The impact of PSD2

What are the challenges and potential solutions for established banks regarding FinTech companies and digital platforms?

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Preface

This master thesis is written as a final part in the master's program in Business and Administration at the School of Business and Law at University of Agder, Kristiansand. The study's work began in January 2019 and ended the 3th of June the same year. The objective of writing a thesis is to give the students an opportunity to explore one or more disciplines.

The purpose of this thesis has been to get a deeper understanding of how the banking industry is reacting to digital platform and FinTech companies regarding the EU's new set of legislation PSD2.

The process of finishing this master thesis has been educational and interesting. We would like to thank all the respondents who have through dedicated and informative in-depth interviews helped to make this thesis possible. We would also like to thank our supervisor Andreas Erich Wald for the advice and feedback he has given us in the process of writing this thesis.

Abstract

The European Union has revised the original Payment Service Directive 1. The new Payment Service Directive 2 (PSD2) forces the banks to implement Application Programming Interface (API), making it possible for third-party providers to gain access to the bank's customer data without approval (given the customer's consent).

The European financial market is quickly changing with new customer needs and new innovative technologies emerging from FinTech startups, targeting each part in the value chain of traditional bank-service providers. PSD2 enhances the innovation of the financial industry, forcing banks to make a digital transformation of their business model. However, not everybody views FinTech companies as a threat. Some view them as a challenge but with an understanding that they could become a potential partner with great opportunities. Some of the largest companies in the world, such as Alibaba, Alphabet (Googel), and Amazon are all based on a digital platform model. Such companies can all be potential threats to the banking industry, where Facebook already has a banking license.

We have found that many banks are reluctant to make changes in their business model. This is especially true for smaller savings banks. Larger banks are more aware of the need for a digital transformation and invest heavily in developing their business model. In this thesis we investigate the banks business models and suggest that the larger banks transform into a platform-based business model, while smaller banks should become niche banks by specializing in targeting particular customer segments.

List of Abbreviations

PSD2	Payment Service Directive 2
PISP	Payment Initiation Service Provider
AISP	Account Information Service Provider
FinTech	Financial Technology

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Chapter 1 - Introduction

This introductory chapter presents the background for the thesis, its purpose, and research question. Furthermore, we explain why we opted to investigate Norwegian banks and our motivation to carry out the study. Lastly, the thesis structure is explained.

1. 1 Background

The increase of digital innovators in financial services presents a substantial threat to traditional banks (Dietz, 2016). Digital development has led to online payment services and contactless cards, and this has had concomitant impacts on consumer preferences (Ley et al, 205). Traditional banking as we know it today is facing major challenges and changes and this will continue in the years to come.

On January 13th, 2018, Revised Payment Service Directive 2 (PSD2) was introduced in Europe. PSD2 is an EU directive that regulates payment systems in the EU and EEA, and will lead to major changes in terms of payment services (Finans Norge, 2019). PSD2 was put into force to stimulate increased cross-border trade in the EU, and its purpose is to facilitate increased competition in the payment service market (Finans Norge, 2019). PSD2 is a major threat to the business model of traditional banks because it forces those banks to open up consumer payment accounts for appropriately licensed banks and FinTech service providers (Hellström & Holm, undated).

Financial technology (FinTech) refers to technology-enabled financial solutions. Its purpose is to revamp existing solutions for consumers. The European financial market is rapidly changing with new customer needs and new innovative technologies emerging from FinTech startups, targeting each part of the value chain of traditional banks. FinTech companies offer modern online banking environments with simple financial solutions that challenge traditional financial services (Dapp, 2014). The need for new solutions and business ideas is considerable and technology development in the banking and finance industry is progressing rapidly, which makes it essential for banks to be a part of the development if they want to stay relevant in the future ("FinTech" 2017). A substantial sum has been invested in FinTech development and this grows year on year. The amount invested across mergers and acquisitions (M&A), private equity (PE), and venture capital (VC) more than doubled from

$50.8 billion in 2017 to $111.8 billion in 2018 (Pollari, 2019). It is attractive to invest in FinTech and 2018 was a year of multiple record highs across FinTech investments. As an increasing number of FinTech companies are capturing market shares, they have grown to become serious competitors to traditional banks (The Economist, 2015).

Another threat to the survival of banks is digital platforms, including Facebook, Google, and Alibaba. These are characterized by their platform-based business models. Several of the large digital platforms have investigated the possibility of extending into the financial services market and as such they threaten traditional banks. A good example of this is Facebook which has established Facebook Payment Inc., a licensed money service business in the United States. In addition, Facebook has opened its platform for person-to-person (P2P) money transfers. As a customer you can register your credit cards, debit cards, or Facebook gift cards to your Facebook account and use them to transfer money easily to anyone who has messenger (Facebook, 2018). Further, in March 2019 Apple presented their new Apple Card, which is a virtual credit card. Apple claims that their credit card is simple, transparent, and private, it works with Apple Pay and their users will not pay any fees (Apple, 2019). Digital platforms, like FinTech companies, attack the value chain of traditional banks and banks must react quickly to survive.

Existing literature and research on the future of banks covers a wide range of topics. However, the impacts of PSD2 have received little attention. This thesis aims to fill this knowledge gap.

1. 2 Purpose

The purpose of this research is to investigate how the new regulations, PSD2, and the increased competition in the market will affect banks' viability given a changing landscape which is increasingly populated by FinTech companies and digital platforms. Furthermore, we seek to identify which opportunities and challenges this will entail for the traditional banks.

1. 3 Research Question

Some of the industry's biggest challenges lie in understanding the possibilities and consequences created by new technologies, understanding the impact PSD2 will have on the industry, and how new business models in finance will emerge ("FinTech" 2017). This makes

the banking industry relevant for our research and sparked our interest for the thesis topic which led to formulating the following research question:

What are the challenges and potential solutions for established banks in competition with FinTech companies and digital platforms regarding PSD2?

This thesis follows a qualitative methodology based on a sample of seven Norwegian banks. We opt for a qualitative research method because we want to gain a deep understanding of the development of banks. The data were collected through in-depth interviews conducted face to face and via Skype with bank managers and business developers from the sampled banks.

1. 4 Rationale for Choosing Norway

Norges Bank conducted a study and found that cash payments accounted for 11 per cent of payments at retail outlets. In some other European countries, cash payments account for up to 90 per cent of total payments at retail outlets (Norges Bank, 2018).

Country	Period	Cash ratio in percentage
Euro area total	2014 - 2016	79
Greece	2015 - 2016	88
Italy	2015 - 2016	86
Germany	2014	80
France	2015 - 2016	68
Finland	2015 - 2016	54
Netherland	2016	45
United Kingdom	2016	44
USA	2016	31
Denmark	2017	23
Sweden	2018	13
Norway	2017 - 2018	11

Table 1 Proportion of payments in cash at retail outlets (Norges Bank, 2018)

The Network Readiness Index (NRI) is an international valuation of countries' capacity to take advantage of opportunities offered by information and communication technologies (Kirkman, Osorio & Sachs, 2002). In a report by the World Economic Forum in 2016

concerning global information technology, the Nordic countries scored high, with Finland ranking at 2, Sweden ranking at 3, Norway ranking at 4, Denmark ranking at 11, and Iceland ranking at 16. For comparison, Germany ranks at 15, France at 24, and Spain at 35. The criteria which the NRI is based on are as follows (1) the overall environment for technology use and creation (2) network readiness in terms of ICT infrastructure, affordability, and skills (3) technology adoption/usage by government, the private sector, and private individuals (4) the economic and social impact of new technologies (Baller, et. al. 2016, p. 3). Furthermore, in a recent McKinsey survey, it was found that the percentage of customers with positive preferences for digital branch-based transactions was higher in Nordic countries (85%) compared to Western European countries (58%) (Amar, et. al, 2016). This explains our rationale for using the case of Norwegian banks and it is duly noted that the findings generated herein may generalize to other Nordic countries.

1. 5 Motivation

The banking industry is an exciting area that faces major changes. PSD2 came into force in Norway on April 1, 2019 and as such warrants research attention. This motivated us to investigate the area further.

1. 6 Structure

The remainder of this thesis is divided into 6 chapters. In the following, chapter 2, a presentation of previous research will be given. Next, in chapter 3, we will explain the research method we used and why it is appropriate to answer our research question. In chapter 4 we present the results before discussing these results against our research question and previous research in chapter 5. Finally, in chapter 6 we draw conclusions, provide details concerning the limitations of the study, and suggestions for future research in this domain. Chapter 7 consists of literature and references.

Chapter 2 - Theoretical Framework

In this chapter, an overview of previous research on business models, PSD2, and FinTech in relation to the banking industry will be presented. We will address the concept of a business model and establish a shared understanding of business models and digital transformation by definition. Lastly, a look at the key theories that make up the framework of our research project will be presented and discussed.

2. 1 Literature Review

A literature review was carried out to form a theoretical basis for the thesis. A review of prior, relevant literature is an essential feature of an academic project, because it creates a firm foundation for advancing knowledge, closes areas where research exist and uncovers areas where research is needed (Webster & Watson, 2002). In processual terms, Sekaran & Bougie (2016, p. 51) note that *"[a] critical literature review is a step-by-step process that involves the identification of published and unpublished work from secondary data sources on the topic of interest, the evaluation of this work in relation to the problem, and the documentation of this work*". Targeted searches were carried out in various databases with keywords such as business model, FinTech, PSD2 and banking industry. The process of finding previous research created a snowball effect because by screening the references of a particular source, new sources and relevant topics were discovered.

2. 2 Conceptualizing the Business Model

Stewart & Zhao (2000, p. 290) define a business model as "*a statement of how a firm will make money and sustain its profit stream over time*". The term "business model" is often used in a broad context, and there are several alternative definitions in the literature. Teece (2010, p 172) considered the essence of a business model as in "*defining the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profit*". Herein, we will use the definition by Osterwald and Pigneur (2010, p 14): "*A business model describes the rationale of how an organization creates, delivers, and captures value*".

PSD2 and digital transformation enables new business models to emerge and existing companies must adjust their business models to address new competitors. When we use the

term "digital transformation" we ruminate on how firms use digital tools to change and improve the way they create value for their customers.

"Digital Business Transformation is Organizational Change through the use of Digital Technologies and Business Models to Improve Performance" (Wade, 2015, p3).

Matt (2015, p. 340) define it as follow: *"Independent of the industry or firm, digital transformation strategies have certain elements in common. These elements can be described to four essential dimensions: use of technologies, changes in value creation, structural changes, and financial aspects. The use of technologies addresses a company's attitude towards new technologies as well as its ability to exploit these technologies. It therefore contains the strategic role of IT for a company and its future technological ambition"*

Zimmermann (2016) divided digital transformation into four pillars, where the first pillar gives a deeper understanding of how digital transformation is helping to influence value creation and affect emerging structures such as networks and ecosystems. To describe a business ecosystem, we use the definition put forward by Moore (1993, p. 76): "*In a business ecosystem, companies coevolve capabilities around a new innovation: they work cooperatively and competitively to support new products, satisfy customer needs, and eventually incorporate the next round of innovations*"

For a platform-based business model to have any value it is dependent on a large network of players (Kelly, 2015). This makes a platform a powerful type of ecosystem. "*Some (platforms) are designed primarily to create new markets by enabling connections between previously separated potential buyers and sellers; others are more focused on the distributed development of new products, services, and solution"* (Kelly, 2015, p. 8).

In the literature, the platform business model goes by several names: "digital platform", "platform-based business model", "platform business model", and "network orchestrator". Kim (2016, p. 2113) defines a platform business model as a two-sided market, *"It is an environment established to allow multiple groups such as suppliers and consumers to exchange their views for fair transactions. Platforms evolve through the connection and interaction of participants, and act as ecosystems of coexistence that can provide values and benefits to all participants".* Libert, Wind, & Fenly (2014, p. 11) use the term "network orchestrator" and define it as follows *"companies that create a network of peers in which the*

participants interact and share in the value creation. They may sell products or services, build relationships, share advice, give reviews, collaborate, co-create and more. Examples include eBay, Red Hat, and Visa, Uber, Tripadvisor, and Alibaba"

2. 2. 1 The Business Model Canvas

For a business to be successful, it must operate in accordance with four elements (Christensen, 1997). The first element is *a customer value proposition*, it's about how to perform the job better than competitors. The second element involves *a profit formula* and how to deliver the value proposition. The last two elements are *key processes* and *key resources*. The former refers to the importance of essential processes for accomplishing the value proposition, and the latter element is about who or what we cannot afford to lose. Osterwald et al. (2010) extends this by considering a total of 9 building blocks. The business model canvas can be used as a strategic tool for studying and analyzing business models.

