

NAVIGATING THE ERA OF OPEN BANKING

THE OPPORTUNITIES AND THREATS OF OPEN BANKING - A CASE STUDY OF NORDEA AND THE OPEN BANKING ECOSYSTEM

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Abstract

Regulatory changes and shifts in technology enabled the rise of Open Banking. In this paper, we examine the opportunities and threats implied by Open Banking on traditional banks and the strategies on how to navigate the era of Open Banking, using Nordea as an example. To get a differentiated perspective on our research questions, we conducted 20 in-depth interviews with various stakeholders in the Open Banking ecosystem. In these interviews, we recognized five major opportunities of Open Banking for traditional banks. These are premium APIs, embedded finance, account aggregation, data analytics, and trust. Furthermore, the five key threats we uncovered are increased competition in payments, losing the customer-facing position, technological change, data security, and fraud concerns. Lastly, we identified four strategies to navigate the era of Open Banking; to comply, compete, expand, or transform, and provide examples of these strategies in practice. The interviewees suggest taking an offensive strategy where banks seize the opportunities, manage the threats, and consider future regulations.

Keywords: Open Banking, PSD2, FinTech, Banks, Finance, APIs, Strategy

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1. Introduction

When speaking about Open Banking, Gunnar Berger, head of Open Banking at Nordea noted that “This change is as big as when the internet came to banking.” (Bloomberg, 2018). In another interview, Berger predicts the following: “The relationship between the bank and the customer will change forever.” (Brusnahan, 2018).

These reactions were caused by the introduction of the revised Payments Services Directive (PSD2) on January 13, 2018. With this new regulation, the European Commission aims to promote competition by allowing third parties to initiate payments and offer other financial services by directly accessing a customer’s bank account (Reuters, 2018). PSD2 triggered the start of Open Banking in Europe. In essence, Open Banking refers to providing third parties access to bank data and services. This access is often made available through Application Programming Interface (API) technology, which enables different IT systems to exchange information (Nordea, 2023). The upcoming PSD3 regulation will remain focused on payments and provide further clarifications and harmonization, while the upcoming Open Finance regulation intends to bring similar ideas to more financial services, such as insurance. Since the introduction of Open Banking, banks face a changing landscape that provides opportunities to some, and threats to others (Kearney, 2019).

The market size of Open Banking in 2023 is valued at \$25.1bn, which comprises the total revenue of all Open Banking services globally. This market is expected to grow at a compound annual growth rate of 27.2% from 2023 to 2030 (Grand View Research, 2022). In the United Kingdom alone, there are 200 companies and 70 account providers that offer products and services based on Open Banking (Thomas, 2023). The significance of Open Banking can also be seen in M&A activity and valuations in the Open Banking space. For instance, the payments giant VISA agreed to buy the by-then Open Banking Startup Tink for €1.8bn (Tink, 2021) in 2021.

There is literature on the concept of Open Banking (Laplante & Kshetri, 2021), its underlying technology (Zachariadis & Ozcan, 2017), implied opportunities and threats, e.g. Brodsky and Oakes (2017), strategies on how to approach Open Banking (Cortet, Rijks, & Nijland, 2016), and its impact on competition (Babina, Buchak, & Gornall, 2022). However, one must consider that Open Banking is a relatively new topic and therefore there has not been a lot of research done on the topic.

There are two gaps in the existing literature that we will contribute to with our research. Firstly, while previous research on opportunities and threats was either written before the introduction of PSD2 or focused on consumers, we would like to look at the opportunities and threats as they exist for traditional banks as of today, more than five years after the introduction of PSD2. Since the regulation has come into effect, new technologies have surfaced, and customer preferences may have changed. Therefore, opportunities and threats may look different today. Secondly, there was no geographical focus on a traditional bank in the Nordics yet. We chose Nordea Bank AB as our case study since they are the leading Nordic bank when it comes to Open Banking development (INNOPAY, 2022). Nordea is an early adopter of Open Banking and provides our thesis with an in-depth view of the compliance and commercial side of Open Banking, as well as practical examples.

