where economic rent is generated by firms that own resources with higher productivity (Ricardo, 1817). Barney (1986) applies this to competitive advantage by presenting his strategic factor market theory, where the firm generates economic rent by outsmarting the resource market as a result of superior skills in resource-picking. Firms search for, evaluate and acquire necessary resources, and gain a competitive advantage due to a more precise expectancy about the future value of resources than other market participants.

The capability-building mechanism is based on the Schumpeterian DCV and presents an alternative to the Ricardian economic rent perspective (Mahoney & Pandian, 1992). Makadok (2001) defines a capability as:

> *A special type of resource-specifically, an organizationally embedded non-transferable firm-specific resource whose purpose is to improve the productivity of the other resources possessed by the firm. (p. 389)*

Makadok (2001) highlights two distinctions of capabilities in relation to resources: the firm-specificity of capabilities and the capabilities role as enhancers of resources.

It follows that the two mechanisms for resource attainment require very different approaches to management and strategy. The capability-building mechanism sees the implementation and deployment

phases of resource attainment as deterministic and thus requires management to function as an architect of resources, rather than an informed customer whose decision phase in advance of resource acquisition determines the economic rent created for the firm (Makadok, 2001). Within the capability-building view, the role of strategic research should be to explore the structural principles for the appropriate design of capabilities, on the components that make up capabilities and on the techniques that build these capabilities (Makadok, 2001).

3.1.3 Dynamic capabilities

Like RBV, dynamic capability theory is based on the view that intrinsic heterogeneity in firms' resources and capabilities cause differences in firm performance. As previously described, the DCV belongs to the broader category of the RBV of the firm. There are numerous definitions of dynamic capabilities within literature, often associated with the manner and rate of which firms respond to exogenous changes, related to for example consumers, regulations and technologies. The overall suggestion is however that "dynamic capabilities affect how business organisations adapt and create heterogeneous resource positions in dynamic environments" (Leiblein, 2011, p. 921).

Eisenhardt and Martin (2000) define dynamic capabilities as "the organisational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die" (p. 1107). In his latest definition, Teece (2007) defines dynamic capabilities accordingly:

> *Dynamic capabilities can be disaggregated into the capacity (a) to sense and shape opportunities and threats, (b) to seize opportunities, and (c) to maintain competitiveness through enhancing, combining, protecting, and when necessary, reconfiguring the business enterprise's intangible and tangible assets. (p. 1319)*

While RBV focuses on resources as a source of *sustainable* competitive advantage, the DCV sees capabilities as tools to establish short-term advantages to support competitive survival. Teece et al. (1997) saw the development in high-technology industries as a demonstration of the need to expand on existing views of competitive advantage. The authors argue that the DCV is a more integrative approach to understanding the emerging sources of competitive advantage and therefore provides a way of understanding the newer sources of competitive advantage. Following the notion that control over rare resources provides the source of competitive advantage, the strategic management role should then focus on issues like the acquisition of skills, knowledge management, learning and know-how (Teece et al., 1997). As stated above, the DCV subscribes to the perception that economic rent is generated by a capability-building mechanism.

Helfat and Peteraf (2003) however argue that the core theory of RBV not necessarily is contingent on a static approach. Helfat (2000) suggest a dynamic resource-based theory which encompasses all organisational capabilities. Helfat and Peteraf (2003) introduce the capability life cycle (CLC) concept to explain the fundamental sources of firm heterogeneity. They present CLC as a general pattern for the

possible paths and the evolution of an organisational capability, with the goal of unifying the various strands of the RBV: dynamic, routine and knowledge-based approaches. The CLC follows four stages: founding stage, development stage, maturity stage, and lastly branch-stages.

Dynamic capabilities create value by deploying resources in novel, value-creating strategies, and are made up of precise strategic and organisational processes, such as alliancing, product development and strategic decision making (Eisenhardt & Martin, 2000). Teece et al. (1997) implicitly propose three classes of dynamic capabilities through their definition of dynamic capabilities as "the firm's ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments" (p. 516). Building on this, Bowman and Ambrosini (2003) propose four processes to categorise dynamic capabilities: reconfiguration, leveraging, learning and creative integration.

Burgelman (1994) proposes resource allocation routines that distribute scarce resources within the firm as a dynamic capability. Eisenhardt and Martin (2000) list two dynamic capabilities proposed in the literature; knowledge creation (Helfat, 1997; Henderson & Cockburn, 1994; Rosenkopf & Nerkar, 2017) and alliance and acquisition routines (Capron, Dussauge, & Mitchell, 1998; Gulati, 1999; Lane & Lubatkin, 1998 and many more) as dynamic capabilities. Another proposed dynamic capability is corporate foresight, defined by Rohrbeck, Battistella and Huizingh (2015) as "a practice that permits an organisation to lay the foundations for a future competitive advantage" (p. 2).

According to Rohrbeck and Gemünden's (2011) review of existing research, organisations struggle with responding to changes in the external environment for three reasons:

- High rate of change
- Ignorance
- Inertia

Research has shown the perceived rate of change is increasing due to shorter product life cycles, increased technological change, increased innovation speed and an increase in the diffusion of innovations (Rohrbeck & Gemünden, 2011). Secondly, ignorance within the firm due to short strategic planning cycles, the narrow scope of corporate sensors, an overflow of information to top management leading to a decreased capacity, and to vital information not reaching the necessary management level. Finally, inertia, due to complex internal and external structures, protection of existing lines of business and cognitive inertia due to existing technological capabilities (Rohrbeck & Gemünden, 2011). The corporate foresight capability enables firms to challenge assumptions about customer needs, technology, current projects and other factors, in addition to scanning for disruptions (Rohrbeck & Gemünden, 2011).

Although dynamic capabilities can be generalised and display commonalities across firms, they are firm-specific in their details. Eisenhardt and Martin (2000) argue that similarities across firms are valid and useful as they demonstrate that there are more and less efficient ways of organising, best practices, which can be employed by other firms.

3.1.4 Evolutionary Economics

DCV departs from RBV in the understanding of the external context of the firm as static. Nelson (1991) retrospectively connected the emerging theory of dynamic capabilities with Nelson and Winter's (1982) evolutionary theory of economic change and their description of organisational routines. As briefly touched upon above, the DCV sees the firm in a context of Schumpeterian competition, where innovation, entrepreneurial activities and market power drive economic change (Teece et al., 1997). The departure of the DCV from the static view of competition is perhaps the most central role of Schumpeter (1942a) evolutionary perspective. Schumpeter (1934) saw the economic life as a circular process, a transition from one equilibrium to the nest, leading to economic development. Nelson and Winter (1978) argue that Schumpeter introduced competition as a process that involves introduction and dispersal of innovations and resulting in winners and losers. However, it is important to note that, as previously mentioned, the evolutionary perspective does necessarily not depart from the foundations of RBV, and that the dynamic perspective thus can be seen as an extension of the RBV instead of an altogether opposing view.

Schumpeter (1942b) introduced entrepreneurship and argued that entrepreneurs are the source of innovation and technological change. Although being far from the sole driver of change, profit-motivated innovation within the market economy provides a major source of economic change (Schumpeter, 1950; Winter, 1984). Furthermore, Schumpeter (1947) saw large corporations as forces enhancing the standard of living, as they have access to capital to invest in risky R&D. Schumpeter considered the object of the firm to be "seizing competitive opportunity by creating or adopting innovations that make rivals' positions obsolete" (cited in Conner, 1991, p. 127). However, opposed to the RBV, Schumpeter argued that monopoly power determines the scope and scale of a firm (Conner, 1991).

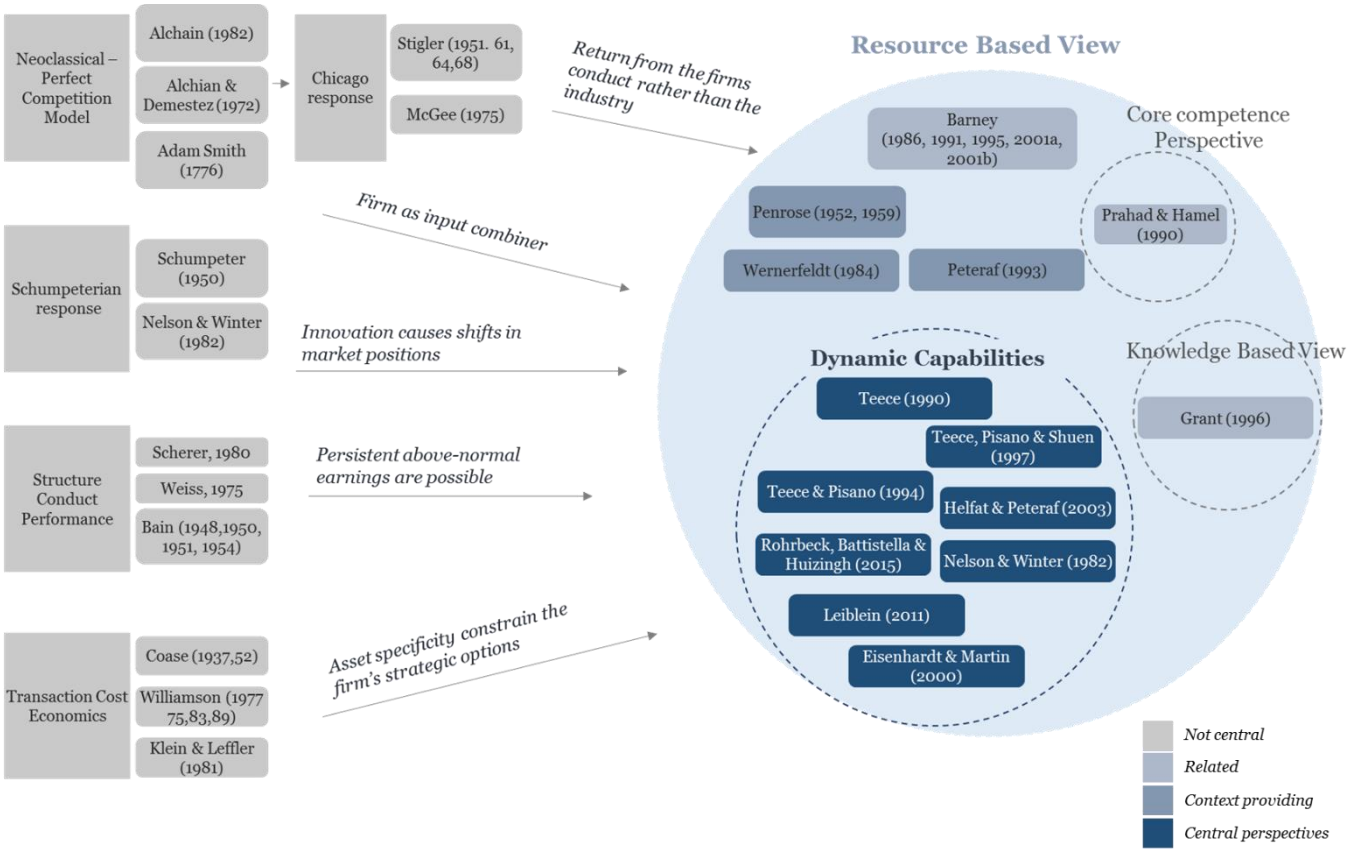

Figure 5: Overview of resource-based view
Authors' contribution

3.2 Boundaries of the Firm

A large amount of literature attempts to develop approaches for determining firm boundaries. Transaction cost economics (TCE) has greatly influenced the literature on firm boundaries. TCE suggests that a firm expands until the costs of organising a transaction within the firm equal the costs of carrying out the same transaction as an exchange in the open market (Coase, 1937). TCE has however received criticism for being outdated, and instead, strategy scholars often emphasise the importance of comparative firm capability in boundary decision (Argyres & Zenger, 2012).

The dynamic capability literature discusses how intra- and inter-organisation structure of business activities serves as mechanisms through which businesses can develop dynamic capabilities, suggesting that organisational choices affect how firms build their resource bases (Leiblein, 2011). Helfat and Peteraf (2003) suggest that intra-organisational boundary decisions affect how effectively firms can renew, reduce and retire resources when facing exogenous changes.

Barney (1999) suggests that there are three ways for a firm to access capabilities: cooperating with other firms using market or intermediate governance; developing the capabilities internally using hierarchical governance; or acquiring firms with the sought for capabilities, again using hierarchical governance. In the classical make-or-buy decision, TCE suggests that the choice should depend on the level of

transaction-specific investment required to gain access to a capability. For high levels of transaction-specific investments, a firm should consider hierarchical forms of governance, such as acquire or develop the capability internally, to avoid opportunistic behaviour that may arise in a market transaction. Intermediate or market governance, through cooperation, is suggested for low levels of transaction-specific investments. Thus, in case a capability requires a firm to make high transaction-specific investments, and the firm is not able to acquire it, the only option left is for it to be made internally. This is where the TCE logic faces a standstill since it overlooks the fact that capabilities may be too costly to build internally, especially in rapidly evolving high-technology industries (Barney, 1999). Barney (1999) suggests that firms should weigh the cost of developing a capability internally against the cost of opportunism that may arise with non-hierarchical structures, and argues that the attributes of the capabilities a firm is trying to gain access to have a far more important role than recognised in TCE.

Chesbrough and Teece (1996) discuss firm boundaries from the perspective of how firms best appropriate returns from innovation. The authors compare *virtual* organisations, which they characterised as being decentralised, outsourcing activities to third-parties and having loose boundaries, with *traditional* integrated firms that are centralised and have tight boundaries. There are benefits to being a virtual organisation: as activities are outsourced to the market, partners and outside developers are faced with competition and thus incentivised to use resources efficiently and motivated to come up with more innovative outcomes, especially in situations with rapidly changing technology (Chesbrough and Teece, 1996). On the other hand, the virtual organisational structure could also undermine a firm's ability to innovate. As external third-parties are induced with strong incentives to perform, they also engage in a greater deal of risk taking and self-interest. Thus, the firm becomes vulnerable as it loses control of its innovation process, and involved parties may turn on each other to maximise their gain. Traditional, centralised firms are less engaged in risk-taking, and the innovation process can be better handled and monitored.

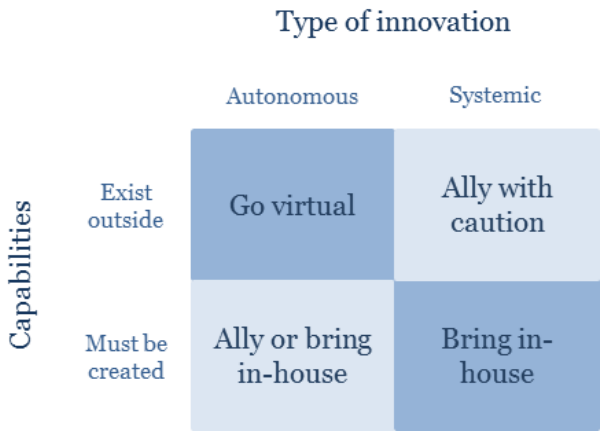

Figure 6: Matching organisation to innovation
Adapted from Chesbrough & Teece, 1996, p. 9

As shown in Figure 6 above, Chesbrough and Teece (1996) argue that the right degree of centralisation depends on the type of innovation being pursued. The authors distinguish between innovation that is autonomous in nature, in that it can be pursued independently and systemic innovation that can only be realised when combined with related complementary innovations. A virtual, decentralised organisation is best suited to develop and commercialise autonomous innovation, whereas centralised firms best manage and appropriate value from systemic innovation.

Other factor firms must consider in the choice of organisational structure is whether the capabilities needed to produce an innovation are easily obtained or must be created. If a capability does not exist, such as a technology, a firm must consider whether to wait for the technology to be available or if it should develop it internally or in partnership with another firm. Waiting for others to develop the technology could have mitigating effects; the firm loses control over the direction of the technology, its pace to market and its applicability. In the choice between developing a capability internally or in cooperation with others, Chesbrough and Teece (1996) argue that companies that don't let others lead the way, but develop their capabilities internally, outperform firms that rely heavily on alliances and market coordination. If an innovation is or may become systemic, decentralisation is an especially flawed strategy.

The choice of firm boundaries also depends on industry characteristics, such as the existence of industry standards. Standards emerge in markets that are subject to network externalities; when the value of a product depends on the number of users. Virtual organisations are better suited to manage innovations based on existing standards, whereas integrated firms are more likely to advance if industry standards do not exist (Chesbrough & Teece, 1996).

3.3 DUAL BUSINESS MODEL

Established firms facing disruptive innovators are often caught in the dilemma of how to react. Either the established firm can embrace the new business model and cannibalise itself, or ignore the disruptive players and stick to its core business (Markides & Charitou, 2003). Both alternatives have their pitfalls. Changing an established way of doing business is complex and could potentially dilute the firm's existing capabilities and destroy value and staying put could mean losing competitive advantage (Markides & Charitou, 2003). Rather than choosing between two potentially damaging alternatives, management literature suggests a mitigating solution that circumvents the dilemma, namely by pursuing dual strategies (Markides & Charitou, 2004). By pursuing two separate business models, the established firm can enjoy the benefits of its existing core capabilities, while at the same time exploiting alternative opportunities.

The challenge with this model is that the two businesses might come in conflict with one another and potentially dilute or damage the firm's brand. To avoid conflict, it is commonly proposed to keep the two businesses and their value chain separate in two distinct organisations (C. M. Christensen, 1997; Markides & Charitou, 2004). By creating a new unit, the growth of the new business is less likely to

cannibalise the existing business. Separating two businesses also allows the new business to better develop a tailored strategy, processes and culture, independently without interference and mismanagement from the established business. However, there are important drawbacks of strict separation. According to Markides and Charitou (2004), complete lack of integration prohibits the two businesses from exploiting any synergies that could be an important source of value. Spinoffs, although more equipped to enable action early on, are also found to have a more difficult time achieving long-term market power. Finding the optimal balance between separation and integration is crucial when pursuing dual business models. The authors suggest that that as the lower strategic relatedness and more severe level of conflict, the more strictly two businesses should be separated. In contrast, the higher similarities and less severe nature of a conflict, the more suitable are businesses to pursue an integrated strategy (Markides & Charitou, 2004).

3.3.1 Exploration and exploitation

Within the research on ambidexterity, the two activities of exploration and exploitation have received much attention (Stettner & Lavie, 2014). According to Levinthal and March (1993), exploitation refers to the development of new knowledge, while exploitation is the refinement of knowledge. March (1991) argues that it is essential to pursue the two activities within one firm. However, Stettner and Lavie (2014) argue that conflicting routines, negative transfer and limited specialisation inhibits balancing the two pursuits successfully within one firm. Moreover, Stettner and Lavie (2014) find that balancing across modes of exploration and exploitation is more beneficial than balance within these modes. Moreover, in their study of software firms, Stettner and Lavie (2014) found that organisations that explored though modes directed at the external environment while utilising internally focused modes to exploit performed better than if doing the opposite. The authors further found that a firm can enhance its performance when leveraging existing knowledge in marketing alliances (exploitation) while expanding its knowledge base via the acquisition of firms with distinct businesses (exploration).

3.4 Open Innovation

Chesbrough coined the term Open Innovation (OI) to describe an innovation paradigm where firms "use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology" (2006, p. xxiv). Chesbrough (2003) contrasts OI with Closed Innovation (CI), where firms generate, develop and commercialise their own ideas. CI relies heavily on internal control and self-reliance within a firm for successful innovation. CI also requires large investments in R&D and high intellectual property (IP) protection to prevent competitors from exploiting a firm's discoveries (Chesbrough, 2003). CI was a successful strategy that dominated the 20th century, but there has been a fundamental shift in how companies achieve innovation. Innovation no longer relies on strong internal R&D capability, but has become something that firms increasingly *externalise* by opening up firm

boundaries to external inputs (Gassmann, 2006). Institutional openness is increasingly gaining traction within research and as a way to realise radical innovation (Gassmann, Enkel, & Chesbrough, 2010).

Chesbrough (2003) mentions two major factors that force firms to adapt to OI. Firstly, towards the late 20th century, both the number of people working with R&D and innovation and their mobility had significantly increased, making it harder for firms to control their IP. Secondly, the internal funds that were once essential to enable the R&D investments within a firm has been replaced by new sources of capital. Venture capital has had a particularly important role in enabling start-ups to develop innovative businesses and ideas (Chesbrough, 2003). Gassmann (2006) adds a number of developments that have driven the shift towards OI: globalisation, driven by low logistics costs, mobility of capital and increased market homogeneity across countries; increased technology intensity, making even incumbents unable cope with or afford to develop their own technology; technology fusion into new fields, which shifts and weakens industry borders; and lastly new business models and opportunities that arise with the rapid shift of industry and technology borders.

Literature often highlights benefits with OI, such as reduced costs, shorter time-to-market, access to partners' networks, the ability to leverage complementarities and stronger credibility and trust (Martovoy, Mention, & Torkkeli, 2015). Consistent with OI, Quinn (2000) argues that it is too costly and complicated for any one company to have the capabilities to keep up with these new threats and innovations. Quinn (2000) suggests a several reasons for outsourcing innovation: to spread the risk; firms have resource limits, and no single company can innovate better than the combination of the capabilities of all its potential competitors; firms lack specialist talents with motivation or depth of knowledge in all necessary technical fields; firms are unable to attracting in-house talent to work on noncore activities, as these talents seek to work for specialists; and because outsourcing increases speed and flexibility.

The disadvantages of OI are less explored, but in a survey of financial services firms in Luxembourg, Martovoy et al. (2015) found costs to be the main issue associated with external cooperation.

4 SCENARIO AND CAPABILITY ANALYSIS

This chapter contributes to the overall research question by exploring what types of dynamic capabilities are likely to be required to remain competitive in the emerging context of financial services. The chapter first presents a scenario analysis to explore the future role of banks. Following, the types of dynamic capabilities that would be required for competitive survival the scenarios are analysed.

4.1 SCENARIO ANALYSIS

The scenario analysis commences with a discussion of observations and trends in the financial services industry, and after that continues with an analysis of three scenarios for the future of banking. Through thorough research on happenings and issues in the financial services industry, we choose to highlight a number of observations that stand out as the most significant. Next, we extract patterns in these observations and categories them these into trends. Once we have established the trends, we connect them to three scenarios that we generate by bringing together several perspectives on the role of banks in the future.

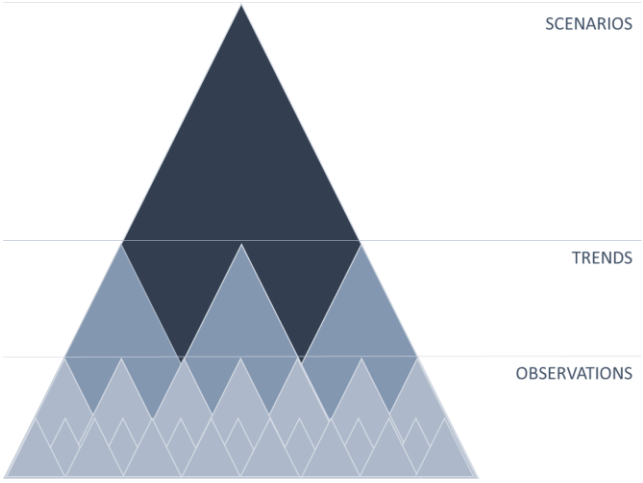

Figure 7: Scenario development
Authors' contribution

4.1.1 Observations

To detect patterns of observations, we have consulted a variety of sources, including academic literature, reports by companies and organisation as well as viewpoints collected from though-leaders, industry incumbents and start-ups. For clarity, we have divided the observations into three categories; observations regarding the demand environment, the business environment and technological prospects. Figure 8 below illustrates an overview of the observations. As shown, a number of subordinate observations are discussed in Appendix II.

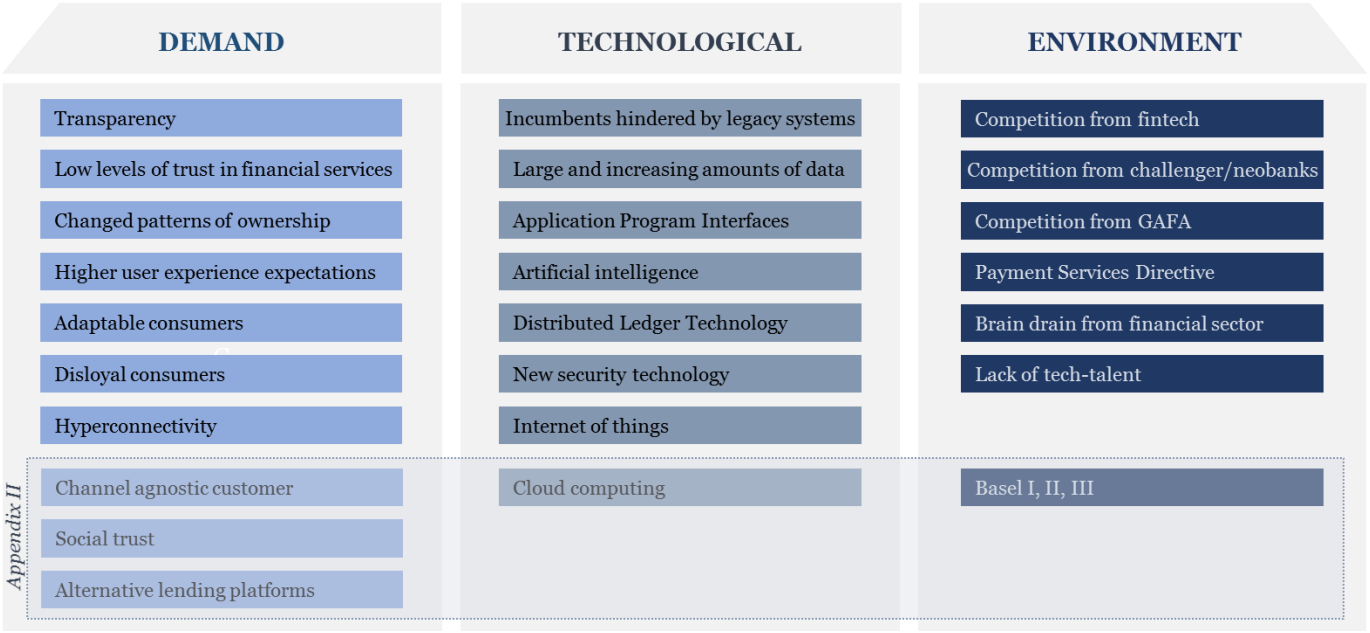

Figure 8: Demand, Technological and Environment Observations
Authors' contribution

4.1.1.1 *Demand environmental observations*

Transparency

A global survey by EY (2016) shows that consumers now demand transparency from the financial institutions they engage with. In 2013, a consumer research report that asked 3,000 adults in the US, UK and China, showed that 'honesty and transparency' along with price and quality, were most important when deciding whether to buy a brand (Cohn & Wolfe, 2013). The report also showed that UK customers' rating of transparency as a deciding factor in purchase decisions increased, from 53 to 66 percent in one year. In a report by Accenture (2014) customers rated 'clear and transparent' as the single most important factor for selecting a current account provider.

> *I think that the younger generations have trust in transparency. (L. Jonasson, Senior Executive Advisor at CIFS, interview, March 3, 2017)*

Not only customers but also regulators push toward increased transparency. One example of this is the Interchange Fee Regulation, aimed at unrevealing and capping the fees banks and card issuers can charge on payments. Banks are prohibited from using blended charges and must specify the amount of any charge linked to a transaction. Retailers must disclose their selection of payment means, which ultimately improves the transparency at the consumer level, and enable customers to choose the most cost-efficient alternative (European Commission, 2016).

Low levels of trust in financial services

The 2008 financial crisis and its aftermath have shaped how a generation of Americans and Europeans think about the old institutions who once were the epitome of trust. The lies, bail-outs and protests have left a strained relationship between the consumers and financial institutions. According to PwC (2014), less than a third of customers trusted their banks. An EY (2016) survey of 55,000 consumers showed that trust in banks is decreasing on the whole. The 2017 Edelman Trust Barometer, also shows that trust has declined across the board, in all four institutions business, government, NGOs and media. Although customers' trust in financial institutions to keep their assets safe largely has bounced back, customers have little trust in banks as strategic partners and putting the customer interest first, for instance to provide unbiased advice (EY, 2016).

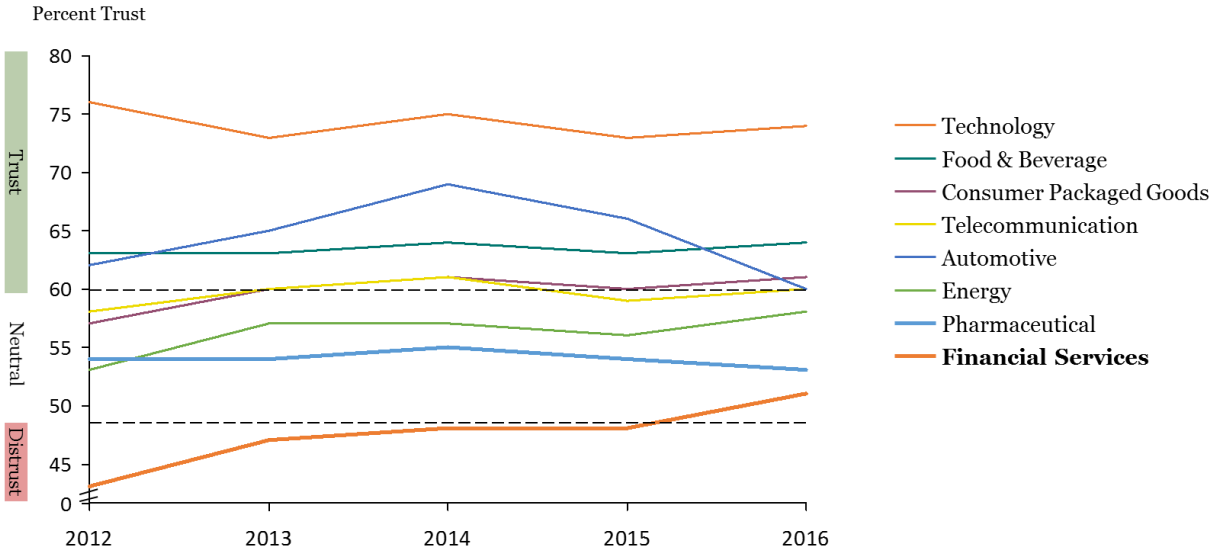

Figure 9: Historical development of global trust in sectors
Authors' contribution, based on data from Edelman Group, 2016, p. 26

In several interviews conducted for the purpose of the thesis, interviewees were found to have a strong belief that consumers' trust in banks would protect or mediate the impact of possible dramatic developments in the industry. Trust was also mentioned as an underestimated factor when assessing the future of banking, in favour of the banks. Regardless of whether the developments measured in the Edelman Trust Barometer correctly represent consumer trust, or the financial institutions' own perception is more valid; the trust factor is deemed central in banks' competitiveness. Thus, banks' strategies, competitive strength and futures are exposed to changes in this factor.

Changed patterns of ownership

The traditional role of banks is strongly intertwined with the asset ownership. From mortgages to car loans, a key function of banks is offering capital to customers, and thus the opportunity to own an asset. In the US, home ownership is the lowest it has been in nearly 50 years (Wachter & Acolin, 2016). The reasons for the decline is complex and involves many factors such as urbanisation, changing consumer preferences, changing family structures, a more negative attitude to ownership and stricter regulations

following the 2008 recession (Wachter & Acolin, 2016). The decline in home ownership is most prominent among people under the age of 35 (Noguchi, 2017).

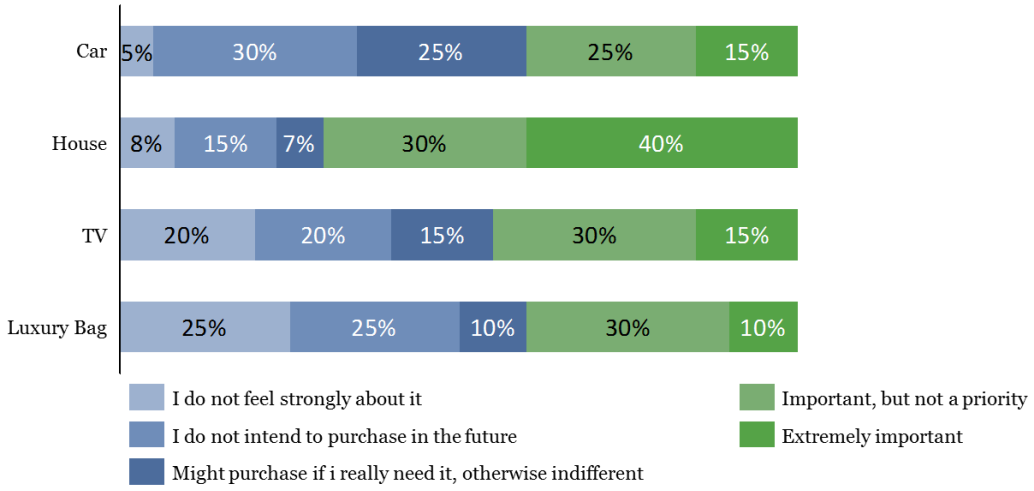

Figure 10: Millennials and big purchasing decisions
Adapted from Goldman Sachs Fortnightly Thoughts, 2013

Laurie Goodman, director of the Housing Policy Centre argues that the change represents a subtle, but permanent change in the attitude towards ownership (cited in Noguchi, 2017). An important factor in the decline of homeownership for young adults is the changing living situations; 25-34 year-olds are less likely to have a live-in partner or get married than before (Matthews, 2015). Furthermore, the cost of home ownership is lower than before the recession, adjusting for inflation and wages, suggesting that there could be a cultural shift in the future (Matthews, 2015). More prominent, again especially among the younger generations, has been the decline in propensity to own a car. With a host of alternative transportation, urbanisation among other developments, owning a vehicle seems to be less attractive (Quinones & Augustine, 2015). In a Warton Business School article, the development is put this way "it's becoming more convenient to not have a car. In fact, we're already seeing some shift away from private ownership in dense urban centres" (Eisenstein, 2017, p. 3).

> *Millennials have been reluctant to buy items such as cars, music and luxury goods. Instead they're turning to a new set of services that provide access to products without the burdens of ownership.* (Goldman Sachs, 2017, p. 4)

For millennials, refraining from ownership represents greater flexibility and lesser environmental impact (Mincer, 2015). Quinones and Augustine (2015) argue that the historical consumption patterns of assets have, and will continue to, change affecting their spending habits and needs for financial services.

Higher user experience expectations

In today's digital era, the expectations on user experience are constantly increasing (SAP, 2016). Banking and fintech expert, Alex Kreger (2016) believes that user experience user experience in banking is about incorporating human feelings, impressions and behaviour in digital interfaces. He believes that UX

engineering can help banks create financial services that match users' needs with banking capabilities and are easy to use.