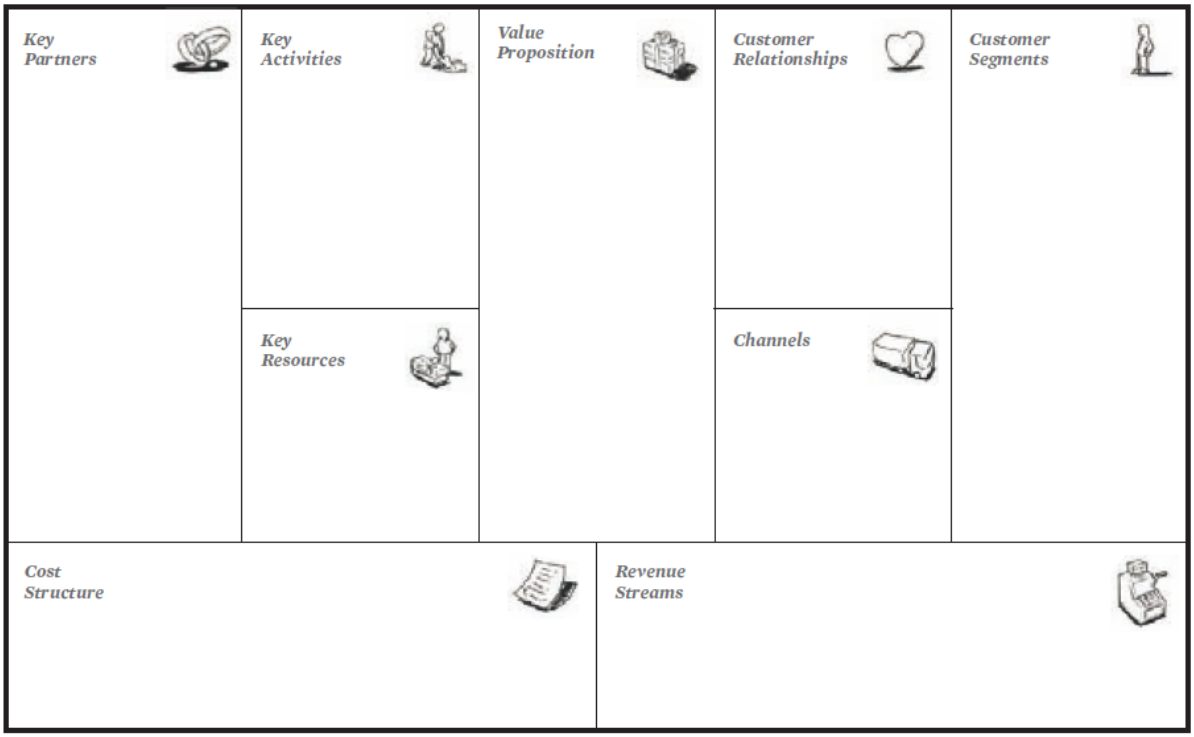

Figure 1 The business model canvas (Osterwald & Pigneur, 2010)

As mentioned above, the business model canvas is made up of nine building blocks. The first building block is the *customer segment*. Here, the company must find out which customers the company wants to serve because all companies need customers to survive and it is important to keep customers satisfied. It may therefore be wise to divide the customers into segments. The company must make a choice about which segments they want to serve, and

which segments they want to ignore. There can be several customer segments, here are some examples: mass market, niche market, diversified, and multi-sided platforms.

The second building brick in the canvas is *value proposition*. To make money, a business needs to provide products or services to its customers that solve a customer problem or a customer need. There are several strategies. It can be novelty, where a business comes up with something new that the customer did not know they needed. Performance, where the company provides something better than before. This strategy is often used in the personal computer industry. Customization, where the company tailors their offerings to customer needs. Design where you design your products in a way that makes the customer prefer your product. Brand/status, a customer can choose your brand because the brand displays status, for example Rolex which displays a status of wealth. Price, here you provide a product or a service that is similar to others, but you offer it at a lower price than the competition. Other strategies are cost reduction, risk reduction, accessibility, and convenience.

The third building block is *Channels*. It is no use having a good value proposition if potential customers do not know about it. It is therefore important to find the right channels to communicate with customers. The company must find out which channels the selected customer segments use.

Customer relationship is the fourth building block and describes what type of relationship the company has with its customer segments. There are several possible types of customer relationship. Osterwalder has pointed out six types: personal assistance, dedicated personal assistance, self-service, automated service, communities, and co-creation.

The fifth building block is *Revenue streams*. It is important that the company finds out what value the different customer segments are willing to pay. There are several ways to generate value including assets sales, usage fees, subscription fees, lending/renting/leasing, licensing, brokerage fees, and advertising.

The sixth building block is *Key resources* and describes the most important assets the company must have to make the business model work. The key resources can be different depending on the business model. For some companies the key resources may be human

capital, for others it may be physical, financial, or intellectual capital. The company doesn't necessarily have to own the key resources themselves, they can be leased from partners.

The seventh building block is *Key activities*. These describe the most important tasks that the company must undertake to make the business model work. It might be production which is common in the manufacturing industry or it could be problem solving which is common in the consulting industry. Alternatively, it could involve platforms/networks.

Key partnerships constitute the eighth building block and describe the most important partners and alliances that the company has. Osterwalder distinguishes between four different types of partnerships: strategic alliances between non-competitors, strategic partnerships between competitors, joint ventures to develop new businesses, and buyer-supplier relationships to assure reliable supplies.

The ninth and final piece in Osterwalder's business model canvas is *cost structure* which describes the most important costs incurred to operate the business model.

2. 2. 2 Platform-based Business Model Canvas

In a platform model, the company brings together two different but interdependent groups of customers and creates value by enabling interactions between those groups. An example of a platform business is video game consoles. The console manufacturers must draw video game players towards their platform whilst at the same time drawing video game developers to their platform. The videogame manufacturers create value by selling their hardware, as well as earning royalties on the games sold on their platform.

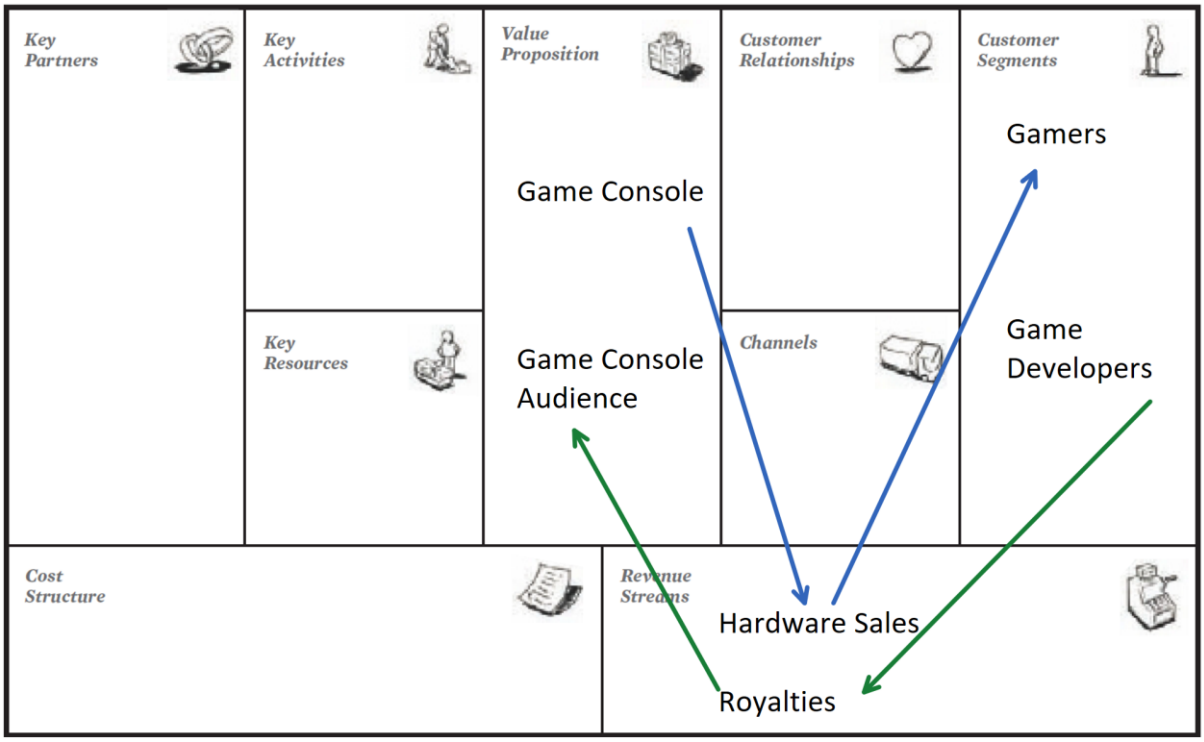

Figure 2 Platform-based Business Model Canvas (Osterwald & Pigneur)

The banking industry could also work as a digital platform business model where they have two sets of revenue streams. The first revenue stream comes from their traditional services and products such as suppling loans and insurance. The second revenue stream would come from suppling their customers with financial services and products from third-party actors, taking a customer fee from the products and services they use.

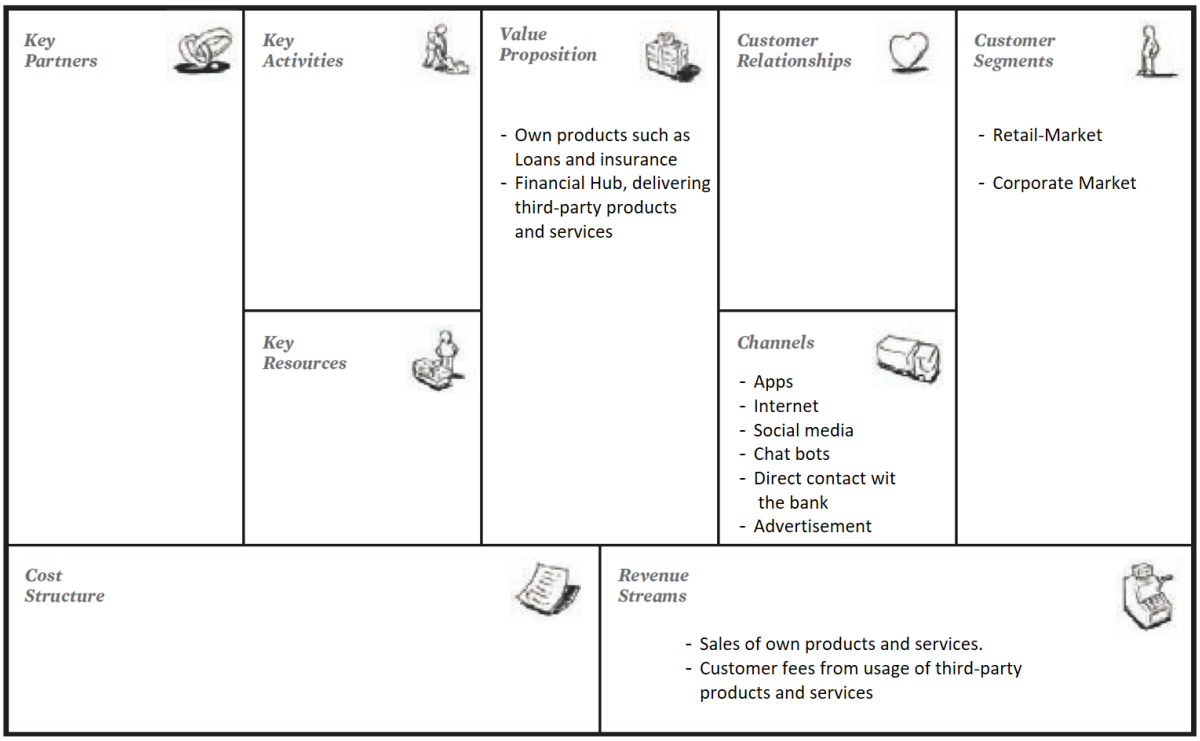

Figure 3 Platform-based Business Model Canvas (Bank) (Osterwald & Pigneur)

2. 3 Game Theory

Game theory is widely used in economics to analyze the behavior of companies. To describe game theory, we use the definition put forward by Camerer (1952 p 2), *"In economics, game theory is used to analyze behavior of firms that worry about what their competitors will do"* The basis of game theory is that for every action, there is a reaction. Companies use game theory as a tool for understanding the behavior of other companies/players. The importance of game theory is not focusing only on yourself, but rather on the other players (Brandenburger, et. al, 1995). There are five elements to game theory, namely the players, value added, rules, tactics, and scope. To change the game, one must change one or more of these elements and this is where a good strategy starts (Brandenburger & Nalebuff, 1995).

The reason for introducing game theory here is that the EU has changed the game by introducing PSD2. PSD2 is a set of regulations that changes the rules of the game, which in turn changes the added value, players, tactics, and scope.

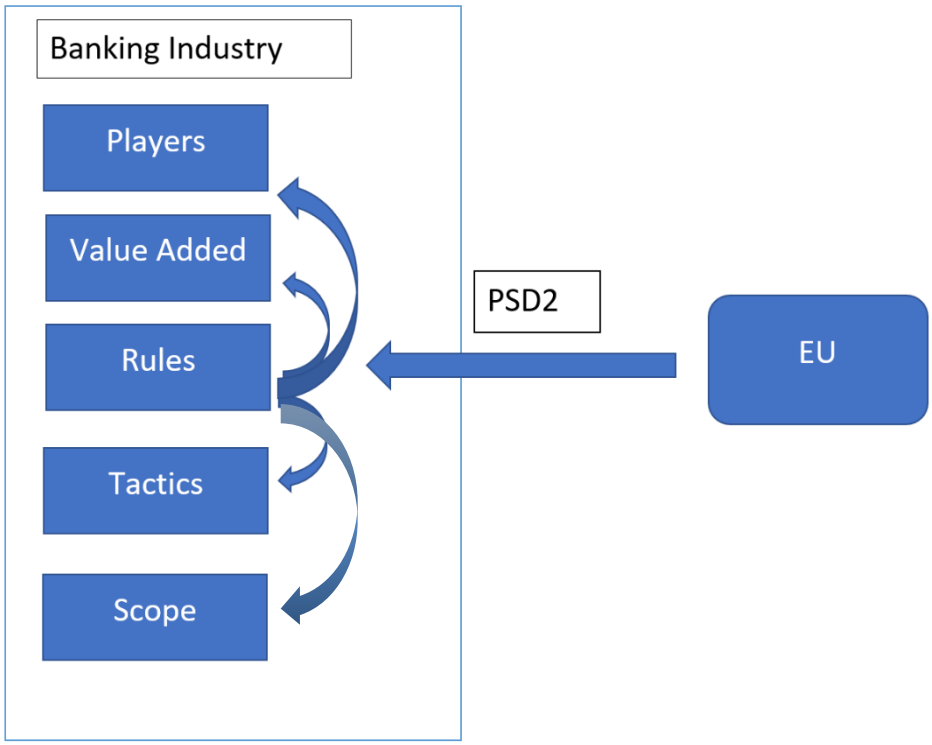

Figure 4 Game theory affected by PSD2 (compiled by the authors)

With PSD2, banks operating in the EU will be required to give third-party providers access to their customer data, thus creating new players. Banks' value used to lie in their customer databases, this is now weakened. Furthermore, PSD2 enhances the cross-border trade, reducing the obstacles for widening the scope. This all leads to the fact that banks must consider changing their tactics. Banks are already strongly established in the market and could take advantage of a first mover strategy, ending the race before it starts (Hellström & Holm, undated).