To display the opportunities and threats that a traditional bank in the Nordics faces in the era of Open Banking, this research paper will answer the following research question:

How can traditional banks like Nordea navigate the era of Open Banking?

To answer this question, we explore three sub-questions.

(i) What are the opportunities of Open Banking for traditional banks?

Five major opportunities of Open Banking are discussed for traditional banks. Firstly, banks can provide premium APIs, which are APIs that enable more services than required by the PSD2 regulation. The provision of premium APIs can yield several benefits for banks. Additional revenue can be generated either directly, by charging per API call, or indirectly. Indirect revenue can be made when the premium API provides an underlying service, such as FX trades. Moreover, premium APIs can strengthen the customer relationship as the APIs can help customers save time by automating procedures. Secondly, banks can benefit from embedded finance by embedding their financial services in the platforms of others. As a result, a new distribution channel is created for the bank. This new distribution channel can be used to provide financial services to customers that the bank normally does not encounter in their channel. Thirdly, banks can become the financial hub for customers through account aggregation. Account aggregation allows banks to provide an overview of all financial accounts that a customer has. Through account aggregation, the bank can provide the customer with a superior customer experience as customers no longer have to log into multiple platforms. Consequently, the customer-facing position of the bank and the opportunity for cross-selling

can be retained. Fourthly, data analytics can allow banks to provide helpful tools and better services to their customers. Data can be used to provide quicker and more informed credit decisions and identity verification, as well as personal insights and financial coaching that can help customers save money. Lastly, traditional banks have an advantage over FinTechs as banks are generally more trusted. Traditional banks can leverage this advantage by obtaining more data and offering services instead of third parties.

(ii) What are the threats of Open Banking for traditional banks?

The case presents five threats that Open Banking poses to traditional banks. First, banks could lose market share in the payments industry to new players. Since the introduction of PSD, around 500 new FinTechs have entered the payments domain. This may have a negative effect on the revenue and margins of traditional banks, such as Nordea, which experienced a 17.9% decline in revenue for payment services from 2019 to 2022 (Appendix IV). Second, the customer-facing position of banks may be lost. Therefore, the opportunity to cross-sell may be lost. Third, banks may find it challenging to cope with technological change. Technological change requires significant investment. Banks that just choose to comply with the PSD2 regulation, without pursuing any commercial angles, need to invest in API infrastructure at no direct benefit to them. Furthermore, it is suggested that FinTechs are generally faster and better at implementing new technologies. As a result, banks could risk losing business if others capitalize on the new technology first. Fourth, there are concerns surrounding data security. Sharing data with external parties creates a possibility for data breaches and scandals. In the event of a data breach, the bank could suffer significant damage to its reputation. Lastly, Open Banking technology can be leveraged by fraudulent players. As Open Banking facilitates near-instant payments, defrauded funds can disappear quickly, leaving banks with no time to react. Previously, funds moved through the clearing system, allowing banks to intercept defrauded funds. As this is no longer possible, the cost of fraud has gone up significantly.

(iii) What strategies can traditional banks take to succeed in the era of Open Banking?

To navigate the era of Open Banking, four strategies are identified. Firstly, banks can choose to comply, which means banks will fulfill the minimum requirements of the regulation and not pursue any opportunities. We found that this option is not recommended, as banks would face compliance costs without any benefit to the bank. Secondly, banks can choose to compete by offering payment initiation and account information services as well. One way

this can be done is by offering account aggregation services. Thirdly banks can choose to expand by offering third parties access to more bank data and services than is required by the regulation. This can be done through premium APIs and embedded finance. Fourthly, banks can choose to transform when they combine all previous strategies. In our case about Nordea, we find that the bank has characteristics of this strategy. However, the right strategy may differ across banks, as it depends on the bank's business model and future vision. Finally, our interviewees suggest that banks should seize the opportunities and manage the threats that Open Banking poses, while also considering upcoming regulations.