According to Likhit Wagle (2015), IBM Global Business Services, one of the challenges banks are facing is that consumer are becoming more demanding and getting accustomed to the quality of user experience they get from digital companies, and demand the same quality from their banks. Kreger (2016) argues that banks should not underestimate the importance of user experience and customers rising expectations since customers will easily switch in case better alternatives arise, such as iPhones tremendous success at the loss of Nokia. Kreger (2016) believes that banks need to employ a holistic user experience strategy, by integrating customer needs and technological opportunities in innovative digital solutions to create seamless experiences.

Adaptable consumers

The business climate is changing with increasing speed. Downes and Nunes (2013) present the Shark Fin Model (see Figure 11), showing how business cycles are shorter and more intense compared to the traditional bell curve business cycle, where product or service adoption gained momentum gradually and sustained over time. Ruotsila et al. (2015) argue that consumers are strong in adopting new digital tools and will not stay around long enough for slow implementation and innovation, but firms must work with increasingly speed to stay relevant and face competition.

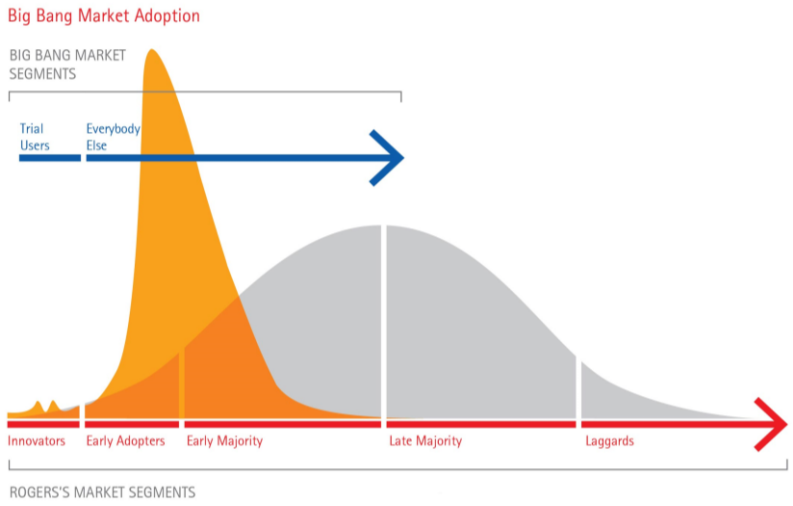

Figure 11: The Shark Fin Model
Reprinted from Downes & Nunes, 2013, p. 47

It poses a great risk to not adapt quickly enough in what is called the Age of Adaptability (Percy, 2015). The rate of change today is non-linear, especially spurred on with the rise of millennials and the increasing rate of technological adoption. Research on different levels of penetration in US households supports the same argument, showing that innovations introduced more recently are being adopted with increasing speed, and faster reaches the same levels of penetration than earlier innovations (see Figure 12) (McGrath, 2013).

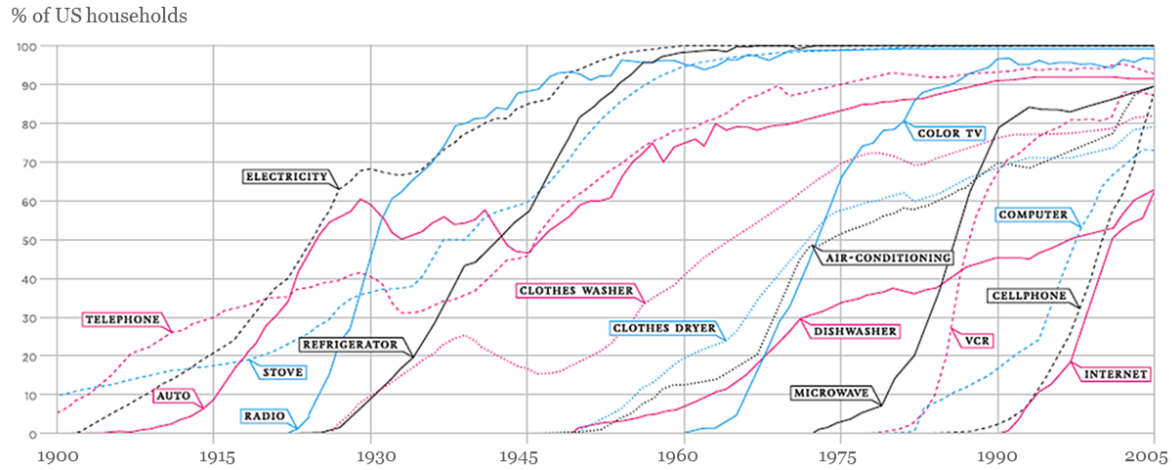

Figure 12: Adaptability
Reprinted from Cox & Alm, 2008, p. 2

Disloyal consumers

Much research shows that the financial services industry face increasingly disloyal customers. In 2014, EY surveyed over 32,500 retail banking customers in Europe and the key takeaway was that customers are becoming more willing to switch bank, mainly because of cost issues (EY & Efma, 2014). Research by Accenture (2015a) led to the same conclusion; that customers to a lesser extent are buying financial products and services from their current provider and that the single most important reason to switch bank is competitive pricing. The Millennial Disruption Index surveyed 10,000 millennials, born 1981 to 2000, and found that banking is the industry that is most likely to be transformed by millennials and at the highest risk of disruption, mainly due to customers' lack of trust and disloyalty to their financial service provider (Scratch, 2014). 53 percent did not perceive that their bank offers anything different or better than other banks, and 33 percent were willing to switch bank within the next three-month period.

Not only retail but also mid-market customers are decreasingly loyal and more willing to move their banking business. EY (2014) surveyed 2,000 commercial banking customers globally and found that 25 percent of the companies had changed primary bank in the past year, and more than half of the surveyed EMEA executives indicated that they considered switching banks the next year. These are only a few of the findings that point to a fundamental shift in customer behaviour. Relationship breadth or history no longer seem to be enough to prevent customers from switching, and banks must focus more resources on customer retention and finding new sources of growth.

Hyperconnectivity

In 2016, daily internet usage in Europe was at 71 percent, up from 56 percent in 2011 (Eurostat, 2016). The internet usage amongst Europeans under the age of 30 was even higher, at 91 percent. Daily internet usage overtook daily computer usage for this group in 2016, reflecting the use of other devices like tablets, phones and smart phones (Eurostat, 2016). So how connected are these consumers? Hyperconnectivity is a term from social science which refers to the prolonged connection to multiple means of digital

communication. A survey conducted by (Deloitte, 2016a) found that 18 percent of the 1,530 smartphone owners asked immediately look at their phone in the morning, 43 percent check their phone within 5 minutes, and 76 percent did so within 30 minutes. Consumers are seemingly connected at most times, as evident by the 93 percent of smartphone users who report using their phone while at work, talking to friends, shopping, during leisure time, watching TV and eating in a restaurant. 93 percent even reported using their phone while crossing the road, which only 38 percent reported that they did in 2015 (Deloitte, 2016a). They vast array of tools, features and services available to consumers in the palm of their hand through smartphones seems to result in hyperconnectivity among consumers.

4.1.1.2 Technological observations

Incumbents hindered by legacy systems

To meet customer needs, banks use digital and technical innovations to create front-end solutions (Duthoit, Grebe, Mönter, Noakes, & Walsh, 2015). New front-end services and apps are, however, added only IT systems built decades ago to service branch-based banks, long before the era of digitisation (Dunkley, 2015). After decades of acquisitions and new product launches, bank's systems have become increasingly complex and costly to run (M. Arnold & Braithwaite, 2015). For example, Santander runs a mashup of over 1,000 banking systems and lacks personnel with the right formalised technical background to handle them (L. Petersen, interview, March 15, 2017). In 2015, banks across North America, Europe and Asia-Pacific spent no less than 75 percent of their budgets on system maintenance (Lodge, Zhang, & Jegher, 2015).

Innovation and digitalization are topics on every bank's agenda, but many argue that incumbents overlook transforming their legacy back-end systems (Boston Consulting Group, 2015). Boston Consulting Group (2015) found that only 14 percent of global banks' digital efforts aim at process automation and back-end solutions, whereas 86 percent of efforts focus on enhancing customer experience. According to Capgemini's World Retail Banking Report 2016, 87.1 percent of banks "believe their infrastructure is not adequate to support the digital banking ecosystem of the future" (p. 4). Santander's COO, Juan Olaizola, argues that banks must invest in the back-end technology; "Though the emphasis tends to be on the apps and the customer-related experience, it is only the back-end services that provide frictionless customer experiences, as we see in success stories such as Amazon or Uber" (cited in Dunkley, 2015, para. 15). Many banks however avoiding transforming their legacy IT systems because of the costs and risks associated with it (Dunkley, 2015).

Large and increasing amounts of data

According to IBM (2017), 2.5 quintillion bytes of data is collected every day. Already in 2013, Åse Dragland, researcher at SINTEF, estimated that 90 percent of the existing data had been created in the past two years. The speed of data generation is so rapid that in 2020 it is estimated that there will be 44 zettabytes, up from 4.4 zettabytes in 2013 (International Data Corporation & EMC, 2014). The source of the data can be everything from climate sensors, social media content, records of transactions or phone

calls and so on. This vast and increasing amount of available data is often referred to as Big Data. The term big data was first used in 1997 to describe how large data sets posed challenges for computer systems. The term has since been attributed many definitions, such as "datasets whose size is beyond the ability of typical database software tools to capture, store, manage, and analyze" (McKinsey, 2011, p. 1) or "a collection of data from traditional and digital sources inside and outside your company that represents a source for ongoing discovery and analysis" (Arthur, 2014, para. 7). The most widely used applications of big data analytics in the banking industry are data-driven customer insights used to create personalised offerings and using big data to strengthen security and improve fraud detection (Stringfellow, 2017).

Application Program Interfaces

Application program interfaces (APIs) are a set of requirements that decide how one application can communicate and interact with another. Open APIs refers to making these requirements publicly available, meaning that developers get access to a specific function within a program. Making these APIs open or public allows banks' software and its information to interact with external pieces of software (Bannister, 2015). EU's revised Directive of Payment Services (PSD2) forces banks to provide third-parties with open access to payments, accounts and transaction data by January 2018. Banks are obliged to do this by facilitating access to their systems on the condition that the account holder wishes to provide access to this information (WEF, 2015). APIs would open up for faster development of applications and products by developers and for external third-parties to develop useful products and services for customers (Amit, 2016).

Third-parties create new possibilities for the traditional bank. Providing new services and products to bank customers through digital channels have increased profitability and loyalty and opened up the possibility of expanding banks' customer base and revenue streams (Fintech Ranking, 2016).

Companies have already started to open up their APIs to third parties. Figure 13 presents an overview of API based fintechs that are disruption traditional financial services across 12 segments (Goel, 2015).

Figure 13: 63 Open APIs analysed by segments
Adapted from Goel, 2015, p. 1

Artificial intelligence

There are several definitions of artificial intelligence (AI), varying on two dimensions: whether the system should think or act, and whether it should be modelled on rational or human capabilities (Russell & Norvig, 2013). Russell and Norvig (2013) define AI as "the designing and building of intelligent agents that receive precepts from the environment and take actions that affect that environment" (p. viii). Machine learning is a component of AI, currently applied to use-cases, based on the idea that a machine is given access to data it then learns from itself (Marr, 2016). AI is seen as one of the most promising technologies for application within financial services. This interest in AI is evident by the 2 billion USD that start-ups raised in venture capital in 2016 (PwC, 2016b).

The possible applications of AI are vast, varied and encompass functions and processes way beyond that of financial institutions. Among the possible use-cases of AI in financial services are personalisation, data-driven management decision making and reduction of fraud and crime (Schutzer, 2015). Data-driven decision making would impact financial institutions by reducing costs and introducing a new management style that substitutes human expertise for AI (Schutzer, 2015). The most relevant applications for banks are data analytics and robo-advisors (PwC, 2016b). One example is digital assistants that analyse and manage data to provide customers personalised and automated advice and manage routine processes (Hackl, 2017).

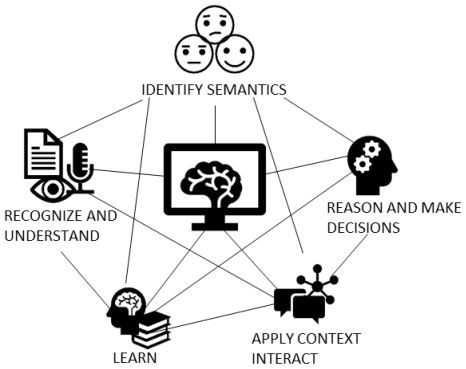

Figure 14: Components of AI
Adapted from Deloitte, 2016b, p. 23

The possibilities for personalisation go beyond this to include; customisable automatic data-driven portfolio management, lending decisions based on vast amounts of data analysed by an AI system, smart wallets, intelligent underwriting systems, to name a few (Schutzer, 2015). Furthermore, the technology could allow financial institutions, governments and customers to fight fraud and crime by learning patterns of behaviour and thus identify anomalies alerting the relevant entities to possible crime or fraudulent activity (Schutzer, 2015). AI technology could also reduce the previously mentioned large regulatory and compliance costs incurred by banks and governments by flagging suspicious behaviours and generating audit trails (Hackl, 2017).

Although the potential for AI seems revolutionary, there are concerns about the security, privacy and governance of these machines. Breaches, tampering, downtime and other failings in AI systems would have severe consequences, causing problems such as bad or false advice, unlawful access to sensitive information and liability issues (Schutzer, 2015). Prominent technology and science personalities like Stephen Hawking, Bill Gates, Peter Norvig and Elon Musk are among the many who have raised concerns about the technology and how it should be developed to remain in control of the potential consequences of the technology (Rawlinson, 2015).

Distributed Ledger Technology

Distributed ledger technology (DLT) is the technical application of "a consensus of replicated, shared, and synchronised digital data geographically spread across multiple sites, countries, and/or institutions" ("Blockchain Technology Explained," 2016, p. 2). There are different types and applications of DLTs, of which digital currency Bitcoin is most well-known. Bitcoin uses Blockchain, a proof-of-work DLT "comprised of unchangeable digitally recorded data in packages called blocks" ("Blockchain Technology Explained," 2016, p. 3).

According to WEF (2016), over 2,500 patents have been filed worldwide pertaining to the use of DLT, and over 1.4 billion USD have been invested in the technology in the past three years. Figure 15 shows the development of US patent filings relating to DLT.

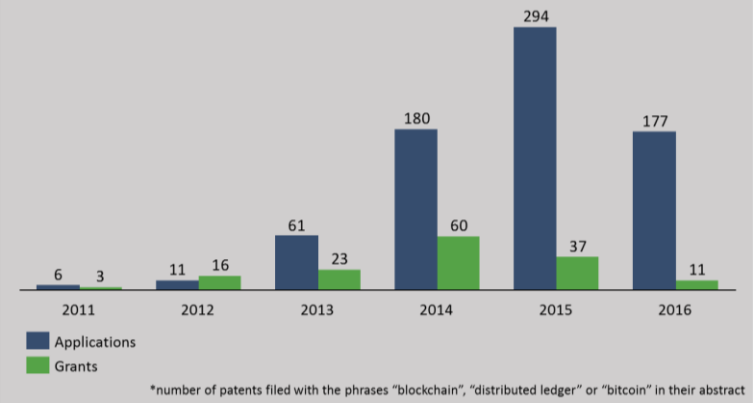

Figure 15: Distributed ledger US patent filings
Adapted from Rosario, 2017, p. 1, 3

By 2017, over 80 percent of banks predict to start DLT projects (WEF, 2016). WEF (2016) identify six value drivers; operational simplification, improved regulatory efficiency, reduced counterparty risk, fraud reduction, clearing and settlement time reduction and liquidity and capital improvement.

DLT could significantly impact banks' compliance, which is subject to a host of complex regulations and require costly and inefficient compliance methods. According to Thomson Reuters' (2016) global survey of 800 financial institutions, know your customer (KYC) negatively impacts banks' onboarding processes and client relationships, and drain banks on employee resources and money; up to 500 million USD per year is spend on KYC compliance. However, estimates suggest that DLT could cut the KYC costs by 20 percent (WEF, 2016).

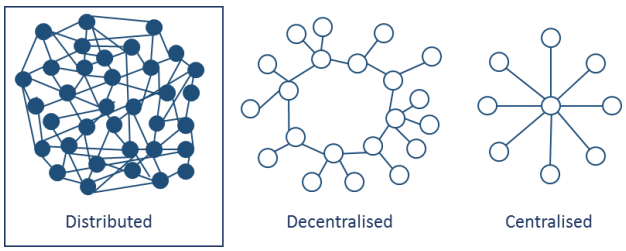

Figure 16: Distributed, Decentralised and Centralised systems
Authors' contribution

Another effect of DLT is that central intermediaries can come to be disintermediated, which would reduce arbitrage in the system. DLT could further enable increased audit efficiencies and reduce disputes over assets and transactions and lower the cost of leverage by reducing information asymmetries between lenders and borrowers (WEF, 2016). This would impact the financial services by promoting visibility and transparency. DLT also has the possibility to reduce counterparty risk and disintermediate the entities that mediate possible disputes (WEF, 2016).

Although there are many promising possibilities for applying DLT in banks, there are still significant problems and challenges. There are general problems with authentication of information exchanges, governance, energy usage and scalability, and bank specific challenges such as deciding on governance

structures, netting positions, recourse or revocation and interoperability with existing systems and networks (EMSA, 2016).

New security technology

New security technology like biometric security and authentication methods are security processes that rely on the unique biological characteristics or behaviour of an individual to verify or recognise their identity (NSTC Subcommittee on Biometrics, 2006; Rouse, 2014). One application of biometric technology is fingerprint authentication, used for example in smartphones. Security technology is currently expanding into areas such as voice recognition, keystroke detection, pulse recognition and facial recognition (Ohlhausen, 2016). The development of new security technology is instrumental in enabling a cashless future (WEF, 2015). Emerging biometric security systems are predicted to be very secure once in place in addition to increased convenience for the user. Although not entirely new, the further development of more intelligent, comprehensive and convenient digital security systems is a critical enabler for many other emerging technological developments within the sector (WEF, 2016).

Tokenization is a way to handle sensitive information securely by replacing the information or data with symbols that hold the necessary information. This method of securing data aims to reduce the data kept in a business' own systems to a minimum in a less complex and expensive way (Rouse, 2011). Tokenization is thus an attractive alternative for merchants, whose alternative otherwise would be to invest in costly end-to-end encryptions (Rouse, 2011). Aside from being more efficient and less expensive, tokenization is also widely regarded as a more secure alternative to the previous security systems for protecting sensitive data in payment processes (3 Delta Systems, 2013; Rouse, 2011).

Internet of things

Internet of things (IoT) is a concept referring to the interconnection of computing devices in everyday objects, enabling communication of data through the internet (Chui, Loffler, & Roberts, 2010). Garner (2017) estimates the use of 8.4 billion connected devices in 2017, growing to 20.4 billion devices and almost 3 trillion in IoT spending by 2020. IoT represents the convergence of a host of different technologies, real-time internet analytics, machine learning, sensors, cloud computing and so on (Barrett, 2012) According to (Capgemini, 2015), IoT is becoming the most prolific and pervasive technological revolution. The progression of the IoT technology and devices has been substantial and now has applications ranging from Amazon's Echo a smart home to wearables like Apple watch and connected vehicles to name a few (Griffith, 2017; Joseph, 2014; Slocum Jensen, 2016).

4.1.1.3 Business environment observations

Competition from fintech

Financial technology (fintech) broadly refers to the application of technology in finance (Arner, Barberis, & Buckley, 2015). Fintechs force incumbents to rethink their business models (McKinsey, 2017) by providing focused, simplified and cheaper services, presenting a *no-frills* value proposition to overserved

consumers. Fintechs' offering has extended from front-end activities to a broad range of solutions throughout the value chain. The companies are setting new norms and standards in areas such as lending, payments, personal finance, asset management, remittances, DLT and capital markets (KPMG & CB Insights, 2016). 10-40 percent of revenues and 40-60 percent of profits within these areas are estimated to be vulnerable to disruption by fintechs (Dietz, Khanna, Olanrewaju, & Rajgopal, 2015). Fintechs also pose a threat by seizing talent that used to be attracted by the well-paid and highly regarded positions in financial services (Parker Edmund, 2015; Smith, 2016). Additionally, fintechs are largely based on business models that avoid the structural formalities and regulations that incumbents face, thus able to provide more efficient and client-centric services (Desai, 2015). "For every service offered by major banks, there is at least one FinTech start-up offering similar deals at a lower cost and increased convenience." (Currency Cloud, 2016, p. 6).

Banks have become increasingly preoccupied with regulations, compliance and risk management, and fintechs have come to lead innovation in the financial sector (Desai, 2015).

> *After decades of relatively low R&D spend, the early impact of fintech galvanized the banking sector into action. Having sat behind regulatory walls building large value chains, banks found their highly visible, commoditized products ripe for disruption. (Webster & Pizzala, 2015, p. 3)*

The number of fintechs are fast growing, from 800 in April 2015 to over 2,000 in February 2016 and receive accelerating levels of capital (Dietz et al., 2015). Global fintech investment grew 201 percent in 2014, compared to 63 percent overall growth in venture investments (Accenture, 2015b), and up another 75 percent in 2015 (Accenture, 2016b).

Competition from challengers and neobanks

Non-traditional banks play a vital part in the evolution of the financial services industry (Quinten, Briault, & Evans, 2016). *Neobanks* are not technically banks as they do not have banking licenses and thus rely on partner banks to operate. They do however offer a core banking service, current accounts, complemented with added products and features, such as bookkeeping and Personal Finance Management tools (Pallardó, 2016). *Challengers* are banks that, in contrast to neobanks, recently have, or are in the process of, obtaining banking licenses (Pallardó, 2016). Pallardó (2016) distinguishes between traditional and new challengers. Traditional challengers are not fully digital, but still have a few physical branches and business models similar to traditional banks; offering a full suite of products and lending on their own balance sheet. New challenger banks are fully digital, with an ambition to "challenge either the products, the user experience or the business models of both traditional banks and traditional challengers" (Pallardó, 2016, "New challengers").

Quinten et al., (2016) describes four traits of challenger banks that have come to influence the financial services industry: personalisation of products and services; open ecosystems and platform-based models

making challengers agiler than incumbents; complete transparency with customers; and the use of predictive intelligence and commercialisation of data. A diverse set of strategies is pursued by challengers, ranging from niche offerings to platform and marketplace strategies (Quinten et al., 2016). New challengers that pursue marketplace strategies focus on developing current account offering and partnering with third-party providers for the rest of their product offering (Pallardó, 2016).

Compared to traditional banks, challenger banks on average offer better rates for savers, have lower costs per income and higher profitability. Reasons for this outperformance include less complex IT systems, more streamlined and automated operating models, simpler product set, less costly real estate and fewer legacy compliance issues (Quinten et al., 2016). As put by Dunkley (2015a), "In contrast [to old banks], new challenger banks that have not inherited legacy IT systems have the opportunity to select modern, scalable, resilient technology platforms". Several challenger banks are operating with fully self-built technologically advanced platforms.

Competition from GAFA

The vast interest surrounding Google, Apple, Facebook and Amazon (GAFA) exemplifies the potential role of digital technology companies. The interest is not unfounded; in 2014, Facebook hired the former president of PayPal to head their Messenger service and later in 2015 the company launched free of charge P2P payments (Constine, 2015). In December 2016, the social network was granted a license for e-money and payment services (Hernæs, 2017). Moreover, Amazon has been offering smaller loans to their merchants in mid-2015 (Bose, 2015).

Consumers increasingly perceive GAFA as attractive alternatives to traditional financial providers. A survey by Accenture (2017), shows that 40 percent of Gen Y respondents, born 1977 and later, would consider using GAFA as their provider of banking services. According to The Millennial Disruption Index's survey, 73 percent of respondents would be more excited about a new offering in financial services from a GAFA than from their own nationwide bank (Scratch, 2014). When around one-third of banking and insurance customers state that they would consider switching their accounts from incumbents to tech giants, there is surely cause for concern (Dilts, 2017).

Payment Services Directive

In 2007, the Payment Services Directive (PSD) facilitated the creation of a single payments market in Europe (Korschinowski, 2017). The revised Directive, PSD2, set for introduction in early 2018, will further revolutionise banking and reshape the financial services industry in Europe and beyond (Light, McFarlane, Barry, & Ruotsila, 2016). The directive aims to increase the openness, competition and level of innovation among financial institutions (Skinner, 2015) by facilitating a more integrated and efficient payments market, level the playing field among payment service providers, increase payment security, protect consumers and encourage lower payment prices (Derebail, Bhushan, Gamblin, & van Oijen, 2016). Under PSD2, the Access to Account Regulation requires any bank operating in Europe to provide

APIs that allow third-party providers access to customer accounts if the account holders consents (Derebail et al., 2016; Light et al., 2016).

The Directive introduces two new players to the financial landscape: Payment Initiation Service Providers (PISP), third-party service providers that can initiate payments directly from users' bank account; and Account Information Service Providers (AISP), third-party service providers that are allowed access to customers', enabling them to extract information and data (Light et al., 2016).

PSD2 could severely impact the profitability of banks' business models, as they could lose their monopoly on account information and payment initiation, and PISPs and AISP will disintermediate banks' customer interaction (Evry, 2016). Light et al. (2016) estimate that by 2020, 9 percent of retail payments revenues will be lost to PISP services, as PISPs are allowed to initiate payments directly from a customer's bank to the originating bank, causing banks to lose both the interchange and acquirer fee. Furthermore, investing in and developing the technology and standards needed for open APIs is a costly and time-consuming process (Derebail et al., 2016).

The Directive does, however, pose as an opportunity for proactive banks that modify their business models, as they can "gain a first-mover advantage in forging new relationships within the third-party ecosystem and partnering with companies to create innovative new services." (Derebail et al., 2016, p. 4). Banks could maximise the value of consumer data and expand their offering horizontally, by partnering with PSD2-compliant apps and services to monetise on the bank's payment APIs. Banks could also monetise on data by partnering with fintechs and use their data to identify trends and create targeted customer propositions, or by selling data and information to other retailers and third-parties (Korschinowski, 2017). 65 percent of banks have already testified to wanting to the use PSD2's access requirements to create their own app store (Skinner, 2015).

Brain drain from the financial sector

According to Raftery (2017), the competition among banks to attract highly skilled bank talent is becoming fierce due to the increased demands for quality in services like advisory or investment banking. One element of this problem is that many banks scaled or shut down talent and training programs, while at the same time taking a reputational blow affecting the industry's attractiveness (Raftery, 2017). In addition to the reputational effects of the crisis, the regulatory repercussions have also made it harder to retain talent as they reduce incentive structures and increase control and responsibility (Parker & Gupta, 2015). As smaller firms are not subject to the same regulations talent is encouraged away for the larger financial institutions, at least within the current regulatory environment (Parker & Gupta, 2015).

Lack of tech-talent

In addition to the challenges with traditional banking talent, there has been a shift in the competencies and talent required in the financial services industry (L. Petersen, interview, March 15, 2017). Traditionally banks required risk experts in risk management functions, marketing experts in marketing

departments and so on, whereas today, all departments also need employees with competencies within technology to facilitate and cope with digitalisation (L. Petersen, interview, March 15, 2017). Banks have traditionally had difficulty in attracting millennial, digital-savvy employees. The structure of the work in the industry does not appeal to this talent who prefer flexibility, creative and energetic cultures, and values that align with theirs (Horton, 2017). McKinsey predict that the demand for technology talent across all industries will be significantly higher than the supply (Bhens, Lau, & Sarrazin, 2016). They estimate that the demand for big data talent is likely to be 50-60 percent higher than the supply agile skills will be four-fold that of the supply.

4.1.2 Trends

The trends presented have been established by aggregating and conceptualising the observations into groups. Figure 17 shows a graphical overview of which observations make up each trend.

Figure 17: Overview of observations and trends

Authors' contribution

New entrants

As observed, technological developments, the internet and regulatory reforms have decreased barriers to entry (Bikker & Bos, 2005) and the financial services industry is facing a wide array of new and prospective entrants, ranging from fintechs, neobanks, challenger banks, to large and powerful technology companies, with GAFA at the forefront. New regulations further facilitate the entry of new competitors. Most prominently, PSD2 drastically reduces the barriers to entry and pushes financial institutions to open up and collaborate with newcomers. Historically, new entrants had to obtain some variety of a banking license to operate in parts of the industry. Today, due to regulatory reforms to increase competition, a range of actors in the industry are less burdened by such requirements.

Automation

Technological advances in areas like machine learning and artificial intelligence open the possibilities for what services, operations and processes can be performed automatically by computers. According to Barclays (2016), "automation using artificial intelligence could become the next game changer with respect to process efficiency in the financial services industry" (p. 2).

AI in combination with other technologies, such as cloud computing, will enable software, information and computing operations to be accessed and operated remotely. The increased amounts of data provide the fuel and base to turn the once manual processes into faster and more precise services and products.

Processes that used to depend on highly educated and trained financial professionals can now be automatically performed at lower cost by computers, leading to the commoditization of once high-value activities (WEF, 2015). Automation by robo-advisors demand minimal human intervention and will challenge traditional financial advisors (PwC, 2016b). Automation also creates opportunities for increased efficiency and cost saving (PwC, 2016b).

Another example is how complex regulation has triggered a wave of innovation in regulatory technology. 'Regtech' is "focused on solving complex regulatory challenges, enabling smarter regulation and reducing complexity in existing regulation and compliance" (PwC, 2017, p. 13). A strong trend within regtech is using AI and machine learning to automate regulatory and compliance processes and customer identification processes, such as KYC and anti-money laundering, to reduce fraud and improve client interactions (PwC, 2017).

Cost reductions and efficiency improvements due to automation in combination with other factors could lower barriers to enter the industry, thus inviting a larger pool of potential investors to private and public capital markets (WEF, 2015), of which crowdfunding is a current example. New entrants and automation will put pressure on the margins and intensify competition (WEF, 2015). The emergence of robo-advisors and automated algorithmic based financial services presents a large threat to asset management and advice services as well as other services throughout banks' value chains (Schmid, 2015). These are highly specialised functions within the bank that generate substantial revenue (Schmid, 2015).

The automation of a long range of processes and activities is and will continue to be a force shaping the industry. Technological advances allowing for automation result in cost reductions, either through increased efficiencies in customer service or in new or current products, and should thus be considered an important factor when banks prepare for the future.

Advanced data analytics

Hyperconnectivity and the large and increasing amounts of data collected on individuals, groups and society at large provides an unprecedented amount of data available to the banks. The technological developments in artificial intelligence and cloud computing enable banks to turn this data into information. This development is labelled advanced data analytics. Meaning the ability to process large amounts of data into meaningful insights about individuals, groups, people or the world in general. This information can then be used in pricing, marketing, selling, processing, risk management and lots of other functions, products and processes within the bank. Advanced data analytics will enable companies to make more precise decisions in areas ranging from strategy to product pricing. It also has the potential to greatly impact the profitability and competitiveness of firms in the future. This trend may have implications for the back-end processes, like compliance or procurement, all the way to the very front-end tasks like customer relations and support.

Modularity of solutions

As previously mentioned, the development of APIs provides internal or external units' access to the programs and information within the bank, allowing for, and following the PDS1 and 2 regulations demanding more modular solutions within the industry. Cloud computing further increases the possibilities by enabling remote access apps, software that can be utilised when needed or desired. Another aspect adding to this trend is the possibility and developments in security. New security technology enables verification through biometric sensors on mobile phones, or tokenization through the cloud, allowing add-ons to comply with strict security procedures without making large and often irreversible investments. Furthermore, the competition from neobanks and technology giants increases the pressure to provide modularity and flexibility to the disloyal customers.

Talent mismatch

While banks are dealing with regulations and reputation affecting their ability to retain their top talents in traditional banking services, they are simultaneously facing a battle over much-needed technology-based talent along with many other industries. Banks are therefore entering a two-front war for talent. Additionally, new entrants, such as neobanks, challengers, fintechs and GAFA, are going put even more pressure on the talent pool. The choices are becoming much wider, and one can argue that some of the new challengers might have a better foundation for providing the culture and flexibility that these talents desire. On the other hand, new technology opens up processes, about half of them according to McKinsey, and services to full automation thereby replacing traditional labour with software (Hirt & Willmott, 2014). As a whole, these developments point to a growing mismatch of talent in financial services which may

have impacts on the firm level, by dictating the individual firms access to important knowledge, but also on an industry level, favouring some companies over others and creating knowledge and competence gaps between groups of firms.

Sharing economy

According to (Saussier, 2015), the rapid growth that the sharing economy has experienced points to a shift in the traditional consumption patterns. Saussier (2015) also argues that the shift started at the turn of the century with the digitalisation of media and subsequent sharing of digital media. As previously mentioned, other assets and resources are being shared between peers. For the financial industries, it is especially the sharing of monetary assets through the rise of P2P lending, crowdfunding and insurance solutions. These activities are facilitated by the rise of technologies such as DLT and IoT, which enable a safer and more efficient sharing economy. Quinones and Augustine (2015) estimates that 19 percent of US consumers engaged in the sharing economy in 2015. The rapid rise of the sharing economy can, at least partially, be attributed to digitalisation and technological progress allowing peers to be connected more efficiently through seamless customer experiences (Quinones & Augustine, 2015). The apparent decrease in the popularity of asset ownership also contributes to the attractiveness of the phenomenon, although there is some debate as to what came first. The increased adaptability of consumers also allows for quicker and more widespread adoption of new platforms, products and services within the spectrum of sharing economy. Additionally, the increase in trust consumers place in their peers and their reviews and the distrust for incumbents and demand for transparency contribute to making these solutions more popular (Quinones & Augustine, 2015). The sharing economy seemingly represents more transparent business models, and in their very nature, values that indicate a more *for the people* approach.

Personalisation of products and services

According to 59 percent of European consumers, it is the customer experience that keeps them loyal to their bank or insurer (Fujitsu, 2016), making personalised services crucial to attract and retain customers. Light et al. (2016) states that "Customer demands are evolving as more and more transactions take place on mobile devices, demanding real-time, personalised and seamless payment experiences." (p. 3). However, it is a challenge for banks to keep up with consumers' quest for a highly personalised, convenient and consistent service across multiple channels. An IBM survey (2015) shows that 62 percent of banking executives believe that their institutions are not able to effectively deliver a personalised experience to customers.

Open APIs present another opportunity for banks to create more personalised services by partnering with third-party providers (Derebail et al., 2016). A result of social trust is that consumers generate increasing amounts of information and data in networks and on social media. Data on customers is becoming a commodity and big data analytics can be used by banks to create "innovative and personalized offerings that make modern banking a highly individualized experience" (Stringfellow, 2017, para. 1). AI

can further enable banks in their move towards a personalised offering and a "personal customer experience at a lower cost than was ever possible before" (Marous, 2017, "Data, Data, Data").