2. 4 Payment Service Directive 2 (PSD2)

Payment Service Directive 2 (PSD2) is a set of laws and regulations set by the European Parliament and builds on the original Payment Service Directive 1 which was implemented in 2009. PSD2 was introduced on 13th January 2018 and came into force (in Norway) on 1st April 2019 (FinansNorge, 2019). The objective of PSD2 is to facilitate increased competition in the payment service market, promote innovation, strengthen the security of online payments and access to accounts, as well as improve interaction between different types of players and further harmonize the regulatory framework in the EU (FinansNorge, 2019). Under PSD2, banks are obligated to implement application program interfaces (APIs), which allow third-party providers access to customers' accounts (Noctor, 2018). With PSD2

banking, customers can use other providers of payment services that are not banks for their payments (FinansNorge, 2019).

PSD2 opens up for two types of new players, Payment Initiation Service Providers (PISPs) and Account Information Service Providers (AISPs). PISPs could, for example, represent third-party companies that can make payments from your bank account. You can give a third-party the opportunity to pay a bill for you, without the third party having any agreement with your bank (Hermansen, 2018).

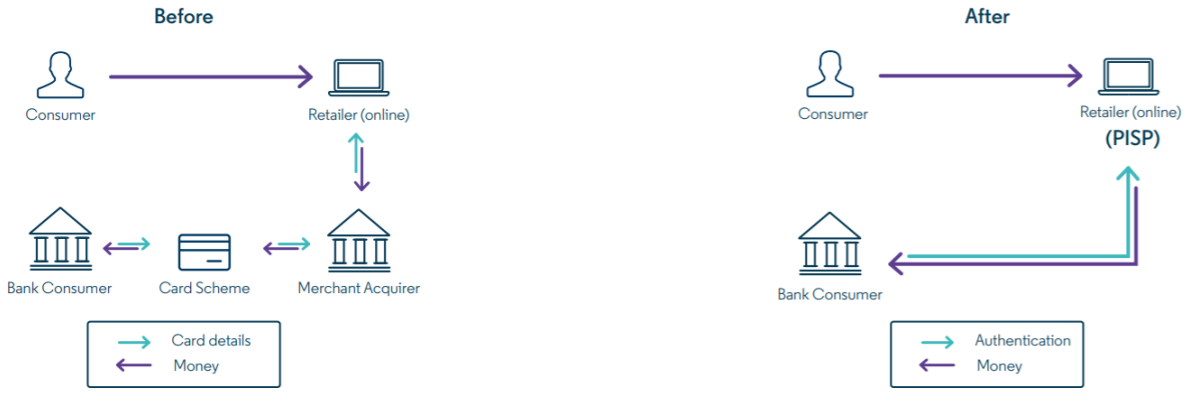

Figure 5 Payment Initiation Service Provide (PISP)(Hellström & Holm, undated).

The figure illustrates how, previously, a retailer would be provided with a customer's payment card details and then request and receive the payment through their bank, a card scheme, and the customers bank. However, upon the introduction of PSD2, a PISP would create a software "bridge" between the customers and retailers accounts where the necessary information to make the transaction is exchanged (Hellström & Holm, undated).

AISPs work so that as a customer, you can give an AISP actor full access to all your account information without the AISP having an agreement with your bank. The AISP can access all your account information, regardless of how many banks you have, and access the information in one place (Hermansen, 2018). The AISP providers can provide you with services such as a solution that collects all your funds in a single service. The AISP could also analyze your funds and suggest changes to the ways you dispose of your funds (Hermansen, 2018).

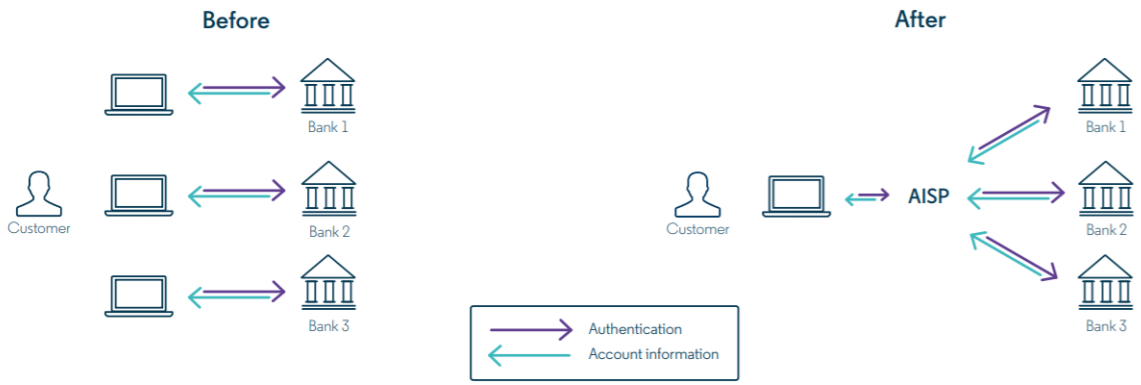

Figure 6 Account Information Service Provider (AISP) (Hellström & Holm, undated).

The figure illustrates how it was previously only banks that held customer information. However, upon the introduction of PSD2, a third-party can access the account information of bank customers to perform the service more effectively on behalf of the consumer (Hellström & Holm, undated).

The PISP market has huge potential, and it is predicted that by 2020, 9 percent of retail payment income will be lost to PISP services (Jackson, 2018). One of the biggest threats to banks is that the new startups and FinTechs might not prioritize security as highly as banks, and PSD2 makes it clear that it is the responsibility of banks to ensure that customer data is secure (Noctor, 2018).

PSD2 will force banks to open up consumer payment accounts for appropriately licensed banks and FinTech service providers. FinTech players are seeking to capture customer and developer mindshare as well as payment and non-payment revenues (Cortet, Rijks & Nijland 2016). PSD2 enables innovative and agile FinTech players to offer front-end PISP and AISP without having to own the traditional infrastructure of processing capacity (Cortet et al., 2016). PwC believes that banks are underprepared for PSD2 and, according to their research in 2017, based on representatives of 39 leading banks in 17 countries, 38% of banks had made an analysis of where they are and where they want to be, 47% are in the design phase and are trying to fill its new position, and only 9% had found new services and are in the process of implementing what they must do before 2018 (Folcia & Firnges, 2017). Some financial institutions see PSD2 as an opportunity to work closely with emerging FinTech companies, while others see it as a threat to their business (Cortet et al., 2016). PSD2 is expected to disrupt traditional banks, but Jackson (2018) claims PSD2 could potentially

provide opportunities for traditional banks, by making them re-examine the services they provide, and in the process, find new markets they can enter. Furthermore, some believe that the threat of FinTech's exploiting the PISP and AISP markets is overestimated and that the source of the competition will remain similar (Jackson, 2018).

2. 5 FinTech and Digital Platforms

FinTech is a very broad phenomenon and because more and more technology entrepreneurs are entering the industry, transforming it, and adjusting to social needs, the phenomenon is constantly in flux (Zavolokina, Dolata & Schwabe, 2016). FinTech is difficult to define, and the available data are somewhat controversial. Zavolokina et al. (2016) collected 38 different definitions of FinTech from 28 different sources, 10 of the definitions included the application of IT in finance and 11 of the definitions described the function to combine IT and finance. As an umbrella term, FinTech encompasses innovative financial solutions enabled by IT (Puschmann, 2017).

FinTech companies are given an opportunity to gain a considerable market share in their niche, by focusing on specific parts of the value chain of traditional banks (Cortet et al., 2016). Since an increasing number of FinTech companies have grasped this opportunity, they have grown to become serious competitors to traditional banks (The Economist, 2015). However, the FinTech revolution is perceived differently. Some members of the finance industry perceive FinTech as a threat to the traditional banking industry, while others view FinTech as a challenge, but which could become a potential partner with great opportunities (Romānova & Kudinska, 2016). Most large financial companies take FinTech seriously and develop strategies to compete and collaborate with FinTech companies (Lee, 2018). Romānova & Kudinska (2016) classified FinTech companies into two groups, namely those FinTech companies providing services complimentary to bank services and those FinTech companies providing services traditionally covered by banks. This classification forms the basis for potential reactions by banks or actions regarding the development of FinTech, which can be framed in terms of competition or partnerships (Romānova & Kudinska, 2016).

A survey conducted by Statista (2014) showed that financial experts in Europe see possible threats from FinTech companies to be very likely. In areas such as payments, 95% of respondents found it very likely that FinTech is a threat. 78% of respondents looked at simple

savings products as an area likely to be threatened by FinTech compared to 64% for current accounts and 54% for consumer credit. Areas that are expected to be less exposed to FinTech companies are structured savings products and home loans.

Gomber, Kauffman, Parker & Weber (2018, p. 223) discuss the driving forces of FinTech. They refer to FinTech as a revolution based on the amount of venture capital funding FinTech startups have received, "*In the late fourth quarter 2017, VentureScanner listed on the order of 1,537 companies in 64 different countries having received US $80.4 billion in venture capital funding for their FinTech innovation start-up activities*". Further they posit that the revolution rests on three separate pillars of innovation. The first is the large amount of capital. The second is that FinTech creates new technologies and designs that have not been offered in the industry before. The third pillar is that FinTech has transformed business models, financial intermediation, and customer access.

Digital platforms have become a hot topic within research around information systems (Faber & de Reuver, 2019) and some claim that these platforms have already had a widespread transformative impact (de Reuver, Sørensen, Basole, 2018). The banking industry is already affected by digital platforms such as Apple, Google, and Facebook and these platforms are now world-leading companies in terms of market capitalization, growth rate, and number of customers (Scardovi, 2017). Thus, digital platforms are threatening the business models associated with traditional banking. However, Scardovi (2017) claims that traditional banks may still challenge these digital platforms on P2P payments, or specific technology services by cooperating with FinTech companies.

2. 6 Digital Transformation of Business Models

The rise of digital innovators in financial services presents a significant threat to the traditional business models of established banks (Dietz, 2016). Previous research on the topic shows a consensus view that the future of the banking industry will be characterized by substantial changes. Walker (2014) claims that over the next decade, custody banks and business-to-business financial service providers will be facing competition from self-service business-to-consumer social networks. In the literature there is a clear consensus that banks face perhaps their biggest challenge to date and must undergo a digital transformation vis-à-vis their business models to remain competitive.

Dapp (2015) argues that banks now have the opportunity to transform their business models by harnessing digital platforms. This would enable them to satisfy the requirements of the digital era and at the same time avail of benefits associated with technological flexibility. The biggest challenge for established banks is to develop into a digital platform-based ecosystem, while at the same time entering strategic alliances with external financial service providers along their entire value chain (Dapp, 2015).

Zachariadis & Ozcan (2017) use the term banking-as-a-platform (Baap). Those authors contend that, due to PSD2 regulations, banks must open their customer information to third parties and as such banks should consider changing their strategies and business models to go over to a Baap style approach and change the rules of competition (Zachariadis & Ozcan, 2017). Moreover, they argue that the banks will have to revise their role as financial intermediaries and prepare themselves to become re-intermediaries by providing online automated tools and systems that offer valuable new goods and services to telecommunications operators on all sides of the network. Mitchell (2019) argues that the current banking business model has remained relatively unchanged since modern commercial banking began, where banks make money in two ways, fee income and interest income. Mitchell (2019) then presents three approaches whereby the banking business model can change. In the first approach the financial control centers sees banking as modular and discrete where your current account works as a central hub where other products are connected (Michell, 2019). The second approach he presents is banking-as-a-service where the bank works as plumbing for other financial services and makes it possible for other businesses to build on top of them to create new and existing customer experiences (Michell, 2019). The last approach that Michell (2019) suggests is the niche bank approach, where banks specialize and target specific demographics. In his article he mentions examples of niche banks such as Monse, which is a bank for migrants, Loot which is a bank for students, and Coconut, which is a bank for freelancers (Michell, 2019). Robinson (2016) refers to several banking business models for the digital age in his article, and that he believes that all banks will be forced to change their business model. This is because we have now entered a creator's economy, and the need for such a large banking sector as per what exists today, is no longer necessary, and Europe must start creating platforms. The first strategy Robinson (2016) suggests is the "do nothing" option. According to him, this might be the most tempting strategy, but also the most dangerous. Most banks provide a full-service model and it is hard

to compete when there is an increasing number of providers offering products for your entire value chain at a lower price with better customer service and less friction.

The second option is the "aggregator model". In this approach, the bank will not produce its own products, but rather act as a distributor for financial services in an ecosystem. The bank will not incur production costs and will be able to offer the customer a better selection of products. The value in this model will be a fee that the customer pays for the products and services that they use. Robinson (2016) believes that the obstacle to this model has not been in technology, but in access to customer data. PSD2 will now make this possible. In this model, the bank will function as a platform, and with network effects it can potentially be very profitable. One challenge will be that it can be difficult to argue that your platform is the best available.

Another model that Robinson (2016) suggests is the "thin, open platform". In this model, banks will search for platform and network effects while taking advantage of their current competitive advantage, such as trust and large customer bases with a lot of customer data. This model will be vertically integrated in which they offer a small number of their own products where they have a competitive advantage while providing access to third-party suppliers.