We have chosen an exploratory, qualitative case study to approach our research question. Our main sources were interviews. We complemented the learnings from the interviews with existing literature and other external sources. Especially the interviews allowed us to get a deep understanding of various perspectives in the Open Banking ecosystem. The main limitations of our study are a possible bias and results that may not be generally applicable to other institutions. We ensured validity and reliability with triangulation.

Following the introduction, our thesis will first review the existing literature. Secondly, the methodology of our thesis is described. Thirdly, our case study will be presented. In the case, we start with an overview of the regulation, Open Banking, and Nordea. Following this introduction, the opportunities of Open Banking are described. Then, the threats of Open Banking are identified. The case concludes with a discussion of the upcoming PSD3 and Open Finance regulation. Fourthly, the findings of our case will be discussed. Lastly, we will finish with our conclusion.

2. Literature Review

In this chapter, the literature on Open Banking will be reviewed. Firstly, the section will discuss prior research on the opportunities and threats of Open Banking. Secondly, four strategies for banks to confront the PSD2 regulation are identified. Lastly, Open Banking's effect on competition will be evaluated.

2.1 Opportunities and Threats in Open Banking

Open Banking changes the competitive landscape of payment services and poses several opportunities and threats to banks, FinTechs, and consumers. This section will discuss the opportunities and threats already identified by the literature and will conclude with the limitations of the reviewed literature.

Open Banking can create several opportunities for traditional banks. According to Brodsky and Oakes (2017), Incumbent banks can create new services to generate more revenue. For instance, predictive analytics and artificial intelligence can be used to improve customer experience. Gozman, Hedman, & Olsen (2018) identify a similar opportunity and suggest that banks can provide improved data analytics by aggregating customer data from accounts held at other institutions. Moreover, banks can offer their services to clients at other banks or third parties and thus create a new revenue channel. This has become easier as banks can access customer data from other parties. Know Your Customer (KYC) and Anti-Money Laundering (AML) procedures may also be improved by using data from other institutions. This may improve efficiency and help prevent fraud. Additionally, banks can leverage the trust they have as a large financial institution to limit the potential loss of business to third parties. Between incumbent banks, a first-mover advantage is open to an organization that is first to deliver innovative services to customers (Brodsky & Oakes, 2017). As a result, the first-mover can establish brand recognition in the Open Banking space.

Likewise, consumers can also benefit from Open Banking. In a recent study by Nanaeva, Aysan and Shirazi (2021) several advantages for consumers are identified. Firstly, aggregation of all financial data of a customer enables the customer to better manage their financial products. Moreover, customers can more easily switch between financial products, allowing them to choose the best value proposition for them. Furthermore, increased competition in the industry may reduce transaction costs and improve efficiency.

On the other hand, there are several threats that Open Banking poses to traditional banks. The primary goal of the PSD2 regulation is to increase competition and innovation in payment services within the EU by providing account access to third parties. Access to these data flows is often viewed as more of a threat than an opportunity by banks (Brodsky & Oakes, 2017). When third parties use this data to provide services to the bank's customers, there is a risk that the bank may lose brand recognition. Gozman, Hedman, & Olsen (2018) identify this risk as well, calling it the threat of disintermediation. They argue that the direct access that third parties now have to the banks' customers may affect the ability of the bank to retain said customers. Moreover, banks may face margin pressure or lose revenues when more third parties enter the market due to lowered barriers of entry. In addition, banks are required to invest in the infrastructure that facilitates this increased competition (Brodsky & Oakes, 2017). While at the same time, banks cannot charge parties for the use of this infrastructure when it is used for compliance.