Customer empowerment

Customers are increasingly adopting and facilitating new digital banking channels and new types of banks. This empowers customers to self-serve, choosing when and where to perform their banking services (Estrin, 2016). Neobanks and add-on services by fintechs especially empower customers by offering 'anytime, anywhere banking', but also traditional banks follow their lead. "In past 2-3 years, many Retail Banks have accelerated their efforts to move from customer satisfaction & loyalty to customer empowerment." (Singh, 2015, para. 1). Because of the increased competition and customer disloyalty, customers today find themselves choosing between a range of financial service provider, from traditional banks to challengers and possibly even GAFA in a not too distant future. Evidently, customers are becoming increasingly empowered to make an active choice of banking provider, based on individual preferences.

With PSD2, customers will hold control over their data and accounts. By giving permission for different apps, service providers and companies to access their data, customers can take advantage of various services, regardless of their bank (Turner, 2016). DLT pose further possibilities for customer empowerment, as it increases transparency and the need for intermediaries controlling transaction flows.

Customer-centricity

New entrants in the marketplace, such as fintech, neobanks and GAFA, have reinvented the customer experience and are taking away slices of banks' customer relationships. Banks need to challenge themselves and improve their offering to customers, both regarding customer experience and channel offering. Customers are increasingly becoming channel agnostic and connected to the world through a wide range of touch points, and they expect to interact with banks in the same way with banking services offered on demand, online as well as on mobile devices (Jaubert, Marcu, Ullrich, Dela, & Malbate, 2014).

PSD2 is believed to catalyse a global competitive race towards openness and customer-centricity (Korschinowski, 2017). Owning the customer will be a main competitive advantage in the future, as it allows banks to monetise on accessing customer data and information (Derebail et al., 2016; Korschinowski, 2017). Customers' demand for transparency is increasingly facilitated by technologies and regulations, which make products and services more translucent.

Trust 2.0

The nature of trust has been challenged by new technology, historical events and social developments. As observed, customers are less trusting of banks, although there has been some improvement since 2008 financial crisis. Customers are also increasingly willing to substitute reputation or network, for a personal, trusting relationship, for instance in relation to other consumers through P2P lending platforms. The value of the network based trust through reviews, peers and social networks that are emerging are and

will continue to be, key to the development of consumer behaviour (Quinones & Augustine, 2015). In combination with the increasing demand for transparency, the way customers trust, and thus the process required to build this trust, is changing. Trust 2.0 will likely impact banks' relationships with their customers in the future.

Democratisation of products and services

According to PwC (2016a), "the democratisation of banking and personal finance describes the shift in which customers take control over their financial health and seek new channels and solutions to assist in this process." (p. 31). Technology decreases the cost of services, such as equity analysis and trading, and increases their accuracy, and regulations open services up to competition from new entrants, thus prices on these services are likely to follow suit and decrease. This would benefit existing customers and has the potential to make these products and services available to new groups of customers. New fintech entrants are already providing wealth management services at a fraction of the price, largely to customers who previously have not had access to such services in a traditional bank. The combination of new technology, regulation and entrants has the potential to democratise financial products and services.

Hypercompetition

The financial services industry has seen progress towards tougher competition. In Europe, the creation of the euro, establishment of European capital markets and international harmonisation of regulation have intensified cross-border competition (Bikker & Bos, 2005). Today, most banks face a reality where they compete against not only each other but also, and perhaps foremost, against the vast amount of non-traditional players entering the industry (Wagle, 2015). And in 2018, PSD2 will, as earlier discussed, allow new players into the financial landscape.

Part from decreasing barriers to entry, regulatory reforms have further given new entrants a competitive advantages over banks, especially since the financial crisis in 2008 when already heavy regulation increased significantly (D. Arnold & Jeffery, 2015). According to a global survey by Centre for the Study of Financial Innovation (2015), bankers are concerned that tighter regulation takes up increasingly more time for managers and eats away at margins. This ultimately impacts banks' ability to innovate and effectively compete against smaller players and non-bank challengers that are not subject to the same regulatory scrutiny.

Changing customer behaviour intensify the competition between incumbents and new entrants, as customers have less trust in traditional banks and are less loyal, increasingly willing to switch provider of financial services, making it harder for banks to retain customers. Customers, especially millennials, increasingly adapt to new products and distribution channels and are more willing to switch to non-traditional market players that are offering cost-effective and innovative solutions and tech-giants that offer superior user experiences. According to McKinsey's Global Banking Annual Review (2015), 10 to 40 percent of revenues and 20 to 60 percent of profits will be at risk by 2025 due to increased competition, compressed margins and lower prices.

> *It has never been easy to switch banks, but new apps and online services are beginning to break the heavy gravitational pull banks exert on their customers. Importantly, most start-ups are not asking customers to transfer all their financial business at once; rather, they are asking for just a slice at a time. (McKinsey, 2015, p. 19)*

Altogether, these observations suggest that the banking industry is hypercompetitive, a concept defined by D'Aveni (1994) as "an environment characterized by intense and rapid competitive moves, in which competitors must move quickly to build advantage and erode the advantage of their rivals" (p. 217–218). Moreover, according to a more recent definition "Hypercompetition comes about when there is an excess supply of strong competitors and a low amount of intensity of barriers to entry" (Urmey, 2017, para. 1).

Collaborative environment

Hindered by legacy systems, banks find themselves unable to keep up with faster innovation cycles and higher customer expectations. Facing vast competition from innovative fintech companies, banks are increasingly collaborating with fintechs rather than fighting them to access to their technology and talent (Currency Cloud, 2016). As stated by Blitz, KPMG's Head of Fintech; "Over the past year, there has been a shift as banks have moved from seeing fintech companies as disruptors to co-creators." (KPMG & CB Insights, 2016, p. 29). Banks are increasingly engaging in partnerships with fintechs, 54 percent in 2017, 12 percentage points higher than 2016, and buying more services from fintechs, 40 percent of banks, versus 25 percent in 2016 (PwC, 2017). A survey of US executives shows that 88 percent believe that in 10 years from now, the banking industry will likely be characterised by traditional banks partnering with fintechs in a largely collaborative environment (Manatt, 2016). This positive view on collaboration is shared by fintechs, which increasingly see incumbents as a source of capital and an opportunity to "become established in the industry, legitimise their operations in the eyes of sceptical consumers or expand their market share" (Manatt, 2016, p. 4).

Collaborative efforts could increase the efficiency of incumbents' businesses. 73 percent of respondents in a survey by PwC (2017) saw cost reduction as the main opportunity related to collaborating with fintech, by simplifying and rationalising processes and reduce inefficiencies in operations. Collaboration is also a way for banks to differentiate themselves, and servicing the needs of adaptable and channel agnostic customers. Through collaboration and co-creation, fintechs have gone from disrupting banks to enabling them to kick-start their own innovation. With the implementation of PSD2 and open APIs, banks will move towards a more open structure that will facilitate further collaboration with other service providers.

Reduced intermediation

Traditionally, banks have generated the majority of its profits from interest income. The importance of traditional banking services, such as savings and lending, has diminished with the development of capital markets, hypercompetition and internationalisation of the industry (Bikker & Bos, 2005). Banks have

been forced to generate revenue from non-interest income rather than interest income alone, by shifting activities from traditional lending towards activities that enhance financial market intermediation, such as creating and selling new capital market products and offering transaction based advisory services (Bikker & Bos, 2005). D. Arnold and Jeffery, 2015 suggest that the value provided by financial institutions today derives from their intermediary function and their role in creating value networks that bring together investors and borrowers, collect and distribute information and brokerage for contracts.

Several forces are however disrupting banks' value chains and their role as intermediaries, such as changes in the legal environment, technological advancements on the supply side and the financial crisis on the demand side (D. Arnold & Jeffery, 2015). With easier access to information, competitors can offer customers alternative interaction channels and platforms, and bypass banks as intermediaries (D. Arnold & Jeffery, 2015). Non-banks increasingly take over the customer interaction and banks' origination and sales activities, causing banks to lose their most profitable segment. Fintechs and new challengers do so by adding a layer of products and service separate from banks' underlying balance-sheet credit provisions (McKinsey, 2016). As earlier observed, PSD2 and open APIs increase competitors' possibilities for taking ownership of banks' customers.

Other novelties diminishing the need for traditional banking channels and aggregating the trend towards disintermediation are P2P lending, retail algorithmic trading, digital currencies, mobile-banking, crowdfunding and the move towards a cashless society (D. Arnold & Jeffery, 2015; Kroszner, 2015; WEF, 2016). DLT and smart contracts will also have especially disruptive effects and reduce the need for intermediaries to validate transactions in areas such as lending, payments and movement of funds and assets (McLean, 2016; WEF, 2016).

As customers are becoming increasingly disloyal, adaptable and more inclined to use new channels to connect with their financial service provider, the trend towards disintermediation is likely to accelerate further. New platforms that disintermediate banks by connecting market constituents in public and private capital markets are progressively gaining traction (WEF, 2015). Lending via bond markets and the use of corporate debt as a source of funding steadily increases, whereas bank loans' share of corporate debt decreases (Authers, 2014). In 2015, only 25 percent of lending in the US was provided by banks (Schwarz et al., 2015).

4.1.3 Scenarios

Banks have traditionally been organised as vertically integrated top-down organisations, owning not only the product channels to market but also the customer relationship (Brear & Bouvier, 2016). The traditional bank has been described as three companies within one; a retailer that is caring for the customer relationships, a processor managing processes and channels, and a manufacturer of products (Skinner, 2014). However, the trends outlined above are revolutionising the industry and profoundly

affecting the reach and efficiency of banks' aggregated value chains (D. Arnold & Jeffery, 2015). Banks offering is becoming increasingly disaggregated and unbundled (Kroszner, 2015).

According to Skinner (2014), banks can only operate with excellence in one part of its former vertically integrated role. He thus suggests that banks should not engage in protecting the traditional vertically integrated structure, but instead focus on becoming a specialist rather than a generalist. Likewise, Hagel, Brown, De Maar and Wooll (2016) suggest that businesses in industries facing disruption should focus their efforts on a particular business model, rather than being hybrids or generalists. Hagel et al. argue that focused businesses are better equipped at leveraging their capabilities and more flexible in changing environments. Depending on the pattern of disruption in an industry and given how the market is expected to evolve, firms should choose different business models (Hagel et al., 2016). Finding the right fit enables firms to take advantage of the disruptive trends and to capture and create value.

With this in mind, this section explores three future scenarios of banking to illustrate how the past and current developments in the industry may be rendered in the future. We connect the trends we have analysed to scenarios that have been generated by bringing together perspectives on banks' role in the future. The scenarios, shown in Figures 18 and 19 below, are illustrations of possible futures. One should, however, note that nuances of these may represent more likely end-states. The scenarios do not serve to represent exhaustive alternatives that banks should choose between or bet on, but rather a set of characteristics of future states of the financial services industry to use as a base for discussing innovation efforts within organisations.

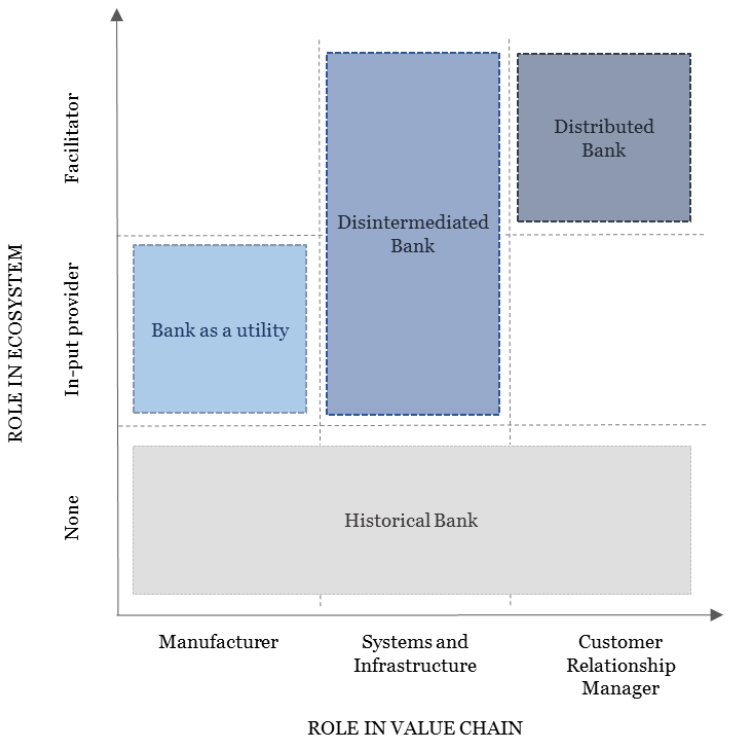

Figure 18: Scenarios for the future role of banks
Authors' contribution

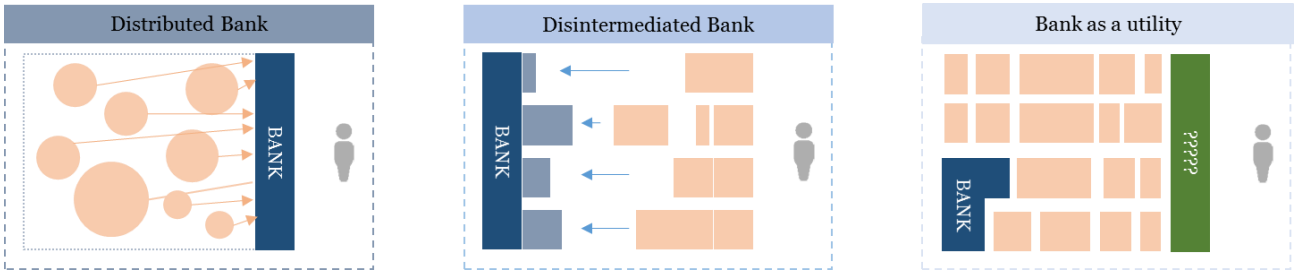

Figure 19: The potential role of banks in the new value chain
Authors' contribution

4.1.3.1 Distributed Bank

A possible scenario for the future of banks is the distributed bank. In this scenario, banks will become distributors of products and services produced by other businesses (Hatami, 2015). This could be seen as a result of new entrants, especially fintechs, which offer specialised products and services in a wide range of areas. Customers will access these providers through the interface of what will constitute the future bank: an online business that is aggregating a universal set of banking services (Hatami, 2015). An IBM report (2015) adds validity to the scenario, stating that "Banks are uniquely placed to be the orchestrator of fintechs and other partners. Banks are also best positioned to continue to manage the relationship with customers." (p. 8). The distributed bank scenario resembles Skinner's concept of *Banking as a Service* (BaaS) (2014). The idea of BaaS is that the components of a bank's offering become distributed amongst several specialists that more effectively manufacture or produce their piece of the process than the generalist or the traditionally vertically integrated bank.

> *New entrants are trying to come up with better front-end user experiences through apps; they are trying to create easy to plug-and-play APIs to allow anything to be processed anywhere by anyone; and they are re-inventing products by offering cloud-based delivery of services. (Skinner, 2014, para. 9)*

Rather than building and controlling the components themselves, banks will source them from other providers (Skinner, 2014). External companies would provide the majority of the systems, processes and infrastructure, while the bank would assemble and deliver services to customers through the banks front-end interface. WEF (2015) suggests the same scenario; as customers' needs continue to change and grow, traditional banks will have a harder time trying to meet their needs. With the rise of alternative providers of specialised financial services, banks and financial institutes are increasingly pressured to cannibalise themselves by integrating third parties through partnerships and collaborations. To face the competition, banks will have to shy away from in-house solutions and rely on external providers that satisfy the rapidly changing customer needs. Banks will end up as mere providers of services, becoming service aggregators that create a network of products and services to customers (WEF, 2015).

Lars Petersen, Nordic e-business manager at Santander Consumer Bank, also believes in a distributed bank scenario, where banks source services and products from third parties and offer them to customers under the bank's brand. Petersen (interview, March 15, 2017) believes that banks' brand will become an increasingly important differentiator, as banks in this future scenario will all have similar technology. Customers will choose their banking *marketplace* based on brand preferences, as each bank more or less will be able to offer the same set of third-party services.

Facing the threat of disintermediation, Greer (2015) sees a significant risk of banks losing the customer-facing side of business over the next 5-10 years. Greer (2015) argues that becoming distributed is a way for banks to stay relevant "even as they begin to see some of their legacy products or services fall to new entrants." (para. 2). By aggregating nonbank fintech offerings, banks would maintain the customer-facing side of the business and let customers access offers through the bank (Greer, 2015). Compared to today, banks would thus shift their focus towards operating as a relationship manager, owning the customer relationship and providing customers with a horizontal array of solutions by leveraging its ecosystem of partnerships and collaborations with niche companies, fintechs and other businesses (Accenture, 2016b; WEF, 2015).

The distributed bank scenario and the variations presented is founded on some of the trends presented earlier. Central to this scenario is the entrance of new companies, especially fintechs, to provide products to a platform or ecosystem. In addition to customer empowerment, modularity of solutions, hypercompetition and increased collaboration are also consistent with this scenario. The PSD2 regulation is one example of how this trend could push towards a distributed bank scenario by practically forcing collaboration and partnership into the traditional value chain.

The distributed bank model would let banks keep the benefits that come with owning the customer. If banks focus on becoming the relationship manager, they can preserve the benefits of traditional bundling of products and services, and for example increase banks' cross-selling opportunities Greer (2015). However, WEF (2015) argues that although banks would be keeping the customer-facing side of business, their control over customers would be impacted by enabling an ecosystem of non-traditional providers. "Even though financial institutions will serve as a gateway, their ability to control end-to-end customer experience will be reduced" (WEF, 2015, p. 109).

4.1.3.2 Disintermediated Bank

As discussed, banks are attacked from all sides by new companies that specialise in improving particular products, services and customer experiences. These companies have the potential to weaken banks' relationship with the customer and seize the value these. As noted in the previous analysis, customers' trust in fintechs and non-banks is continuously increasing. Customers are with increasing speed adapting to and adopting new channels and interfaces. PSD2 and open APIs will play a vital part in further opening up third parties' disintermediation of banks. As a result, it is a viable scenario that banks in the future

may be fully disintermediated; as they have lost customer ownership to digital competitors, ranging from fintechs to technology giants.

> *I see the future of banks as gatherers of services, within this they have to find their niche. Is there niche the customer service? […] It is probably not their core competence. So what is then their core-competence? If you focus on everything, you become good at nothing. I think the banks that win will be those that are able to play one game and become good at that. (L. Jonasson, interview, March 3, 2017)*

Up until recently, banks have enjoyed their status as intermediaries and have had no incentive to open up a platform to enable partnerships and collaborations with other players. But as mentioned, many industry experts and researchers argue that banks should become specialists and have more niche structures and business models to gain competitive advantage.

Hatami (2015) suggest that the disintermediated bank is a possible future scenario since customers are becoming increasingly comfortable with going through alternative providers to buy financial services, as already noted with for example payments and alternative lending platforms. In this scenario, banks will still be providing the financial services, but through platforms and interfaces that are chosen by the customers, and thus gradually becoming more of a service, "providing service but not owning the customer relationship" (Hatami, 2015, p. 2). Instead of a universal, whole service bank, the front-end will be split up by many actors, and the bank will provide the systems, processes and infrastructure. An example could be a wealth management app that manages a customers' accounts across from different banks. The customer only interacts with the app, while the bank holds the account and provides the data and infrastructure through open APIs.

Brear and Bouvier (2016) suggest that Banking as a Platform (BaaP) is a way for banks to handle customer disintermediation. The BaaP structure entails that banks shift their activities towards supplying an infrastructure that lets users create and consume value (Brear & Bouvier, 2016). Through open APIs, external developers can extend the platform's functionality, and unlike today, banks would not supply the end product, but the software and technology that connects other parties. "At the technology layer, external developers can extend platform functionality using APIs. At the business layer, users (producers) can create value on the platform for other to consume." (Brear & Bouvier, 2016, "Making a Platform Play in Banking Possible").

I line with Brear and Bouvier, Turner (2016b), argues that "Banks that transition to be a platform more than a service provider stands the greater chance of staying viable and successful" (para. 22). WEF (2015) also discuss the scenario, saying that also BaaP is manifested by shifting customer channels, virtual banks and the evolution of mobile banking. The BaaP movement "aims to standardise APIs across financial institutions, allowing third-party developers to easily build and integrate customer-facing enhancements

to the institutions' core offerings" (WEF, 2015, p. 100). As earlier observed, PSD2 could facilitate the distributed bank scenarios as the directive essentially forces banks to become platforms.

In addition to hypercompetition, the changing nature of trust, reduced intermediation and democratisation of products and services are trends that could point to a future scenario of the disintermediated bank. In many ways, this scenario represents an escalation of these trends, drawing on changes in customer behaviour and attitude, new sources of competition, and technology and regulation lowering the barriers for new entrants to enter banks' business areas and value chains.

Platform strategies have not yet reached banking, or is at least a rare phenomenon. The only predecessors are Visa and MasterCard, companies that have created a network linking issuers, acquirers, start-ups, vendors and payment service providers (Brear & Bouvier, 2016).

In line with BaaP advocates, Kroszner (2015) suggests that technology and regulation will affect the viability of banks and their business models, and as a result, many banks in the future will not be seen as primarily *financial* firms, but rather as primarily *technological* firm. Banks will be "technology and data analytics firm engaged in financial services rather than a financial services firm engaged in using technology and data analytics" (Kroszner, 2015, p. 15).

Disintermediation is further accelerated by hypercompetition and new challengers entering the industry, especially fintechs, which have come to be on the frontier of innovation and extended their offering from being primarily focused on front-end activities to include a broad range of solutions throughout the value chain (McKinsey, 2017; Skinner, 2014).

4.1.3.3 Bank as a utility

Much like the distributed scenario, the bank as a utility scenario suggests that products and services are provided by a wide range of companies, rather than a universal bank. In contrast to the distributed scenario, in this scenario, banks will not be the aggregator of these services. Rather, this scenario draws upon earlier discussions of competition, disintermediation, customer adaptability and the observation that banks are hindered by legacy systems. In all, this suggests that banks might not be the ones owning the service aggregating front-end. Moving from value chains to a value network society (L. Petersen, interview, March 15, 2017), it is not unlikely that another, primarily non-financial, universal multi-sector platform network created by technology giants or GAFA. In this scenarios, banks will end up providing back-end utility like services, just as electricity or gas suppliers do today.

For example, PSD2 enables the appearance of big customer-centric ecosystems, replacing banks as customer intermediaries, since non-banks will be allowed to offer customers services on top of banks accounts. If large internet companies, such as GAFA, start pushing financial services to their own customer bases, they create ecosystems that potentially take customers away from the banks (Finnegan, Finnegan, & Finnegan, 2016).

WEF (2015) predicts that incumbent players within the financial services industry are most likely to be disrupted within the services where customers experience the greatest friction and where the largest margins are found. WEF (2015) further says that banks' ability to cross-subsidise across products will be diminished due to a disaggregation of the offering. Many sources voice similar concerns on the changing role of banks. As put by Celent banking analyst Stephen Greer (2015), "Banks become a utility on the back-end, essentially forced by the market to provide the necessary regulatory requirements and accounts for nonbank disruptors." (para. 1). Accenture (2016a) also propose that one of the key five roles that banks should operate in is as core financial services utility. In this role, banks would not provide the platform, but rather focus on perfecting the traditional role of banks and provide a package of compliant financial services to platforms.

Jenkins (2016) also supports this scenario, by arguing that the financial sector increasingly adapts the characteristics of a utility; "operating under high levels of regulation, with price and profit controls, low returns on equity, high dividend yields, constrained growth prospects and modest stock market valuations" ("Generating returns"). Jenkins (2016) suggests that the development towards banking as a utility is largely due to the constraints that regulations, such as capital requirements and liquidity rules, put on banks. With increasing regulations and reduced risk appetites, banking products and services are increasingly commoditized and utility-like. The development is most noticeable within the area of payments, a core part of banking that has been and further will be commoditized and attracts vast competition from fintech companies. According to Jenkins (2016), banks' loss of the customer-facing side within payments and development towards being a utility provider is only the visible tip of a broader change.

As earlier described, bank as a utility might be a future scenario due to the hypercompetitive landscape that the financial sector is facing; regulations are increasing capital requirements, opening the value chain and squeezing margins, while new entrants further intensify competition. Furthermore, the talent mismatch building in the industry could also be a factor in this move, due to incumbents' lack of technology and user experience talent, creating areas of friction in the banks' customer relationships. Naturally, trends such as increased customer expectations and new entrants are also consistent with the foundations of this scenario.

4.2 CAPABILITY ANALYSIS

The section adds to the overall research by answering research question 1: *How does the development of the financial services industry impact the capabilities required for competitive survival?* More specifically, this section aims to explore sub-question 1.b: *What capabilities will be required by banks for competitive survival?* To answer this question, an analysis will proceed from the pre-established scenarios. Using insights from theories discussed in the theoretical framework, the capability analysis will

present three categories of dynamic capabilities that we deem most important for banks to stay competitive in the future.

We find that the evolutionary view of economics, where innovation and creative destruction drives the continuous shift of equilibriums, describes the transition represented in the future scenarios. Furthermore, as the transition towards a future scenario of banking is expected to entail a series of changes, twists and turns, it will likely require banks' resources are developed, adapted and rendered obsolete. Therefore, we argue that the financial services industry can be seen in a context of the dynamic RBV or the DCV described in the theoretical framework. As will be discussed below, we find that the dynamic capabilities required by banks in the future can be divided into three categories: protect, discover, and act.

Firstly, we argue that a crucial prerequisite for remaining competitive in any of the pre-established future roles of banks is a group of capabilities to ***act***; to act effectively and efficiently on available information and utilise the breath of internal and external resources available to the organisation. Secondly, we argue for a group of dynamic capabilities that comprise a category of capabilities that ***protect*** the organisation. Capabilities to protect refer to organisations' ability to manage risks and evaluate the up- and downsides of technologies, products, partnerships and strategies, and their ability to shield the organisation from harmful developments stemming from internal as well as external sources. Lastly, we argue that the success of capabilities to protect and act requires organisations to have well-developed capabilities in terms of foresight and business intelligence, a group of capabilities that we label ***discover***. Banks' ability to discover is related to developments internally, externally and in the future. Without strong capabilities to discover, the developments that require organisations to mobilise capabilities to either protect or act, the two other classes of capabilities, will not be deployed effectively.

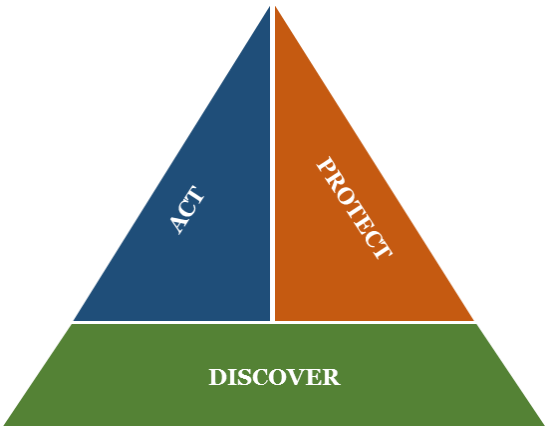

Figure 20: Capability trifactor
Authors' contribution

4.2.1 Act

As mentioned in the scenario analysis, customers are becoming more adaptable, empowered and less loyal, and the threat from new entrants in the financial services industry is looming and the cycle of innovation is speeding up. While companies turn to agile or the lean start-up methods, there is arguably a need for large incumbent companies to become more efficient and effective in their execution of strategic initiatives. We argue that banks' ability to remain competitive in the future partly relies on their dynamic capabilities to act, *a group of capabilities that mobilise efficient, effective and timely execution of both long- and short-term strategic efforts*. The dynamic capabilities to act can be seen in connection to existing theories on dynamic capabilities as described by Teece et al. (1997):

> *Winners in the global marketplace have been firms that can demonstrate timely responsiveness and rapid and flexible product innovation, coupled with the management capability to effectively coordinate and redeploy internal and external competences. (p. 515)*

The capabilities described by Teece et al. (1997) represent product innovation, coordination and redeployment of internal and external resources, capabilities which can be argued to be part of a category of dynamic capabilities to act. It should however be noted that in this thesis, innovation is not considered a dynamic capability in itself, but rather a result of other capabilities acting together (Hill, Brandeau, Truelove, & Lineback, 2015).

The previously mentioned legacy banking systems, along with a stringent risk-averse culture, silo structure and more, inhibit the incumbents from developing this ability. Major trends and plausible future scenarios of banking point to a situation where banks are no longer the sole provider or actor throughout the entire value chain. This entails that in some way or other, either through a platform, utility, network or another solution, banks will need to collaborate with external parties and thus, at a minimum, keep up with the pace of these third-parties.

Banks' capabilities to effectively coordinate and redeploy internal and external competencies are necessary in the future scenarios of banking in terms of the collaborative capabilities needed in the financial services industry. As previously noted, Capron et al. (1998), Gulati (1999) and Lane and Lubatkin (1998) specifically suggest that alliance and acquisition routines are dynamic capabilities. In the distributed bank scenario, where banks become providers of third-parties' products and services, banks' ability to forge partnerships and collaborations will be vital. Banks will act as an orchestrator of partners. Thus the importance of sourcing, bundling, connecting and delivering these products and services to customers will play an important role for banks competitive position. It is plausible that banks that succeed in continuously developing capabilities to choose the right partners and leverage these partnerships best will have a stronger competitive position than firms who do not develop this capability. The disintermediated bank scenario would entail similar demands for the bank, however since the bank

does not own the customer relationship and thus loses control over the bundling of products to the customers, the bank becomes dependent on third-party firms for their access to customers. In this scenario, banks will also compete on their capability as partner and provider for other firms.

To collaborate with the actors that, across all the above scenarios, will come to plug into or take over parts of banks' value chains, banks will need to enable system compatibility. If banks become infrastructure or platform providers, it might be even more substantial that their systems, processes and ways of working are adaptable, efficient and compatible with other systems, and that they continue to be. As previously discussed legacy banking systems, often thousands within just one bank, are not built according to a cohesive standard, complicating the transition of the addition of new technology, partners and even customers.

In addition to building capabilities to ensure that firms effectively can coordinate and redeploy external resources, dynamic capabilities, as described above, also entail effectiveness in coordinating and (re)deployment of internal resources. In the context of the future financial services industry, one important aspect of this capability will be banks' ability to efficiently and effectively allocate resources and coordinate strategic efforts within the firm. As noted earlier, corporate ignorance is described by Rohrbeck and Gemünden (2011) as one of three reasons organisations may struggle with responding to external change. This ignorance can, among other things, be attributed to short-strategic planning cycles, vital information not reaching the appropriate management level and reduced management capacity and capability to process this information (Rohrbeck & Gemünden, 2011). For banks, it is central that short-term goals do not necessarily trump long term goals. Short strategic planning cycles may create incentives that promote inefficient resource allocation, by favouring and giving priority to projects with a short-term of certain reward, or a low-risk profile. The risk-averse culture often described in banks is one example that may emphasise this risk further. In a scenario where the banks manage the product development, it could be vital for banks to take on for example projects and product developments with different risk profiles than usual. As noted in the scenario analysis new entrants, like fintech companies will and are willing to invest capital and risk in uncertain projects that sometimes lead to products customers love. Examples from other industries indicate that this might mean being able to stomach more risk within product development, perhaps even launching minimum-viable-products to test an idea without knowing the precise result (S. Haldrup, interview, February 28, 2017). On the other hand, if banks forgo the product and service development role in the value chain, internal resource coordination and deployment would still be an important part of their competitive position.

As highlighted in all scenarios presented above, hypercompetition, new regulations and customer expectations will likely continue to increase pressure on banks to decrease costs and employ best practices in processes. If banks adopt new technologies, such as automation and AI, they can increase efficiencies across several processes. However, if they continue to use outdated technologies or avoid investing in new

systems and resources, banks risk competing against companies that can accept lower margins, use technology to allocate resources more efficiently or price products more precisely.

Another element of the Teece et al.'s (1997) description of dynamic capabilities highlights the importance of timely responsiveness. In a world where ecosystems are built on partnerships and collaborations, the success and competitiveness of these ecosystems and bundles depend on meeting the needs of their customers, which as described earlier are changing and evolving faster than ever. For instance, in the distributed bank scenario, where the bank might curate the bundled offering to the customers, a part of ensuring timely responsiveness could be tied to the firm's ability to quickly mobilise collaborations or integration of new firms and additional products to the offering. A similar dynamic could be seen in the disintermediated bank scenario where the bank could benefit from building capabilities to quickly mobilise to take advantage of new business areas or applications for their platforms.

Regarding the banking as a utility scenario, banks face less pressure to drive innovation and to be at the very forefront of developments. However, in this scenario banks role in the value chain could be greatly impacted by regulation and swift reaction and preparation for potential changes in these could be an important differentiating factor. Additionally, banking as a utility would entail that the services banks provide to other firms could become standardised and largely substitutable. Thus, this could put pressure on banks to quickly employ new technologies and practises that either reduce costs or provide new in-demand services and features.

The scenarios would all represent substantial changes to incumbents, and given that the incumbents do not know exactly how these scenarios play out, they would benefit from building capabilities that enable responsiveness throughout the organisation. As previously touched on, some estimate that more than half of the current banking processes will be automated. As we argue in our scenarios, incumbents seem to agree that the future holds changes, but how, when and where are important questions that are not known for certain. Developing the capability to make strategic decisions, access internal and external expertise, set up collaborative structures and execute projects in a quick manner will become an important part of banks' operations. Especially, when the speed of innovation increases, competitions intensifies and customer behaviour changes. Thus, building responsiveness throughout the organisation could represent a source of temporary competitive advantage.

By promoting structures that operate across silos, like cross-functional teams, and engaging employees in projects outside of their business line the inclination to protect their own business line or silo might be decreased. Also, efforts like this could contribute to simplifying internal structures in some processes, further mitigating intertie within the bank.

The specific capabilities that comprise the category of the dynamic capabilities to act may, and likely would, vary intra-industry and across the different scenarios. However, on a group level, we argue that the capabilities to act are prerequisites for banks to remain competitive in the future, particularly to establish a series of short-term competitive advantages. Furthermore, capabilities *to mobilise efficient,*

effective and timely execution of both long- and short-term strategic efforts may also serve as important foundations for making the internal transitions and changes that banks will likely require in the near future.

4.2.2 Protect

Dynamic capabilities often relate to how firms respond to exogenous changes in the business environment (Leiblein, 2011). As noted in the scenario analysis, the financial services industry is undoubtedly facing a hurdle of exogenous changes in for example demand, technology and regulation. All scenarios for the future role of banks that has been presented assume that such changes will occur and each scenario represents a role of banks different than today. Regardless of which of the scenarios the financial industry faces, all of them will put banks' dynamic capabilities to the test, forcing incumbents to devote substantial efforts to adapt their resource base and capabilities to their new roles in the industry. Banks already are, and will have to continue, develop their capabilities to survive in the evolving industry. We argue that banks will need a category of dynamic capabilities to protect, *by effectively managing the risk associated with resources becoming obsolete, ruined, imitated or adversely affected due to internal or external factors, and to be able to mitigate this risk*. The dynamic capabilities to *protect* refers just as much to banks' ability to protect its core competencies from being be diluted in the quest of acquiring new capabilities, as it refers to have the capabilities to protect the firm from new threats surfacing in the rapidly evolving financial services industry.