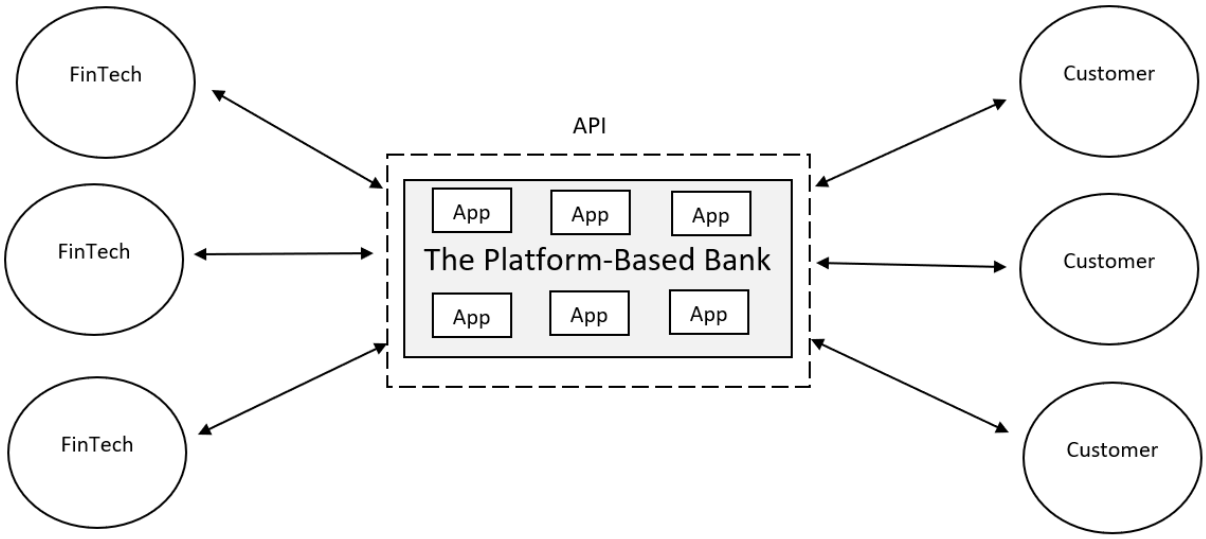

Figure 7 Simplified illustration of a banking platform-based business model (Compiled by the authors)

The figure shows a simplified illustration of how banks can operate with a platform-based business model. Dapp (2015), Zachariadis (2017), and Mitchell (2019) all argued that banks must consider changing their business model to a platform-based business model. As can be observed from the figure, banks use their network effect to connect developers and consumers. The banks cooperate with FinTech companies and create applications the consumers can access in the bank.

2. 7 Infrastructure

Norges Bank (2018, p. 3) defines financial infrastructure as "*a network of systems that allow users to carry out financial transactions with each other"*. Financial infrastructure includes the payment system, securities settlement system, security registers, central counterparties, and transaction registers. Norges Bank claims that if a failure occurs in the financial infrastructure, society's costs can be significantly greater than the business-related costs of system owners. Vipps, BankAxept and BankID have merged. The reason for the merger is to stand stronger in competition with global players and create economies of scale and act as an obstacle for other players who want to establish themselves in the value chain. If one or a few global players become dominant providers of payment services at the international level, this may weaken the competition by allowing them to shut out competing operators. For example, on Apple phones, only Apple Pay can make use of near field communication (NFC). Network effects are important for digital platforms. When a digital platform has many users, it makes it profitable for other service providers to develop complementary services. A platform can attract new users on the sole basis that they already have a large number of users, and not necessarily because they are the best. Using network effects, a dominant platform can experience a near-monopoly situation but if the platform companies exploit their power, it can weaken the competition (Norges Bank, 2018).

Robinson (2016) argues that a potential business model for established banks is to become an infrastructure provider. In this model, the bank chooses to focus on becoming a service provider for other banks and FinTech companies. The value base for such a model lies in eliminating the need for others to engage heavily in regulated areas. This model will not yield high margins as the services and goods offered will not allow for network effects (Robinson, 2016). Lars Erik Fjørtoft, a partner and Fintech expert at PwC believes that perhaps the

biggest risk for Norwegian banks is that they could be reduced to only becoming an infrastructure provider for third-party suppliers (Fjørtoft, undated).

Chapter 3 - Research Methods

This chapter begins by justifying why a qualitative method was used for gathering data, and how the data were collected. Furthermore, we will explain how the data were analyzed and interpreted, and what was done to increase the validity and reliability of the data.

3. 1 Research Design

Sekaran & Bougie (2016) describe the research design as a blueprint or plan for the collection, measurement, and analysis of data, created to answer your research question, and it is evident that the research design is essential in developing a good and worthwhile research study (Toledo-Pereyra, 2012). Dalland (2012) describes a method as way of solving a problem and arriving at new knowledge, and any means that serves that purpose belong in the arsenal of methods. A method is thus an approach that helps us to collect the necessary data and information for our study. We had limited knowledge of the topic prior to the thesis, so we started out by developing a solid theoretical basis. This was done through carefully reviewing the available literature in our domain of interest.

3. 2 Qualitative and Quantitative Methods

In the literature, empirical methodologies are often delineated as being either qualitative, quantitative, or mixed methods. Interestingly, qualitative and quantitative methods are not as separate as they may first appear. Creswell (2009) argues that qualitative and quantitative approaches should not be viewed as polar opposites or dichotomies. Instead they represent different ends on a continuum (Newmann & Benz, 1998). The distinction between different research designs is often in how they are framed.

Qualitative data are in the form of words (Sekaran & Bougie, 2016, p. 2). Creswell (2009) explains that qualitative research is used when the researcher wants to understand the meaning of individuals or groups as a social or human problem. Furthermore, the process of qualitative research consists of developing questions and procedures where the data are composed in the partaker's situation (Creswell, 2009).

On the other end of the continuum is quantitative data, represented in the form of numbers (Sekaran & Bougie, 2016, p 2). Creswell (2009) explains that the researcher uses quantitative

data when the objective is to examine relationships between variables, and these relationships can be estimated and explored using bespoke statistical software.

When choosing a method, the researcher must make a decision concerning what is most appropriate for solving the research question (Larsen, 2007). In quantitative studies, the principles are positivistic and involve variables and hypotheses, while qualitative studies lean on interpretations or critical social science (Neuman, 2011).

The potential strength of a qualitative approach is that there can be fewer threats to external validity, because subjects can be studied in their natural setting and thus encounter fewer controlling factors compared to a quantitative approach (Sandelowski, 1986). Miles & Huberman (1994) argue that qualitative data are a source of well-grounded, rich descriptions and explanations of processes in identifiable local contexts; further, with qualitative data it is easier to preserve chronological flow, see which events led to which consequences, and derive fruitful explanations. The possibility for understanding latent, underlying, or nonobvious issues is strong (Miles & Huberman, 1994).

On the other hand, qualitative research does have some drawbacks. Yauch & Steudel (2003) argue that the process is time consuming, and a particular, important issue could be overlooked. In addition, all researchers' interpretations are limited, as positioned subjects, personal experience, and knowledge influence observations and conclusions; further, the participants have more control over the content of the data collected, because qualitative inquiries are often open-ended, at least to some extent.

3. 3 Choice of Method

We chose a qualitative approach for this thesis since it is more suitable when analyzing data in the form of words, rather than numbers. Utilizing a qualitative method with open-ended questions allows the respondents to give more detailed answers which is important since we were seeking to identify opportunities and threats which occur because of the new competition FinTech companies bring to the banking industry.

3. 4 Data Gathering

This study is based on both primary and secondary data. The primary data were gathered through in-depth interviews with respondents working in banks. Primary data refer to information that the researcher gathers first hand for the specific purpose of the study. Primary data are often best obtained by methods such as interviewing people, observation, or by administering questionnaires to individuals (Sekaran & Bougie, 2016).

For this thesis, it was more suitable to focus on theory first by studying previous articles. Without thematic prerequisites, it would be hard to generate a strong interview guide, and would run the risk of ending up with large amounts of unnecessary data.

To avail of the required information to effectively answer our research question we needed respondents from the banks themselves. We searched for people in management positions because we needed information from people who had influence over the company and/or knowledge and experience of its inner workings. We found the respondents for our research by looking through companies' websites. We used several methods to get in touch with the respondents. In most cases we contacted them by e-mail. Several of the banks had employees' e-mail addresses and job titles available on their website, but there were other banks that only had a common customer e-mail. We did not receive any answers by using the customer email and ended up physically going to the banks in question to ask for interviews.

Sekaran & Bougie (2016, p. 113) define an interview as "*a guided, purposeful conversation between two or more people"*. Interviews are a widely used method of collecting data in business research and used to obtain information on an issue of interest. Since our research question concerns a relatively new phenomenon, we chose to conduct interviews to acquire new information about the subject. Before we created the interview guide, we studied existing literature and relevant theories that we could use in the interview whilst always being minded of the importance of retaining as clear focus on answering our research question. To ensure we did not stray away from our topic, we kept asking ourselves if the questions were necessary and appropriate given what was plausible to expect vis-à-vis the knowledge and experience of respondents.

3. 4. 1 Interviewees

Seven interviews were conducted with bank employees and these interviewees were identified using a judgement sampling approach. As already noted, when we were looking for subjects, we specifically targeted people in management position since we needed experts who possessed the necessary information. If we gathered information from front-line employees, we would run the risk of bias since the chance of them not knowing what they were talking about would be high. The second thing we had to decide was which banks we would select. We divided the banks into two categories, those we perceived as large banks, and those we perceived as small banks. We define large banks where the group has total assets of more than 100 million Norwegian krones (NOK).

Respondent overview	
Small	Large
Respondent 1 Respondent 2 Respondent 3	Respondent 1 Respondent 2 Respondent 3 Respondent 4

Table 2 Respondent overview (Compiled by the authors)

3. 4. 2 Interview Guide

Prior to the interviews, an interview guide was prepared to structure the interviews (see Appendix 1). Questions were formulated and follow-up questions were formulated where needed. The purpose of the interview guide was not to set limitations, but rather to set guidelines for questions related to the topics. To minimize biases, we wanted to use the same interview guide for all the interviews with all questions asked to all respondents in the same order. However, we had to make some changes to the interview guide after the first few interviews were conducted. We noticed that we had to be more specific about certain points, and to be more explanatory to ensure that respondents understood the questions we were

asking and why it was important for us to get answers to these questions. Some questions had to be omitted because they were too similar to other questions, causing unnecessary redundancy, we also identified that there were topics we wanted to explore more and changed some questions in the interview guide to get a deeper understanding of the topic. The interview guide was divided into different topics to make it easier for the interviewers and respondents to keep track of the questions (Tjora, 2012). The questions that were prepared gave a good basis for covering the research question.

3. 4. 3 Audio Recorder

We chose to use audio recordings as information recalled from memory is often imprecise and more likely to be incorrect (Sekaran & Bougie, 2016). Audio recordings also provide a more accurate representation of the interview than writing notes along the way (Yin, 2014). The use of audio recordings allowed us to devote our full attention to each of the respondents, facilitated communication flow, and made it easy for us to request elaboration where needed.

3. 4. 4 Conducting the Interviews

Most of the interviews were conducted face-to-face at the respondents' offices. However, as already noted, we sought respondents in management positions and, as a result, some of the respondents we wished to interview worked relatively far away. Therefore, we made use of Skype interviews as well. We conducted structured, open ended interviews with standardized questions. The interview was divided into several categories. We started out by introducing ourselves, explained the purpose of the interview, and what we wanted to find out. Further we assured confidentiality and asked for permission to use a recording device. The respondent was asked to sign a consent form (see Appendix 2).

3. 4. 5 Data Analysis

All the interviews were transcribed the same day they were completed. This was done to reduce the likelihood of something being forgotten or misinterpreted. When interviews are transcribed from oral to written form, the interview becomes structured, and better suited for analysis (Kvale & Brinkmann, 2019). There is no universal formula or code for transcribing research interviews, however, there are some standard options that should be considered. Should pronunciations transcribe directly, word for word with all repetitions and registration of all the "eh" sounds, or should the interview be converted to a more formal, written style? (Kvale & Brinkmann, 2009). When we transcribed the interviews, we did not convert them

into a formal style, but rather word for word. However, we did convert them to Norwegian Bokmål to navigate the issue of different dialects. We removed words such as "eh" but kept repetitions. Sometimes during the interview, the interviewee would point to an object such as their watch, or bankcard when making a point. When transcribing, we recorded these gestures in parentheses. After all the interviews were completed and transcribed, data analysis commenced. The purpose of this analysis was to identify patterns, relationships, common features, and differences (Larsen, 2007). We started by reading through the transcribed interview material. We worked separately and marked quotes and similarities that we thought were important and relevant. Finally, we met to compare, sort, and classify the information.

3. 5 Quality Assurance

For this qualitative method to provide credible knowledge, requirements for reliability and validity must be met (Thagaard, 2013).

3. 5. 1 Reliability

Reliability is about examining the data correctly and indicating the margin of error so that you can assess the credibility of the conclusion (Dalland, 2015). Reliability is linked to whether empirical findings represent real situations (Jacobsen, 2013). A study will be more reliable if the same result can be produced by other researchers at a later date (Kvale & Brinkmann, 2015). The same applies if the same measurement is repeated several times and the same result occurs each time (Jacobsen, 2013).

As already noted, a total of seven interviews were carried out with some differences in terms of the questions that were asked in the first two interviews compared to the latter five. Because some of the respondents were more talkative than others, the duration of the interviews varied from 30 to 45 minutes. For a study to be considered reliable, it is important that the interviewee would not have given a different answer when faced with a different interviewer. Therefore, open-ended questions were used to obtain the most credible answers, as a leading question may weaken reliability (Kvale & Brinkmann, 2015).

If multiple researchers collaborate on a project, this can help strengthen reliability because they can perform critical assessments in relation to each other's methods (Thagaard, 2013). By virtue of the fact that two people undertook this study, we have the advantage of being

able to be critical of each other's work. We have used this to our advantage during the transcription of interviews with the aim of being as objective as possible so as to arrive at accurate understandings of respondents' opinions (Kvale & Brinkmann, 2015).

As most of our interviews were performed face to face, the reliability of both the investigator and the respondents may be somewhat impaired as a result of the so-called interview effect. The interview effect refers to the impact of physical proximity on respondents' answers and behaviors. The place where the interview takes place is also a factor that can influence the nature and extent of respondents' answers. Therefore, whilst we cannot discount the potential impact of the interview effect, by virtue of the fact the interviews were conducted at the offices of the respondents, it is likely they felt relatively comfortable because this setting was familiar to them (Kvale & Brinkmann, 2015).

As PSD2 legislation came into force (in Norway) on April 1st, one of the study's biggest weaknesses will be that we have not seen the impact of the new payment services. This could clearly have an impact on the nature and extent of responses we garnered from our interview questions with, for example, respondents possibly speculating on threats and opportunities in the absence of supporting evidence. As such, if the same questions were posed to the same respondents a year from now, any deviations in their answers could reasonably be interpreted on this basis.

3. 5. 2 Validity

Validity refers to the relevance and credibility of the data and can be approached in terms of internal and external validity (Malterud, 2011). Internal validity concerns whether our interpretation of the information the respondents have given is relevant, and whether we have managed to elucidate the area surrounding the research question. External validity concerns the extent to which the results can be transferred and be valid in other contexts (Thagaard, 2013).