Furthermore, there is a security and reputational risk to the bank. When sharing customer data with third parties, the chances of fraud and misuse increase. Customers tend to have strong confidence in the banks' ability to protect their data (Gozman, Hedman, & Olsen, 2018). For this reason, the banks may be the ones receiving the complaints when a third party is responsible for a data breach or fraudulent transaction (Basel Committee on Banking Supervision, 2019). To protect their reputation, banks need to navigate the security risks that exist when third parties access bank data. Thirdly, Open Banking presents transformational challenges for banks. Banks need to provide and invest in the API infrastructure that is required for third parties to access their data. Furthermore, investments need to be made to address security concerns that may arise when sharing data with third parties. These investments cause banks to encounter cost pressure.

A limitation of the opportunities and threats that are previously discussed is that PSD2 is a new regulation that was not yet in use when most of these studies were written. New opportunities and threats may have surfaced since, and there may be opportunities and threats that are no longer relevant. Therefore, it may have been too early to tell what effect Open Banking may have on the competitive position of incumbent banks. This thesis will contribute a recent outlook on the current opportunities and threats that banks face because of Open Banking.

2.2 Strategies in Open Banking

The paper by Cortet, Rijks, and Nijland (2016) argues that the introduction of PSD2 legislation may lead to serious disruption for traditional banks. In response to this, four strategic options are identified that banks can choose to navigate the changing business landscape. The four strategies that are described are:

Comply. This strategy implies that banks will focus on PSD2 compliance only. The data that is shared with third parties by banks is minimal and does not go beyond the requirements of the regulation. When choosing this option, compliance costs are incurred that are not offset by an increase in revenue.

Compete. With regards to sharing data, this option is similar to the first option. However, an offensive strategy is employed where banks offer innovative payment initiation and account information services. For example, banks can provide an aggregated view of a customer's finances across multiple banks. This allows banks to compete with third parties and help offset the compliance costs incurred from the regulation.

Expand. This strategy goes beyond compliance where the bank becomes a platform that provides access to more data and services through APIs than is required. This can create new revenue streams for the bank. For example, banks can monetize their “*Know Your Customer*” (KYC) and “*Anti Money Laundering*” (AML) information to provide digital identity authentication services to third parties.

Transform. This option combines all previous strategies. The bank will compete with third parties on front-end services such as payment initiation, but also share more data than what is required by regulation through their API platform. The bank will become a multi-sided platform that facilitates its own innovative financial services as well as that of third parties. When monetizing their API platform, banks create a new revenue source.

All strategies affect the business model of the traditional bank in some way. The right strategy depends on the banks' desired position in the value chain and its future ambitions. Nevertheless, banks may need to act quickly to retain their dominant position in the market.

2.3 Early Evidence on Competition

Babina, Buchak and Gornall (2022) explore the effects of Open Banking policy and argue whether the policy achieves its goal of improving data access, promoting new entrants, and increasing competition in payment services. Firstly, the improvement in data access is

researched by looking at the prevalence of APIs. In countries that have adopted Open Banking policies, banks have twice the API offerings as countries that did not enact such a policy. Secondly, the improvement in competition is assessed by measuring venture capital (VC) investments in FinTechs. It was found that there is a significant correlation between Open Banking policy and VC investment in FinTech. Thirdly, the evidence for increased competition remains inconclusive. Lastly, Open Banking reduces the value that banks gain from their data, this reduces their incentive to produce that data.

He, Huang, and Zhou (2022) find that Open Banking can affect competition. Notably, the study highlights that competition can be hindered if FinTechs gain too much power. This is because, when one lender has a screening ability that is significantly stronger than the other lender, the weaker lender may offer fewer loans. As a result, the lender with the better screening ability can gain monopoly power, increasing lending rates. Traditional banks are thought to have the better screening ability between them and FinTechs given that the banks have more data. However, FinTechs can have access to this data through Open Banking, and if they have superior data analysis, they may surpass the bank in screening ability. If the gap in screening ability becomes large enough, competition may suffer. While this study provides some perspective on how screening ability may affect competition, the study does not assess the long-run effect of Open Banking on competition. It would be likely that banks would attempt to catch up once their profits start falling.