Dynamic capabilities to protect a firm's core serves two purposes; on the one hand, it means having a general robustness and redundancy to survive disruption and changing business environments. On the other hand, protection refers to the ability to maintaining a strong core, and not dilute core competencies while pursuing the development of new resources and capabilities in the quest for renewal.

Traditionally, established firms are suggested to approach disruption by either ignoring it and sticking to their core capabilities, or by engaging in the disruption (Markides & Charitou, 2003). Both alternatives have their pitfalls. Firms that ignore the changing circumstances and restrain from responding to disruption in fear of cannibalising their core business, could lose their competitive advantage (Markides & Charitou, 2003). On the other hand, fully embracing a new way of doing business, and reallocating resources to the efforts to change an established way of doing business is complex.

In the quest for developing new capabilities in a timely and efficient manner, capabilities are often sought for beyond the organisational boundaries. Decentralisation can, however, make it difficult to focus on core competencies; a firm's unique combination of resources and capabilities, which should be durable, opaque and difficult to transfer (Prahalad & Hamel, 2006). Dynamic capabilities are the result of long-term investments and efforts (Stalk, Evans, & Shulman, 1992), thus reallocating resources away from the core could potentially dilute the firm's existing capabilities and destroy value. Furthermore, the capability life cycle explains, capabilities go through different stages and become mature and dynamic after being

developed over time, maintained and repeated (Helfat & Peteraf, 2003). Helfat and Peteraf (2003) specifically suggest that it is the "evolution over time of the resources and capabilities that form the basis of competitive advantage" (p. 998), and thus, capabilities differ in their level of functionality. Over time, organisations become more efficient and effective in deploying a capability (Helfat & Peteraf, 2003). This supports the argument that it is important for firms to protect their core competencies and capabilities, in order to have a foundation of dynamic capability skills, in case newly pursued capabilities fall through, in light of new exogenous changes in the rapidly changing environment. This will be of importance in all the suggested future scenarios of banking, as they entail that banks to some degree will have to change to adapt to their new roles. Moving towards either one of the scenarios, banks will have to protect their core business, brand and competencies to avoid finding themselves in a disadvantageous position if the road towards the future of banking unfolds differently than expected. Given that, the dynamic capabilities to protect ensure that *firms' valuable competencies will be sustained in the face of changes taking place in the industry*.

The dual strategy, playing two games at once, is, however, an example of dynamically protecting the firm by building up redundancy in the core, while at the same time hedging by investing in complementary resources and capabilities and moving into new business areas. Agility, defined as "the ability to adapt simultaneously to many different business environments" (Stalk et al., 1992, p. 63), is thus an important dimension in the dynamic capabilities to protect.

Capabilities to protect also refers to being vigilant and capable of identifying and deploying resources to act on threats and challenges that come with the dynamics of an industry. Since the financial crisis, systemic-risk-based regulatory reforms have significantly impacted and burdened the financial sector. Not only to serve at the pleasure of regulators but also to survive in an industry that is becoming increasingly uncertain and volatile, banks must have capabilities within for example cyber-security and risk management.

Pursuing new technologies is a balancing act between great opportunities and hazards. It is necessary for financial institutions to have the capability to maintain security and protect data while embracing the technological progress towards open systems and data sharing. Cyber-security and data protection will be especially important in the distributed and disintermediated scenarios, which move toward open banking, and data is decentralised or open for third-party access, thus exposing it to security hazards.

4.2.3 Discover

Long gone is the time when incumbent banks were the sole source of innovation in the financial services industry. Today, other factors and trends are pushing the industry's limits, and banks are forced to keep up. A vast amount of literature on organisational theories such as the RBV and transaction cost economics argue for how firms should discover and explore new knowledge, capabilities, technologies and opportunities. Dual business model and open innovation argue that open boundaries and decentralised

organisations are preferable and encourage firms to look beyond the boundaries of the firm in their exploration, through means such as collaborations, partnerships and investments. While theory often debates *if* firms should explore and discover opportunities beyond their boundaries, the question of how and *what* to explore is equally important.

The dynamic capabilities to discover *are the abilities to sense, screen and track information from the internal or external environment, and evaluate their potential impact*. These capabilities are fundamental to gain insight into which future movements in the internal organisation, business environment, technological shifts and changes in customer behaviours that will come to affect the industry, and thus to know where to direct exploratory efforts. Discovery becomes increasingly important with rapid shifts in the industry and technology is forcing incumbents always to stay alert.

As discussed, development towards more open banking structures and easier access to customers, pose as both a threat and a possibility for banks. In the latter, banks can use the increased amount of data on customers to their advantage, especially in the scenario of the distributed and disintermediated bank that becomes a platform. As banks open up and data becomes more accessible, one could argue that it is the *use* of data that will set banks apart in the future, rather than the possession of data. Strong analytics capabilities will allow banks to generate insightful intelligence from various sources of internal and external data that can be used for commercial as well as operational purposes. As a commercial application, analytics will give the distributed bank insight into what products and services to provide and which external providers to include in its customer offering.

As noted in the previous analysis, economic cycles shorten and new technologies emerge more often the banks will need to develop capabilities to assess the opportunities available to them. Thus, developing capabilities within the firm to evaluate which technologies and projects are best suited for the firm and allocate effectively, and being able to overcome corporate ignorance in this respect can be critical for a bank to maintain their competitiveness, especially with regards to cost structures in all scenarios.

In all future scenarios where the bank keeps the customer facing side of business, their capability to monitor and analyse customers' social behaviour and patterns will become indispensable in offering personalised customer experiences and products. Analytics will likewise provide insight into customers' channel usage, how they choose to interact with their bank, and should thus be of importance in the distributed bank scenario where banks either provide the channels to customers, or disintermediated bank scenario, where banks provide the platforms that connect third parties.

Analysing data alongside future studies will contribute to ensuring banks are perceptible and capable of foreseeing movements in the industry, and thus able to seize opportunities before they arise as threats. Just like analytics, the use of artificial intelligence could have the same benefits. Through AI, banks will not only be able to interpret data quicker, wider and better but also have automated systems act upon it. The vast applications of AI benefit the capabilities to discover in all scenarios.

Discovering is not only about banks uncovering, screening and assessing existing opportunities or patterns hidden in data, but it is also about banks discovering new opportunities themselves internally. One thing in common for banks in all future scenarios is that they will face increased competition in the future. To survive hypercompetition, all banks will need the capability to generate new ideas, whether based on data analytics or market sense. Just as theories on intrapreneurship often highlight the need for an entrepreneurial culture within the firm, the same can be argued for discovery. Fostering an entrepreneurial culture should facilitate a more creative and wide-spanning process of idea discovery throughout the firm.

Another part of developing the capabilities to coordinate and redeploy internal resources, mentioned in the act section, is developing structures and processes for uncovering, monitoring and communicating the capabilities that exist within the firm. Being able to mobilise the information and competencies that exist within the bank supports the firm's ability to act, by increasing the ease and amount of resources available to any given activity.

Developing capabilities to discover can be seen as a foundation for the other two categories. Being able to discover, whether internally or externally, determines the availability, breadth and quality of the information used to make decisions and direct the efforts to both act and protect the firm's resource base. The capabilities to discover supports the bank's ability to protect, both in pricing and traditional risk settings that concern the deployment of traditional resources like capital. Capabilities to discover also provide analysis and information to evolve, redeploy, build and so on, resources that protect the bank.

4.2.4 The tri-factor of dynamic capabilities

Markides and Charitou (2003) propose the dual business model as an alternative to the two alternatives they argue that firms have when reacting to change; either embrace the new business model that conflicts with existing ways of doing business, or ignore the disruption and stay true to the core. Although employing a dual business model can be a viable way of reacting to disruption, we propose a more nuanced approach. Substituting 'sticking to core' and/or fully embracing the new business model and abandoning the existing one, with managing risk both in terms of protection against unnecessary risks and in developing capabilities to evaluate risks to the company, and developing the ability to act quicker and more effectively on information, trends and developments on a large scale.

By emphasising the ability to act and the ability to protect across the firm, the hypothesis is that the firm will be suited to fend off and act on important developments that occur externally and to rig themselves and their systems to prevent exposure or latency among internal factors. However, these two aptitudes depend on the firm's ability to discover, or gather, analyse and utilise, relevant information about their environment and internal workings. Without the ability to discover the information to act on or to defend against, the previously mentioned two abilities will risk being efficient at protecting the firm from unimportant threats or acting efficiently on the wrong trends, developments or needs of the organisation.

The tree categories of dynamic capabilities that have been established, summariced in Figure 21, represent broad and dominant groups of capabilities that banks can apply in their strategizing and management practices. In line RBV and theory on dynamic capability, we stress that firms are heterogeneous in their set of dynamic capabilities.

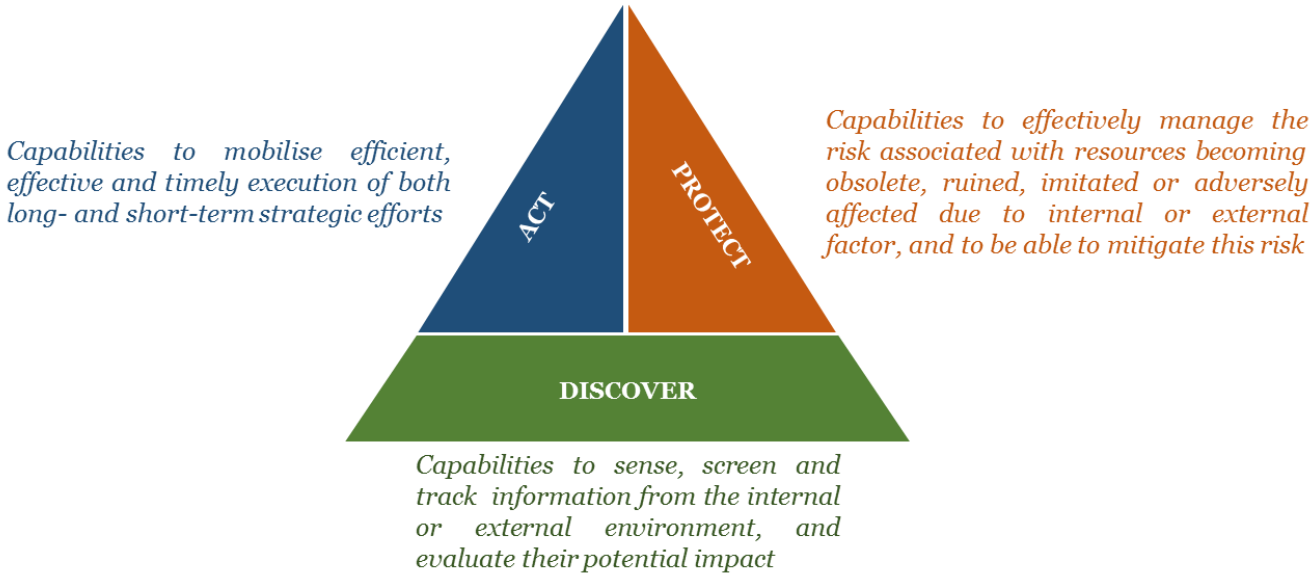

Figure 21: Three categories of dynamic capabilities
Authors' contribution

Examples of specific capabilities pertaining to the three categories of dynamic capabilities are presented in Appendix III.

5 CASE STUDY

Using case studies, this chapter seeks to contribute insight into how the case companies use vehicles of innovation to develop capabilities for the future. The first section describes the vehicles of innovation pursued by Danske Bank and then analyses these vehicles using the framework developed in the previous chapter. Secondly, the vehicles of innovation employed by Santander are analysed using the same framework. In the last section of the chapter, the insights, differences and similarities between the two cases are discussed.

5.1 DANSKE BANK

Danske Bank was selected as a case due to its long history as an incumbent bank in Scandinavia. Additionally, because of the bank's wide communication on the MobilePay solution, which has been a success for the company. Furthermore, Danske Bank has been vocal about some of the bank's innovation efforts, especially the innovation department as a vehicle for innovation. However, there are some issues

with using Danske Bank as a unit of analysis. First and foremost, the listed company cannot share any projects, strategies or other efforts that are not public information. Due to the sensitive and competitive implication of these themes, it is very likely that there are significant aspects of Danske Bank's innovation efforts that are not public information and thus, not part of the case analysis.

5.1.1 Introduction to Danske Bank

Danske Bank ("DB") originates from Danske Landmandsbank, Hypothek- & Vexelbank I Kjøbenhavn, founded in 1871. Originally the bank primarily operated as a farmer's bank. After the Second World War, it ran into difficulty and was ultimately restructured by the Danish government in 1922. In the years following the restructuring, all the way into the 1970s, DB expanded and established new branches across the country. In 1973, DB became the first bank to offer an online connection between its banks. (Danske Bank, 2017d)

As of 2016, DB served 3.4 million customers across 280 branches in eight countries and had 19,400 full-time employees. DB describes itself as a Nordic universal bank with core markets in Denmark, Norway, Sweden and Finland. In these markets, DB serves private customers, small and large companies and institutions. DB divides its business areas into Personal Banking, Business Banking, Corporates & Institutions and Wealth Management (Danske Bank, 2017a).

5.1.2 Corporate strategy

As previously mentioned, DB follows a universal banking model. According to DB, this business model provides the bank with significant synergies across core markets by establishing a diversified platform for the services. DB's vision is to be recognised as the most trusted financial partner. BD aims to achieve this by creating long-term value for our customers, investors and the societies where they operate (Danske Bank, 2017b). In the 2016 annual report, DB expresses a goal to become a more "customer-centric, simple and efficient bank" (Danske Bank, 2017c, p. 7).

DB points to technological developments, macroeconomic conditions, changing customer expectations, intensified competition and increased regulatory pressure as the driving forces of rapid change and a challenging business environment within the sector (Danske Bank, 2017c). Furthermore, the bank stresses their focus on improving customer service, innovation and digitalization in addition to maintaining strong financial performance and growing in the Nordic countries.

When describing the changing and challenging future of the sector, DB emphasises the need to adapt to developments in the environment in order to stay competitive (Danske Bank, 2017c).

> *Netflix, Airbnb and Uber are coming to banking. Something has got to happen. The traditional banking model, where you make money on the difference between deposits and loans, is under pressure. Payments, which we have made a lot of money*

> *one previously, is under a massive upheaval. Therefore, we have to get the creativity flowing*. (Inder Sapru, cited in A. B. Christensen, 2015a, para. 18)

In light of these changes, DB has initiated strategic efforts categorised under four themes: Nordic potential, innovation and digitalisation, customer experience and people and culture (Danske Bank, 2017c). Nordic potential refers to DB's growth strategy in Norway and Sweden, where partnerships with labour unions have been a central part of the effort. Additionally, the Nordic potential entails focusing on being a frontrunner in digitalisation to attract and onboard new private banking customers. With regards to innovation and digitalization, DB points to the digital signing of agreements as an initiative that improves customer experience. Furthermore, DB stresses their belief that "Ongoing, high-paced innovation is a pre-requisite for staying competitive and relevant to our customers and responding to new competitive forces" (Danske Bank, 2017c, p. 9). To accelerate its innovative efforts, DB plans to pursue partnerships with a much larger degree going forward. MobilePay, DB's mobile payment app that was launched in 2013, is becoming a partnership with over 60 other Danish banks and carved out into a new legal entity with Nordea among the owners (Danske Bank, 2017e).

The customer experience efforts are mostly centred around customer satisfaction goals in the private and business banking areas. Culture and people are used to describe efforts to create a high-performing, agile organisation. This entails building new areas of expertise as well as attracting a diverse group of people and educational backgrounds (Danske Bank, 2017c).

Lastly, DB's efforts in wealth management are driven by a goal to capture the expected growth in Nordic wealth accumulation in addition to employing a more customer-centric organisation. DB feels that there is considerable potential within wealth management in the Nordics and are planning to expand their offering further within this area. The company highlights the digital focus within wealth management through the digital investment advice solution; June, developed by the MobileLife department. June aims to make investments more broadly available to customers and consumers who are not customers of DB (Danske Bank, 2017c).

Tonny Thierry Andersen, Head of Wealth Management and member of the Executive Board at DB, presents seven strategies to respond to digital disruption. These include block strategy, disrupt the current business strategy, invest in disruption model, the milk strategy, redefine the core strategy, retreat into a strategic niche strategy and finally the exit strategy (T. T. Andersen, 2016). DB has chosen the strategy to disrupt the current business;

> *I think we should get used to the mind-set where we are a software company who operated in the banking sector. We are not a bank who uses software in our operations*. (Tonny Thierry Andersen cited in Sixhøj, 2015, para. 5)

5.1.3 Innovation strategy

As mentioned, one of DB's four strategic focuses is innovation and digitalization. According to DB, these efforts are prerequisites for staying competitive. However, the bank does not mention an explicit innovation strategy.

> *I am absolutely sure we do not have an innovation strategy. So that is not a goal in itself. We have a business strategy. We have a strategy for how we want to service our customers, then that frames all sorts of innovation. (S. Haldrup, interview, February 28, 2017)*

So, if DB does not have a formalised innovation strategy, what are the efforts they are doing aimed at innovation and what do they say about their aims in this field? DB's innovation efforts are aimed at transforming the existing company gradually by influencing and impacting it through innovative efforts (S. Haldrup, interview, February 28, 2017). In an interview with Wittorff (2015), Haldrup expresses the need to connect the innovation efforts closer to the corporate parent to enable the organisation's gradual change. One of the key elements of DB's innovative efforts is MobileLife, their separate innovation hub that grew out of the MobilePay project.

5.1.3.1 MobilePay

Launched in May 2013, MobilePay was the first mobile payment solution by a major Nordic bank. Within the first four months, the MobilePay app had 500,000 users in Denmark. In 2016, the app had 3.3 million Danish users, 240,000 Norwegian users and 205,000 Finnish users and a total transaction volume of 44.4 billion DKK. The full range of solutions, payment processing, processing of bills with PoS, e-commerce and invoice features, connected to the MobilePay Business app is currently only available in Denmark. (Danske Bank, 2017c)

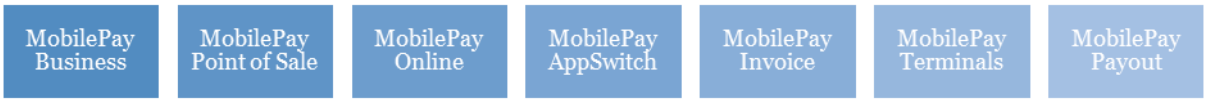

Figure 22: MobilePay features for Businesses
Authors' contribution

In October 2016, a new partnership model for MobilePay was launched with the aim to provide private customers and businesses with access to a more innovative, efficient and user-friendly platform (MobilePay, 2016). Nordic banks were invited to join the partnership, with Nordea being the first bank to join with their Norwegian and Danish branches (Danske Bank, 2017e). At the end of 2016 more than 60 Danish banks had joined the partnership (MobilePay, 2016). Due to the expectation of growth in the partnership DB has initiated a process to move MobilePay into an external, stand-alone subsidiary with its own board of directors, which is expected to be completed in the spring of 2017 (Danske Bank, 2017e). The move to turn MobilePay into a collaborative effort within the Nordic banks is an important strategic

move to strengthen the platforms competitive stance against existing solutions and new entrants. With tech-giants like GAFA, all launching or already operating their own payment solutions in some geographical segments. The *every bank for themselves* approach will make it costly, complicated and unrealistic for Nordic banks to keep the international players out of their customer journey (Bradley & O'Toole, 2016; Ritzau, 2015; Skan, Dickerson, & Masood, 2015).

The development of MobilePay in later stages has been contingent on partnerships. When rolling out the in-store point-of-sale solution, DB collaborated closely with Verifone (Ismail, 2016). Verifone is the world's largest provider of bank terminals, present in 150 countries (Verifone, 2017). It is also the largest payment terminal supplier in the Nordics with a market share of 60 percent (Danske Bank, 2016). Verifone was able to build a solution that enables customers to 'tap and pay' in store (Ismail, 2016). Additionally, the partnership enabled merchants to accept MobilePay without investing in new POS-hardware, by embedding the solution in existing contact-less terminals (Danske Bank, 2016). This opened up the use of MobilePay to smaller merchants who only have one all-in-one terminal, thus expanding the market for the solution. The partnership is not exclusive for either party (Verifone, 2016). DB remains in talks with Nets, another payment service provider and a Verifone competitor to develop solutions, and the point-of-sale solution is available and used by other payment applications than MobilePay (Verifone, 2016).

In an interview with Forbes Magazine, Andersen describes that the success of MobilePay took the bank by surprise (Salem Baskin, 2016). Andersen further explains that MobileLife was established after DB sent teams to look at emerging technologies and customer behaviour.

5.1.3.2 MobileLife

In 2014, DB launched the digital development department MobileLife ("ML"). ML has over 100 employees (Aagaard, 2016) and three offices, two in Copenhagen and one in Vilnius (MobileLife, 2017a).

Thomas Borgen, CEO of Danske Bank, asked Simon Haldrup, Head of ML, to "make something disruptive" (S. Haldrup, interview, February 28, 2017). Haldrup initially looked at three ways to set up and structure a department; an internal innovation department, an accelerator, or a hybrid model (S. Haldrup, interview, February 28, 2017).

Although DB does not have an innovation strategy, Haldrup (interview, February 28, 2017) argues that the core of the innovation strategy pertaining to ML is to have a vehicle where it is possible to generate dramatic improvements across the value chain.

> *Our mandate is to disrupt what we are doing before someone else does. (S. Haldrup, interview, February 28, 2017)*

The model chosen by Haldrup was the hybrid model, drawing on inspiration from Spotify, Amazon and Google. The model seeks to combine attributes from an entrepreneurial company, a start-up, and an

established company, an incumbent, drawing on the best of both worlds. Haldrup (interview, February 28, 2017) argues that the operational model is a hybrid of a start-up and a corporate. The start-up part of the model is the culture, the sentiment, the people, and the feeling of purpose and the approach to risk. Haldrup (interview, February 28, 2017) argues that ML sees risk very differently to the parent, where decisions are made with an underlying goal of minimising uncertainty, whereas ML tries to keep options open for as long as possible to refrain from abandoning a project on no or undeveloped grounds. The access to resources, competencies and capital such as customers, experts, processes, systems and brand represent the corporate part of the model (S. Haldrup, interview, February 28, 2017).

> *If we can take the best of these two worlds and encapsulate it here to protect it from the corporate immune system, then we can do something that is actually really difficult to compete with. So that is the fundamental idea. (S. Haldrup, interview, February 28, 2017)*

Furthermore, the goal of ML is to become a vehicle for change within the parent by making small improvements and incremental innovations leading to a gradual change in solutions as well as culture, ways of working and across several other dimensions, according to Haldrup (interview, February 28, 2017). As shown in Figure 23, Haldrup (interview, February 28, 2017) describes an innovation matrix consisting of four types of efforts; incremental innovations across the vale chain, transformational programs, radical innovations pertaining to very narrow parts of the value chain and radical innovations across the value chain. Haldrup (interview, February 28, 2017) argues that MobilePay could be an example of a radical innovation in a part of the value chain, whereas the goal of ML, and its role in the innovation strategy of the bank, is to develop a vehicle for making the radical, or more impactful, innovations across the value chain.

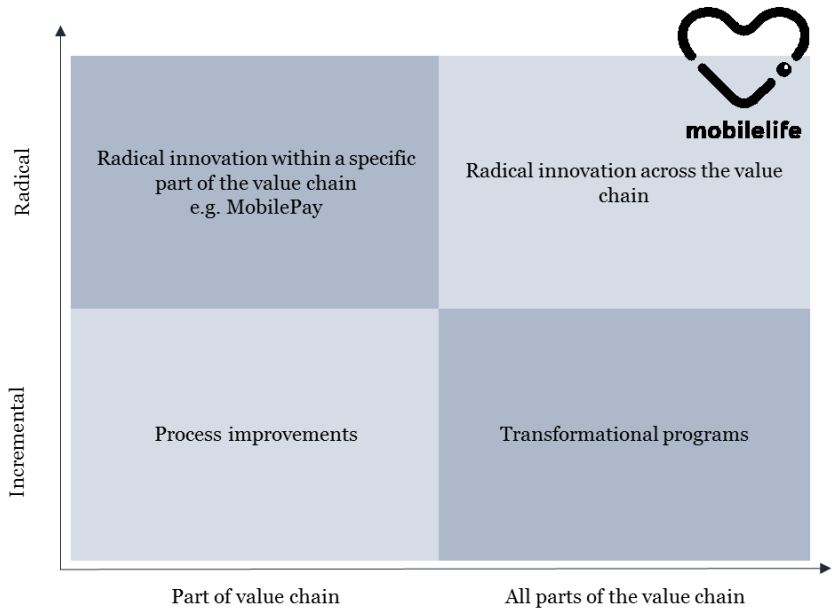

Figure 23: MobileLife in Danske Bank's innovation efforts
Authors' contribution

A key element in the relation to the corporate parent is that Haldrup is the only link between the two units (S. Haldrup, interview, February 28, 2017). DB's top executives and members of the board are limited to two visits a year at ML's offices, otherwise, they are barred from the locations. According to Haldrup (interview, February 28, 2017), the reasoning for keeping ML separate from the corporate parent is to protect the culture and projects generated within ML from the 'corporate immune system'; intangible forces within a large organisation like DB that systematically reject new initiatives, ideas or ways of thinking. Although the corporate mother is kept at a distance, Haldrup (interview, February 28, 2017) says that the success of ML is entirely dependent on support from the corporate business leaders, such as the head of risk and head of IT. Haldrup deems the support from the head of HR as especially important as he requires backing for side-stepping corporate guidelines and practices to do things differently. In addition to their, support Haldrup (interview, February 28, 2017) says their trust has been and will continue to be, and important factor in developing efficient solutions at a fast pace. As an example, the head of risk management granted ML blanket permission to underwrite 1 billion DKK in loans through the Sunday platform, without ML having to go out and prove the product beforehand (S. Haldrup, interview, February 28, 2017).

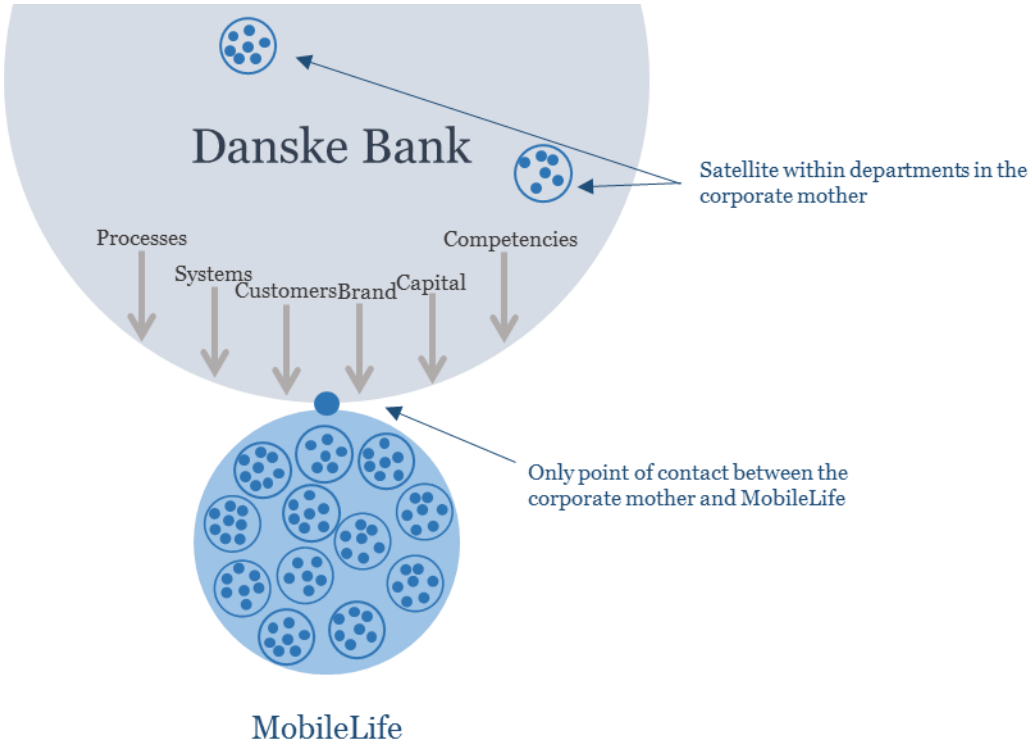

Figure 24: Danske Bank and MobileLife
Authors' contribution

In addition to the ML organisation, there are some small satellite units within the corporate mother that are set up to resemble the structure of ML, which report to Haldrup. There are currently projects that are executed by setting up satellite units in Business Banking and Corporate and Institutions. These units are based on the blueprint of ML and serve to avoid alignment between corporate parent and ML and prevent

ML from taking on too many or too large tasks before both organisations are ready (S. Haldrup, interview, February 28, 2017).

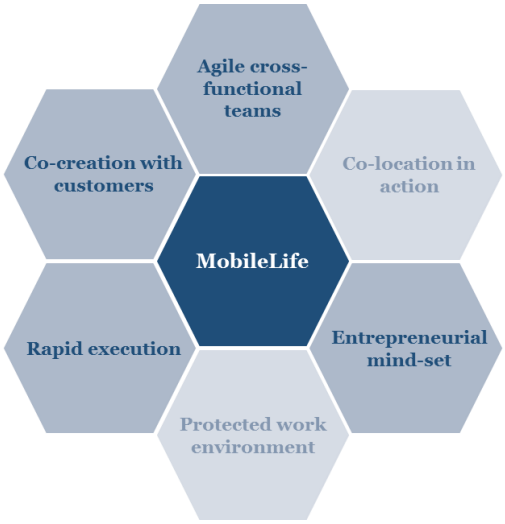

Figure 25: Six attributes of MobileLife
Authors' contribution

In a presentation, Thomas Weikop (2016), Head of Strategy, presents six attributes of ML: agile cross-functional teams, co-location in action, entrepreneurial mindset, rapid execution, co-creation with customers and protected work environment. Following, the cross-functional teams, the rapid execution, entrepreneurial mind-set and co-creation with customers will be discussed.

Agile cross-functional teams

ML's employees are organised in cross-functional teams. "From time to time, experts with specialised skills are lent in from the corporate mother, but the idea is that the competencies required to take a product from idea to market exists within the sub-organisations" (S. Haldrup, interview, February 28, 2017).

> *I do not have to ask anyone for permission. We have everything from IT, marketing, communication, process excellence, the advisory processes, legal, compliance, user experience design, it is basically the whole stack of competencies. If one of these are missing from the team, that creates a 50% overhead in time, because you have to go over it again and again. (S. Haldrup, interview, February 28, 2017)*

The teams are intentionally kept small, two-pizza teams. The 'two-pizza team' term comes from Amazon CEO Jeff Bezos who reportedly employed the concept to keep team sizes small to promote decentralised, untangled organisations where independent small teams are unconstrained by group think and control (Deutschman, 2004). When projects mature and grow, and teams are segregated, the project or product is broken down into smaller parts and the responsibility of each part is handed to a team (S. Haldrup, interview, February 28, 2017). The intent is for teams to be autonomous and self-leading, but they do cross-coordinate with the other teams.

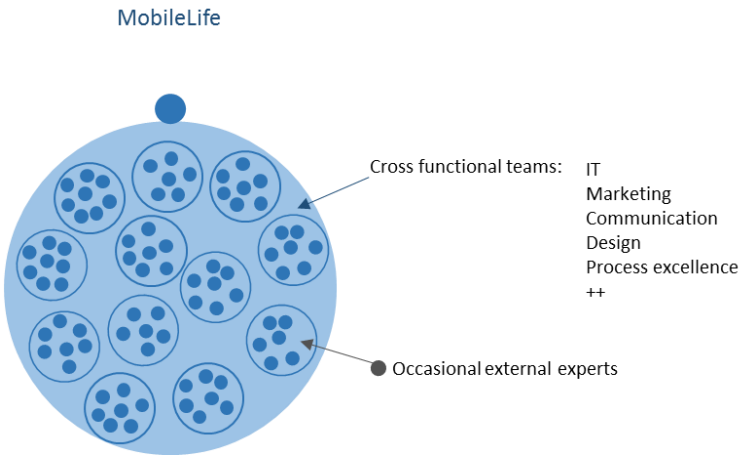

Figure 26: MobileLife's organisational make-up
Authors' contribution

Rapid execution

A lot of the focus of ML is on the execution aspect, specifically rapid execution (Weikorp, 2016). The cross-functional teams contain the full range of capabilities to see a project through from start to finish. Haldrup (interview, February 28, 2017) expresses that they aim to develop and deploy projects to market very fast. Where the structure is built to be able to quickly draw upon the right resources, through the cross-functional teams, and deploy fast in a new business or product area. According to Haldrup (interview, February 28, 2017), the time from ideation to a minimum viable product decreases from each project to the next.

> *Generally, how we think about it is that there is 5% idea, 15% innovation, 80% execution. To balance out the idea that we sit on pillows and get great ideas in a super creative environment where people play foosball all day. That is just not what it is about. Fundamentally I don't think we get ideas that no one has thought about before. (S. Haldrup, interview, February 28, 2017)*

The directions, ideas and concrete projects are mostly thought out and developed within ML. Haldrup and some of ML's employees have previously worked in the bank and are familiar with it. In addition, the business leaders within the corporate parent will at times communicate requests for ideations, or spaces of research, for instance home buying, that they would like ML to look into (S. Haldrup, interview, February 28, 2017).

Entrepreneurial mindset

One of the reasons for establishing ML outside the boundaries of DB was to develop and protect a unique culture. The key elements of this culture are customer-centricity, passion, diversity in backgrounds and competencies, autonomy and tolerance for failure (MobileLife, 2017c).

> *At MobileLife we value collaboration over hierarchy, skills over titles, people over processes and learning over forecasting*. (Weikop, 2016, p. 6)

People are a large part of ML's culture. All employees, except Haldrup, have the title 'corporate entrepreneurs' to signify the combination of the corporate resources and capabilities with the mind-set of entrepreneurs (MobileLife, 2017a). By recruiting self-driven and curious people and encouraging a high pace environment with autonomy, responsibility and teamwork at the centre ML hope to encourage passion in the employees (MobileLife, 2017c).

> *We see ourselves as a cultural start-up. That means that we have the culture, but also the autonomy, agility and the risk willingness of a start-up, but at the same time, we have muscle, capital, brand and competences on the same level as a traditional player*. (Haldrup cited in Wittorff, 2015, p. 44)

The diversity at ML also comes in terms of banking experience, 40 percent of employees come from the bank. Additionally, there is diversity in specialities, they vary from developers, agile coaches, strategists, designers, UX designers, process designers, human resources, marketing, analysts, product owners and more (MobileLife, 2017b).