Internal validity is important to ensure that the interview guide measures what we want to measure. The advantage of a qualitative approach, and that may have strengthened the validity of the interviews, is that we had the opportunity to ask follow-up questions if the respondent did not understand the content of the question. The same applies in situations where we ourselves were uncertain about particular answers and could seek clarification by

asking a follow-up question (Jacobsen, 2013). We spent a significant amount of time preparing the interview guide to ensure that appropriate questions were asked and that there was a connection between what was asked and our overall research question. Through flexible interviews, we had the opportunity to change questions along the way, and respondents could speak freely. This helps to strengthen validity because imposing fixed questions would not have allowed us to optimize the question set through changes, whilst imposing fixed answer options on respondents would have erroneously assumed that we were already aware of all plausible responses.

External validity is about transferability, the extent to which the findings from the interviews can be generalized (Jacobsen, 2005). A common concern with qualitative approaches is their inability to generalize from the sample to the population, not least because such approaches tend to be characterized by small sample sizes (seeking depth) compared to quantitative approaches which tend to be characterized by larger sample sizes (seeking breadth). External validity weakens when the sample does not represent the population (Jacobsen 2005) In our case, there were relatively few interviewees, and the respondents were selected based on particular criteria because the purpose of the study was to understand and elaborate on a phenomenon (Yin, 2014). This does not mean that the empirical data acquired through the interviews do not have transferability, but that one cannot statistically generalize to a wider population as with a quantitative study (Thagaard, 2013).

Chapter 4 - Results

This chapter starts with an introduction of Vipps and BankAxept as it was mentioned by the answers from the respondents. A presentation of the current business model canvas of small and large banks will follow. Finally, the findings from the interviews will be presented. These findings will contribute to resolve the research question. The chapter is divided into sub chapters consisting of quotes and samples from the interviews.

4. 1 Vipps

Vipps started as a payment solution for friend payment and has since then launched payment solutions such as person to business, e-commerce, invoice, and payment in store. In July 2018 Vipps merged with BankAxept and BankID (Vipps, undatet). Vipps works for everyone in Norway, regardless of the customer's bank. Vipps is free to use for transactions below NOK 5000, for larger amounts there are a 1% transaction costs (DNB, undatet).

4. 1. 2 BankAxept

BankAxept is a national Norwegian payment solution with roots back to the end of the 1970s with the introductions of automated teller machines (ATM) and point of sale (POS) terminals from the beginning of the 1980s. The trademark BankAxept was established in 1990, and in 1991 a joint operational infrastructure was established. Thus, a merger of the various Norwegian banking systems took place, and the banks established a joint, electronic payment solution (EPS) for trading on the physical ground. (BankAxept, undated). In Norway, BankAxept is the link between the payment terminal and the card. Regular debit cards issued from a Norwegian bank that is linked to a checking account have BankAxept implemented in the card. The card usually has an international payment system as well, such as Visa and Mastercard, which makes it possible to use the card on the internet and in foreign countries. BankAxept has since the beginning been cheap to operate. In the beginning, the user paid a few NOKs in transaction cost. These transaction costs were later made free of charge, and the banks took these charges on their expenses. The BankAxept is the most used payment solution in Norway, the reason why is that it is tailored in for the Norwegian marked, thus making it cheaper. Some stores, retail outlets, and merchants only accept BankAxept since it is cheaper than other solutions. However, it risks users not being able to use their card (Dinero, 2016). BankAxept has had a priority rule, meaning that cards with various

trademarks (example, Mastercard and Visa) was automatically carried out as a BankAxept transaction. However, on June 27, 2016, the Ministry of Finance stated "forskrift om formidlingsgeby i kortordninger mv" (regulations on dissemination fees in card schemes, etc), making it possible for the user-site to make a pre-selection of a trademark as priority in the payment terminal (BankAxept, undated). The user can also select another trademark in the payment terminal (Forskrift om formidlingsgebyr i kortordninger, 2016, §4-5).

4. 2 Current Business Models

We started the interviews by asking specific questions about the company's current business model. We based these questions on Osterwalder's business model canvas, presented in chapter three, and prepared an existing business model canvas to display the differences between a small and a large bank.

Example of a general business model canvas for a small bank:

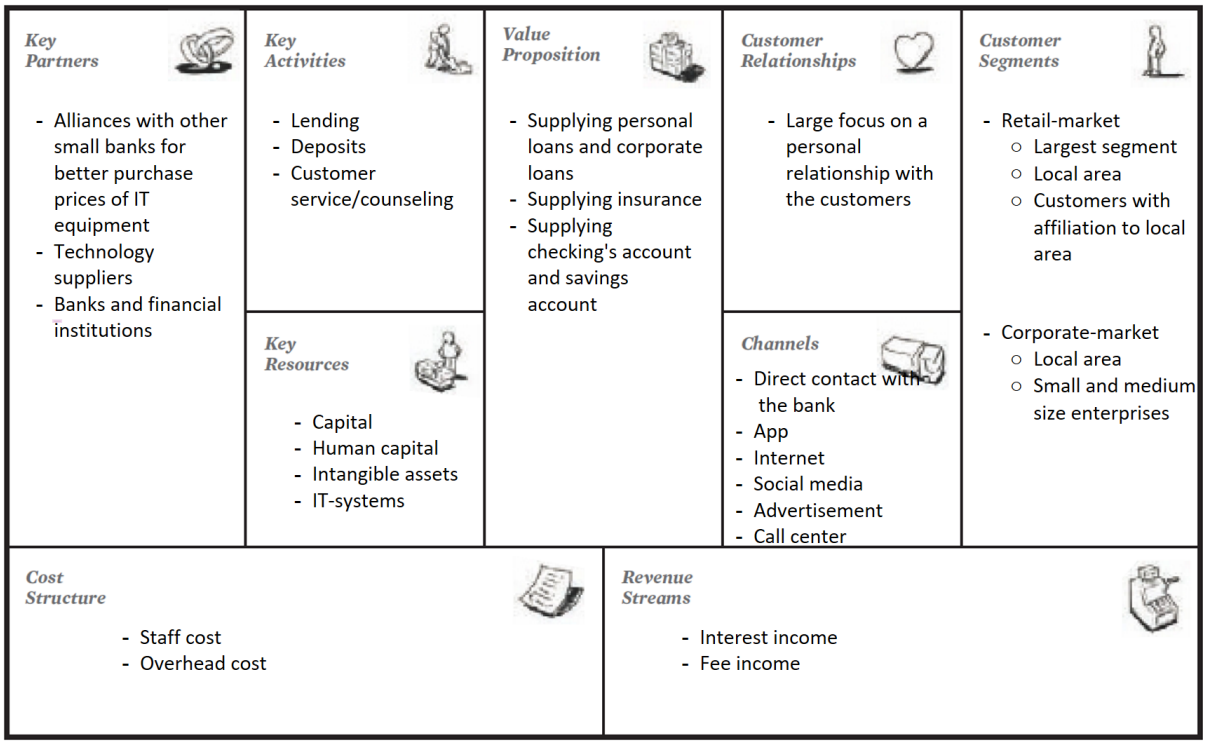

Figure 8 Business Model Canvas Small Bank (Osterwald & Pigneur)

The largest segment for the smaller banks is the retail market. However, they are represented in the corporate market as well. The customers in the retail market are all types of customers with an affiliation to the bank's local area. For the corporate market, the customers are only

small and medium-sized enterprises based in their local area. The banks take part in the local community and engage in having a personal relationship with their customers. Developing new digital and innovative solutions are too expensive for smaller banks. Thus, their market strategy is fast-follower, where they observe what is on the market and implementing what they see is necessary.

Example of a general business model canvas for a large bank:

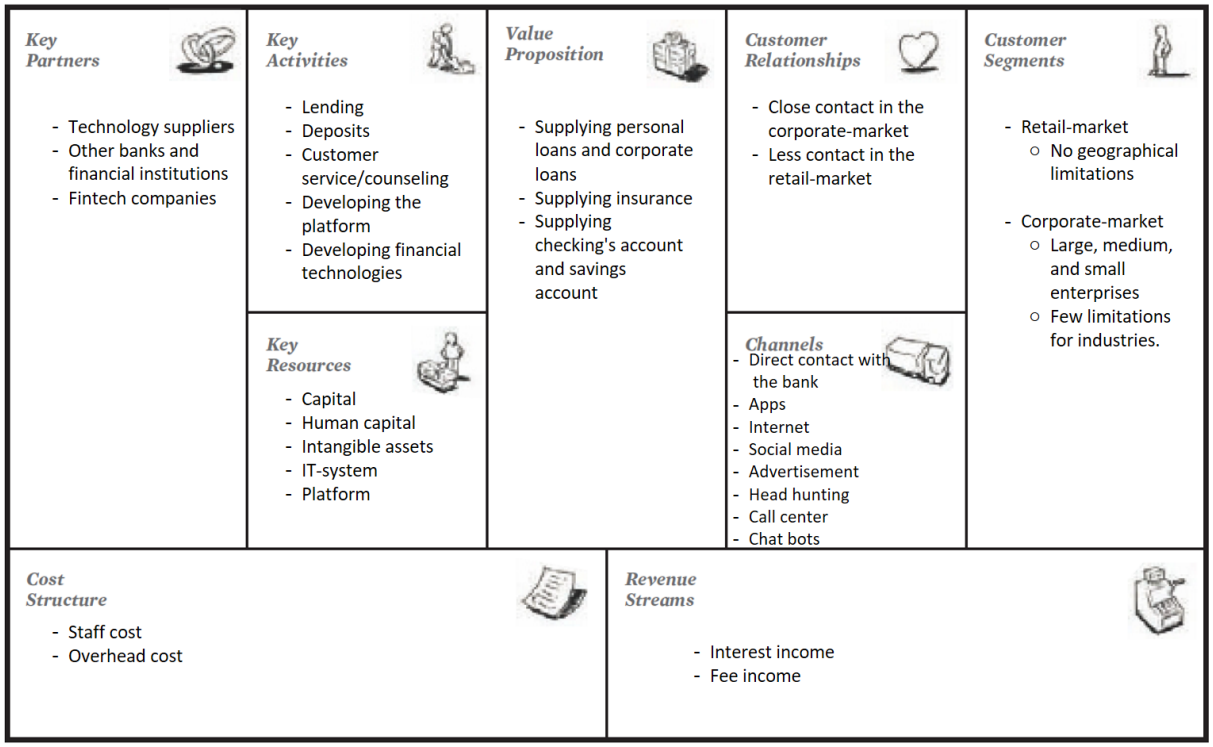

Figure 9 Business Model Canvas Large Bank (Osterwald & Pigneur)

The larger banks have two segments. The retail market and the corporate market. Neither the retail- or the corporate market have any geographical limitations. The customers in the retail market cover all potential banking customers. The customer relationship is less personal with the large banks than for the smaller banks. The customers in the corporate market are small, medium, and large enterprises in most industries. Their customer relationship in the corporate market is more personal than in the retail market. The large banks use resources on developing their own digital and innovative solutions.

4. 3 Technological Development and Strategy

The respondents agree that the banking industry had come a long way in digital development but disagree when it started. Most of the respondents point out online banking and mobile banking and claims that digital development goes back 20 years. However, other respondents think it started more recently. The respondent in bank 7 believes that digital development first began seriously two years ago.

> "We are in an industry that is far ahead when it comes to digitization because it is about investing in digital solutions. Online banking has existed for 20 years, and from the time the online banking arrived, customers started to do the job themselves. So, don't be part of the digital in a bank is not an option."
>
> - Bank 1

> "Banking and finance have been good at utilizing technology if you look back 20 to 30 years. From people working completely manually, to implementing systems that made it possible for the people to do it themselves, more simply."
>
> - Bank 2

> "Digitization is very widespread in the industry. Bank spent quite a bit of time before they seriously started thinking about it digital, but it really has come now. The last two years there has been a tremendous development."
>
> - Bank 7

Digital development has meant that banks must work differently. In the past, the banks worked a lot with project work, where they, for example, had three years before releasing a product. Today, things must go faster, and the banks experience that the products often are outdated when they get released on the market. This factor has led them to have an agile approach to their work, where they deliver products that are not necessarily finished. The digital development has brought several challenges. The respondent in bank 7 brought up the question of how they should use the "human" in combination with the digital aspect. This is an even more significant concern for the smaller banks who do not have the same capital strength as the larger banks when it comes to developing new technologies and solutions.

> "The challenge is whether there will be anything left for us who are betting on the human. For when the solutions are simple and cheap, and when you get confidence in it, most people choose that type of solution."
>
> - Bank 1

The digital development has brought several challenges. One of the challenges is that it is expensive, which means the banks must save money. Robot process automatization is therefore crucial for the banks. The areas that can be digitized must be digitized so that the customers can do things themselves. The respondent in bank 7 informs that the banking industry has been very good at robotization in the retail market but is lagging behind on the corporate side. The reason why they are lagging on the corporate side is because there are more complex aspects on the business side. Thus, making it more difficult to standardize a robot. The respondent in bank 6 agrees that it is in the retail market they experience the most significant pressure for digital development.

> "It is the retail market that is under the biggest pressure, but it is in the whole enterprise. Afterall, we are an IT-company really."
>
> - Bank 6

> "You probably have it to a greater extent on the retail-market than the corporate-market where there are perhaps more complex issues in the corporate than you get in the retail. It is difficult to standardize a robot in the corporate-market. So, I would probably say that corporate is lagging behind on the digital".
>
> - Bank 7

Another area where many banks save money is by shutting down offices. The respondent in bank 7 informed that they have shut down more than 1500 offices within the last five years. Other respondents told that they did not shut down their offices, but instead changed the offices.