While 40 percent of ML employees come from DB, Haldrup talks about the problems banks are having when trying to attract new groups of talent. According to Haldrup (interview, February 28, 2017), the very way banks are set up to monitor and control contradicts the desires of these group of talent. The structure of banks ensures that employees are very small units in a huge system with limited direct, or visible, impact. ML had success in recruiting new talent by convincing some key people that the unit really wanted to do something and execute on the ideas, and by network effects, the unit was able to attract more people. When recruiting new talent, the focus has primarily been on their ability to execute. Initially, ML attracted a lot of people who were interested in the ideation phase, but lacked the stamina to see projects through. A job at ML presents some benefits and comfort for the group of entrepreneurs who have been out in the real world and started their own businesses that now seek more security or foreseeability, either due to life stage, family or something else. Although ML has had success in attracting talent to the unit, Haldrup (interview, February 28, 2017) says that some employees still refrain from updating their LinkedIn profile in order to keep a distance to DB's brand.

In addition to recruiting talent to the division, ML has been an acquisition channel for talent to the corporate parent. In the last few months of 2016, five corporate entrepreneurs transferred from ML to DB, one of them reporting directly to the CEO. This further strengthens the value proposition for ML as it can provide a traction and direction for its employees after ML.

Co-creation with customers

Throughout phases in projects and developments, the teams involve customers and ask them what they think about the solutions, enabling a more customer-centric culture (MobileLife, 2017c). According to Haldrup, ML works according to a test and learn-principle where the product is created, sent to the

market and then receives feedback from potential customers, which become the basis for improvements and further development (Wittorff, 2015).

Measurement

In terms of performance, ML measures itself more stringently than the parent, and present the measurements to the bank. The measures are adjusted to fit the life stage of the process of the venture or projects. The measurements are twofold; customer satisfaction, and monetization. According to Haldrup (interview, February 28, 2017), the measurement practices for customer satisfaction are well developed and include elements such as user experience and instant gratification. The monetization mainly pertains to measurements of cost savings, using existing processes or products as benchmarks, and customer acquisition measurement.

5.1.3.2.1 Projects

Sunday was ML's first product launch, described by (T. T. Andersen, 2016) as a minimum viable product. Sundays is a real estate portal built around customers' emotional journey when purchasing a home. The portal integrates the financing aspect soon than usual for prospective homeowners by including the personal finance aspect into the search criteria (Weikop, 2016). A full financial profile is created by asking seven questions, later presenting homes categorised by how they would affect the person's economy. When the potential buyers have found a home they can, with a click, be approved to for financing of the particular property, thus bypassing the usual contact point with the bank (Plesner, 2015; Sunday, 2017). Sunday, the mortgage platform, for instance, cuts around 70-80 percent of the costs connected to the mortgage process, which is one of the largest cost drivers in the bank (S. Haldrup, interview, February 28, 2017). This service has been developed further by an add-on; OpenHouse by Sunday. The OpenHouse app gathers notes and pictures of prospective homes, using checklists and rating systems (Weikop, 2016).

Andersen was one of the previously mentioned business leaders that requested ideation sessions to his department, wealth management (S. Haldrup, interview, February 28, 2017). As a result, ML launched a beta version of June in 2016, a digital wealth management solution that seeks to democratise wealth management by making the service more accessible, through an app, and cheaper (Bitsch, 2016). The user answers questions about the size and the holding period of the investment, economic situation, risk willingness and so on and thereby receives a recommended portfolio-type (June, 2016). There are currently six different portfolios, that vary in the weight of bond based ETF's to stock-based ETF's, based on risk tolerance; June Opportunity, June Progressive, June Balanced, June Moderate, June Moderate Short and June Defensive (June, 2016).

5.1.3.3 The Hub

Another effort by DB that could function as a vehicle of innovation is The Hub. The Hub is an online platform, formed in Denmark in 2015 through a collaboration between DB and Rainmaking, a Danish start-up cooperative (Danske Bank, 2015). The portal has also been launched in Norway, Sweden Finland

and Ireland, where DB collaborates with local cooperatives (Knuutinen, 2017). The Hub offers small businesses access to recruitment, funding and best practice tools. Since the launch of the platform over 1,800 jobs have been posted and more than 19,000 applications have been sent through the platform. Local partners and entrepreneurs run the portal on a day-to-day business, limiting DB's direct involvement (Nikolaisen, 2016). The Hub is presented as part of the offering to small businesses in the 2016 annual report (Danske Bank, 2017c). The Norwegian head of business banking, Bent R. Eidem, presents two goals for The Hub: to enable start-up growth and to capture new business banking customers in the future (Nikolaisen, 2016).

5.1.4 Case analysis

DB has no formal innovation strategy. Formalising an approach to innovation on a group level could help DB align its vehicles of innovation towards common goals and allocate resources more systematically towards the prioritised efforts or vehicles. Additionally, an innovation strategy could enable the bank to manage the capabilities it hopes to develop though these vehicles and serve as a communication tool to the rest of the organisation (Pisano, 2015).

Although lacking an explicit innovation strategy, DB has a range of strategic efforts that could be seen as parts of an informal innovation strategy. A seemingly significant portion of the dedicated efforts, at least those publicly known, are directed to ML or its predecessor MobilePay. The primary focus of the internal innovation department, ML, can be argued to be in line with the previously defined category of dynamic capabilities to *act*. The efforts to create and develop MobilePay can also contribute insight, experience and mobilisation to the efforts to build these act-capabilities. Through collaborations and with limited involvement on the company's part, DB has also established the web portal, The Hub, which has more in common with a marketing effort than a vehicle for innovation.

5.1.4.1 Act

As Haldrup (interview, February 28, 2017) describes ML: organisational structure, talent focus, culture, ways of working and architecture, are all drawn up to facilitate and support faster, more efficient and effective execution. This description of ML is aligned with developing the "timely responsiveness and rapid and flexible product innovation" that Teece et al. (1997) highlight. This is supported by Haldrup who emphasises ML's in creating radical innovations that span different value-chain activities and business units.

The commitment within ML to develop their capabilities to act is demonstrated in that one of the key measurements of success is speed to market. Furthermore, the stated goal of these cross-functional teams is to enable agility and speed, by ensuring that the necessary competencies are available and cooperate from the get go, thus eliminating delays in deploying specific human capital resources within the organisation. Furthermore, the autonomy of ML's teams also enables speedy decision-making and accountability within the small teams.

Additionally, ML engages in co-creation with customers, which can contribute to building capabilities to act by using the feedback of potential customers as a basis for improvement and further developments. Using customers in this way intends to strengthen to their product development capability, a previously mentioned dynamic capability under the act-category.

Another important part of the ML's contribution to the *act*-capabilities is the culture. This culture is built on a set of factors, their employer branding, diversity in backgrounds, the size of their teams, the cross-functionality within the teams and the separation from the rest of the organisation. The intent is to build an entrepreneurial culture, or the entrepreneurial mindset as ML describes it. ML tries to develop a culture that values autonomy, passion, risk-tolerance and direct impact on products or projects. ML believes that this culture contributes to its ability to be agile and innovative, thus building capabilities to act (S. Haldrup, interview, February 28, 2017). For instance, the size and autonomy of the teams are built to ensure that the teams are not constrained by group-think and control, thus limiting forces that deteriorate dynamic capabilities, for instance inertia.

MobilePay, Sunday and June are manifestations of capabilities within product development, a dynamic capability that we argue falls within the *act*-category. Furthermore, they are examples of products that contribute to building DB's process efficiency capabilities. For instance, Sunday takes the existing private mortgage process, one of the most cost driving processes in the retail bank, and develops a new and more efficient process. Furthermore, DB was the first bank in Scandinavia to launch a P2P transfer application with MobilePay.

The non-exclusive partnerships, in product development, which have enableded the success of MobilePay is an example of building collaborative capabilities, thus building the capabilities to act. A notable factor about the non-exclusivity of the partnerships is that DB benefits from the knowledge and incentives that the third-party has in terms of developing viable and competitive solutions that in the end benefit DB's customers. Furthermore, as suggested by Chesbrough and Teece (1996), the non-exclusivity provides the third-party with incentives to continue their development and allows DB access to rapid product development on a scale that they likely would not be able to muster themselves, while keeping their own options open to form relevant partnerships in parallel or in the future.

Finally, Haldrup talks about ML as a vehicle for change in processes and solutions across the entire organisation both by providing cross-value chain innovation, like previously mentioned Sunday, and for cultural change in the parent (interview, February 28, 2017). By cultivating a culture and ways of working that are more dynamic that traditional practices the hope is that this can be introduced into the bank and enabe the existing resources of DB to evolve along the same lines. One example of this are the satellite ML-teams that currently sit within the personal banking and wealth management functions in the bank. These teams assist the functions with improving their processes and products on a more incremental level, without exposing ML and creating alignment between the two units. For DB as a whole, having a tested and tried example of innovation that has received media attention and been very successful has a

signalling effect, that could impact attitudes to similar initiatives. Thus the success of MobilePay could contribute to gradual changes in culture at DB in itself.

5.1.4.2 Discover

Initially, The Hub could be regarded as an effort to enhance the earlier described earlier as the capabilities to discover if it enabled DB to build connections and intelligence about the adjacent entrepreneurial environment. Furthermore, as The Hub is the result of a collaboration with several external companies, these partnerships could allow DB to build their collaborative capabilities. However, The Hub seems to be an almost entirely isolated external effort, thus severely limiting the efforts ability to impact the capabilities within the bank. Furthermore, when DB describe the goals of the effort, they seem to be exclusively marketing and PR-related. As described by DB, The Hub acts as an adjacent service, provided and run by external parties as a marketing effort to attract potential new customers. Although The Hub deals with start-ups, that alone does not make it a vehicle of innovation.

Cross-functional teams could be a promising method to increase internal discovery, streamlining complex internal silos that would ordinarily be barriers between these. The informal meetings, small team sizes, and flat-hierarchy within ML could also contribute to increasing the discovery capability within the department. Aside from culture elements mitigating inertia, the talent that ML targets and employs also contributes to the departments *discover* capability by accessing new talent and knowledge. Although ML regard itself as a separate unit, the department also serves as recruitment channel for the bank. According to Haldrup (interview, February 28, 2017), these talent-groups are additionally not available for the traditional bank to recruit as they seek a different culture that what DB represents. Thus, the department has vastly expanded the breadth of knowledge that traditionally is available to the bank. Being able to employ these groups of talent might also allow DB to tap into, understand and monitor a wider array of developments in their environment. These groups likely have different professional networks than existing employees and can be characterised as 'bridging ties', and thus enable the access to novel ideas and increased knowledge, as suggested in the strength of weak ties theory (Borgatti & Halgin, 2011). Furthermore, they can provide insight and understanding of new areas, technologies and developments, further contributing to the *discover* capabilities.

5.1.5 Case conclusion

DB employs a limited number of vehicles of innovation, with sole focus on the internal innovation department, which was established as a result of MobilePay. ML is a suited vehicle for developing capabilities to *act*. The agile, risk-tolerant, autonomous culture developed within ML enable the organisation to build and contribute to the development of these capabilities. However, the department is largely unchecked and detached from the part of the organisation that deal with compliance and risk. Instead of developing collaborations or involving this part of the organisation as experts in the cross-functional teams, the two are kept separate. Although this structure is useful in some respects, for

example in protecting the culture within ML, it inhibits the further development of new risk management capabilities within the parent. Thus, the dynamic capabilities to protect is left out of the equation. Furthermore, the organisation has few direct efforts that are likely to enable it to develop dynamic capabilities within the *discover*-category. However, there could be some effects on internal discovery from cross-functional teams and externally from the diverse recruitment within ML.

5.2 SANTANDER

Santander was chosen as a case company for several reasons, first and foremost in order to have two contrasting cases. Santander's broad range of innovation and digitalization efforts differ from Danske Bank's focused initiatives, thereby adding valuable insight into how different vehicles of innovation can help firms build dynamic capabilities. Santander was also chosen because innovation and technology are main strategic priorities (Santander, 2017a).

Because Santander is a large and geographically diversified banking group, the question arises whether it is justifiable to use the whole group as the unit of analysis. Since the group's innovation activities stem from global as well as local initiatives and efforts across the world, the ability to analyse the bank as a whole is limited. However, a number of factors mitigate this problem. First of all, the group's corporate centre is responsible for setting strategy, which is merely adapted to local conditions, and decides upon and centralises the main innovation and digital transformation efforts. A number of global projects are run by the group and launched in several countries. Furthermore, vehicles that are instrumental to Santander's innovation strategy, such as the CVC arm, serve the purpose of the whole bank, not a specific business or country. Lastly, the banking group puts much emphasis on sharing best practices and collaboration between the individual businesses and divisions. As described in Santander UK's annual report (2017): "As a subsidiary of a large international banking group, we can access shared resources, expertise and capability from across the globe. We draw on technological innovations, operations and support services provided by independent operating entities from across Banco Santander." (p. 2). In all, for the purpose of analysing how to build capabilities through vehicles of innovation, we find it justifiable to look at Santander as a group, drawing on local examples across divisions and businesses.

5.2.1 Introduction to Santander

Established in 1857 in Spain, Banco Santander ("BS") is the world's 8th largest banks with 190,000 employees and 125 million customers across the United Kingdom, Europe, Latin America and the United States (Santander, 2017a). Santander's focus is on Retail and Commercial Banking, which account for 75 percent of profits, whereas Global Corporate Banking makes up the remaining 25 percent. Santander operates through a subsidiary banking model, structured around several financially independent subsidiary banks that are subject to local regulations and supervision. (Santander, 2017a)

Throughout the years, Santander has grown significantly through numerous large mergers and acquisitions. In 2014, Santander bought GE Money Bank's Nordic operations, doubling its size in Denmark, Sweden and Norway (Santander, 2017b).

5.2.2 Corporate strategy

Santander offers universal, transactional banking with a focus on commercial and retail banking. The bank has a differential commercial model; focusing on all types of retail and commercial customers, geographically diversified with critical mass across ten core markets, and a balance between mature and developing markets (Santander, 2017a). Customer relationships at scale are the bank's core differentiator; the bank has the highest number of franchises in the world and a higher number of customers per country than any other bank (Botin, 2016).

Every subsidiary bank is run by local teams as Santander sees strength in having local expertise. Santander also encourages collaboration across the businesses and strives for a unified culture, way of working and brand. The corporate centre in Madrid is responsible for setting the group's strategic direction and aims to maximise the subsidiaries' value and competitiveness by leveraging the group functions' capabilities (Santander, 2017a). The corporate centre works toward this goal by launching global commercial initiatives, group-wide digitalisation transformation efforts and by enabling collaboration throughout the subsidiaries. Operational capabilities are integrated across the group through a shared core banking structure and infrastructure that manages all customer data (Plaza, 2015).

Santander has a customer-centric strategy. The bank's top strategic priority is to increase customer loyalty, in order to unlock organic growth in revenues and fees. The reason for this is that loyal customers are more profitable and because it is cheaper to make customers loyal than getting new ones (López, 2015). To increase loyalty, Santander has launched commercial and digital transformations, aimed at improving the bank's operational and digital excellence and customer experience, by leveraging new technologies and digital processes (Santander, 2017a).

In 2016, Santander's digital customers increased by 26 percent to 20.9 million (including a 53 percent growth in mobile banking customers). The number of loyal customers, considering Santander their primary bank, increased by 10 percent-to 15.2 million. As a result, the group's profits from fee-based activities increased by 8 percent in 2016 (Santander, 2017a).

5.2.3 Innovation strategy

Santander's commercial and digital transformation processes aim to increase loyalty by developing "new products and services, both for individuals as well as companies, which provide innovative solutions and global proposals." (Santander, 2017a, p. 98). To achieve this, Santander focuses on digitalisation and innovation. The bank aims to be at the forefront of innovation and in meeting regulatory and societal expectations (Botin, 2015). However, the bank does not have a formalised innovation strategy.

The group pursues several activities and efforts to fulfil this, engaging in external as well as internal and collaborative innovation activities, such as internal innovation departments, corporate venture capital, start-up accelerators, collaborations with fintech companies and separate, experimental banking vehicle.

Cross-country collaboration in innovation and digital solutions is an important part of the group's strategy. Innovation stems from global as well as local initiatives and is often shared through the group. Santander Wallet is an example of a global solution, whereas a new customer relationship management tool was developed in Chile and further improved on by the UK, to be further implemented in Poland. Another current example is that Mexico and Brazil are working on a joint biometrics project (Santander, 2017a).

Below is a description of some of the Santander's most prominent initiatives and departments that work to facilitate innovation, based on interviews with employees, company reports and public information. Innovation departments in Santander UK will serve as an example of local country efforts. An overview of the internal and external activities is presented in Figure 27.

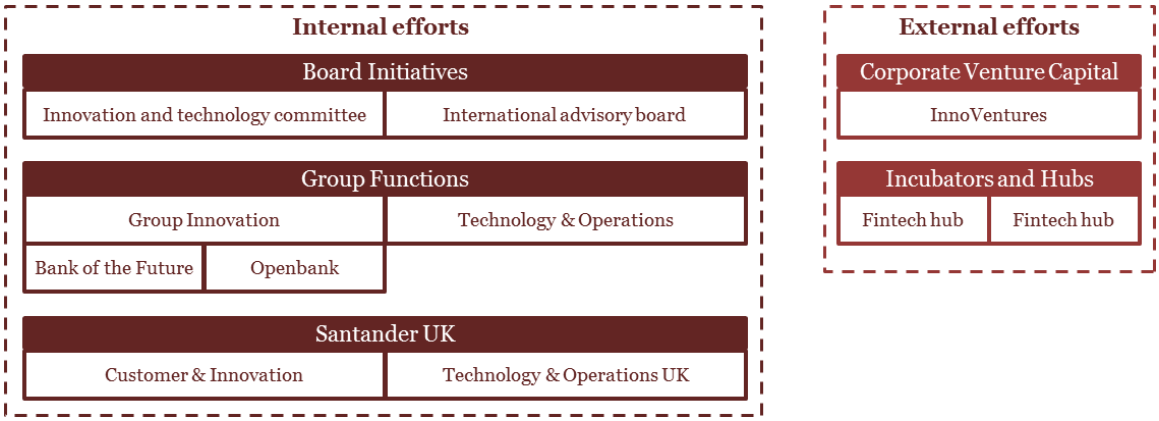

Figure 27: Overview of innovation activities in Santander
Authors' contribution

5.2.3.1 Board initiatives

Santander has taken several initiatives to make innovation a key priority throughout the company, all the way into the boardroom. An innovation and technology committee has been established to "meet the challenges of the new digital environment" (Santander, 2017a, p. 20). Its functions include to evaluate the capabilities and conditions for innovation at a group and country level and review the group's plans and activities within technology and innovation. Examples of this include testing and adopting new business models, technologies, systems, platforms and application programming and looking at the group's partnerships, collaborations and investments in innovation, IT equipment and technological transformation (Santander, n.d.). Furthermore, Santander has initiated an international advisory board of external experts in strategy, IT and innovation, whose purpose is to provide strategic advice on innovation, digital transformation, cyber security and new technologies, and a committee to drive the

process of change and coordinate the digital transformation between all areas involved in the process. (Santander, 2016).

5.2.3.2 Internal innovation divisions

In 2015, Santander decided to simplify the group's corporate structure and restructure its corporate division, in part to improve the bank's ability to respond to customers' needs. The new structure separates the functions for defining digital strategies (Group Innovation Division) from implementation, execution and development (Technology and Operations Division) (Santander, Press Release 2015, p. 1). According to Santander's CEO, José Antonio Álvarez, the structural changes enables Santander to "capture further growth opportunities which require the more agile, flexible and decentralised organisation we are now implementing." (Santander, 2015, p. 2).

Group Innovation Division

Santander's Group Innovation Division runs from the corporate centre in Madrid. The division was established in 2015 with the purpose "to research and anticipate market trends, and design businesses and solutions for customers from a global, disruptive and long-term standpoint" (Santander, 2016, p. 41). The division leads new strategies to position Santander as an international reference in innovation and technology applied to banking and reports directly to the group's Executive Chairman, Ana Botin (Santander, 2015). Group Innovation leads transformational projects with five-year timeframes and fosters replicating local innovation teams (Botin, 2015).

Bank of the Future

One of the project areas within the division is *Bank of the Future*, a fully detached unit that reports directly to the board of Santander and has no strings to the rest of the bank (L. Petersen, presentation, February 28, 2017). Bank of the Future develop strategy and initiate projects with the aim to create a foundation for the future bank for Santander (eFintech Show, 2016). "They have a lot of money, so they can do basically whatever they want to do" (L. Petersen, presentation, February 28, 2017).

Rodrigo Kuri, Head of the Bank of the Future believes that "The bank of the future is an open bank" (cited in Fernández, 2016, para. 1). According to Fernández (2016), Kuri argues that for banks to become open, they must "open their doors and platforms to collaboration with companies and start-ups [and] integrate these solutions in their platforms and incorporate models that offer value services at very low costs" (para. 1).

Customer & Innovation

Customer and Innovation (C&I) in the UK is a local innovation department that pursues its own innovation efforts as well as those initiated by Group Innovation. C&I looks at new concepts, ideas and find new opportunities for Santander. C&I connect different areas from Group Innovation, InnoVentures and the internal bank, to see what is coming through the pipeline in terms of innovation, mainly from a front-end focused customer perspective. C&I also looks at innovation opportunities driven by regulations

and experiment how data sharing can be an advantage, both commercially and for the customer, and what new business models could look like.

The team consists of 12-13 people with various specialisms such as product and UX development, new business model and customer experience. Stephanie Mitchell, Delivery Lead Manager at C&I, explains the division's twofold objective: "We do look at innovation and try to bring the future forward, but also trying to bring a customer focus to how we operate at the bank, so there's an element of cultural drive and cultural change" (interview, March 10, 2017).

Mitchell (interview, March 10, 2017) describes C&I's work as divided into three stages: ideation, discovery and delivery. Ideation is an unformalised stage of idea searching through for example conversations with people, research, workshops, industry events and looking at what regulations are coming through. In the discovery phase, C&I adds shape and structure to the ideas and validate which ideas are worth experimenting with and filter out those that do not fit Santander strategically. In this stage, C&I also looks at whom is the most appropriate third party and then explores with them. In the last stage, led by Mitchell, the team goes forward with chosen projects and perform a proof-of-concept to validate that a project is an opportunity for Santander and give *recommendations* on how it could work and be integrated to the bank (S. Mitchell, interview, March 10, 2017). C&I does not look at the specific technology of the ideas the team works on, but rather source help with technology on the projects they lead. Technology people, often from the Technology and Operations Division, help with design and delivery on the technology side (S. Mitchell, interview, March 10, 2017).

After the delivery stage, C&I becomes less involved. Mitchell (interview, March 10, 2017) explains that her team will make sure that the customer experience is at the centre, but otherwise, further development and integration is proceeded by other departments. "We try to add value where we can, but when we get into integration, a lot is from the Technology and Operations side" (S. Mitchell, interview, March 10, 2017). C&I currently works on several projects in collaboration with external parties, such as projects on robo-advice, blockchain and cloud accounting software.

Technology and Operations Division

Technology and Operations (T&O) is a group function that is responsible for delivering operational efficiency in terms of excellent customer service and best in class efficiency (Plaza, 2015). T&O is focused on innovation and efficiency in technology and operations and centrally manages and coordinates internal and external technology, software and hardware providers that link into them (S. Mitchell, interview, March 10, 2017). T&O is responsible for big-scale projects related to IT systems and for integrating and developing new products and solutions, often handed over from C&I (S. Mitchell, interview, March 10, 2017). Andreu Plaza López, Head of T&O explains that "so far, the Group has invested in robust technology capabilities that are the foundations of our digitalisation. Now it is time for customer experience (operational excellence) and innovation, whilst maintaining our resilience" (Plaza, 2015, p. 21).

Investments in digitalisation are focused on front-end and innovation, to enhance the customer experience, time-to-market, data and systems quality and to reduce costs (Plaza, 2015). Head of T&O, Plaza (2015), describes a number themes that digitalisation efforts are centred around:

- operation – process simplification and operational excellence
- channels – improved customer experience, integrated channels and focus on mobile
- data – focusing on regulatory challenges and business opportunities by using big data and more sophisticated techniques of data analysis
- IT – agile methods, new architecture and more flexible and efficient technologies, such as cloud infrastructure

5.2.3.3 Openbank

Openbank is a part of the Group Innovation Division. Openbank is a digital bank in Spain, owned by Santander and used as an experimental pilot for Santander in the whole world. The bank was originally established in 1995 and later bought by Santander and relaunched as Openbank in 2007 (Contreras, 2016). Today Openbank operates as a standalone business under its own brand, sponsored by Santander and governed as a subsidiary under the Group Innovation Division (Allison, n.d.). Openbank is completely digital and offers online banking services to over one million customers, with only 100 employees (Santander, 2017a).

When Santander bought Openbank, it had heavy legacy systems and was not digitalized. In two years' time Santander managed to completely digitalize it, back-end as well as front-end processes (L. Petersen, presentation, February 28, 2017). Rather than upgrading or shifting the bank's legacy system piece by piece, Santander separated the system development from Openbank's daily business, and built a completely new online banking platform system externally, which Openbank, and its customers, could switch to in one step (L. Petersen, interview, March 15, 2017). The goal was to have Openbank operating through its own online platform, fully isolated from and not relying on Santander's legacy systems, processes and infrastructure (Santander, 2017a). Santander has also replaced the employees in Openbank and appointed Amazon's Vice President as CEO (L. Petersen, presentation, February 28, 2017). Openbank also has a completely different organisational structure than the other banks in Santander (L. Petersen, presentation, February 28, 2017).

Petersen (interview, March 15, 2017) describes Openbank as a *low-risk vehicle*, which Santander can use to test new innovative ideas and technology since the risks that comes with failure are smaller than if trying new solutions full scale in Santander. "So this is a pilot that is still going on, and all the learnings from this will eventually be implemented in other businesses around the globe in Santander." (L. Petersen, presentation, February 28, 2017). According to entrepreneurship cooperative Rainmaking, Openbank creates "additional value as an innovation initiative as startups' technologies can be integrated much faster than with Santander itself" (Allison, n.d., "Santander").

5.2.3.4 InnoVentures

Santander's CVC fund, InnoVentures ("IV"), was launched in 2014, as part of Santander's broader innovation strategy to "support the digital revolution and ensure Santander's customers worldwide benefit from the latest know-how and innovations across the Banking Group's Geographies." (Botin, cited in InnoVentures, 2014, para. 1). Peter Jackson, Head of Group Innovation, describes IV as a "catalyst for transformation, by finding and partnering with technology companies that allow us to bring the next generation of services to our customers, globally." (cited in InnoVentures, 2016, para. 3).

The fund was originally allocated 100 million USD and secured another 100 million in funding from Santander in 2016. According to Ana Botin, Group executive chairman, the further investment "represents Santander's success in investing in disruptive new technologies that will help our transformation towards being the best bank for our customers" (cited in Santander InnoVentures, 2016, para. 2).

IV's investments are intended to be strategically beneficial for Santander as well as the portfolio companies. The fund goes beyond the role of financial investor and offers the start-ups a broad range of services and a platform for growth. (InnoVentures, n.d.-c). IV works closely with the start-ups and offer them strategic as well as technical support. Through industry experts and senior sponsors from Santander, the start-ups get help to develop and scale their business models and leverage strategic value from Santander. (InnoVentures, n.d.-c). Start-ups get to leverage Santander's brand, network and expertise and are given access to Santander's millions of customers. The portfolio companies also get access to the Santander's expertise in areas such as regulation, technology and operations, and supported with distribution and local services, such as recruitment, in all of the bank's markets (InnoVentures, n.d.-c).

Investments

IV's investments are stage-agnostic, as long the company's product or service is mature enough to be introduced to Santander's customers. Investments range from 100,000 to 13 million USD or more, normally around 5 million USD. (InnoVentures, n.d.-c; A. Arts, interview, February 14, 2017)

Each investment must have a clear strategic fit with Santander and be able to provide value to Santander and its customers. According to Mariano Belinky, Managing Partner at IV, every investment comes with a commercial collaboration, either straight away or in the future (Belinky, 2016). Thus, complementarity between Santander and the start-up is important; start-ups have something to offer while Santander has the governance, talent, brand, scale and expertise in regulation and compliance (Belinky, 2016). After an investment is made, IV starts working on implementing the company's solution, often in collaboration with internal innovation and technology departments. With the help of a corporate sponsor, the goal is to get traction across the group and implement the solution globally (A. Arts, interview, February 14, 2017).

IV's team looks at five vertical areas they believe have potential in disrupting and helping customers: payments, marketplace lending, client and risk analytics, online investment advisory services; and digital delivery of financial services (InnoVentures, n.d.-a). Digital delivery of financial services, include solutions such as blockchain, personal financial management software and API based banking (InnoVentures, n.d.-a). IV further looks for investment opportunities in new areas such as AI, cognitive computing and digital banking (InnoVentures, 2016b).

For IV to invest in a company, the company must, besides fitting Santander strategically, a) have a solution that is innovative enough and offers more than just solving short-term issues, and b) have a solid investment potential to deliver a financial return. If IV does not see an investment potential in a solution but believes it would have great value for Santander, IV instead delivers the solution directly to Santander.

> *For example, KYC and biometric solutions like fingerprinting would be great for our customers but nothing really differential in sense that there is a lot of other companies doing it. So, we will help the innovation team to scout and find the best one for them to partner with, and we won't invest. (A. Arts, interview, February 14, 2017)*

One example of the Santander's global-local collaborative approach is IV's investment in Kabbage, an SME lender. Santander UK showed an interest in launching a commercial relationship with Kabbage, and as explained by Belinky (2016), the investment quickly resulted in an operational project involving the C&I, IV, the business, T&O, as well as risk and compliance, all coming together to make the project happen.

As of February 2017, IV's portfolio included: payment solutions companies, iZettle, MyCheck and PayKey; DLT and blockchain software ventures, Ripple, Digital Asset and Elliptic; Socure, a digital identity software using machine learning and biometrics technology; SigFig, a wealth management technology and robo-advisory platform; Cyanogen, an open-source mobile ecosystem developer; and the earlier mentioned lending fintech, Kabbage (InnoVentures, n.d.-b). The latest addition to the portfolio is Danish fintech Tradeshift, which offers business commerce and supply-chain finance on a cloud-based open platform that is extensible by third-party applications. Tradeshift has a marketplace approach and connects a network of 800,000 companies across 190 countries (Williams-Grut, 2016). The investment is strategically beneficial for Santander, who is exploring opportunities to apply Tradeshift's platform to the benefit of its own corporate and business customers (InnoVentures, 2016b).

Engagement with fintech community

Apart from making investments, IV is engaged in activities with the fintech community. IV's Distributed Ledger Challenge is an open competition to encourage and support early-stage start-ups using DL in the financial services industry (InnoVentures, 2016a). "The Challenge seeks to identify and support innovative applications for using DL and blockchain technologies to improve the processes and operation

of the banking industry." (InnoVentures, 2016a, para. 8). The winner receives 15,000 USD and gets access to IV's and Santander's experts, and get help to validate and develop its business. Belinky heads the judging panel along with other Santander executives and blockchain experts (InnoVentures, 2016a). He explains that the aim is to "inspire innovation and encourage entrepreneurship" (InnoVentures, 2015b, para. 7) and further says that IV "hope to ultimately adopt these to the benefit of Santander's customers." (Belinky, cited in InnoVentures, 2016a, para. 6). Furthermore, the possibility of receiving funding exists for those start-ups that qualify under IV's requirements.

Another initiative launched by IV and IE Business School are FinTech Venture Days, held in 2016 in Tel Aviv, Sao Paulo and Madrid (InnoVentures, 2015a). The initiative is a combined conference and competition with the aim to "inspire, encourage and empower a vibrant financial technology startup ecosystem around the world" and bring together local stakeholders to "explore the issues faced by startups in the financial technology sector, offering help in the form of advice, insight and best practices" (InnoVentures, 2015a, paras. 1–2).

5.2.3.5 Incubators and hubs

In 2014, Santander launched an UK-based incubator hub for fast-growth SMEs in Liverpool, as part of Santander's strategy to become the "SME bank of choice" (Hodgson, 2014, p. 1). The hub supports the start-ups mainly by providing them with a collaborative space free of rent for twelve months, as a way for the bank to support new enterprises in ways other than direct finance (Kirwans, 2017). The space serves as a community where founders of start-ups can have business conversations, network and learn from each other (Hodgson, 2014). Santander's incubator manager explains that the hub is a part of Santander's community work, to support its stakeholders, "Working with other stakeholders is critical to what we do" (cited in Kirwans, 2017, p. 1).

In 2015, Santander launched a London-based fintech incubator in collaboration with Monetise. The purpose of the incubator is to invest in, build and help transform and scale fintech business ideas with the potential to redefine and support financial services globally (Monetise, 2015). The start-ups will receive advice from industry experts to help them grow their businesses, as gets free access to Monitise's services (Irrera, 2015). According to Santander's announcement, the fintechs will also "benefit from the opportunity to become partners with [Santander]" (Monetise, 2015, p. 1).

5.2.3.6 Innovative outcomes

The collaborative approach between Santander's different internal innovation and technology departments and venture fund has yielded results over recent years. Through IV's investment in blockchain start-up Ripple and C&I's collaboration with the company, Santander developed a first of its kind international blockchain payments app. The app has only been rolled out to staff but is expected to be available to customers at a later stage (Nunns, 2016).

To deliver operational efficiency, Santander has launched the intelligence tool Santander NEO CRM, which increases both efficiency and personalisation by integrating information from all channels (branches, online, mobile and so forth) and incorporating new transactional capacities. This enables Santander to offer customers better and more personalised proposals (Santander, 2017a). Santander is also involved in various blockchain technology projects and utilises big data analytics. In 2016, Santander UK also launched a voice assisted banking technology in their mobile banking app. The voice recognition technology enables customers to ask the app questions and transferring money to existing payees by purely speaking to the app (Martin, 2017).

As part of Santander's digital transformation, the bank is expanding its multi-channel offering by improving its mobile banking offering, introducing new apps and digital solutions, financial management tools, online trading and investment platforms (Santander, 2017a).

5.2.4 Case analysis

Santander pursues a broad range of internal as well as external efforts and activities to face the rapid rise of disruptive innovation and new technology that is revolutionising the financial industry. To fulfil the bank's strategic priorities of increasing customer loyalty, Santander aims to become more customer centric by driving change internally and facilitate innovation. Although Santander has not formalised an explicit innovation strategy, the bank strives to be at the forefront of innovation and digitalisation in the financial industry (Botin, 2015). Santander's vehicles of innovation can be argued to primarily focused on developing capabilities to act and discover; to digitalise their channels, products and services and offer innovative solutions, the operational excellence of processes and omnichannel offerings. These capabilities are built internally as well as by accessing resources and competencies externally through collaborations and partnerships.

5.2.4.1 Discover

Internal efforts contributing to Santander's capabilities to discover are found throughout the organisation, from local innovation teams all the way to the boardroom. The newly appointed international advisory board, made up out of external experts on new technology, digitalisation and innovation, adds to Santander's capabilities to *discover*, which can influence the whole organisation.

The purpose of establishing the Group Innovation function, to research and anticipate market trends, is aligned with what we argue entails the category of dynamic capabilities to discover. The same applies to the innovation team in the UK, C&I, whose ideation stage entails *external discovery*, in terms of research on new opportunities, industry trends and incoming regulations, as well as *internal discovery*, searching for novel solutions across Santander's group functions and markets.

In addition to being an investment vehicle, IV also contributes to the bank's capabilities in terms of discovery. The CVC fund is closely connected to and aligned with the fintech community and serves as a

radar to identify the latest trends and innovations within the technology space. Through events and competitions for fintechs, IV scans the market for innovative technology and accesses knowledge networks that may help Santander build knowledge and awareness of developments that might otherwise be unfamiliar to them. IV investments often lead to collaborations and partnerships run by Santander's internal innovation and technology divisions. As mentioned, IV aids these departments, by screening the market for suitable solutions and partnerships, sometimes even without indenting to invest themselves, thus adding to the bank's capabilities to discover.

Santander's incubators can be argued to serve as important vehicles for discovery, as they attract fintechs and start-ups with novel technologies and business models that Santander can explore.

5.2.4.2 Act

Santander's capabilities to act stem from internally as well as externally oriented vehicles of innovation. InnoVentures is a vehicle that is central in developing Santander's capabilities to act. Through IV, Santander gains direct access to a wide range of capabilities that the bank does not have internally, ranging from front-end applications to new technologies and analytic tools (InnoVentures, 2016b). The technologies, products and services that IV invests in are used to increase the efficiency and effectiveness of Santander's processes and to advance the bank's customer-offering, thus adding to the Santander's capabilities to act. Furthermore, through IV, Santander builds capabilities to collaborate, with the portfolio companies as well as internally across departments. By frequently engaging in collaborations with new, high-technology companies, Santander gains experience, knowledge, networks and processes that able them refine their capabilities to *act*.

As discussed, Teece et al. (1996) suggest that winners in the marketplace have capabilities such as "rapid and flexible product innovation, coupled with the management capability to effectively coordinate and redeploy internal and external competences" (p. 515), capabilities which we suggest belong to the act category. We argue that while IV contribute to the product innovation capabilities, Santander's capabilities coordinate and redeploy internal and external competences stem from the group's internal innovation departments. At the highest group board level, the technology and innovation committee develop capabilities to effectively allocate resources and coordinate activities and initiatives within the innovation and digitalization area. The capability to effectively coordinate activities is developed by Group Innovation, and further facilitated by local the innovation teams on a country level, such as C&I. C&I adds to Santander's *act capabilities* by coordinating and managing projects, serving as Santander UK's octopus in terms of managing the implementation of innovations, projects and initiatives coming from Group Innovation, InnoVentures, or partnership initiated by C&I itself. C&I adds to Santander's capabilities to act by finding the right partners needed for a project to be efficiently developed and integrated. The UK team further builds on Santander's capability regarding customer centricity, by looking at innovation from a customer point of view, making sure that customer experience is a key priority throughout projects. Another internal group function adding to Santander's *act capabilities* is Technology &

Operation. T&O's efforts to simplify processes, ensure system compatibility, employ advanced analytics techniques and agile systems, often in partnership with external technology providers, continuously develop Santander's dynamic act-capabilities on a global level.

Lastly, Openbank adds to Santander's act-capabilities, by serving as a platform where Santander can try new solutions and build new partnerships without having to go through the long process of integrating the solution in Santander's complex legacy system. Openbank is an experimental innovation vehicle, and experience and insight from it continuously add on to Santander's capabilities. Openbank develops alliance routines, a dynamic capability emphasised by Capron et al. (1998), Gulati (1999) and Lane and Lubatkin (1998), that we argued belong to capabilities to act.

Santander's capabilities to act are dependent on external partnerships. With internal efforts building capability to coordinate and collaborate, most radical innovations and transformation stem from competencies existing outside the boundary of the organisation. The most evident example is Openbank's platform, which, as suggested by the name, is built specifically to integrate other third-parties' technologies, products and services easily. Through collaborations, partnerships and investments, Santander essentially has access to an ecosystem of a wide range of capabilities and competencies.

Santander's utilisation of vehicles of innovation to build capabilities is consistent with Chesbrough's (2006) definition of Open Innovation, suggesting that firms "use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology" (2006, p. xxiv). As suggested by Martovoy et al. (2015), by building capabilities via externally oriented vehicles of innovation, Santander benefits from reduced costs, access to partners' networks and the ability to leverage complementarities. Quinn's (2000) argument that that it is too costly and complicated for any one company to have all capabilities internally also speak for the benefits of Santander's innovation efforts.

Having worked at both T&O and IV, Arts has insight from Santander's external as well as internal endeavours. Arts (interview, February 14, 2017) argues that it is more *practical* for Santander to partner with other companies than to build new capabilities internally. Consistent with the previously discussed observation that the industry lacks talent with tech-knowledge to support innovation from within banks, Arts (interview, February 14, 2017) further suggests that Santander lacks the skills and resources needed to build all solutions internally. Instead, start-ups and fintechs have an advantage in these capabilities. Instead of investing in building these capabilities internally, Santander relies on its capability to collaborate and partner with other companies for accessing these.

> *We try to build some things internally but at the end of the day, are we going to have the resources and skills that a start-up has too often spend like four years just working on building a single solution and have a crazy amount of tech-knowledge? I think that's why it is just more practical to go with a solution to partner with a start-*

> *up than building the solution yourself, and it ends up probably building an internal solution will cost more than it would to invest in a start-up. (A. Arts, interview, February 14, 2017)*

5.2.4.3 Protect

Facing disruption, Santander devotes substantial resources and efforts to acquire and develop new capabilities to facilitate the bank in the changing business environment. As discussed, changing the core business when facing disruption comes with a risk of diluting an organisations core dynamic capabilities in favour of newly acquired static capabilities. Thus, one could argue that pursuing dual business models, such as exploring with Openbank separately from Santander's core, adds to Santander's capabilities to *protect*.

Although Santander's incubators primarily would build on the organisation's *discovery-capabilities*, one could consider that these vehicles in themselves are an act of protection. Industry thinkers' comments on Santander's latest fintech incubator underpin this argument, saying that "It will allow [Santander] to find and invest in interesting and relevant fintech startups before they are large enough to compete with some of the bank's core businesses." (Novoa, 2015, para. 7).

> *The [venture] will let Santander keep an eye on the fintech world to make sure some plucky startup doesn't catch it on the back foot. It will also let the bank try and bring any promising startups into its fold rather than face it as competition. Keep your friends close and your enemies closer, as the saying goes. (Williams-Grut, 2016, para. 9)*

5.2.5 Case conclusion

Santander is aware of the risk and challenges lying ahead and proactively adapts the way business is done to protect the bank. The bank actively works on a group level and locally to mitigate the impact of many of the challenges and trends earlier outline; protecting itself from competition from new entrants, facing new regulations that foster financial disintermediation, and making customer loyalty its core strategic priority.

Using internal and external sources of innovation and capabilities, Santander's practices are much in line with the concept of open innovation. The bank benefits from building and accessing networks of capabilities, essentially creating an ecosystem that will serve not only customers, but most likely the bank's progress into one of the future roles of banks.

Despite being a geographically diverse bank with autonomous subsidiaries, Santander's internal collaboration efforts and centralised corporate centre facilitate the coordination of the bank's efforts and activities. Both the internal innovation department and the CVC vehicle contributes to building *act* and *discover capabilities*. The vehicles of innovation utilised at Santander focus on developing dynamic capabilities to *act* and *discover*, while dynamic capabilities to *protect* are pursued less explicitly. Although

Santander's individual activities and vehicles of innovation across the businesses could have their respective drawbacks in their ability to build dynamic capabilities, they complement each other.

5.3 CROSS-CASE DISCUSSION - BUILDING CAPABILITIES THROUGH VEHICLES OF INNOVATION

The previous case studies of Danske Bank and Santander explored the vehicles the banks are utilising to prepare for the changes happening in the industry and ultimately the future of their organisations. A description of these vehicles of innovation was followed by a case-analysis of the capabilities these efforts might contribute to. To further explore sub-question 2.b, the cross-case discussion compares and aggregates the insights from the two case studies.

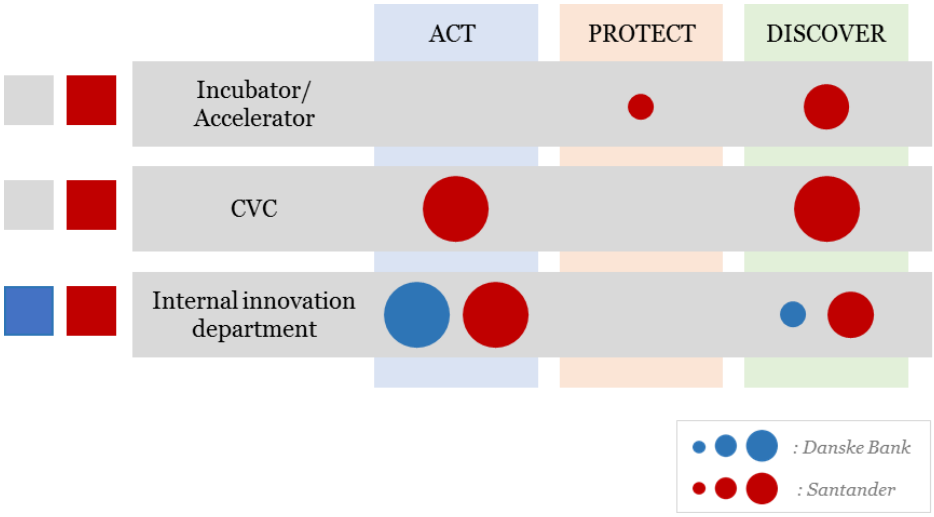

Figure 28: Vehicles of innovation and their impact on dynamic capabilities
Authors' contribution

In the diagram above, the relationship between the vehicles of innovation and their argued contribution to the three categories of dynamic capabilities needed to thrive for the future bank. The column on the left indicates whether the specific vehicle for innovation exists within the organisation. The size of the bubbles indicates the vehicle's ability to contribute to the corresponding group of dynamic capabilities. Figure 28 above is intended to provide an overview of the arguments and analysis that underlie the individual case analyses. Danske Bank, for instance, does have The Hub which could be classified as an accelerator by some. However, we will argue that it functions as a marketing tool rather than a vehicle for innovation. Another aspect of the diagram is that efforts existing within the corporate structure, but not as independent vehicles (internal or external departments or units) are not included, for instance, Santander's Innovation board.

5.3.1 Differing motives for separation of vehicles from mother

Both Danske Bank and Santander take measures to separate some vehicles of innovation from the parent organisation. However, the reasons and goals of this separation vary from protecting the vehicle to protecting the mother organisation.

Although MobileLife formally is a division of the bank, Danske Bank regards it as a separate organisation. The main motive of the separation is to protect the unique culture and the projects within MobileLife from what Haldrup (interview, February 28, 2017) labels the corporate immune system. By making Haldrup a gatekeeper between the two units, the idea is that MobileLife will be left alone. Danske Bank can channel resources like funding, clients and systems to MobileLife, while not exposing the vehicle to the culture or influence of Danske Bank. This separation is seen as key to the vehicle's ability to cultivate the capabilities that we argue are in line with the *act*-category. The argument for separating the two entities can also be made in terms of establishing *protect*-capabilities; protecting the capabilities within MobileLife. This is, however, changing, MobileLife has a completely different logo to that of Danske Bank now perhaps to separate the department. Although this separation is seen as so central, Haldrup does express that it might be relevant to depart from this structure in the future. MobileLife, however, was initially branded in close relation to Danske Bank (interview, February 28, 2017).

Santander's Openbank is operated entirely separate from the parent, although the vehicle is a wholly owned subsidiary of the bank. The separation of Openbank is done to protect Santander from IT and reputational risk. Santander state that one of the key reasons for operating Openbank outside the realm of the traditional banks is so that it can function as a low-risk vehicle to test innovative ideas and technology. This motive for separation can be seen in connection with argument for protecting the core during dual-innovations. On the other hand, InnoVentures is separated from Santander in some respects, but intertwines strategically and to some degree operationally on others.

These differing approaches to separation and protection can be seen in connection with the motives and goals of the vehicles. Openbank's motive is to experiment, build knowledge and experience that can be utilised by Santander at a later stage. A close connection with Santander could perhaps limit the risks a vehicle like Openbank would be willing to take, thus limiting the effectiveness of the vehicle. Furthermore, a close connection with the mother might not be necessary to take advantage of IT-systems and process best practices at a later stage. MobileLife, on the other hand, functions a vehicle to build a unique culture for innovation and capabilities to act. In this case, the separation could very well be instrumental in developing this unique culture and additionally for allowing the vehicle to take on certain projects that might not be explored within the corporate mother. As one goal of the MobileLife vehicle is to contribute to the rest of the organisation's gradual transition, the strict separation between the two units could be counterproductive. The CVC vehicle, InnoVentures functions as a vehicle to discover and collaborate, thus involving the greater organisation more closely might enable them to utilise these investments and collaborations better in building dynamic capabilities across the organisation.

5.3.2 Formal versus informal roles for vehicles of innovation in building dynamic capabilities to discover

The case companies pursue distinctively different approaches to building capabilities to *discover*. Santander uses a number of approaches that are specifically directed towards building these capabilities, while Danske Bank seemingly relies on the indirect effects of initiatives that have other primary goals. The distinction between the two organisations approach to discover is especially evident in their efforts to build capabilities for *external discovery*.

These concrete efforts to discover externally at Santander range from the international advisory board, whose goal is to provide insight and advice on these areas, to the C&I team's ideation-stage, where the goal is to search for investments and ideas through conversations, industry events and motoring the environment. While capabilities to discover serves as the focus of a number of efforts, and perhaps even the CVC vehicle of innovation at Santander, these capabilities seemingly take a back-seat at Danske Bank. It could be argued that Danske Bank potentially builds or strengthens its external *discover*-capabilities through MobileLife by recruiting from new talent pools that have increased expertise and networks to monitor and understand external developments. However, the efforts seem secondary at best. The argument for recruiting these pool of people is mostly centred on capturing and accessing talent with the knowledge needed to execute on new ideas. Furthermore, the Head of MobileLife views the importance of the idea to be 5 percent, the innovation to be 15 percent while the remaining 80 percent is attributed to the execution (S. Haldrup, interview, February 28, 2017).

In addition to having more formalised approaches for *external discovery,* Santander also has more focus on *internal discovery*. InnoVentures, the CVC vehicle, has a system involving corporate sponsors involving the greater organisation in the collaboration and implementation processes. Danske Bank does not appear to use vehicles of innovation specifically to build internal discovery capabilities. They do, however, use cross-functional teams within MobileLife. The use of cross-functional teams, as previously argued, offers a simpler alternative to the usual silo and functional structure, thus enabling the development of capabilities for internal discovery. However, on a corporate level, the initiatives seem lacking, and the cross-functional team structure exists within MobileLife, thus only applies to about 100 of the around 19,000 employees at Danske Bank.

Santander seems to use their vehicles of innovation more deliberately and have clearer goals pertaining to the development of both internal and external discovery. Danske Bank could benefit from looking at how the bank can use these vehicles, or perhaps new vehicles or efforts, to enhance capabilities such as to discover, systemise and process information that exists within the resources of the organisation.

5.3.3 Vehicle of innovation or marketing strategy?

Many large banks today have launched incubators or accelerator programs. One could argue engaging in these types of activities has become a necessity to merely level the playing field and keep up with

competitors, rather than means to develop capabilities or gain strategic benefits. The incubators, hubs and other engagements with the start-up community earlier discussed, often do not entail specific obligations from the incumbents in terms of time and resources spent. Apart from offering a collaborative space, a cash award or access to the incumbent's expertise, the amount of resources devoted by the incumbents come across as discretionary.

Aside from sponsorship, Danske Bank's effort The Hub entails little involvement from the bank in operations of the portal, in combination with the lack of a connection between the bank and the start-up's the implication of this effort in terms of capabilities is arguably limited. The bank's motivations for this particular effort seems to be PR and to facilitate growth in new companies, thus increasing their potential SME customer base. It could be argued that with limited effort from Danske Bank, The Hub might have potential to be a vehicle to contribute to dynamic capabilities to discover by monitoring companies and engaging in dialogue with them. However, in its current form, The Hub stands solely as a marketing and PR effort without contribution to the capabilities, dynamic or otherwise, of Danske Bank.

Regarding Santander's and InnoVentures' incubators and start-up engagements, Santander has expressed that the start-ups have the *benefit of an opportunity* to collaborate with Santander, or that Santander *hopes to partner* with a start-up or that the *possibility of funding exists,* if a solution is found interesting and qualify under certain requirements. In other cases, the Santander has even expressed that the intentions of an incubator or fintech activity is merely a part of the bank's community engagement or to inspire entrepreneurship. Santander has, as mentioned in the case, even communicated that one of its hubs is an act of community engagement, serving their stakeholders, rather than anything else.

The way these vehicles are utilised in both Santander and Danske Bank could be argued to serve the purpose of marketing and sales, rather than building and developing capabilities within the banks. As questioned by Webster and Pizzala (2015); "Incubators are good for customer and shareholder PR, but will they deliver actual innovation or just more apps?" (p. 2).

5.3.4 Drawing on external capabilities or build internally?

Danske Bank has explicitly communicated an intention to build and bring resources and capabilities internally, rather than to access them through collaborations and partnerships. MobileLife believes that encompassing all the necessary competencies to deliver new solutions throughout the entire process internally, from the ideation stage to development and integration, encourages speed, agility and flexibility. As discussed, Santander has a fundamentally different approach to using external resources and capabilities to enhance and complement their own, much in line with Open Innovation. Santander builds its capability base as a network of external capabilities, accessed through partnerships, collaborations and open platforms. The company relies on external capabilities and competencies from the highest level in the boardroom, all the way down to technology and product development. While Danske Bank possesses the majority of its act-capabilities internally, Santander's capabilities to act are

distributed internally as well as externally. Through local as well as global innovation departments and efforts, Santander aims to build capabilities to facilitate collaboration internally across countries and divisions, as well as the capability to coordinate and distribute all external parties and competencies throughout the bank.

Looking beyond the boundaries of the firm is often describes as inducing flexibility and creativity, better facilitating the capability to innovate. However, this comes with some risk and is dependent on that the external parties devote enough time and resources to collaborate and create specialised solutions. If Santander's collaborators have other engagements taking up time and resources, the benefits of external engagement, rather than building capabilities internally, would be mitigated.

Chesbrough and Teece (1996) provide a cautionary argument against decentralisation and relying too much on other parties. With examples from several high-technology industries, the authors argue that companies developing their own capabilities, rather than in cooperation with others or passively waiting for others to do so, often emerge as industry winners. The ability to appropriate value from strong internal capabilities outweighs the costs of making large investments to build them. Even the most virtual decentralised companies must invest heavily in building strong core capabilities and competencies to remain control when coordinating activities with third-parties.

Danske Bank's approach is in line with literature's emphasis on internal resistance towards external engagements and collaborations. Incumbents often struggle with opening up to external third-parties and implementing innovation, since such efforts often are halted because of personal resistance (Salter, Criscuolo, & Ter Wal, 2014). This suggests that the products and services developed by MobileLife receive less resistance, as they come from an internal division. In line with this, Santander testifies to sometimes having troubles getting new solutions implemented in geographical areas other than where the solution was developed or initiated. When trying to expand a collaboration with a start-up globally, it often gets pushback from divisions that do not share the same approach or think that they can build a solution better themselves (A. Arts, interview, February 14, 2017). However, delivering proof-of-concept and using business sponsors mitigate the resistance and encourage support for new solutions.

One should consider the possibility that change can receive push-back from employees, regardless of whether the manifestation of that change is external or internal. As put by Arts (interview, February 14, 2017): "At the end of the day, when the solution is built internally it would be dispersed sort of like an external venture would be", speaking against Salter et al.'s argument that internal solutions would meet less resistance. It is also worth noting that, in contrast to Danske Bank, Santander has launched internal efforts to drive cultural change in terms of setting the right mind-set of employees and getting them onboard on transformations within the organisation. "If you manage to change the mind-set of the people internally, they'd be more willing to accept a venture coming from the outside as well as more open to internal solutions" (A. Arts, interview, February 14, 2017).

Regardless of whether refraining from external sources of capabilities or utilising a combination of internal and external sources of capabilities, there are arguments suggesting the benefits of both strategies. Santander builds capabilities to coordinate and collaborate, this could be suggested to allow a greater deal of flexibility regarding what capabilities and competencies the bank can tap into. Danske Bank's focus on developing capabilities internally allows for a higher degree of specificity in capabilities. As evident, agility may come in various forms, however, if not coupled with redundancy, it may be hard for a bank such as Danske Bank to quickly adapt to changing environments and circumstances without being able to access new capabilities quickly. In light of this, Santander's vehicles of innovation build capabilities in a way that could be argued more redundant, as the organisation is built to discover and act through not one, but a network of external and internal channels that complement each other.

5.3.5 Lack of formalised innovation strategy

Neither Santander or Danske Bank have and explicit and formalised innovation strategy. According to Pisano (2015), the lack of a formalised and comprehensive innovation strategy inhibits the organisation's innovation efforts. He argues that organisations lacking an innovation strategy will have trouble making trade-off decisions, risk pursuing conflicting priorities and so on. Furthermore, the lack of an innovation strategy might incline a firm to pursue "a grab bag of much-touted best practices" (Pisano, 2015, p. 44). Some elements of this critique ring true for the two case companies. As described by Haldrup (interview, February 28, 2017), his mandate is "just to do something disruptive", which points to an unstructured process with loose ties to possible other innovation efforts within the company. And from the previous analysis we see that, although they use their vehicle of innovation directly and efficiently in the development of dynamic capabilities to *act*, the other two categories seem to be overlooked. Although Santander communicates a well-formulated corporate strategy and explicit intentions with its pursued innovation efforts, the bank lacks a formalised innovation strategy.

The lack of an innovation strategy for these two banks might also contribute to confusion, resistance and cultural distance within other functions of the banks. Existing employees in other parts of the business that do not explicitly deal with the different vehicles of innovation cannot be expected to understand what is not communicated clearly to them. According to Pisano (2015), a well-formulated innovation strategy "promotes alignment among diverse groups within and organisation, clarify objectives and priorities, and help focus efforts around them" (p. 46). Pisano (2015) goes on to argue that the organisation should initially develop clear and specific goals in terms of the objectives they have to achieve sustainable competitive advantage, and then develop their innovation strategy to match these objectives. Furthermore, having an explicit innovation strategy can assist the organisation in determining whether specific practises and methods are well suited with for the specific firm, and manage the trade-offs associated with these (Pisano; 2015). Although the lack of an innovation strategy is an interesting observation, it falls outside the scope of the thesis and merely forms part of the context and background information for the case study.

6 CONCLUSION

This chapter will present a concluding summary of what has been explored and discovered. The implications of the findings, both managerial and academic, are then discussed. Followed by a discussion of the limitations of the research conducted and suggestions for further research.

6.1 SUMMARY OF FINDINGS

This thesis has explored the research question: ***How does banks' use of vehicles of innovation impact their ability to remain competitive in the future context of the industry?*** This question was decomposed into two sub-questions, which we explored using different research methods.

The Scenario and Capability Analysis sought to explore sub-question 1: *How does the development of the financial services industry impact the capabilities required for competitive survival?* First, the scenarios analysis investigated the future role of banks, following the grounded theory approach. By consulting contemporary research and literature on the financial service industry, a number of observations and trends were developed. Thereafter, three scenarios were established by encompassing our trends as well as industry experts' thoughts on the future of banking; *distributed bank*, *disintermediated bank* and *bank as a utility*.

Hereafter, the theoretical framework was applied to analyse what types of dynamic capabilities banks might require in the proposed scenarios. With an emphasis on the comprehensiveness of the categories, the analysis found that developing dynamic capabilities within three categories, *act*, *protect* and *discover*, can ensure the competitive survival of a bank.

The objective of the Case Study was to explore research question 2: *How do banks use vehicles of innovation to develop capabilities for the future?* The case studies served two purposes. Firstly, to explore which vehicles of innovation are being deployed, by analysing the strategic efforts pursued by the case companies and their intentions for doing so, and secondly, as a basis for exploring how these vehicles of innovation can contribute to building dynamic capabilities. Compared to Santander's broad set of activities, Danske Bank employs a narrower set of strategic initiatives. The internal innovation department, MobileLife, was found to develop dynamic capabilities to act. Capabilities to discover and protect were mostly found to be indirect efforts from the bank's activities, rather than the result explicit strategic initiatives. Santander's broad set of vehicles was found to rely on a network of dynamic capabilities developed internally as well as externally. Santander's strategic efforts are primarily suited for developing capabilities to act and discover. Finally, the cross-case discussion concludes that both companies lack an explicit innovation strategy and could benefit from conceptualising their initiatives in terms of what types of dynamic capabilities they develop.

6.2 IMPLICATIONS

6.2.1 Managerial implications

A key managerial implication of this thesis is the suggestion of a practical framework for evaluating and considering banks' dynamic capabilities. Furthermore, the framework provides a holistic approach to developing and managing the capability base of banks, highlighting the importance of complementary dynamic capabilities. The act, protect and discover categories provide banks with a tool to consider their existing dynamic capabilities, but more prominently to discuss the impacts of strategic initiatives on the collection of dynamic capabilities. Relative to the complex bodies of academic theorisations that currently exists within these themes, the categorisation is intuitive and thus provides a more operational way to bring the consideration of capabilities into a range of strategic discussions.

The insight generated from the case studies regarding the relation between vehicles of innovation and the categories of dynamic capabilities is limited to the two case companies specifically. The generalisability of the case studies does not extend to managerial implication for other banks. For the two banks, the framework and analysis could serve as a step towards formalising an innovation strategy, or more specifically a strategy for the use of vehicles of innovation. Doing so could have implications for business practices as it unifies firms' efforts into a comprehensive structure and facilitates high-level strategizing. Both banks could benefit from a formalisation of their innovation strategy, especially regarding their use and intentions for using vehicles of innovation. Doing so could ensure more efficient resource allocation and greater effectiveness in building dynamic capabilities.

There are further potential managerial implications for Santander and Danske Bank. Firstly, Danske Bank's focused ability to build dynamic capabilities to act can be considered well matched with the structure and intention of the MobileLife department. However, management could be encouraged to broaden their pursuit of capabilities. Although dynamic capabilities to act are a key factor in ensuring the competitive survival of the bank, a focus on that category alone is unlikely to be sufficient. Danske Bank's The Hub initiative is an example of an effort that could be restructured to contribute to the development of the organisation's capabilities thus serving a purpose beyond marketing and PR. Santander employs a more holistic approach in their use of vehicles of innovation, relying on internal as well as external sources of capabilities, which has the potential to develop a wider set of dynamic capabilities. Santander could perhaps benefit from employing more explicit goals to build dynamic capabilities to protect in the organisation.

The managerial impact of this thesis' results lies in the consideration of banks future competitive survival as a result of their dynamic capabilities across a comprehensive group of capabilities. Furthermore, the intention and structure of the vehicles vary between the firms and are instrumental in their ability to contribute to the generation of these dynamic capabilities.

6.2.2 Academic implications

The thesis seeks to contribute to the literature by serving as a bridge between theoretical research on dynamic capabilities and practical applications. Ambrosini and Bowman (2009) note that the theoretical and empirical evidence on how dynamic capabilities can purposefully be built is lacking. Further, they argue that the field lacks research on how these operate alone or in combination. The thesis contributes to this by developing an initial framework to highlight the broader categories of dynamic capabilities and how they relate to one another. As previously discussed, individual dynamic capabilities are firm specific in nature. However, these three categories may provide a more general approach applicable on an inter-firm basis.

This thesis has taken a step to conceptualise the somewhat fragmented literature on dynamic capabilities. With foundations in the resource-based view of the firm, this thesis provides a contemporary perspective on a practical conceptualization of dynamic capabilities. Furthermore, the thesis structures and categorises existing knowledge on some of the possible futures of banking while contributing the perspective of dynamic capabilities within the specific sector of banks.

6.3 LIMITATIONS

This thesis has been constrained due to time and space limitations. This has especially impacted the primary data, regarding conducting interviews, collecting information on financial services firms and the industry in general. The case analysis would benefit from including additional interviews with employees to generate a richer description and provide further validity to the analysis.

Due to space restrictions, this thesis is unable to include all relevant findings and information regarding the development of the banking industry. The subjective choice of which information to include, based on consensus and relevance of included information, should be considered as a limitation. Furthermore, the scenarios generated would benefit from analysis and explorations using a different method to generate a more to increase the reliability of the results.

Furthermore, there are limitations to analysing and exploring about an emerging topic where central issues remain unresolved. As there is limited sources of data and the data that is available is susceptible to biased from views of interviewees. Furthermore, the scenario development is limited by the authors' subjectivity.

6.4 FURTHER RESEARCH

To understand how the future of financial services is likely to evolve and what possible future scenarios might look like, further research could study how other industries that have been moved forward by innovation, globalisation and hypercompetition have evolved. Research on such industries would yield

insight into the future development of the banking industry. Furthermore, more research could be done on the vehicles of innovation pursued and how they impact banks' dynamic capabilities.

Further research that conceptualises and integrates the findings on dynamic capabilities would facilitate the development of a framework for dynamic capabilities. Research that facilitates the application of frameworks for the practical implication of dynamic capabilities and their interrelations is needed. Such research could be used to develop methods and frameworks that help a business analyse and shed light on what capabilities it is and is not developing.

For further academic research, it is recommended to study the implications of building dynamic capabilities internally versus externally. Transaction cost economics consider this from the perspective of costs inherent to internal or external transactions, and resource-based view discussed some implications of in- versus outsourcing on for example flexibility. However, this literature is based on theoretical research taken place in a context of much more stable industries and business environments that we observe today. Contemporary empirical research of dynamic capabilities would be critical to verify and validate the theoretical foundations and conceptualise how firms most effectively build capabilities in the dynamics of the 21st-century environment.

7 LITERATURE LIST

3 Delta Systems. (2013, September 25). Credit Card Tokenization 101 — And Why it's Better than Encryption. *3DSI.com*, p. 1.

Accenture. (2014). Winning the race for relevance with banking customers, 16.

Accenture. (2015a). *Banking Customer 2020 - Rising Expectations Point to the Everyday Bank*. Accenture Strategy. Retrieved from https://www.accenture.com/t20150710T130243__w__/us-en/_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Dualpub_17/Accenture-Banking-Consumer-Pulse.pdf

Accenture. (2015b). The Future of Fintech and Banking. *Accenture*, 1–12.

Accenture. (2016a). *2016 Accenture Technology Vision for Banks - Platform Economy: It' s time for banks to join in and welcome others*.

Accenture. (2016b). *Fintech and the evolving landscape: landing points for the industry*.

Accenture. (2017). *Financial Providers: Transforming Distribution Models for the Evolving Consumer. Consumer study*.

Allan, G. (2003). A critique of using grounded theory as a research method. *Electronic Journal of Business Research Method*, *2*(1), 1–10.

Allison, C. (n.d.). What Banks Are Actually Doing To Innovate. Retrieved from https://www.rainmaking.io/blog/what-banks-are-actually-doing-to-innovate

Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management? *International Journal of Management Reviews*, *11*(1), 29–49.

Amit. (2016). The Most Important Thing in FinTech : Advent of APIs and Banking APIs Are Real Too.

Amit, R., & Schoemaker, P. J. H. (1993). Strategic assets and organizational rent. *Strategic Management Journal*, *14*(1), 33–46.

Andersen, I. (2008). *Den skinbarlige virkelighed. Den skinbarlige virkelighed*. Retrieved from http://books.google.com/books?hl=en&lr=&id=CR72nBllFOQC&oi=fnd&pg=PA9&dq=Den+skinbarlige+virkelighed:+om+vidensproduktion+inden+for+samfundsvidenskaberne&ots=uEoOj8dGrp&sig=yMBtnhuKxD5RaOA7Hj00825kNXo

Andersen, T. T. (2016). *Business models in a digital disruptive environment Why you should care?* Danske Bank: Copenhagen.

Argyres, N. S., & Zenger, T. R. (2012). Capabilities, Transaction Costs, and Firm Boundaries. *Organization Science*, *23*(6), 1643–1657. Retrieved from http://pubsonline.informs.org

Arner, D. W., Barberis, J., & Buckley, B. P. (2015). The Evolution of Fintech: A New Post-Crisis Paradigm? *University of Hong Kong Faculty of Law Research Paper*, *2015/047*, 1689–1699.

Arnold, D., & Jeffery, P. (2015). The digital disruption of banking and payment services. In *Research Handbook on Digital Transformation* (pp. 103–120). Edward Elgar.

Arnold, M., & Braithwaite, T. (2015, June 18). Banks' ageing IT systems buckle under strain. *Financial Times*, pp. 1–9. Retrieved from http://www.ft.com/intl/cms/s/0/90360dbe-15cb-11e5-a58d-00144feabdc0.html#axzz3ovElJXvv

Arthur, L. (2014). What is big data? Retrieved February 7, 2017, from https://www.forbes.com/sites/lisaarthur/2013/08/15/what-is-big-data/#347bf5c15c85

Arts, A. (Santander InnoVentures). (2017, February 14). Personal interview by Hjeltnes, Ø. & Odin, J.

Authers, J. (2014, June 22). Role of banks recedes in wake of crisis. *Financial Times*, pp. 1–2.

Bannister, D. (2015). Is everybody API? *Bankingtechnology.com*, p. 1.

Baptiste Su, J. (2016). The Global Fintech Landscape. Retrieved May 7, 2017, from https://www.forbes.com/sites/jeanbaptiste/2016/09/28/the-global-fintech-landscape-reaches-over-1000-companies-105b-in-funding-867b-in-value-report/#115220e826f3

Barclays. (2016). *Financial institutions embrace artificial intelligence*.

Barney, J. (1986). Organizational Culture: Can It Be a Source of Sustained Competitive Advantage? *Academy of Management Review*, *11*(3), 656–665.

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*.

Barney, J. (1999). How a firm's capabilities affect boundary decisions. *Sloan Management Review*, *40*(3), 137–145.

Barney, J. (2001). Is the resource-based "view" a useful perspective for strategic management research? Yes. *Academy of Management Review*.

Barney, J., & Clark, D. N. (2007). Resource-Based Theory: Creating and Sustaining Competitive Advantage. *Oxford University Press*, 336.