> "We have a business model where we have said that we should not reduce the number of offices but change the contents of the offices."
>
> - Bank 3

Another challenge the banks experience as a result of digital development is that they received customers in the past with other premises. It can be challenging to satisfy several different types of customers. On the other hand, digital development also comes with opportunities. The banks have large customer portfolios, and big data is an important aspect. The banks sit on much customer data where they can specialize and tailor products and services to the individual customer. Although the banks must open their data for third-party actors, they still have a lot of expertise and insight on the customer, which new startup companies and FinTech companies lack. The challenge here is to use this data correctly. The respondent in bank 7 informs that they work together with FinTech companies and believes that this is where the critical battle is. If they find a FinTech company they believe can analyze the data better, they will try to establish a cooperation. If the bank thinks they can do the job better themselves, they choose to compete.

It is other banks that are the are the main competitor to the traditional bank and not other players such as FinTech companies. However, on the areas such as risk-free-loans, both other banks and other players are the leading competitor. The respondent in bank 7 uses the air travel company, Norwegian, as an example.

> "But, risk-free-loans, I would say that many other players are also our biggest competitors. Norwegian suddenly starts with credit loans, airlines begin with credit. Such types of players."
>
> - Bank 7

However, being at the forefront of digitization is expensive, where one must try, and fail to succeed. Being in front is thus not an option for small banks as they cannot afford it. They must make use of the market strategy "fast follower," where they follow what is happening in the market and implement the solutions that they see works.

> "We shall not be in front. We have no chance of being the first, but we have an approach to be a fast follower. That we shall adopt what we see coming and linking us to it to the best of our ability."
>
> - Bank 2

> "We are not the first ones out. We are too small to develop new things. We could not make Vipps alone, right. We are too small for it. It costs too much."
>
> - Bank 4

Many of the small banks are concerned with finding a segment that attracts customers who are both interested in digital solutions, and at the same time appreciate the personal advice, service, and follow-up in combination.

> "We have to find a segment that attracts customers who, of course, use digital solutions, but also appreciate the personal advice, service, and follow-up in combination."
>
> - Bank 1

The informant in the first bank said that more and more are being digitized and automated. He joined the banking industry 12 years ago and did not believe that it would be possible to digitize the advisory service. However, he now experiences the opposite.

A lot of the banks, especially the smaller banks, pointed out the importance of still being somewhat of a traditional bank. Many of the local banks believed that having people working in the bank that had physical contact with the customers would be a way for them to be different. However, they did point out that they could not choose one path and ignore the other. They wanted their customers to be able to come to the bank and meet a "human," but at the same time be able to have digital solutions.

> "We still think that it should be possible to meet a person. That they (the customer) have a counselor, that you should be able to come in and sit in a chair. We are committed to knowing who you are, know your family, what you are doing, the business you are working in. But we also need to have a simple, good digital solution that makes it possible for people to do it themselves from their living room, on their iPad, their watch, or whatever it is. It is not either this or that."
>
> - Bank 2

Bank 1 told that they were part of a community, and their ambition becomes what that community agrees. They did not want to be in front and develop themselves, but rather be a fast follower.

> "We are, after all, part of a community, so we are set on the ambition that the community of the 68 savings banks agree on, and the ambition is not to be in front. You should not develop, but you should try to be part of it when it happens and choose a good and safe solution. The dilemma is that as a small bank, we do not have a chance to be at the forefront of digital transformation, it is too costly, you have to try and fail, it is expensive to develop, that is, the development cost is very high."
>
> - Bank 1

Bank 2 brought up the fact that they had been in business for more than a hundred years and had strong roots with the local community. They had managed to stay relevant until now and believed that it would still be possible in the future to be a small and flexible bank. Furthermore, he explained that their ambition was not to be taken by the big wave of large banks.

In bank 3, the respondent told that if they were to initiate something, it must be cost-effective and have a good business case. They bring up their size and explains that they cannot be first on everything and that they must pick their battles. They try to be in front and take positions in some areas, for example with DSOP-projects, which is digital interaction between public and private sector. The respondent also said that they were in front when it comes to taking advantage of the opportunities that already exist when it comes to payment. However, they are not developing new solutions.

> "We do not initiate lots of projects that we may think could become something. We have an extensive process before we get into something, but when we first go for it, we go 110%."
>
> - Bank 3

Bank 4 did not have a long answer to how ambitious they were. The informant pointed out they were not developing new solutions themselves, but that their strategy was to be a fast

follower. However, the interviewee did point out that he had noticed that in an industry perspective, the industry had started to look for new business developers.

> "I see in the industry that before there were a lot of IT-managers and technicians. Now there is much more looking for business developers to find new solutions and things like that."
>
> - Bank 4

Bank 5 pointed out that their ambitions as a community are very high, but on an individual level, it is relatively the same as the other banks.

4. 4 Payment Service Directive 2 (PSD2)

The new PSD2 regulations came into force on April 1st in Norway, and concerning the factor PSD2, we want to identify the challenges and opportunities associated with the new rules. We asked the respondents what challenges this could bring to the traditional banks. All the respondents mentioned how the main challenges would be that everyone can access their customer information, and thus, new players will enter the market. Bank 1's answer revealed this:

> "One of the challenges is that we are obliged to let them in and give them information. It probably means that a number of new players will enter the market and create great applications for consulting or payment, which is based on the information in our system."

> "It will challenge the industry. There will be new competitors who do not want to run a bank, but who want to capitalize on just that, to present the data and maybe give good advice."
>
> - Bank 2

The respondent of bank 3 goes into the idea that in the future, one might have to question how profitable it is to have a customer. The informant said that their value used to be in the size of the customer database, but with PSD2, anyone, given the customer's consent, can retrieve customer's data.

> "I think that some of the things that can hit our industry quite hard in relation to the fact that before, our values lay in the size of the customer database. Now it is a question of how valuable it is to have a customer. Anyone with a license, and with your consent can come in and get lots of data about you as a person, about the transaction, etc."
>
> - Bank 3

We wanted to investigate how the banks prepared for these new challenges, and several of the respondents were unsure of what position they were going to take.

> "We are talking about which position to take. I think banks are very far ahead, and there are many who want to cooperate with banks. We also have an advantage with the customer base."
>
> - Bank 6

> "So, it's kind of what we are a little excited about what role we should take and how expensive it is to take that role."
>
> - Bank 2
> -

Bank 7 believes that banks are forced to choose a market rather than trying to please all. Bank 7's answer revealed this:

> "The trend in the market is probably that you have to choose a specific market, rather than trying to satisfy everyone. It will probably be more pointed, and there may be own banks for those older than 60, banks who are entirely digital and maybe something in the middle."

The respondents also saw opportunities associated with the new PSD2 regulations. We asked the respondent what opportunities can occur as a result of PSD2, and some of the respondents mentioned how the banks could use the customer information to their advantage.

> "This is something that the banks have feared, but it also means that we can retrieve customer information from others, and with that, there are loads of opportunities. But

then again, you change the bank concept. Also, the question is whether we should call ourselves something other than a bank."

- Bank 6

"We are incredibly nervous about how it will affect the industry in the future. But of course, that means that banks can also take that role, we can actually take that role too, or maybe Vipps can do so."

- Bank 2

One of the respondents explained that as an opportunity due to PSD2 is that a third-party provider could process the customer information. Bank 7 expressed this as follows:

"We can also use this information. Not necessarily use it yourself but attract proper partners who can use the data correctly. We spend huge amounts of money on attracting the right partners."

4. 5 FinTech and Digital Platforms

Facebook has already received a bank license in several countries, and Apple just announced its credit card. Moreover, Apple- and Google Pay are already well integrated into several countries, including Norway. Concerning these factors, we asked the respondents what they thought was the solution to meet the competition from digital platforms. The majority of the respondents answer that they believe cooperation between the banks and to create a stronger infrastructure is the solution to the competition with digital platforms. The respondents mention how Vipps and BankAxept is a collaboration between banks and is helping to strengthen the Norwegian infrastructure.

"We as a bank have limited opportunities alone against Facebook and Google, but the Norwegian bank and finance industry have an opportunity to make a counter-force. We are fortunate to be allowed in the Vipps community, also on the owner's side. Just as Vipps now appears, well over 100 banks are the owner of the company. So, it is a kind of expression that we are building a Norwegian infrastructure together, and that could be an important contribution to meeting this competition from the big ones out

there. I think it is good that we in Norway have such an approach to it, and it rests on a long tradition dating back to the 60-70s. Standing together in the very basic infrastructure of the industry. The Norwegian bank and financial market are very concerned with building on the common solution called BankAxept, which is now also merged into Vipps."

- Bank 2¨

"If you look at Vipps and its merger with BankAxept, it is an attempt to protect a little about its own infrastructure. Creating a stronger infrastructure may make it harder for the type of players as Google to leverage what they really are good at. At the same time, one can say that one does not necessarily have to fight the same arena as Google and Apple, but rather has a differentiation strategy. That one chooses to take positions where it is not so easy for Google and Apple to gain access."

- Bank 5

"I believe the solution is collaboration. Because I think we are very aware that it's not the other banks that are our main competitor, its Google and Facebook, in a global perspective that is our main competitor. That made Norwegian banks join forces on Vipps, now we are 130 banks or something on the owner side. It is a move that we have made because we see that the competition is global."

- Bank 3

Concerning the factors FinTech and digital platforms, we want to identify the challenges and opportunities associated with future payment services from FinTech companies.
We experienced that the respondents had a slightly different perception of what they considered as threats to the banking industry. Some of the respondents pointed out how FinTech companies attacked part of their value chain as the potentially greatest challenge.

"They pick a small portion of our value chain, and make a little operation a little smarter, a little different, and manage to make some money on it."

- Bank 2

In the literature, it emerged how FinTech companies were viewed as both threats and potential partners, and we wanted to investigate how the Norwegian banks perceived FinTech

companies. We asked the respondents if they looked at FinTech companies as competitors or as potential partners. All respondents agreed that they looked at FinTech companies as both, but more as a partner now than before. The majority of the respondents pointed out that they were previously more afraid of the challenges that would come with FinTech companies, while now facing the greatest challenge of choosing the right partner.

> "As it has evolved, perhaps the biggest challenge is choosing the right business partner. But I think if you go a few years back, then you were a little excited, maybe a little scared of what these FinTech companies could do, and how they could attack us. But that the topic now, and a few years further down, is that one of the main challenges of the FinTech companies is the entrance bar that exists. It is heavily regulated and extremely capital intensive to enter our arena. That is why you see very few, if any, of the FinTech companies operating independently. None of them has a clear first position, at least not as we can see. So, choosing the right partner, I would say is the biggest challenge."
>
> - Bank 5

It emerged that the size of the bank plays a significant role in how much money and resources they invest in new solutions and market position. Some of the smaller banks made it clear that they did not spend any money or resources on developing their own solutions.

> "No, I am very against that. We do not have the resources or capacity for it. There is a discussion in the alliance which we are involved, because the large banks in the alliance are a bit more ambitious, while we hold back."
>
> - Bank 1

Other small banks had a strategy of being a "fast follower" by collaborating with the alliance in sharing resources for business development and using third parties as an IT supplier.

> "No, to a lesser extent. But we are in cooperation with other banks where we share resources in relation to business development and are in dialogue with a third party who is our IT supplier."

Of the respondents who represented the larger banks, the answers were slightly more variable. Some of the banks only used resources to develop certain areas, while invested significant amounts in advance of FinTech companies.

> "No, we don't. That is, we are early in the areas that we have decided to be early on. But for us, FinTech has become almost a bit too heavy."
>
> - Bank 3

> "Yes, we do. We invest substantial amounts in advance of FinTech companies."
>
> - Bank 5

There are several factors to consider when the banks enter a collaboration with FinTech companies. The banks must sort out the FinTech companies that can use the bank's information. At the same time, the banks must appear attractive to FinTech companies.

> "We see that collaboration with FinTech companies can offer a lot of positive opportunities. What is important is that we are able to attract an attractive partner who can use our information. However, it is not necessarily that easy. We must therefore, be out there and not let the trains go by us."
>
> - Bank 7

> "A collaboration with FinTech companies is a strategic situation where you have vertical integration. The question is whether we should take positions ourselves or collaborate with Amazon or Google instead. Furthermore, one must find out who in the partnership should be the facilitator for the transactions in the cooperation."
>
> - Bank 6

When asked whether the banks had considered a partnership with FinTech companies, there was variation among the answers.

> "It is quite clear that we are considering partnerships with FinTech companies. This is mostly at the Nordic level, but we also enter partnerships at local levels."
>
> - Bank 7

"It has probably been considered, but nothing concrete has been done. Banks are very uniform by themselves."

4. 6 Digital Transformations of Business Models

According to previous research, there is a reason to believe that the development of business models is a crucial factor for the respondents in competition with large platform-based companies. We asked the respondents how the development of the business model will help to reduce the challenges from FinTech- and platform-based companies, and the answer were varied. Some of the respondents believed that strengthening those parts of the business model that were not so easy for Google to access would reduce these challenges.

"One approach could be to look at which part of the marked you want to have a position. So, one can either have a red ocean strategy and fight in all areas with all customers, or you can become more specialized towards parts of the market. But one thing that I think could be difficult for a player like Google to copy is the traditional counseling service. Google may quickly take positions related to payment transactions, but then there are other parts of our value chain that are not as easy to copy. I think maybe we should rather strengthen those parts of our business model than to absolutely try to close spot on where the competition is more one to one."

- Bank 5

Furthermore, we see that other respondents also mentioned that they did not believe the global competition was going to threaten the different parts of the value chain to the same extent. However, they thought the success comes from making the right adjustments to the business model. Bank 3's answer revealed this:

"One of the things we see is that on payment it should be a relatively simple license in order to be a payment provider, but if, for example, you start with a mortgage, or worse, a corporate loan, there is so much demand and a lot of capital is required and you have such a relatively small return on it. In addition, there is so much focus on compliance, anti-money laundering, supervision, and licenses. So, I don't think the global competition is big on corporate loans and mortgages, but on payment and consumption credits, on the other hand, they are probably bigger competitors. If we

make the right adjustments to our business model, then I think it is a success criterion, if we miss and make mistakes then there is a risk to it too. We have a business model where we have said that we should not reduce the number of offices but change the contents of the offices."

- Bank 3

When we asked the respondents whether digitization of the business model was highly prioritized in the company, they all answered yes. However, some of the respondents gave the impression that it was not. This was especially true regarding the smaller banks, which immediately followed up with arguments for them not changing.