Barrett, D. J. (2012). The Internet of Things: Dr. John Barrett at TEDxCIT. Retrieved from https://www.youtube.com/watch?v=QaTIt1C5R-M

Basel Committee on Banking Supervision. (1988). International convergence of capital measurement and capital standards. *Bank for International Settlements*, 30. Retrieved from http://www.bis.org/publ/bcbs04a.htm

Basel Committee on Banking Supervision. (2004). Basel II: International convergence of capital measurement and capital standards: A revised framework. *Bank for International Settlements*. Retrieved from http://www.bis.org/publ/bcbs107.pdf

Basel Committee On Banking Supervision. (2010). Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems. *Bank for International Settlements*, (June), 1–77.

Basu, S., Benson, D., & Dushnitsky, G. (2016). *Corporate Venture Capital (CVC)*. London, United Kingdom. Retrieved from http://www.kauffman.org/microsites/state-of-the-field/topics/finance/equity/corporate-venture-capital

Belinky, M. (2016, April 15). *IFGS2016 Panel: Corporate Venture Capital with Santander*

InnoVentures, Infosys, Citi and CME Group. (Interview by Innovate Finance). [Video file]. Retrieved at

<https://www.youtube.com/watch?v=GIbqWC7nF4o>

Berg, B. L. (2001). *Qualitative research methods for the social sciences*. *Qualitative Research* (Vol. Seventh Ed).

Bhens, S., Lau, L., & Sarrazin, H. (2016). The new tech talent you need to suceed in digital. Retrieved March 22, 2017, from http://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/the-new-tech-talent-you-need-to-succeed-in-digital

Bikker, J. a, & Bos, J. W. B. (2005). *Trends in competition and profitability in the banking industry: a basic framework*. *SUERF - The European Money and Finance Forum*. Vienna.

Bitsch, A. (2016, August 30). Hvorfor hedder Danske Banks njye investeringløsning mon June? Retrieved

March 26, 2017, from http://finans.dk/investor/ECE8960351/hvorfor-hedder-danske-banks-nye-investeringsloesning-mon-june/?ctxref=ext

Bitsch Olsen, P. (2003). Kvalitetsbeskrivelse. In *Problemorienteret Projektarbejde* (pp. 193–207). Frederiksberg: Roskilde University Press.

Bitsch Olsen, P., & Pedersen, K. (2003). Metode i problemorienteret projektarbejde. In *Problemorienteret Projektarbejde* (pp. 247–269). Frederiksberg: Roskilde University Press.

Bjerg, O., & Villadsen, K. (2006). *Sociologiske metoder : fra teori til analyse i kvantitative og kvalitative studier*. *Sociologiske metoder: fra teori til analyse i kvantitative og kvalitative studier*.

Blockchain Technology Explained. (2016). Retrieved April 27, 2017, from http://www.blockchaintechnologies.com/

Borgatti, S. P., & Halgin, D. S. (2011). On Network Theory. *Organization Science*, *22*(5), 1168–1181.

Bose, N. (2015). Amazon to offer loans to sellers in China, 7 other countries. Retrieved March 21, 2017, from http://www.reuters.com/article/us-amazon-com-loans-exclusive-idUSKCN0P90DW20150629

Boston Consulting Group. (2015). *Operational Excellence in Retail Banking 2015 : Creating Digital Banks with a Human Touch*. BCG. Retrieved from https://www.bcgperspectives.com/content/articles/financial-institutions-operational-excellence-retail-banking-2015-digital-banks-human-touch/

Botin, A. (2015). Opening session – Investor Day Presentation. In *Investor Day 2015*. London: Santander. Retrieved from http://www.santander.com/csgs/Satellite/CFWCSancomQP01/en_GB/Corporate/Shareholders-and-Investors/Investor-Day-2015.html

Botin, A. (2016). Executive Chairman – Group Strategy Update Presentation. In *Group Strategy Update*. London: Santander. Retrieved from http://www.santander.com/csgs/Satellite/CFWCSancomQP01/en_GB/Corporate/Shareholders-and-Investors/Group-Strategy-Update-2016-.html

Bowman, C., & Ambrosini, V. (2003). How the Resource-based and the Dynamic Capability Views of the Firm Inform Corporate-level Strategy. *British Journal of Management*. https://doi.org/10.1111/j.1467-8551.2003.00380.x

Bradley, C., & O'Toole, C. (2016). An incumbent's guide to digital disruption. *McKinsey Quarterly*, (May), 1–10.

Brear, D., & Bouvier, P. (2016). Exploring Banking as a Platform (BaaP) Model. *The Financial Brand*, pp. 1–5. Retrieved from https://thefinancialbrand.com/57619/banking-as-a-platform-baap-structure/

Burgelman, R. A. (1994). Fading Memories: A Process Theory of Strategic Business Exit in Dynamic Environments. *SAGE Publications*, *39*(1), 24–56.

Capgemini. (2015). The Impact of the Internet of Things on Financial Services. Capgemini. Retrieved from https://www.uk.capgemini.com/resource-file-access/resource/pdf/the_impact_of_the_internet_of_things.pdf

Capgemini. (2016). *World Retail Banking Report 2016*.

Capron, L., Dussauge, P., & Mitchell, W. (1998). Resource redeployment following horizontal acquisitions in Europe and North America, 1988-1992. *Strategic Management Journal*, *19*(7), 631–661.

Cassell, C., & Symon, G. (2004). Essential Guide to Qualitative Methods in Organizational Research. *Athenaeum Studi Periodici Di Letteratura E Storia Dell Antichita*, 388. https://doi.org/Book

Centre for the Study of Financial Innovation. (2015). *Banking Banana Skins 2012: The CSFI survey of bank*

risk.

Chesbrough, H. W. (2003). The era of open innovation. *MIT Sloan Management Review*, *44*(3), 35–41.

Chesbrough, H. W., & Teece, D. J. (1996). Organizing for innovation: When is Virtual Virtuous? *Harvard Business Review*, *74*(1), 65–73.

Christensen, A. B. (2015). Sandheden om MobileLife: Danske Bank er blevet hip software-virksomhed. *Magasinet F5*.

Christensen, C. M. (1997). *Innovator's Dilemma*. Harvard Business School Press, Cambridge, Mass.

Chui, M., Loffler, M., & Roberts, R. (2010). The Internet of Things. *McKinsey Quarterly*, (March). Retrieved from http://www.mckinsey.com/industries/high-tech/our-insights/the-internet-of-things

Coase, R. (1937). The Nature of the Firm. *Economica*, *4*(16), 386–405.

Cohn & Wolfe. (2013). From Transparency to Full Disclosure, (October 2013), 24. Retrieved from http://www.cohnwolfe.com/sites/default/files/reprinted articles/Cohn & Wolfe - From Transparency to Full Disclosure report.pdf

Conner, K. R. (1991). A Historical Comparison of Resource-Based Theory and Five Schools of Thought within Industrial Organization Economics: Do We Have a New Theory of the Firm? *Journal of Management*. https://doi.org/0803973233

Constine, J. (2015). Facebook Introduces Free Friend-To-Friend Payments Through Messages. Retrieved March 20, 2017, from https://techcrunch.com/2015/03/17/facebook-pay/

Contreras, E. (2016, October 3). Banco Santander cambia la imagen de Openbank para relanzar la operativa. *elEconomista.es*. Retrieved from http://www.eleconomista.es/empresas-finanzas/noticias/7864785/10/16/El-Santander-cambia-la-imagen-de-Openbank-para-relanzar-la-operativa.html

Cox, W. M., & Alm, R. (2008). You Are What You Spend. *New York Times*, p. 14. Retrieved from http://www.nytimes.com/2008/02/10/opinion/10cox.html

Currency cloud. (2016). *Banks and the FinTech Challenge : How disruption has been a catalyst for*. London.

D'Aveni, R. (1994). *Hypercompetition: Managing the dynamics of strategic management*. New York.

Dambrine, B., Jerome, J., & Ambrose, B. (2015). *User reputation: Building trust and addressing privacy issues in the sharing economy*. *Future of Privacy Forum*.

Danske Bank. (2015). Danske Bank vil hjælpe små vækstvirksomheder. Retrieved February 20, 2017, from https://www.danskebank.com/da-dk/Presse/nyheder/Nyheder/Pages/Danske-bank-hjælper-vaekst-virksomheder.aspx

Danske Bank. (2016). MobilePay in the most widespread payment terminals in the Nordic region. Retrieved April 21, 2017, from https://www.danskebank.com/en-uk/press/News/news-archives/Pages/nordic-partnership-with-verifone-will-strengthen-mobilepay.aspx

Danske Bank. (2017a). About us - Nordic universal bank. Retrieved February 6, 2017, from http://www.danskebank.com/en-uk/About-us/Our-business/Pages/our-markets.aspx

Danske Bank. (2017b). About us - Our strategy and business plan. Retrieved February 6, 2017, from https://www.danskebank.com/en-uk/About-us/Our-business/Pages/our-markets.aspx

Danske Bank. (2017c). *Annual Report 2016*.

Danske Bank. (2017d). History. Retrieved February 6, 2017, from https://www.danskebank.com/en-uk/About-us/ourhistory/Pages/history.aspx

Danske Bank. (2017e). Nordea joins MobilePay. *Danskebank.com*.

Deloitte. (2016a). *2016 Global Mobile Consumer Survey*. Retrieved from file:///C:/Users/Ømjer/Downloads/us-global-mobile-consumer-survey-2016-executive-summary.pdf

Deloitte. (2016b). *Banking on the Future: Vision 2020*. Retrieved from https://www2.deloitte.com/content/dam/Deloitte/in/Documents/financial-services/in-fs-deloitte-banking-colloquium-thoughtpaper-cii.pdf

Derebail, A., Bhushan, B., Gamblin, R., & van Oijen, A. (2016). *European Payment Services Directive 2: Address new requirements and capitalize on emerging opportunities with IBM*. IBM Corporation.

Desai, F. (2015, December 14). The Fintech Boom and Bank Innovation. *Forbes.com*. Retrieved from https://www.forbes.com/sites/falgunidesai/2015/12/14/the-fintech-revolution/#6b473fb249d0

Deutschman, A. (2004, August 1). Inside the Mind of Jeff Bezos. Retrieved from http://www.fastcompany.com/50106/inside-mind-jeff-bezos%5Cnhttp://www.fastcompany.com/50541/inside-mind-jeff-bezos

Dietz, M., Khanna, S., Olanrewaju, T., & Rajgopal, K. (2015). *Cutting Through the FinTech Noise: Markers of Success, Imperatives For Banks*. McKinsey & Company. Retrieved from http://www.mckinsey.com/~/media/mckinsey/industries/financial services/our insights/cutting through the noise around financial technology/cutting-through-the-fintech-noise-full-report.ashx

Dilts, E. (2017). Third of global consumers open to Google, Amazon banking: survey. Retrieved March 20, 2017, from http://www.reuters.com/article/us-wealth-financialservices-survey-idUSKBN14V2I2

Downes, L., & Nunes, P. F. (2013). Big Bang Disruption. *Harvard Business Review*, *March*, 44–56.

Dragland, Å. (2013). Big Data – for better or worse. Retrieved from http://www.sintef.no/home/corporate-news/Big-Data--for-better-or-worse/

Dunkley, E. (2015, May 4). Bank systems creak under weight of digital transactions. *Financial Times*, pp. 11–14. Retrieved from https://www.ft.com/content/466102dc-d856-11e4-ba53-00144feab7de

Dushnitsky, G., & Lenox, M. J. (2005). When do incumbents learn from entrepreneurial ventures?: Corporate venture capital and investing firm innovation rates. *Research Policy*, *34*(5), 615–639.

Edelman Group. (2016). *2016 Edelman Trust Barometer - Global Results. Edelmans insights*. Retrieved from http://www.edelman.com/insights/intellectual-property/2016-edelman-trust-barometer/global-results/

Edelman Group. (2017). *Edelmans Trust Barometert: Global Results 2017. Edelmans insights*. Retrieved from http://www.edelman.com/global-results/

eFintech Show. (2016). Rodrigo Kuri. Retrieved from http://efintechshow.com/2016/speakers/rodrigo-kuri-managing-director-innovacion-banco-de-futuro-grupo-santander/

Eisenhardt, K. M. (1989). Building Theories from Case Study Research. *Academy of Management Review*, *14*(4), 532–550.

Eisenhardt, K. M., & Martin, A. J. (2000). Dynamic capabilities: what are they? *Strategic Management Journal*, *21*, 1105–1121.

Eisenstein, P. (2017). Demographic Shifts: Shaping the Future of Car Ownership. Retrieved March 20, 2017, from http://knowledge.wharton.upenn.edu/article/demographic-shifts-shaping-future-car-ownership/

EMSA. (2016). The Distributed Ledger Technology Applied to Securities Markets. *European Securties and Markets Authority*, (June). https://doi.org/10.1016/j.yexmp.2014.03.001

Estrin, D. (2016). Rethinking customer experience in retail banking: Digital transformation in financial

services. Retrieved from https://www.visioncritical.com/customer-experience-in-retail-banking/

European Commission. (2016). *Antitrust: Regulation on Interchange Fees*.

Eurostat. (2016). Internet access and use statistics - households and individuals. Retrieved April 10, 2017, from http://ec.europa.eu/eurostat/statistics-explained/index.php/Internet_access_and_use_statistics_-_households_and_individuals

Evans, T. (2016, July 18). Peer-to-peer lending: everything you need to know about the leading websites. *The Telegraph*. Retrieved from http://www.telegraph.co.uk/personal-banking/savings/peer-to-peer-lending-everything-you-need-to-know-about-the-leadi/

Evry. (2016). *PSD2 – Strategic opportunities beyond compliance*.

EY. (2014). *Global Commercial Banking Survey 2014 - Advancing service in a digital age*.

EY. (2016). *The relevance challenge: What retail banks must do to remain in the game. 2016 Global Consumer Survey*. Retrieved from http://www.ey.com/Publication/vwLUAssets/ey-the-relevance-challenge/$File/ey-the-relevance-challenge-2016.pdf

EY, & Efma. (2014). *Looking at the bank from the customer' s point of view*.

Fasnacht, D. (2009). *Open Innovation in the financial services: growing through openness, flexibility and customer integration*. Springer Science & Business Media.

Fernández, L. (2016, November 28). Regulation and people, the main challenges for the digitization of the financial industry. *BBVA*. Retrieved from https://www.bbva.com/en/news/economy/financial-systems/banking/regulation-people-main-challenges-digitization-financial-industry/

Finnegan, M., Finnegan, M., & Finnegan, M. (2016, April 25). How technology will transform banking in 2016: Blockchain, digital challengers and IoT. *ComputerWorld*, pp. 1–4. Retrieved from http://www.computerworlduk.com/it-business/how-technology-will-transform-banking-in-2016-blockchain-digital-banks-iot-3631853/

Fintech Ranking. (2016). Overview of APIs and Bank-as-a-Service in FINTECH. *Www.fintechranking.com*, *8*.

Five misunderstandings about case-study research. (2006). *Qualitative Inquiry*, *12*(2), 219–245.

Flyvbjerg, B. (2006). Five misunderstandings about case-study research. *Qualitative Inquiry*, *12*(2), 219–245. Retrieved from http://qix.sagepub.com/content/12/2/219%5Cnhttp://qix.sagepub.com/content/12/2/219.full.pdf%5Cnhttp://qix.sagepub.com/content/12/2/219.short

Fujitsu. (2016). *The Fujitsu European Financial Services Survey - A new pace of change*.

Garner. (2017). Gartner says 8.4 billion connected "Things" will be in use in 2017, up 31 percent from 2016. Retrieved May 11, 2017, from http://www.mckinsey.com/industries/high-tech/our-insights/the-internet-of-things

Gassmann, O. (2006). Editorial Opening up the innovation process : towards an agenda. *R&D Management*, *36*(3), 223–228.

Gassmann, O., Enkel, E., & Chesbrough, H. (2010). The future of open innovation. *R&D Management*, *40*(3), 213–221.

Goel, A. (2015). 63 Insanely Useful APIs Across 12 Segments to Supercharge Your Product. Retrieved February 24, 2017, from https://letstalkpayments.com/63-insanely-useful-apis-across-12-segments-to-supercharge-your-product/

Goldman Sachs Fortnightly Thoughts. (2013). Fortnightly intern survey. Retrieved March 22, 2017, from

http://www.goldmansachs.com/our-thinking/pages/millennials/

Grant, R. M. (1991). The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation. *California Management Review*, *33*(3), 114–135.

Greer, S. (2015). Unbundling, fidor, and the model for approaching financial startups. Retrieved from http://bankingblog.celent.com/2015/09/09/unbundling-fidor-and-the-model-for-approaching-financial-startups/

Griffith, E. (2016). What Is Cloud Computing? *Pcmag.com*.

Griffith, E. (2017). The Best Smart Home Devices of 2017. Retrieved February 2, 2017, from http://www.pcmag.com/article2/0,2817,2410889,00.asp

Guba, E., & Lincoln, Y. (1994). Competing Paradigms in Qualitative Research. *Handbook of Qualitative Research*, 105–117.

Gulati, R. (1999). Network Location and Learning: The Influence of Network Resources and Firm Capabilities on Alliance Formation. *Strategic Management Journal*, *20*(5), 397–420.

Hackl, S. (2017). Machine Learning , AI and the Future of Data Analytics in Banking.

Hagel, J., Brown, J. S., De Maar, A., & Wooll, M. (2016). *Approaching disruption*. Deloitte University Press.

Haldrup, S. (Danske Bank, MobileLife). (2017, February 28). Personal interview by Hjeltnes, Ø. & Odin, J.

Hannestad, S. (FintechMundi). (2017, February 13). Personal interview by Hjeltnes, Ø.

Hatami, A. (2015). The future of banking: four scenarios. *Banknxt*, pp. 1–10.

Helfat, C. E. (1997). Know-how and Asset Complementarity and Dynamic Capability Accumulation: The Case of R&D. *Strategic Management Journal*, *18*(5), 339–360. Retrieved from http://search.ebscohost.com.library.myebs.de/login.aspx?direct=true&db=bth&AN=9712235890&site=ehost-live

Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource based view: Capability lifecycles. *Strategic Management Journal*, *24*(10), 997–1010.

Henderson, R., & Cockburn, I. (1994). Measuring Competence? Exploring Firm Effects in Pharmaceutical Research. *Strategic Management Journal*, *15*(1 S), 63–84.

Hernæs, C. O. (2017). What Facebook's European payment license could mean for banks. Retrieved March 23, 2017, from https://techcrunch.com/2017/01/12/what-facebooks-european-payment-license-could-mean-for-banks/

Hetherington, R. (2015, June). *SAP and IBM Addressing Start-up Competition at SAP FinancialServices Forum London*. (Interview by Finextra). [Video file]. Retrieved at http://edge.media-server.com/m/p/5z6q6a3h/i/ysba856o

Hill, L., Brandeau, G., Truelove, E., & Lineback, K. (2015). The Capabilities Your Organization Needs to Sustain Innovation. *Harvard Business Review*, 1–9.

Hirt, M., & Willmott, P. (2014). Strategic Principles for Competing in the Digital Age. *McKinsey Quarterly*, (May), 1–13. Retrieved from http://www.mckinsey.com/insights/strategy/strategic_principles_for_competing_in_the_digital_age

Hodgson, N. (2014). Santander launches first fast growth SME incubator in Liverpool. *Liverpool Echo*. Retrieved from http://www.liverpoolecho.co.uk/news/business/santander-launches-first-fast-growth-6748531

Horton, D. (2017). 5 Banking Tech Trends for 2017. Retrieved March 22, 2017, from

https://thefinanser.com/2017/01/5-banking-tech-trends-2017.html/

Härle, P., Lüders, E., Pepanides, T., Pfetsch, S., Poppensieker, T., & Stegemann, U. (2010). *Basel III and European banking: Its impact, how banks might respond, and the challenges of implementation* (No. 26) (Vol. November).

IBM. (2015). *Breakthrough Banking: Your cognitive future in banking an financial markets*.

IBM. (2017). Bringing big data to the enterprise. Retrieved February 13, 2017, from https://www-01.ibm.com/software/data/bigdata/what-is-big-data.html

InnoVentures. (n.d.-a). Our focus. Retrieved from http://santanderinnoventures.com/fintech2/our-focus/

InnoVentures. (n.d.-b). Portfolio companies. Retrieved from http://santanderinnoventures.com/portfolio-companies/

InnoVentures. (n.d.-c). What we do. Retrieved from http://santanderinnoventures.com/santander-innoventures-secures-further-usd-100-million-for-fintech-investment/

InnoVentures. (2014). Santander to launch a $100M fund for Fintech companies out of London. Retrieved from http://santanderinnoventures.com/santander-to-launch-a-100m-fund-for-fintech-companiesout-of-london/

InnoVentures. (2015a). IE Business School and Santander InnoVentures launch global FinTech Venture Days for financial technology startups. Retrieved from http://santanderinnoventures.com/ie-business-school-and-santander-innoventures-launch-global-fintech-venture-days-for-financial-technology-startups/

InnoVentures. (2015b). Santander InnoVentures Distributed Ledger Challenge launched to inspire fintech startups worldwide. Retrieved from http://santanderinnoventures.com/santander-innoventures-distributed-ledger-challenge-launched-to-inspire-fintech-startups-worldwide/

InnoVentures. (2016a). Cambridge Blockchain crowned winner of the Santander InnoVentures Distributed Ledger Challenge. Retrieved from http://santanderinnoventures.com/cambridge-blockchain-crowned-winner-of-the-santander-innoventures-distributed-ledger-challenge/

InnoVentures. (2016b). Santander InnoVentures secures further USD 100 million for fintech investment. Retrieved from http://santanderinnoventures.com/santander-innoventures-secures-further-usd-100-million-for-fintech-investment/

International Data Corporation, & EMC. (2014). *The Digital Universe of Opportunities. IDC / EMC Report*. Retrieved from http://www.emc.com/collateral/analyst-reports/idc-digital-universe-2014.pdf

Irrera, A. (2015, July 1). Santander ramps up fintech push with new incubator. *Financial News London*. Retrieved from https://www.fnlondon.com/articles/santander-monetise-launch-london-fintech-incubator-20150701

Ismail, N. (2016). The point-of-sale industry enabling payment : an interview with June Felix The point-of-sale industry enabling payment. Retrieved April 21, 2017, from http://www.information-age.com/point-sale-industry-enabling-payment-123462748/

Jaubert, M., Marcu, S., Ullrich, M., Dela, R., & Malbate, J.-B. (2014). *Going Digital: The Banking Transformation Road Map*. A.T.Kearney, Efma.

Jenkins, P. (2016, September). Banks: Too dull to fail? *Financial Times*.

Jonasson, L. (Copenhagen Institute for Future Studies). (2017, March 3). Personal interview by Hjeltnes, Ø.

Joseph, D. (2014, September 15). Apple Watch will power the internet of things. *The Guardian*. Retrieved from https://www.theguardian.com/technology/2014/sep/15/apple-watch-internet-of-things

June, M. (2016). Din anbefaling = tid + risiko + økonomisk råderum. Sådan fungerer det.

Khan, S. N. (2014). Qualitative Research Method: Grounded Theory. *International Journal of Business and Management*, *9*(11), 224. Retrieved from http://www.ccsenet.org/journal/index.php/ijbm/article/view/39643

King, A. A., & Baatartogtokh, B. (2015). How useful is the theory of disruptive innovation? *MITSloan Management Review*, *57*(1), 77–90.

Kirwans. (2017). Santander incubator hub to offer free Kirwans legal clinic. Retrieved from https://www.kirwanssolicitors.co.uk/press/2017/january/santander-incubator-hub-to-offer-free-kirwans-legal-clinic/

Knuutinen, A. (2017). The Hub Connecting Startups With Employees And Investors. Retrieved April 11, 2017, from http://arcticstartup.com/article/hub-connecting-startups-employees-investors/

Kobler, D., Bucherer, S., & Schlotmann, J. (2016). Banking business models of the future. *Performance*, *20*.

Korschinowski, S. (2017). European PSD2 open banking standards provide the opportunity for payments innovation.

Kovalainen, A., & Eriksson, P. (2008). *Qualitative Methods in Business Research*. Sage.

KPMG, & CB Insights. (2016). *The Pulse of Fintech, 2015 in Review - Global Analysis of Venture Funding*.

Kreger, A. (2016, November 6). 10 User Experience (UX) Design Trends for Banking in 2017. *The Financial Brand*. Retrieved from https://thefinancialbrand.com/62677/user-experience-ux-design-trends-banking/

Kroszner, R. S. (2015). *The Future of Banks: Will Commercial Banks Remain Central to the Financial System?*

Kraaijenbrink, J., Spender, J. C., & Groen, A. J. (2010). The Resource-Based View: A Review and Assessment of Its Critiques. *Journal of Management*, *36*(1), 349–372.

Kuratko, D. F., Montagno, R. V., & Hornsby, J. S. (1990). Developing an Intrapreneurial Assessment Instrument for an Effective Corporate Entrepreneurial Environment. *Strategic Management Journal*, *11*, 49–58.

Kvale, S. (1983). The Qualitative Research Interview: A Phenomenological and a Hermeneutical Mode of Understanding , Journal of Phenomenological Psychology, 14:2 (1983:Fall) p.171. *Qualitative Research*, *14*(2), 171.

Lane, P. J., & Lubatkin, M. (1998). Relative absorptive capacity and interorganizational learning. *Strategic Management Journal*, *19*(5), 461–477.

Leiblein, M. J. (2011). What Do Resource- and Capability-Based Theories Propose? *Journal of Management*, *37*(4), 909–932.

Lepore, J. (2014). The disruption machine - What the gospel of innovation gets wrong. *The New Yorker*, p. 3.

Levinthal, D. A., & March, J. G. (1993). The myopia of learning. *Strategic Management Journal*, *14*(S2), 95–112.

Lunde Bakker, T. (Danske Bank). (2017, January 16). Personal interview by Hjeltnes, Ø.

Light, J., McFarlane, A., Barry, K., & Ruotsila, I. (2016). *Seizing the Opportunities Unlocked by the EU's Revised Payment Services Directive*. Accenture.

Lodge, G., Zhang, H., & Jegher, J. (2015). *IT Spending in Banking: A Global Perspective*. Celent Research. Retrieved from http://celent.com/reports/it-spending-banking-global-perspective-2

Loeb, S. (2016, February 17). The rise of corporate VCs: what that means for the industry. *Vator*. Retrieved from http://vator.tv/n/4327

López, J. A. (2015). José Antonio López – Investor Day Presentation. In *Group Strategy Update*. London: Santander. Retrieved from http://www.santander.com/csgs/Satellite/CFWCSancomQP01/en_GB/Corporate/Shareholders-and-Investors/Group-Strategy-Update-2016-.html

Madill, A., Jordan, A., & Shirley, C. (2000). Objectivity and reliability in qualitative analysis: Realist, contextualist and radical constructionist epistemologies. *British Journal of Psychology*, *91*(1), 1–20.

Mahoney, J. T., & Pandian, J. R. (1992). The resource-based view within the conversation of strategic management. *Strategic Management Journal*.

Makadok, R. (2001). Toward a synthesis of the resource-based and dynamic-capability views of rent creation. *Strategic Management Journal*, *22*(5), 387–401.

Manatt. (2016). Collaboration Between Regional and Community Banks and Fintech.

March, J. G. (1991). Exploration and exploitation in organizational learning. *Organization Science*, *2*(1), 71–87.

Markides, C. C., & Charitou, C. D. (2003). Responses to Disruptive Strategic Innovation. *MIT Sloan Management Review*, *45*(2), 26–32.

Markides, C. C., & Charitou, C. D. (2004). Competing with dual business models: A contingency approach. *Academy of Management Executive*, *18*(3), 22–36.

Marous, J. (2017, January 17). The Use of AI in Banking is Set to Explode. *The Financial Brand*. Retrieved from https://thefinancialbrand.com/63322/artificial-intelligence-ai-banking-big-data-analytics/

Marr, B. (2016, December 6). What is the difference between artificial intelligence and machine learning? *Forbes.com*. Retrieved from https://www.forbes.com/sites/bernardmarr/2016/12/06/what-is-the-difference-between-artificial-intelligence-and-machine-learning/#5ad5139f2742

Martin, B. (2017, February 13). Pay as you speak: Santander revamps voice banking app. *The Telegraph*.

Martovoy, A., Mention, A., & Torkkeli, M. (2015). Inbound Open Innovation in Financial Services. *Journal of Technology Management & Innovation*, *10*(1), 117–131.

Matthews, C. (2015, August 18). Young people can afford homes , they just don't want to be homeowners. *Fortune*. Retrieved from http://fortune.com/2015/08/18/young-people-can-afford-homes-they-just-dont-want-to-be-homeowners/

McGrath, R. (2013). The Pace of Technological Adaption is Speeding Up. *Harvard Business Review*.

McKinsey&Company. (2011). *Big data: The next frontier for innovation, competition, and productivity*. *McKinsey Global Institute*.

McKinsey&Company. (2015). *The Fight for the Customer - McKinsey Global Banking Annual Review 2015*.

McKinsey&Company. (2017). *Three snapshots of digital transformation*.

McKinsey & Company. (2016). Cutting through the noise around financial technology. *McKinsey&Company*, (February), 1–14. Retrieved from http://www.mckinsey.com/industries/financial-services/our-insights/cutting-through-the-noise-around-financial-technology

McLean, J. (2016). *Banking On Blockchain: Charting the Progress Of Distributed Ledger Technology*. Finextra Research. Retrieved from https://www.ingwb.com/media/1609652/banking-on-blockchain.pdf

Merriam-Webster. (n.d.). Definition of innovation. Retrieved from https://www.merriam-webster.com/dictionary/innovation

Microsoft Azure. (2008). What is Cloud Computing. Retrieved from http://cloudcomputing.sys-con.com/node/579826/print

Mills, A. J., Durepos, G., & Wiebe, E. (2010). *Encyclopedia of Case Study Research* (1st ed.). Sage.

Mincer, J. (2015). Millennial "NOwners" follow Uber with new fashipn trading model.

Mitchell, S. (Santander UK). (2017, March 10). Personal interview by Hjeltnes, Ø. & Odin, J.

MobileLife. (2017a). Front page. Retrieved from www.mobilelife.dk

MobileLife. (2017b). MobileLife - Culture.dk.pdf.

MobileLife. (2017c). Our MobileLife Purpose. Retrieved from www.mobilelife.dk

MobilePay. (2016). Historien om MobilePay og lidt fakta. Retrieved January 28, 2017, from http://mobilepay.dk/da-dk/Pages/Om-MobilePay.aspx

Monetise. (2015). Banco Santander and Monitise joint venture. Retrieved from http://www.investegate.co.uk/monitise-plc--moni-/rns/banco-santander-and-monitise-joint-venture/20150701070029768 2R/

Morgan Stanley. (2015). *Can P2P Lending Reinvent Banking?* Morgan Stanley Research.

Nelson, R. R. (1991). Why do firms differ, and how does it matter? *Strategic Management Journal*, *12*(2 S), 61–74.

Nelson, R. R., & Winter, S. G. (1978). Forces Generating and limiting Concentration under Schumpeterian Competition. *The Bell Journal of Economics*, *9*(2), 524–548.

Nelson, R. R., & Winter, S. G. (1982). *An evolutionary theory of economic change*. *Cambridge MA Belknap* (Vol. 93).

Nikolaisen, P.-I. (2016). Danske Bank lanserer jobb- og investorportal for startups. Mener det styrker økosystemet med konkurranse for Startupmatcher. Retrieved April 11, 2017, from http://shifter.no/index.php/2016/11/01/danske-bank-lanserer-jobb-investorportal-startups-mener-styrker-okosystemet-konkurranse-startupmatcher/

Noguchi, Y. (2017). Fewer Young People Buying Houses, But Why?

Novoa, J. (2015). Banco Santander and struggling Monitise launch €24M fintech incubator. Retrieved from https://novobrief.com/banco-santander-monitise-incubator/

NSTC Subcommittee on Biometrics. (2006). *Biometrics Overview*. *National Science and Technology Council*.

Nunns, J. (2016, May 27). Santander looks for positive Ripple effect by becoming first bank to pilot blockchain payments app. *CBR*.

Ohlhausen, R. (2016). Top 10 Payment Trends for 2016. *PPRO Group*, (January), 1. Retrieved from http://www.tableau.com/sites/default/files/media/top8bigdatatrends2016_final_1.pdf?ref=lp&signin=9e959a4adc3e8bd87ca238066f07d945&1[os]=mac os x

Oracle. (2015). Cloud Computing In Financial Services: A Banker ' s Guide, (November).

Padmanabhan, G. R., & Sivaramakrishnan, A. (2016). *Reimagining KYC Using Blockchain Technology*.

Pallardó, A. (2016). Confused about "Fintech Banking" jargon? Here's a quick guide. Retrieved from

https://www.kantox.com/en/confused-fintech-banking-jargon-quick-guide/

Parker, E., & Gupta, M. (2015). Too much regulation creates bank brain drain. *Financial Times*. Retrieved from https://www.ft.com/content/4dfc4190-719f-11e5-9b9e-690fdae72044

Parker Edmund, G. M. (2015). Too much regulation creates bank brain drain. *Financial Times*, 1–6. Retrieved from https://www.ft.com/content/4dfc4190-719f-11e5-9b9e-690fdae72044

Penrose, E. (1959). *Theory of the growth of the firm*. *Theory of the Growth of the Firm*. New York: Sharpe.

Percy, E. (2015, May 13). In the age of disruptive innovation, adaptability is what matters most. *The Globe and Mail*.

Peteraf, M. A. (1993). The Cornerstones of Competitive Advantage: A Resource-Based View. *Strategic Management Journal*, *14*(3), 179–191.

Petersen, L. (Santander Consumer Bank). (2017, March 15). Personal interview by Hjeltnes, Ø. & Odin, J.

Petersen, L. (Santander Consumer Bank). (2017, February 28). Presentation at Copenhagen Business School

Pinchot, G. (1985). *Intrapreneuring: Why You Don't Have to Leave the Corporation to Become an Entrepreneur*. New York: Harper & Row.

Pisano, G. P. (2015). You Need An Innovation Strategy. *Harvard Business Review*, (June), 44–53.

Plaza, A. (2015). Head of Technology and Operations – Investor Day Presentation. In *Investory Day 2015*. London: Santander .

Plesner, M. (2015, September 23). Sådan fungerer Danske Banks nye boligportal Sunday. *FinansWatch*, p. 1. Copenhagen. Retrieved from http://finanswatch.dk/Finansnyt/Pengeinstitutter/Danske_Bank/article8044149.ece

Prahalad, C., & Hamel, G. (1990). The Core Competence of the Corporation. *Harvard Business Review*, *68*(3), 79.

Prahalad, C., & Hamel, G. (2006). The core competence of the corporation. In *Strategische unternehmungsplanung—strategische unternehmungsführung* (pp. 275–292). Springer Berlin Heidelberg.

Priem, R. L., & Butler, J. E. (2001). Is the RBV a Useful Perspective for Strategic Management Research? *Academy of Management Review*, *26*(1), 22–40.

PwC. (2016). *Top financial services issues of 2017: Thriving in uncertain times*.

PwC. (2017). *Global FinTech Report 2017*.