"yes, but not at all costs. We want to be different. We must be digital, but we shall not shut the doors."

- Bank 4

We asked the respondents about how they believed that technology could influence the business model in the industry in the coming years. Many of the banks gave a vague answer. It was a common theme that they did not know what the future had in store for them. The smaller bank's business model was influenced by the fact that they would not get rid of their employees. However, they saw the possible challenges with the future of simple and easy solutions where customers can do things themselves.

"The challenge is whether there will be anything left for us who are betting on the human. For when the solutions are simple and cheap, and when you get confidence in it, most people choose that type of solution."

- Bank 1

We asked the respondents if there were any challenges regarding the digital transformation of the business model. The respondent in bank 6 said that trust in the machines could be a big challenge for both the banks and the customers.

"A challenge is that you choose to rely on it. Both we should trust that the machines say what to do and the customer should trust that what comes out of the machines is the best for them when it comes to advise."

- Bank 6

We also wanted to investigate how important the respondents thought a digital transformation of the business model was for their company's competitiveness over the next few years. All of the respondents thought it was crucial.

> "It is crucial, we are unable to be cost-effective unless the customers use us digitally."
>
> - Bank 3

It was also mentioned the importance of the banks cooperate in the digital transformation of their business models.

> "It is very important, as new generations expect us to be on the same digital platforms as they are at any given time. But we are dependent on the Norwegian banks standing together. It does not benefit that we have our own Vipps when all the other banks use something else."
>
> - Bank 4

It became clear that the smaller banks were more concerned with keeping the personal relationship with the customer. They believed that a digital transformation of the business model was crucial to their survival. However, they argued that it was not the same as becoming a completely different bank.

> "I think that it is absolutely crucial. Also, it is not the same as saying that we should be a completely different type of bank than the one we have been. We still think that it should be possible to meet an adviser. We are committed to knowing who you are. But we also need to have good and simple digital solutions that enable people to solve most things from the living room on their iPad or smartwatch. We go from having the traditional IT manager to that we now have a business developer as well."
>
> - Bank 2

Several of the respondents, regardless of size, pointed out that they often experienced that especially young first-time buyers have a great need for a conversation with a customer

adviser. They referred to the importance of a good customer relationship even though the bank was undergoing technological development.

> "We see that often when customers need loans, even though it is done to a great extent digitally now, we see that they want to come in and chat with us. We also thought for a while, until we examined it, that younger customers they are so digital that they buy loan processes completely digitally, but they have a greater need to sit down and talk with a customer adviser. The first time you buy a home, it's a little scary."
>
> - Bank 3

> "We see that there are many who prefer to have, and in fact, many young people who want to establish themselves for the first time, they want to have a consultative conversation with actual people. Get some advice and some security."
>
> - Bank 1

One of the respondents believed that it would be more proficient at having a business model that was flexible and dynamic, rather than developing the business model for future competitiveness. Bank 5's answer revealed this:

> "I think what may be even more important in the future is to have business models that are more dynamic and flexible. For example, that one creates a flexible foundation which is much more dynamic in relation to the changes that occur."

4. 7 Infrastructure

Norwegian banks cooperation on a shared infrastructure has been a high priority. Most of the respondents believed that cooperation was the right way to face global competition. However, the respondent in bank 6 did not think that having an own Norwegian infrastructure would necessarily be the answer.

> "Yes, infrastructure is important. But should we go along with Vipps or should we go with Apple Pay? I don't think it will be important anymore to have our own Norwegian infrastructure. It becomes so internationalized. When customers come

from abroad, and everyone else has Apple Pay, then you must have a solution to it anyway. I don't think they are able to resist. Vipps have ambitions, but I think it's too small."

When we asked the respondents, what measures they took to strengthen the infrastructure, all of the respondents mentioned the merger of Vipps, Bankaxept, and BankID. Moreover, how the Norwegian banks collaborated and owned Vipps together to strengthen the infrastructure against the global competition.

We also wanted to investigate whether the respondents thought there were any challenges regarding the infrastructure. Some of the respondents answered that the problems of infrastructure were that it was expensive, and the risk of investing in something that may not last.

> "It is expensive, and how much do you invest in something that may not work. Suddenly you do things in a completely different way. Besides, there are safety-related challenges and privacy challenges."
>
> - Bank 6

While others believed that collaboration usually could lead to many challenges. Bank 7 expressed this as follows:

> "One can see from companies entering major cooperation agreements that it often presents great problems. Both technical, cultural, economic, and legal issues. There are many challenges one does not know as well. I think a lot of the challenges we just have to experience. "

Chapter 5 - Discussion

In this chapter we will further discuss the findings of this study, in the context of our research question and previous research in this domain. From our interviews we gathered information on several themes, technological development and strategy, PSD2. FinTech and digital platforms, digital transformation of business models, and infrastructure.

According to previous research, there is reason to believe that the banking game has changed. (Cortet, et al., 2016). The respondent from bank 3 revealed that their value used to be in their customer database, but with PSD2, these data are now available for third parties, reducing the value of customer data for the banks. However, the respondent in the 7th bank argued that even though PSD2 makes their customer data more transparent for third parties, banks still have a better insight on the customer. According to Hellström & Holm (undated), the banks' best option is to pursue a first mover advantage. It could be wise for banks to be aggressive while they still have a better insight on the customers, securing their market position on that basis. On the other hand, being the first mover is not without its disadvantages. When pursuing new areas there are many pitfalls. As revealed by the respondent in the third bank, the banks are aware that big changes are coming, but they do not know what these changes are, rendering it difficult to navigate and make decisions because of these prevailing uncertainties. By waiting, they might avoid some of the pitfalls that might be there. Furthermore, as revealed by the interviews, being first is expensive and, indeed, this is borne out by empirical data in many economic contexts. This alone is a reason why many of the smaller banks simply cannot be the first, and rather pursue a fast-follower strategy.

From the literature we can understand that the FinTech revolution is perceived differently. FinTech is no longer only seen as a threat, but also a potential partner (Romānova & Kudinska, 2016). We get the same understanding from the results given by the respondents. One of the respondents explained how they previously viewed FinTech companies as bigger threats, but the biggest challenge now was choosing the right FinTech partner. However, there are still those who sees FinTech companies as competition. A survey from Statistica (2014) shows that 95% consider FinTech as a competitor in payment, 78% in simple saving, and 64% in current account.

The results revealed that the banks have little focus on making real changes to their business models. PwC claims that the biggest losers in this game will be the banks who do nothing (Fjørtoft, undated). Previous research suggests that there are several different strategies for evolving business models. Robinson (2016) suggests that the "do-nothing" approach may be the most tempting, but also the most dangerous because their entire value chain will be in competition with lower price and better customer service. The banks say themselves that one of the biggest threats that the FinTech and startup companies poses to them is the possibility of being "eaten up". However, the respondents representing the smaller banks have the belief that there will still be demand for traditional banks in the future. According to several of the respondents, the demand for advice from a human advisor is still sufficient, and the younger generation prefers talking to bank employees when applying for a loan to the same extent as the older generation. The question is whether this will last. As the respondent in bank 7 said, the challenge is with trust. Will people ever trust machines like they do currently with human beings? If the answer is yes, will the human advice service cease? Furthermore, the smaller banks point out the fact that they do not have the necessary resources for developing their business model. However, if the banks engage in a strategy of doing nothing, they might unwillingly end up in the second business model suggested by Robinson, which is the infrastructure provider. By acting as an infrastructure provider, it will not be easy for the FinTech companies to get a foothold in their value chain. However, the bank will lose large shares of their value chain, and their profits will be marginal (Robinson, 2016). It was revealed by the interviews that one of the biggest fear to the banks is becoming a marginal loan facility at the bottom of a value chain.

One of the respondents stated that one way of operating is to strengthen the parts of the value chain that are not so easy for the FinTech companies to copy. One strategy suggested by Mitchell (2019) is the niche bank approach that focuses on specific demographics. Niche banks have a more concentrated customer segment and can deliver more specialized products and services that the customers can appreciate. Another respondent mentioned how he thought some banks came to have a niche approach and used a bank for those over 60 years old as an example. On the other hand, by transforming into a niche bank, the bank will lose large portions of their market shares. Such a transformation would also entail various processual and state changes such as transitioning towards a specialized work force that the bank might not have.

In the literature, it is evident that banks should digitally transform their business models by leveraging a digital platform-based approach (Dapp, 2015). Some of the respondents, mainly represented by the larger banks, informed us that they are devoting substantial resources to developing their own products as well as advancing their platforms. Robinson (2016) suggests that some banks could transform into an aggregator where they do not develop their own products, but rather work as a hub, distributing products and services in an ecosystem. This model can be appealing since the developing costs of products and services will disappear. On the other hand, the bank will be left with fewer revenue streams, since they will no longer provide their core products. In addition, one of the main challenges for a bank operating as a digital platform, is to argue that your platform is the best (Robinson, 2016). Perhaps a better option for the banks would be to pursue the thin, open platform, based approach also suggested by Robinson (2016). This business model is based on both having a platform, but at the same time retaining their core products.

It emerged from the results that considerable focus and resources was placed on strengthening Norwegian infrastructure. The merger of Vipps, BankID, and BankAxept is an attempt to keep global competition at a distance (Norges Bank, 2018). According to previous literature, this can be a wise move. By strengthening infrastructure, they can become dominant and attract new users by virtue of the fact that they already have users, and thereby weaken the competition (Norges Bank, 2018). On the other hand, some of the respondents believed that this was of no use. They argued that it was too expensive and risky to invest in something that you don't know will last. Furthermore, one respondent pointed out that the Norwegian market is too small compared with the global market and strengthening the infrastructure will have little to no effect when larger international players enter the market. However, several of the respondents believed that for a new payment service to replace Vipps, it had to be significantly better. There is no doubt that the Norwegian banking industry has successfully achieved a first mover advantage in the payment initiation service provider market with the cooperative development of Vipps. However, it might not be a large enough barrier if major platform-based companies such as Apple, Google, and Facebook enter the market.

Previous research suggests that the banks will face new competition in the account information service provider market. The banks collaborated on the payment initiation service provider market, gaining a first mover advantage in creating a common app for friend payments which they are constantly working on. The banks have not collaborated in creating

solutions in the AISP market. As the respondent in bank 7 noted, the FinTech companies and startups have not yet gained the same level of access to the customer data as the banks. This can give the banks the opportunity to gain a first mover advantage in this market, as they did in the PISP market. Alternatively, they could pursue as a fast-follower, buying access to apps that enter the market, and integrate them into their platform or create similar products.

Chapter 6 – Conclusion

The objective of this thesis has been to study the challenges and possibilities that FinTech companies bring to the banking industry as a result of PSD2. In this chapter we summarize and conclude our findings.

In this thesis we have visited topics such as the PSD2, FinTech, digital platforms, business models, infrastructure, and game theory. Historically, there has been little development in terms of competition in the banking industry, where the banks have had the same value proposition with little to differentiate themselves from other banks. The introduction of PSD2 is likely to change all that. Now the banks have to apply APIs to their business, meaning that third-party actors can access their customer data and perform tasks for the bank's customers without involvement of the banks. This means that the game has changed. There are new rules that create new players which affects value added, which in turns affects tactics and scope. The Norwegian banking industry has a successful history when it comes to cooperating in building banking infrastructure, dating back to 1991 when they established a common, electronic payment solution for trading on physical ground. Most recently the banks cooperated in the creation of the friend payment app Vipps.

There is a big difference between the large and small banks. Our conclusion is that the small banks do not do enough when it comes to developing their business model. The small banks make use of a buyer culture, where they see what is coming on the market and place an order for their IT supplier. It is to our belief that the banking industry is too large, where in the future there will be no use for as many banks as we have today. The banks that will disappear are likely to be those that do nothing to stand out. The small banks use the same strategy to "stand out", which is the do-nothing approach. These banks will be under constant pressure by new FinTech companies attacking their entire value chain. We recommend these banks to transform into niche banks specializing by targeting particular customer segments, since they do not have the resources to compete with larger banks. Another tactic would be aiming to become an infrastructure provider.

On the other hand, the large banks are more aggressive when it comes to developing their business models and they have the capacity to allocate large amounts of resources to it. The future banks will be much more based on platform thinking. The banks must continue to

develop their platforms in the form of mobile banking. Today's mobile banks have few solutions and products. Our recommendation is that the banks use the "thin, open platform" business model presented by Robinson where the banks take a competitive advantage by retaining their core products and at the same time give access to third-party suppliers. This business model will seek to create a "marketplace" where everything can be done in the app, creating a network effect.

PSD2 has opened for two new types of players on the market, PISPs and AISPs. The banks have successfully achieved a first mover advantage on the PISP market and created a strong barrier for FinTech companies to penetrate the market with their collaboration with Vipps. However, the banks have not achieved anything in the AISP market. It is our belief that they should act fast and create new solutions on their platforms before the FinTech companies establish themselves.

Limitations

In common with applied research more generally, this thesis has limitations that need to be considered, particularly in future cognate research endeavors. The thesis is based on the perspective of bank employees, rather than FinTech employees. The purpose of the thesis is to explore the threats and opportunities that are generated because of PSD2, although factors such as security risks are not addressed. This thesis has been based on banks operating in Norway and whilst there may be scope for cautious generalization to Nordic countries more generally because of macroeconomic and institutional similarities, any generalization further afield is likely to be problematic. However, importantly, the biggest limitation of this research is that PSD2 is new and came into force only very recently. As such, the thoughts and opinions of interviewees regarding the threats and opportunities posed by PSD2 could be highly speculative.

Further Research

Upon completing the study, we see that further research in other areas around PSD2 may be relevant. We recommend new research on the topic from the perspective of FinTech companies. One of the respondents from our interviews informed that the perceived pressure for digitizing the business model does not come from the customers. Rather, from within. Thus, we suggest more research on the consumer's expectations of the future bank.

Securing customer data is an essential factor for consumers to trust the financial industry. Third-party actors gaining access to the bank's customer data could lead to security risk. It is, therefore, necessary for more research on the security aspects regarding PSD2.

lastly, we recommend a similar study at a later point in time when PSD2 has been out for a longer time.