PWC. (2016). *Blurred lines: How FinTech is shaping Financial Services - Global FinTech Report 2016*.

Quinn, J. B. (2000). Outsourcing Innovation: The New Engine of Growth. *Sloan Management Review*, *41*(4), 13–28.

Quinones, A., & Augustine, A. (2015). *Technology and Trust: How the Sharing Economy is Changing Consumer Behavior*. *BBVA Research*. Retrieved from https://www.bbvaresearch.com/wp-content/uploads/2015/11/151119_US_SharingEconomy.pdf

Quinten, D., Briault, C., & Evans, M. (2016). The profitability of EU banks – Hard work or a lost cause?

Raftery, D. M. (2017). Top Trends in Banking : 2017 and Beyond. Retrieved March 22, 2017, from

https://www.greenwich.com/commercial-banking/top-trends-banking-2017-and-beyond

Rawlinson, K. (2015). Bill Gates insists AI is a threat. *BBC News*, (January). Retrieved from http://www.bbc.com/news/31047780

Rendtoff, J. (2007). Case-studier. In *Teknikker i samfundsvidenskaberne* (pp. 242–259). Roskilde University Press.

Ricardo, D. (1817). *On the Principles of Political Economy and Taxation*. *The Principles of Political Economy and Taxation*.

Ritzau. (2015, November 27). Derfor frygter danske banker Google , Facebook og Apple. Retrieved from http://finans.dk/live/erhverv/ECE8250552/Derfor-frygter-danske-banker-Google-Facebook-og-Apple/?ctxref=ext

Rohrbeck, R., Battistella, C., & Huizingh, E. (2015). Corporate foresight: An emerging field with a rich tradition. *Technological Forecasting and Social Change*, *101*, 1–9.

Rohrbeck, R., & Gemünden, H. G. (2011). Corporate foresight: Its three roles in enhancing the innovation capacity of a firm. *Technological Forecasting and Social Change*, *78*(2), 231–243.

Rosario, N. (2017). The Emerging Blockchain Patent Landscape. Retrieved April 10, 2017, from https://www.law360.com/articles/899815/the-emerging-blockchain-patent-landscape

Rosenkopf, C. L., & Nerkar, A. (2017). On the Complexity of Technological Evolution : Exploring Coevolution within and across. In *Variations in Organization Science : In Honor of Donald T . Campbell* (pp. 169–184). Thousand Oaks: Sage Publications.

Ross, J. W., Beath, C. M., & Goodhue, D. L. (1996). Develop Long-Term Competitiveness through IT Assets. *Sloan Management Review*, *Fall*, 31–42.

Rouse, M. (2011). Tokenization.

Rouse, M. (2014). Biometric Authentication. Retrieved from http://www.springerlink.com/index/10.1007/b98225

Rumelt, R. P. (1991). How much does industry matter? *Strategic Management Journal*, *12*(3), 167–185.

Ruotsila, I., Ekdahl, P., & Vitali, D. (2015). *Digital Disruption in Nordic Retail Banking*. Accenture.

Russell, S., & Norvig, P. (2013). *Artificial Intelligence A Modern Approach*. *Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki*. https://doi.org/10.1017/S0269888900007724

Salem Baskin, J. (2016). A Bank That Wants To Disrupt Itself. Retrieved February 10, 2017, from https://www.forbes.com/sites/jonathansalembaskin/2016/05/23/a-bank-that-wants-to-disrupt-itself/#373d98622f95

Salter, A., Criscuolo, P., & Ter Wal, A. L. J. (2014). Responding To the Challenges of. *California Management Review*, *56*(2), 77–95.

Santander. (n.d.). Innovation and technology. Retrieved from http://www.santander.com/csgs/Satellite/CFWCSancomQP01/en_GB/Corporate/Shareholders-and-Investors/Innovation-and-technology.html

Santander. (2015). Santander simplifies its corporate structure and reduces its corporate divisions from 15 to 11.

Santander. (2016). *Annual Report 2015*.

Santander. (2017a). *Annual Report 2016*.

Santander. (2017b). *Quarterly report 2016 Q4*.

Santander UK. (2017). *Annual Report*.

SAP. (2016). *Digital Disruption: How Digital Technology is Transforming Our World. SAP Digital Report 2016*.

Saunders, M., Lewis, P., & Thornhill, A. (2016). *Research methods for business students* (7th ed.). Harlow; Pearson Education Limited.

Saussier, J. (2015). *Sharing as a disruptive force. The Sharing Economy: New Opportunities , New Questions. Global Investor 2.15*. Retrieved from http://www.oxfordmartin.ox.ac.uk/downloads/GI_215_e_GesamtPDF_01_high.pdf

Schmid, C. (2015). To Share Or to automate? *The Sharing Economy: New Opportunities , New Questions. Global Investor 2.15*, 48–29. Retrieved from http://books.google.gr/books?id=WVC1tgAACAAJ&dq=To+share+or+not+to+share+Publication+and quality+assurance+of+research+data+outputs&hl=&cd=1&source=gbs_api

Schumpeter, J. A. (1934). The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle. *Harvard Economic Studies*, *46*(2), xii, 255 . Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract%7B_%7Did=1496199

Schumpeter, J. A. (1942a). Capitalism, socialism and democracy. *Harper & Brothers*, *1*, 431.

Schumpeter, J. A. (1942b). *Capitalism and the Process of Creative Destruction. Monopoly Power and Economic Performance*.

Schutzer, D. (2015, April). CTO Corner: Artificial Intelligence Use in Financial Services - Financial Services Roundtable. *Fsroundtable.com*, *April*. Retrieved from http://fsroundtable.org/cto-corner-artificial-intelligence-use-in-financial-services/

Schwarz, J., Baumgartner, C., Casale, G., Creyhton, A., Dany, O., Massi, M., … Halliday, K. (2015). *Global Corporate Banking 2015: The Look of a Winner*. BCG Publication. Retrieved from http://www.agefi.fr/sites/agefi.fr/files/migrate/etudereference/EZFWSUERVY_BCG The Look of a Winner Mar 2015.pdf

Scratch. (2014). *The Millennial Disruption Index*.

Selgin, G. A. (2017). Bank - Finance. Retrieved from https://www.britannica.com/topic/bank

Services, A. F., & Accenture. (2017). *Financial Providers: Transforming Distribution Models for the Evolving Consumer. Consumer study*.

Singh, J. (2015). A new patron of Customer Empowerment - it's called Digital Banking. Retrieved from https://www.linkedin.com/pulse/new-patron-customer-empowerment-its-called-digital-banking-singh

Sixhøj, M. (2015, April 6). Er Danske Bank ved at blive en software-virksomhed? Retrieved February 12, 2017, from http://www.business.dk/finans/er-danske-bank-ved-at-blive-en-software-virksomhed

Skan, J., Dickerson, J., & Masood, S. (2015). *The Future of Fintech and Banking: Digitally disrupted or reimagined?* Accenture.

Skinner, C. (2009). BaaS: Banking as a Service. *The Finanser*. Retrieved from http://thefinanser.com/2009/02/baas-banking-as-a-service-2.html/

Skinner, C. (2014). Banking-as-a-Service, Five Years Later. *The Finanser*. Retrieved from http://thefinanser.com/2014/05/banking-as-a-service-five-years-later.html/

Skinner, C. (2015). The Implications of PSD2 and Third Party Access to Accounts. *The Finanser*.

Slocum Jensen, L. (2016). Tesla was just the beginning : Introducing the connected car landscape. Retrieved from https://venturebeat.com/2016/05/11/tesla-was-just-the-beginning-introducing-the-connected-car-landscape/

Smith, N. (2016, August 17). The riddle of the wall street brain drain. *Bloomberg View*, pp. 1–5.

Stalk, G., Evans, P., & Shulman, L. E. (1992). Competing on Capabilities - the New Rules of Corporate-Strategy. *Harvard Business Review*, *70*(2), 57–69.

Stettner, U., & Lavie, D. (2014). Ambidexterity under scrutiny: Exploration and exploitation via internal organization, alliances, and acquisitions. *Strategic Management Journal*.

Stringfellow, A. (2017). 20 experts reveal the most important big data technology trends shaping banking and finance today. Retrieved May 6, 2017, from https://www.ngdata.com/big-data-technology-trends-in-banking/

Sunday. (2017). Sunday - Homepage. Retrieved from https://sunday.dk/

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal*, *28*(13), 1319–1350.

Teece, D. J., Pisano, G. P., & Shuen, A. (1997). DYNAMIC CAPABILITIES AND STRATEGIC MANAGEMENT. *Strategic Management Journal*, *18*(March), 509–533.

The Economist. (2010, September 13). Third Time's the Charm? Retrieved from http://www.economist.com/node/21010686/print

Thomson Reuters. (2016). Thomson Reuters 2016 Know Your Customer Surveys Reveal Escalating Costs and Complexity. *Thomson Reuters*, p. 2.

Thornhill, S., & Amit, R. (2001). A Dynamic Perspective of Internal Fit in Corporate Venturing. *Journal of Business Venturing*, *16*, 25–50.

Turner, A. L. (2016). The future of finance: Banking as a platform. *The Next Web*. Retrieved from https://thenextweb.com/worldofbanking/2016/09/14/the-future-of-finance-banking-as-a-platform/#.tnw_3hq3Kmus

United Nations Environment Programme. (2002). *Global Environment Outlook 3 - Past, present and future perspectives*. *Geo* (Vol. 3). London: Earthscan Publications. https://doi.org/10.2307/2807995

Urmey, W. (2017, March 20). 3 ways to find your edge in a hypercompetitive environment. *Mobile Business Insights*. Retrieved from http://mobilebusinessinsights.com/2017/03/3-ways-to-find-your-edge-in-a-hypercompetitive-environment/

Verifone. (2016). Nyt samarbejde mellem MobilePay og Verifone.

Verifone. (2017). Om Verifone. Retrieved April 21, 2017, from http://www.verifone.dk/da/Denmark/Om-Verifone/

Wachter, S., & Acolin, A. (2016). Owning or Renting in the US : Shifting Dynamics of the Housing Market. *Penn Institute for Urban Research*, *May*, 10.

Wagle, L. (2015, June). *SAP and IBM Addressing Start-up Competition at SAP Financial Services Forum London*. (Interview by Finextra). [Video file]. Retrieved at http://edge.media-server.com/m/p/5z6q6a3h/i/ysba856o

Webster, I., & Pizzala, J. (2015). *Fintech: Are banks responding appropriately?* EY.

Weikop, T. (2016). *MOBILELIFE / PROJECT X*. Copenhagen.

Wernerfeldt, B. (1984). A Resource-based View of the Firm. *Strategic Management Journal (Pre-1986)*,

5(2), 171. Retrieved from Wernerfeldt (1984) - A resource-based View of the firm.pdf

Williams-Grut, O. (2016, December 27). 2 big banks are backing a startup doing for global trade what Google did for advertising. *Business Insider*. Retrieved from http://www.businessinsider.com/santander-hsbc-invest-fintech-tradeshift-trade-globalisation-christian-lanng-2016-12?r=UK&IR=T&IR=T

Wittorff, J. Ø. (2015, October 30). Her er Danske Banks særlige udviklingsafdeling: Tag med på besøg i "Project X." *ComputerWorld*, p. 1. Copenhagen. Retrieved from http://www.computerworld.dk/art/235364/her-er-danske-banks-saerlige-udviklingsafdeling-tag-med-paa-besoeg-i-project-x

World Economic Forum. (2015). *The Future of Financial Services - How disruptive innovations are reshaping the way financial services are structured , provisioned and consumed*.

World Economic Forum. (2016). *The future of financial infrastructure*. *World Economic Forum*.

Yeoh, J., & Guanco, F. (2015). *How is is Being Used Used in in the Financial Sector : the Financial Sector*. *Cloud Security Alliance Working Group*.

Yin, R. K. (2013). *Case Study Research - Design and Methods*. *Clinical Research*. Sage Publications.

Aagaard, A. (2016). Disruptive moves in Danske Bank. In *Østjysk Topmøde*.

8 APPENDICES

Appendix I: Terminology and concepts

This section provides contextual information on terms and concepts used throughout the thesis. These concepts are central to the context of the thesis but do not provide fundamental support in the analysis.

Appendix I.A: Innovation

A vast number of academics and scholars have argued their meaning and definition of the word innovation. The perhaps most all-incumbent definition concerns novelty; the introduction of something new, a new idea, method or device (Merriam-Webster, n.d.). In his seminal work, *The Innovators Dilemma* (1997), Christensen (1997) separates between two categories of innovation; sustaining and disruptive. Sustaining innovation are incremental improvements competing on the low end of an established market, described as improving "the performance of established products, along the dimensions of performance that mainstream customers in major markets have historically valued" (p. 11). Sustaining innovation can be either evolutionary or revolutionary, but neither significantly affects existing markets, in contrast to disruptive innovation that creates a new market. Disruptive innovations bring new value propositions to the market and result in products that are cheaper, simpler and more convenient to use. A disruptive innovation creates a new market often by catering to the need of overlooked, or niche, segments of the incumbents. Nonetheless, these products often underperform established products in mainstream markets in the short-term, because they lack demand (Christensen, 1997).

Pisano (2015) distinguishes between business model innovation and technological innovation and argues that companies must have a clear strategy on how much effort to put into and invest in each. In *The Innovation Landscape Map*, Pisano (2015) organises four types of innovation along the dimensions of technological change and change in business model.

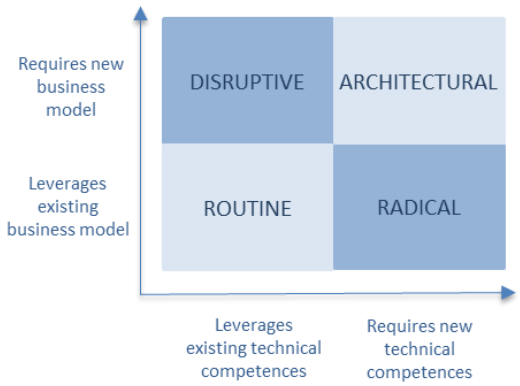

Figure 1: The Innovation Landscape Map
Reprinted from Pisano, 2015, p. 51

Strategic innovation is described by Markides and Charitou (2003) as "an innovation in one's business model that fundamentally changes the way of competing in an existing business" (p. 56). A *disruptive* strategic innovation is an innovation that not only changes the way business is done, but that is in direct conflict with the traditional way of doing business, such as internet banking and online brokerage trading. In line with Christensen (1997), Markides and Charitou (2003) describe some traits that characterise disruptive strategic innovations. Firstly, disruptive strategic innovations attract new customer segments by emphasising different product or service attributes, such as price or convenience. Secondly, they often start out as small and low-margin businesses that initially have no clear customer segment. Thirdly, over time, when disruptive strategic innovations improve and eventually manage to compete with established players in the performance of old product or service attributes, and simultaneously offer new attributes, they will disrupt the industry and capture and force incumbents to respond.

Although the business community has widely celebrated Christensen's theory on disruptive innovation, King and Baatartogtokh (2015) point out that the validity of the theory has not been tested sufficiently, either in academia or through quantitative testing. King and Baatartogtokh (2015) find that out of the 77 examples of disruptive innovations provided by Christensen, a number of them did not fit well with key conditions: a market with a trajectory of sustaining innovations, exceeding of customer needs, having the ability to respond to disruptive threats, and struggling as a result of disruption. King and Baatartogtokh (2015) point to research and anecdotal evidence showing that the for some the cases, customers were not overserved, but rather the contrary, and furthermore point out structural barriers as an alternative to the cognitive barriers that Christensen proposes. Christensen has also been criticised for generalising a study on the disk drive industry, which he labelled as unique, to other industries (King & Baatartogtokh, 2015; Lepore, 2014). Their study lead King and Baatartogtokh (2015) questioned the predictive power and possibility of application of Christensen's disruptive innovation theory and suggest that other patterns like legacy cost, changing scale economies and probability as possible alternative explanations for the course of events in Christensen's 77 cases.

King and Baatartogtokh (2015) suggest that managers are better off doing three things; calculating the value of winning, levering existing capabilities, and collaborating with other companies. "The first step in responding to major innovation is assessing whether the industry continues to be an attractive place to compete"; "Sometimes choosing the right way to use capabilities means reconsidering the existing identity of the organisation" (King & Baatartogtokh, 2015).

Christensen argues that incumbent companies have the capabilities needed to succeed in the future. However they lack the modes of communication, culture and decision making to make use of their capabilities (King & Baatartogtokh, 2015). Schumpeter (1934;1942;2003) on the other hand argues that waves of creative destruction wash out companies with obsolete capabilities from the industry. Schumpeter (1934;1942;2003) therefore argues that these incumbents that are threatened by the development because of insufficient or outdated capabilities, not culture and decision making.

One problem with applying Christensen's theory on disruptive innovation to the financial sector is the underlying assumption that the rate of sustaining innovation within the incumbents should be faster than the customers' ability to take these innovations in use (King & Baatartogtokh, 2015). However, in line with the critics of the theory, we argue that the theory still serves as an insightful and useful warning about myopia and inertia for incumbents.

Appendix I.B: Disruption

According to Markides and Charitou (2003), incumbents are disrupted when disruptive strategic innovation over time grows to capture a significant portion of an established market. Incumbents are then faced with a reality where the established ways of doing business are replaced with a new way that is in direct conflict with the old. Established firms are then forced to develop new tailored activities, cultures and processes that often are incompatible with their existing business model.

Traditionally, established firms are suggested to approach disruption by either ignoring it and sticking to their core capabilities, or by engaging in the disruption. Markides and Charitou (2003) have identified five common responses to disruptive strategic innovation, summarised below.

Focus on and invest in the traditional business	• Acknowledge the innovation as a threat • Remain focused on existing business - Capitalize on investments already made • Invest in own business to make it more attractive to customers
Ignore the innovation – It's not your business	• Established competitors do not perceive the innovation as a threat • New way of doing business significantly diverge from the old • Not enough relatedness – different unique skills and competences
Attack back – Disrupt the disruptor	• Introduce new product attributes instead of adapting to the disruptive innovations • Don't play the game of the disruptor – start a new game • Apple responded to low-price alternatives by emphasizing style and design attributes
Adopt the innovation by playing both games at once	• Embrace the innovation while simultaneously sticking to the core strategy • Enter the new business by establishing separate unit or through existing organization • The higher degrees of autonomy of new unit, the more successful is the dual strategy
Embrace the innovation completely and scale it up	• Abandon existing business and scale the innovation up and grow it into mass market • Take advantage of having the skillset and capability needed to create a market for an idea • Leverage financial strength, existing brand and ability to reach out to customer

Figure 2: Responses to disruption
Authors' contribution, based on Charitou & Markides, 2003

According to Bradley and O'Toole (2016), established incumbents are far more often disrupted than the source of disruption. Arnold and Jeffery (2015) further argue that disruption within an industry not only marginalises incumbents, but eventually causes their extinction.

Fasnacht (2009) presents three forms of innovation within the financial industry that are sources of firm growth; product and service innovation, process innovation, and innovation common to both organisational function and service delivery, such as ATMs, or internet and mobile banking. The author distinguishes between radical and incremental innovation. Radical innovation regards exploring new technology and opening up new markets and potential applications. Radical innovation foremost

concerns product, service and process innovation, aimed at developing new businesses and transforming the economies of a current business. Incremental innovation regards exploiting and improving existing technology within existing products, services and processes.

Appendix I.C: Intrapreneurship and internal ventures

The idea of intrapreneurship, or corporate entrepreneuring, was first defined by Pinchot (1985) as an in-house form of entrepreneurship. Later research adds to Pinchot's definition, suggesting that intrapreneurship is "the act of innovation by the initiator of a new business idea within the organisation." (Fasnacht, 2009, p. 174). Intrapreneurship is increasingly used by firms to enhance the innovative ability of employees and increase corporate success through the creation of corporate ventures (Kuratko, Montagno, & Hornsby, 1990). Pinchot (1985) further defines as intrapreneur as someone who takes a hands-on responsibility for creating innovation within an organisation. More than the entrepreneur, the intrapreneur also encompasses the role of *innovation facilitator*, as he or she must find and bring together synergies and capabilities from specialists and managers from within the firm (Fasnacht, 2009). Fasnacht (2009) believes that intrapreneurship is not only about innovative thinking and creating new businesses within an organisation, but also about transforming an organisation through renewing the key ideas and assumptions on which it was built. Intrapreneurship encompass the same capabilities as entrepreneurship, with the differences than an intrapreneur acts within the firm and thus must consider the firm's existing values and business models.

Incubative intrapreneurship is a strategic form of corporate entrepreneurship referring to the creation of semi-autonomous units within an existing organisation, also referred to as internal ventures. Such units are established to with the purpose of sensing internal and external innovative developments, screening and assessing new venture opportunities, and initiating and nurturing new venture developments (Schollhammer, 1982, cited in Kuratko, Montagno, & Hornsby, 1990).

Internal ventures differ in their relation and closeness to the corporate parent. Research has shown advantages as well as disadvantages to having a close fit between an internal venture and its corporate parent. According to Thornhill and Amit (2001), a close fit is advantageous in the sense that facilitates resource sharing, for example, access by the venture to the corporate's suppliers and distributors, and the availability of internal corporate capital. On the other hand, it has been suggested that it is advantageous for ventures to have greater autonomy as that distance them from the bureaucratic processes of the corporate parent and make them more flexible (Thornhill & Amit, 2001). "Effective corporate venturing has been described as a balancing act with needs for creativity and change on one side and demands for cohesiveness and complementarity on the other" (Thornhill & Amit, 2001, p. 27).

Appendix I.D: Corporate Venture Capital

Basu, Benson, & Dushnitsky (2016) define corporate venture capital (CVC) as an equity investment by an established corporation in an entrepreneurial venture. In contrast to venture capital, corporate ventures seek not only financial benefits but also strategic benefits with their investments (Basu, Benson, & Dushnitsky, 2016). By investing in ventures, corporates can access novel or complementary products, services and technologies (Basu et al., 2016).

CVC is increasingly becoming an integral part of firms' innovation strategy and has become an alternative source of funding and support for entrepreneurs (Basu et al., 2016). The growth of CVC is often attributed to the increasingly important role that start-ups play in deploying innovation (Basu et al., 2016). Speaking for this is the fact that small firms' and start-ups' spending on R&D has increased from 4,4 percent to 24,4 percent from 1981 to 2009 (Basu et al., 2016). Others attribute the rise of CVC to the exponential increase in the pace of disruptive innovation. CVC is corporations' way of keep up and a defence against being marginalised and falling behind their competitors (Loeb, 2016). Research also suggest that the level of CVC increases with weak IP protection and low patent effectiveness (Dushnitsky & Lenox, 2005).

In terms of innovation, increased level of corporate venturing has been shown to be beneficial positively associated with increased future patent citations (Dushnitsky & Lenox, 2005).

There are a number of different models for CVCs. Some are tightly integrated with corporate parent and its strategic initiatives, whereas others are more financially driven, separated from the corporation (Loeb, 2016). Figure 3 below gives an overview of four types of CVC models on the dimensions of how the CVC is governed, closely connected to the corporate or independent, and what purpose the CVC has, financial return or strategic benefits.

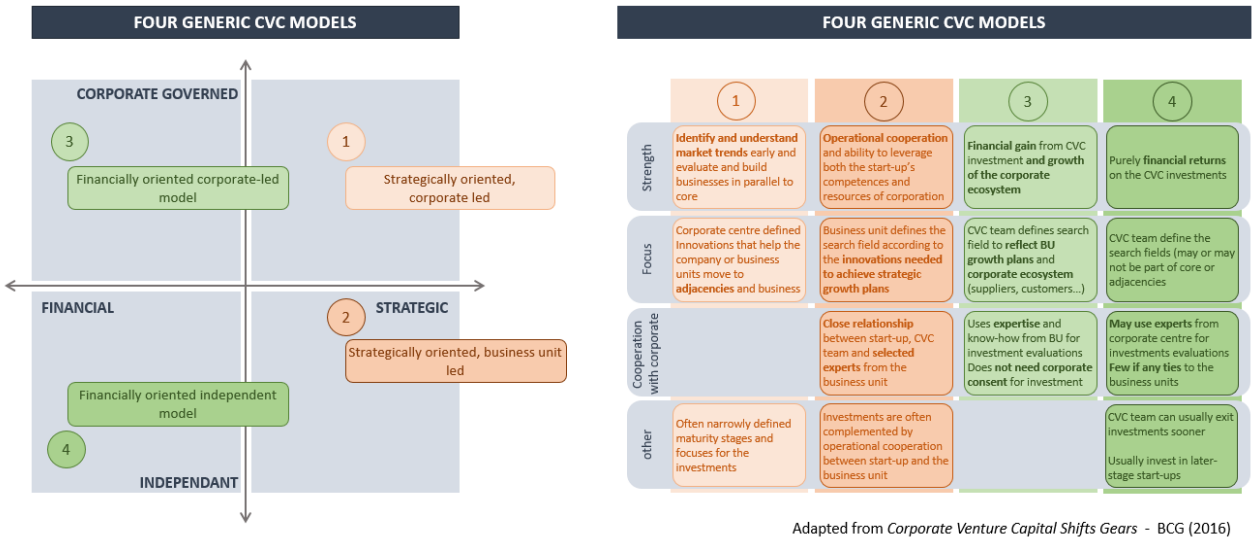

Figure 3: Four generic CVC models
Adapted from Boston Consulting Group (2016)

Dushnitsky and Lenox (2005) argue for the advantage of a clear separation between the investing corporation and the venture. Their research findings suggest that the benefits of CVC are diminished when ventures and investing firms have similar expertise and overlap in their technological knowledge. Dushnitsky and Lenox (2005) advice ventures to avoid or keep a distance to CVC investors whose knowledge and products overlap their own.

Appendix II: Observations

Appendix II.A: Alternative lending platforms

Alternative lending platforms leveraging P2P models have experienced rapid growth since the financial crisis (WEF, 2015), with a global average growth rate of 123 percent from 2010-2014, expected to amount to 150-490 billion USD by 2020 (Morgan Stanley, 2015). Lending platforms use "alternative adjudication methods and lean, automated processes to offer loans to a broader base of customers and a new class of investment opportunities to savers" (Kobler, Bucherer, & Schlotmann, 2016, p. 3). P2P platforms establish a transparent online market where customers are in direct contact with the counterparty, offering borrowers a convenient and easily accessible supply of capital. Unlike banks, these platforms do not engage in the role as depositor or risk-taker and do not offer government deposit guarantees. In place of traditional risk-mitigating services offered by banks, P2P platforms use algorithms to categorise and assess the risk of borrowers (D. Arnold & Jeffery, 2015). P2P lending has also expanded from personal and business loans into other areas such as car refinancing and mortgages (Evans, 2016).

According to Morgan Stanley Research (2015), the rise of marketplace lending was accelerated by the financial crisis; "Heavy losses forced banks to scale back on riskier consumer and small business lending, as increased regulatory oversight and capital requirements made these loans less attractive to banks" (para. 8). As banks' lending processes became more heavily impacted by regulations and requirements on borrowers increased, marketplace lending arose as a convenient alternative (Morgan Stanley Research, 2015). As non-banks, they enjoy minimal regulation, no capital requirement and have low operating costs, especially compared to banks. Banks have costly legacy IT systems and branch networks, while marketplaces do not need to develop payments infrastructures, but can rather leverage already existent infrastructures (Morgan Stanley, 2015).

Appendix II.B: Social trust

New products and technology have enabled consumers to establish trust in new ways**.** Trust can be, and is, increasingly established through networks, reviews and community-like atmospheres (Quinones & Augustine, 2015). Trust is also established through verification, which can now be done through profiles on social media. When trust moves into these networks or communities, reputation can function as a substitute for trust. Customers have an increased trust in the opinions or reviews in networks or communities that they are a part of, which helps consumers to establish trust in relationships with

unknown people or businesses (Quinones & Augustine, 2015). The trustworthiness of a user, customer or company is based on the connections, reviews and verifications they have to show for (Dambrine, Jerome, & Ambrose, 2015). Edelman Group (2017) finds that for the first time *a person like yourself* as an equally credible source of information as a technical or academic expert.

Appendix II.C: Channel agnostic customers

The Internet and new technology have enabled a multi-channel distribution strategy, and banks have increasingly extended their online and mobile offering (Bikker & Bos, 2005). According to a global study of 32,715 financial services consumers by Accenture (2017), 57 percent of respondents did not mind which channel to use to communicate with their bank. In an EY survey (2016) of 55,000 consumers worldwide, 62 percent of respondents considered it important that banks have an deliver an omnichannel experience, allowing them to move from channel to channel depending on their needs and preferences.

Customers are already used to receiving this electronic and physical integration from other industries, and increasingly expect the same from their banks. Banks must develop their multi-channel offering into an omnichannel model by developing the capability for customers to complete interactions seamlessly across several channels (EY & Efma, 2014). Most banks have long offered their customers a range of contact points, and so rather than caring which channel to use, it is increasingly important for customers to being able to switch channels and using channels simultaneously (EY, 2016).

Appendix II.D: Cloud computing

Cloud computing entails storing while having access to data and software stored on the Internet (*the cloud*) instead of on the hard drive, the traditional way (Griffith, 2016). There are currently three types of clouds: public, owned and operated by a third-party; private, only used exclusively by a specific organisation, sometimes operated by a third-party on behalf of the organisation; and hybrid clouds that combine the former and the latter, allowing interaction and transfer of information between the two types of clouds (Microsoft Azure, 2008).

For financial institutions, cloud computing has the possibility to enable greater efficiencies through shared services within the organisations, pooling of assets, standardisation and faster adoption leading to increased scale and utilisation of IT resources (Oracle, 2015). CRM tools, application development, e-mail, and collaboration platforms are the most widely used applications of cloud services in financial services (Yeoh & Guanco, 2015). The primary reasons given by financial institutions for adopting cloud computing is flexible infrastructure, reduced time for provision, reduction in costs to systems and products, and reduced time to market (Microsoft Azure, 2008).

Appendix II.E: Basel I, II, III

In 1988, the Basel Committee on Banking Supervision (BCBS) published minimum capital requirements and risk weights, also known as Basel I. The requirements and regulations mostly pertain to default risk. The requirements intended to align international banking practices. In 2004, Basel II presented new guidelines for capital requirements, risk management and new requirements for disclosure. External rating agencies determined risk weights on corporate, bank and sovereign claims (BCBS, 2004). Furthermore, risk was specified as operational risk and market risk. Operation risk being the risk resulting from inadequate internal processes and controls. Basel III was introduced in 2010 in the wake of the 2008 financial crisis to address some shortcomings of the previous regulations. Basel III focuses on four elements of the banking system; capital, funding, leverage and liquidity (The Economist, 2010). The regulation specified the minimum required Tier 1 capital, liquidity coverage ratio as a buffer for acute short-term stress scenarios specified by the regulators and finally introduced a leverage ratio based on Tier 1 capital and total consolidated assets (BCBS, 2010). McKinsey estimated that the Basel III requirement would entail that the industry needed an additional 1.1 trillion USD by 2019 to satisfy just the Tier 1 capital requirements alone (Härle et al., 2010). This tightening of regulations and increase in capital requirements has a substantial impact on the profitability in the industry, taking an estimated 4 percentage points of return on equity in Europe (Härle et al., 2010).

Appendix III: Examples of specific types of capabilities

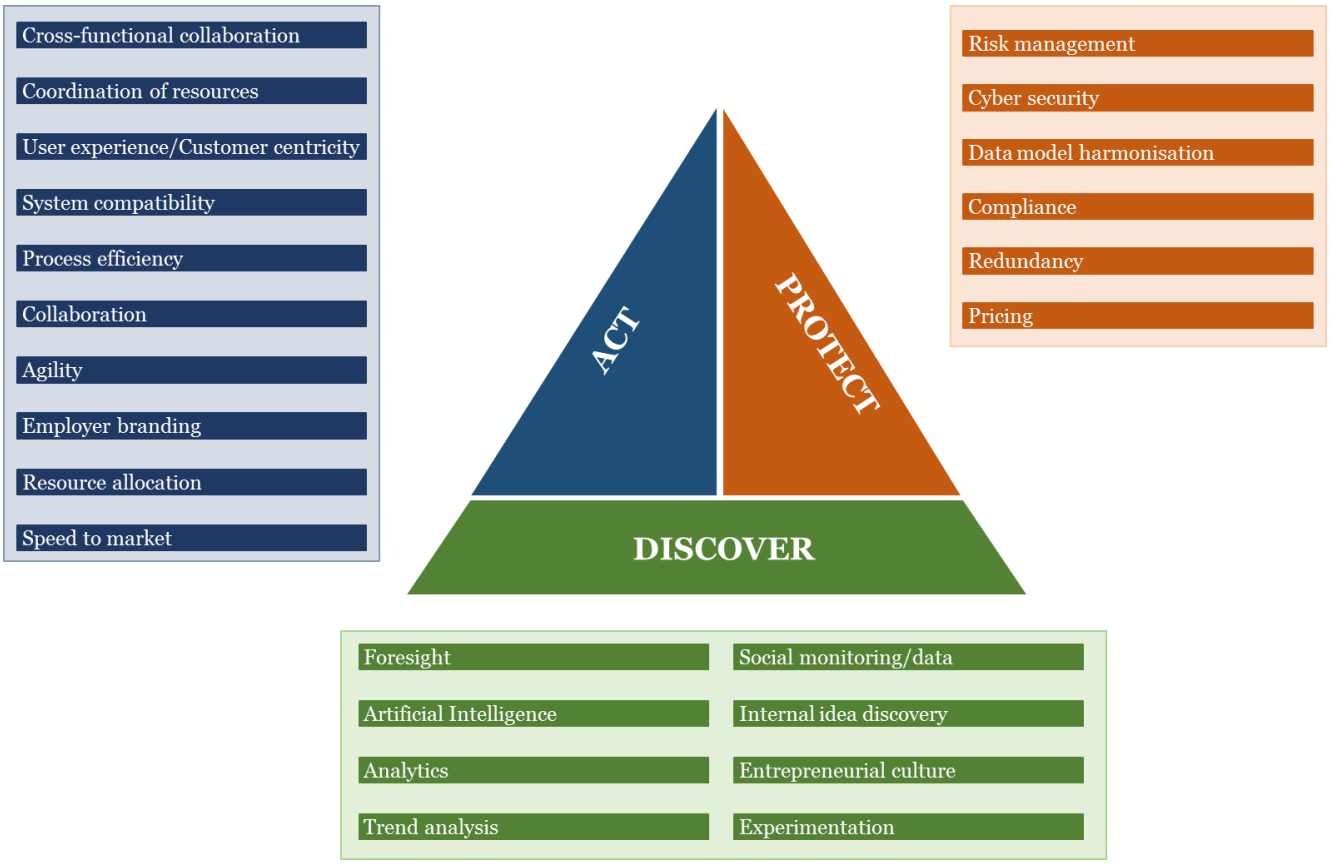

Figure 4: Examples of dynamic capabilities to act, protect and discover
Authors' contribution