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Reflection Paper by Reidar Dalane Pedersen

The rapid technological development threatens the traditional bank's business model and leads to ever-increasing changes in the banking industry. This means that the banks must keep up with the changes to be up-to-date and competitive. Norway is at the top of the world when it comes to technological development in connection with banking services and spends many resources on growth and investment. However, there are substantial differences in different countries, and this is what PSD2 wants to change. The intention with PSD2 is to facilitate increased competition in the payment services market, promote innovation, and strengthen the security of online payment within the EU and EEA. This also opens for new players and thus increases the threat from FinTech companies and digital platforms for traditional banks.

We wanted to investigate the impact of PSD2, which led to the research question: "what are the challenges and potential solutions for established banks in competition with FinTech companies and digital platforms regarding PSD2?". From our findings, we see that FinTech companies are not considered as big of a threat as before. The banks are still looking at FinTech companies as competitors, but also partners. PSD2 forces banks to open their customer information to third-party providers and will lead to FinTech companies becoming even more significant competitors. However, from our findings, we can see that many of the banks envisioned a future where they collaborated with FinTech companies.

In the master thesis, we distinguish between large and small banks because it is evident that there will be different solutions. We explore in depth the various possibilities of business models and look at how a platform-based business model would work for a bank.

I believe the solution for larger banks will be a platform-based business model. If the larger banks transform into a platform-based business model and cooperate with the right FinTech companies, they will also be able to compete with the large international digital platforms. However, for a platform-based business model to have any value it is dependent on an extensive network of players. I don't think there is a need for as many banks in the future as we have today. Based on our findings, the smaller banks were evident that they wanted to

continue as a traditional bank. Furthermore, they believed that in the future, there would still be a market for customers who appreciated this. I believe that the smaller banks will become niche banks and strengthen those parts of the value chain, which is not as easy for FinTech companies and digital platforms to attack. However, I think it will be difficult for smaller banks to survive on a long-term perspective as younger generations expect the bank to be available on all platforms.

DNB first appeared on the market with Vipps, and the remaining banks followed with various options for payment services. It did not take long before the banks agreed to cooperate and became part-owner of Vipps. I believe that Vipps is a good starting point in the competition with new payment services. Because Vipps is well integrated among Norwegian consumers, and it will be difficult for new players to break through. Norwegian banks should continue to strengthen the infrastructure surrounding Vipps, but at the same time collaborate with new FinTech companies in the areas they see fit.

Internationalization

The thesis topics is relevant also internationally because PSD2 is an EU directive that regulates payment systems in the EU and EEA, which means that it affects all of Europe. Besides, in the future Norwegian banks may have to consider FinTech companies and large international digital platforms as their biggest competitor. We also see examples in today's market, where Norwegian banks collaborate with digital platforms. Several of the largest Norwegian banks are already cooperating with both Google and Apple, which can be a smart move. Because these are platforms that have tremendous international strength, and although Vipps is the largest payment service in the Norwegian market today, who knows who will be in the future.

Innovation

European regulators have identified how the banks limited attempts in bringing innovation to the payment's arena as a regional problem. As mention earlier, PSD2 facilitates non-banks to enter the market, which boosts Norwegian banks innovation of business models. PSD2 leads to opportunities for innovation as FinTech startups are investing heavily in developing new payment services. Banks are thus required to strengthen their position in the market, and we expect to see banks cooperate with FinTech companies that together develop new innovative solutions. A collaboration between a bank and a FinTech company may be a win-win

situation. As FinTech companies are associated with new innovative solutions, the banks, in return, have the customers and the opportunity to promote the newly developed payment service. This is also the concept of how a bank would have functioned as a digital platform. It is difficult to define the needs for new technology services. I think existing services are covering the gaps in the banking industry. However, new technological services are continually evolving, and soon will we adopt new innovative solutions that we did not know we needed.

Responsibility

With the introduction of PSD2, there is also a need for security measures. It is, therefore, essential to develop reasonable regulations, to avoid scams. To ensure data protection, banks are now obligated to provide application programming interfaces (APIs) to allow third-party providers access to their customers' accounts. However, it is not mentioned how they intend to achieve this, and we need to be critical of how safe this will be, and what risks will arise. Banks invest heavily in security, simply because their reputation is at stake. PSD2 is quite clear that banks will be responsible for the safety and the confidentiality of the customer data. The third-party providers do not consider security as much of a priority as banks, as they are not under the same scrutiny. However, to achieve risk mitigation, third-party providers will have to adopt the same standard of security as the bank.

PSD2 has only been implemented in Norway for two months, and it will be interesting to see what challenges and solutions this will entail for traditional banks going forward.

Reflection paper for Thomas Enge-Olsen

The subject we have chosen for this thesis is the competition in the banking industry. The EU's revised Payment Service Directive (PSD2) has led to significant changes in regard to game theory, which present challenges for the banks. We were interested in finding out how the banks react to these changes and how the new competition affects the banks.

Over the years, the banks at large have been very similar, where it has been challenging to separate the banks apart. FinTech Companies around the world has received substantial investments. Hence, there are emerging several players offering services from the bank's value chain. It is therefore essential that the banks make changes to their business models and does not clutch onto their old traditions. What has given you success in the past will not necessarily bring you success in the future. We have seen that there is a big difference in the mentality when it comes to large and small banks, where the small banks are hesitant to change out their traditions. The larger banks are more willing to make changes and engage in cooperation with various FinTech companies.

One of the major topics we have addressed in this thesis has been business models and digital platforms. I believe that the future banks will be based on digital platforms, where most of the customer contact the banks have with their customers go through the mobile app. PSD2 has made it easier for new players to compete with the banks. I believe that competition from FinTech companies will be more intense in the future. Furthermore, it will be necessary for the banks to engage in new thinking, collaboration, and prioritizing the development of their digital platforms.

Internationalization

One of the most significant changes that have come as a result of PSD2 is that new players can access the bank's customer information and do tasks for the bank's customers without the bank being involved. In Norway, several banks made their own payment app, but eventually, the banks collaborated on a standard solution, Vipps. Vipps was well received and gained significant market shares. One of the main objectives of PSD2 is to facilitate cross-border trade. In terms of internationalization, other companies can enter the Norwegian market, and possibly take market shares from Vipps. The implementation of PSD2 is still relatively new, both in the EU and the EEA. It will be interesting to see if Vipps will make it in the future

when more players have entered the market. On the other hand, PSD2 provides opportunities for Vipps to expand internationally.

Innovation

PSD2 also opens for other players to analyze the customer information for the customers. This market has not yet taken off, neither among the banks nor with FinTech players. It will be interesting to see who wins the market share in this area. I think it will be necessary for the banks to develop their mobile apps so that they can offer solutions to their customers. The apps should have both the banks own products and products made from FinTech companies. According to previous research, the most significant innovative advances in the finance industry does not come from the banks. As we discovered from the interviews, the smaller banks engage in a buyer culture, where they place orders from large IT-companies. FinTech innovation and start-up activities have received significant investments in recent years. It will be interesting to see if FinTech companies will pose a threat to the bank's IT-suppliers in the future.

Responsibility

PSD2 covers a broad specter of areas; for this thesis, we have chosen to exclude the field of data security. However, it is an essential aspect of PSD2. The banks have a high priority in security and compliance, and the general public has high confidence in the banks (even after the financial crisis). Although one of the objectives of PSD2 is to facilitate safe and secure transactions, implementing APIs to the banks could lead to potential security breaches. The banks are responsible for the confidentiality and safety of customer data. It will be interesting to see if the start-ups and FinTech companies have the same priority of securing the data and if there will be security scandals resulting from PSD2 in the future.

Appendix

Appendix 1 - Interview Guide

Introduction:

This interview will be part of our data collection for our master thesis. The task is about the impact of PSD2, and what is needed to succeed in the competition with companies that rely on a platform-based business model. Therefore, we want to ask about your perception of business models and how it is prioritized in your company.

- You will be anonymized.
- You can withdraw at any point and refuse to answer the questions.
- You will be sent a summary of the interview so that you can approve/disapprove.
- Is it okay that we use audio recording? The raw data will only be used by us.
- Do you have any questions before we start?

Transitional Questions

Tell a little about yourself and the business.

- What position do you have?
- What are your responsibilities?
- How long have you been with the company?

Perception of business model

In order to best identify your business model, we are going to ask some specific questions about the business.

a. Customer segments
    i. Who are your customers?
b. Channels
    i. How do you reach your customers?
c. Customer relationship
    i. How do you acquire customers?
    ii. How do you keep them?
    iii. How do you boost sales?
d. Key partnerships
    i. The network of suppliers and partners.

ii. Strategic alliances between non-competitors
iii. Coopetition, strategic alliances partnerships between competitors

e. Cost structure
    i. Most important costs?

Technological development

1. How widespread do you think digital transformation is in your industry?
2. Which part of the company is under the strongest technological development pressure?
3. Do you consider other banks or brand-new players as the main competitor?
4. Who is your biggest competitor in a 10-20-year perspective?
5. What are you doing to accommodate the technological changes?
6. How ambitious is your business?

FinTech and Digital Platforms

1. Digital platforms such as Apple, Google, and Facebook may become major competitors for Norwegian banks. What actions have your company taken to meet this challenge?
    a. Which critical factors do you consider important to achieving success?
    b. Do you have any strategies or plans to face these future challenges?
2. Do you look at FinTech companies as competitors or potential partners?
3. What are your biggest challenges in relation to FinTech companies?
4. Do you use resources on new innovative solutions ahead of any FinTech companies?
5. What opportunities can arise as a result of cooperation with FinTech companies?
6. Have you considered partnerships with FinTech's and third-party providers to find new business solutions?

PSD2

1. What challenges can arise for the traditional bank as a result of the new PSD2 regulations?
2. What are you doing to meet these challenges?
3. What opportunities can occur as a result of PSD2?

Digital Transformation of Business Models

1. How do you think technology can affect the business models in your industry?
2. What opportunities or challenges can this provide?
3. How will a development of the business models help to reduce the challenges posed by FinTech and digital platforms?
4. Do you feel the pressure do digital transform the business model?
5. Do you think the potential competition from digital platforms is increasing the pace to digital transform the business model?
7. Is digital transformation of the business model a high priority in the company?
8. How important is the digital transformation of the business model for your company's competitiveness over the next few years?

Infrastructure

1. How important is the infrastructure of Norwegian banks in term of competition from foreign suppliers?
2. What measures do you take to strengthen the infrastructure from FinTech and digital platforms?
3. Do you see any infrastructure challenges?

Is there anything you want to add to the interview?

Appendix 2 – Consent Form

Are you interested in taking part in the research project?

" The impact of PSD2"

This is an inquiry about participation in a research project where the main purpose is to give an insight into how PSD2 affects the banking industry. In this letter we will give you information about the purpose of the project and what your participation will involve.

Purpose of the project
The purpose of this research is to investigate how the new regulations, PSD2, and the increased competition in the market will affect banks' viability given a changing landscape which is increasingly populated by FinTech companies and digital platforms. Furthermore, we seek to identify which opportunities and challenges this will entail for the traditional banks.

Who is responsible for the research project?
The responsible institution for the project is the University of Agder, school of business and law.

Why are you being asked to participate?
The sample consist of various banks in Norway. The criterion for the selection is that the company is a bank that is in competition with FinTech companies and digital platforms.

We have received your contact information either directly from their website or from a member of staff in their company.

What does participation involve for you?
The method of research used is interview. The information will be obtained using audio recordings that cannot be connected to the internet. If you chose to take part in the project, this will involve that you participate in an interview. It will take approx. 45 minutes. The interview includes questions about how PSD2 affects the banking industry.

The selection consists of several companies from the same industry. Participation means the same for each company.

Participation is voluntary
Participation in the project is voluntary. If you chose to participate, you can withdraw your consent at any time without giving a reason. All information about you will then be made anonymous. There will be no negative consequences for you if you chose not to participate or later decide to withdraw.

Your personal privacy – how we will store and use your personal data

We will only use your personal data for the purpose(s) specified in this information letter. We will process your personal data confidentially and in accordance with data protection legislation (the General Data Protection Regulation and Personal Data Act).

- The access to the data will be limited and only availibe to, Thomas Enge-Olsen, Reidar Dalane Pedersen and supervisor Andreas Erich Wald.
- Names and contact details will be replaced with codes. The list of names, contact details and respective codes will be stored separately from the rest of the collected data. The data will be stored on a research server provided by the University of Agder, where the data will be locked away and encrypted.

What will happen to your personal data at the end of the research project?
The project is scheduled to end [03/June/2019]. At the closure of the project, the data collected and stored on the servers will be deleted.

Your rights
So long as you can be identified in the collected data, you have the right to:

- access the personal data that is being processed about you
- request that your personal data is deleted
- request that incorrect personal data about you is corrected/rectified
- receive a copy of your personal data (data portability), and
- send a complaint to the Data Protection Officer or The Norwegian Data Protection Authority regarding the processing of your personal data

What gives us the right to process your personal data?
We will process your personal data based on your consent.

Based on an agreement with *School of business and law University of Agder,* NSD – The Norwegian Centre for Research Data AS has assessed that the processing of personal data in this project is in accordance with data protection legislation

Where can I find out more?
If you have questions about the project, or want to exercise your rights, contact:

- University of Agder vi the students: Thomas Enge-Olsen thomae13@student.uia.no, +47 415 11 041 and Reidar Dalane Pedersen, reidap11@student.uia.no, +47 472 41 435. Via supervisor Dr. Andreas Erich Wald, andreas.wald@uia.no, +47 957 32 342.
- Our Data Protection Officer at the University of Agder: Ina Danielsen, ina.danielsen@uia.no, +47 452 54 401
- NSD – The Norwegian Centre for Research Data AS, by email: (personverntjenester@nsd.no) or by telephone: 55 58 21 17.

Yours sincerely,

Project Leader

Student (if applicable)

(Researcher/supervisor)

Consent form

I have received and understood information about the project *[insert project title]* and have been given the opportunity to ask questions. I give consent:

- ☐ to participate in an interview

I give consent for my personal data to be processed until the end date of the project, approx. *[insert date]*

(Signed by participant, date)