Sharing data can have positive and negative effects on the welfare of consumers. On the one hand, FinTech can use data to create new products, improve their quality and increase competition. On the other hand, data can be used for price discrimination. Customers that are considered high-risk may only be able to do business with uninformed FinTechs. Open Banking removes this adverse selection problem. However, high-risk customers that may originate from underprivileged populations will have to pay more for their loans, harming financial inclusion (Parlour, Rajan, & Zhu, 2021). Opting out of sharing data may not be a solution, as this can also send a negative signal to the loan provider.

3. Methodology

3.1 Methodology Choice

Our thesis aims to answer the research question “What are the implied opportunities and challenges for traditional banks”. For two reasons, we chose an exploratory and qualitative case study as our methodology to answer our research question. Firstly, a case study is defined as “an empirical inquiry that investigates a contemporary phenomenon (the case) in depth and within its real-world context” (Yin, 2009). Secondly, a case study inquiry “copes with the distinctive situation in which there will be many more variables than data points as one result” (Yin, 2009). This seems well-suited to our qualitative research question on the relatively new phenomenon of Open Banking.

To approach the research question we conducted semi-structured, in-depth interviews. Semi-structured interviews are interviews that are prepared with a list of questions, however, depending on the response of the interviewee, questions were skipped, elaborated on, or added. We used this method since it makes interviews more flexible and it enables open-ended questions with the opportunity to ask follow-up questions, leading to more in-depth answers. While it would have been easier to classify and compare answers by having the same questions for all interviewees, we believe that due to time constraints and the explorative nature of our thesis, it made more sense to get unique in-depth insights by asking follow-up questions (Bell, 2022).

3.2 Data Collection

3.2.1 Interviewee Selection and Contact

Case study research is “a linear but iterative process” (Yin, 2009). Hence, we started our thesis by scheduling one interview, with Gunnar Berger, the Head of Open Banking at Nordea. Based on the outcomes of this first interview, we reached out to further potential interviewees, and scheduled interviews with those who agreed to conduct an interview with us. We aimed to get an in-depth view of Open Banking from the perspective of one traditional bank that is affected by Open Banking, and, at the same time, we wanted to understand the perspective from the Open Banking ecosystem about our research question.

To get an in-depth view of the research question, we interviewed six employees at Nordea, all of them working directly with Open Banking or being affected by the topic of Open Banking in their day-to-day job. Angles that we touched included legal, partnerships, mobile

banking, and API sales. To validate and supplement these views, we conducted interviews with a representative selection of participants in the Open Banking ecosystem – Nordea, a bank as an account provider (6 interviewees), technology service providers (1), FinTechs that act as third party providers (3), and regulators (2). Besides the participants in the ecosystem, we spoke with strategy, technology, and legal consultants (5) who are experts on the topic of Open Banking. Doing so helped us to get an outside perspective, validate other interviewees' contributions, and make the thesis more objective. In total, we conducted 20 interviews with 18 interviewees. An overview of all interviewees can be found in table I, a detailed overview of all the interviews and how they were conducted can be found in Appendix II.

Table I
Overview of interviewees

The table shows an overview of the interviewees in the case study. Company and role reflect the role the interviewees had at the time of the case.

Interviewee	Company and role
Gunnar Berger	Nordea, Head of Open Banking
Ulrika Claesson	Nordea, Head of Open Banking Solutions
Sanela Dulic	Nordea, Head of Open Banking Platform
Anders Nicander	Nordea, Head of One Digital
Kristoffer Jansell	Nordea, Director
Anja Kögel	Nordea, Senior Legal Counsel
Lovisa Stenbacka	EY, Management Consultant
Lucas Veldkamp	EY, Senior Technology Consultant
Karin Sancho	KPMG, Head of Financial Services & Partner
Matthias Lange	McKinsey & Company, Co-Head FinTech & Partner
Johannes Gärtner	Strategy&, Director
Eric Ducoulombier	European Commission, Head of Retail Finance
Mia Bjurkell	Ark Kapital, Risk & Compliance Manager
Sarah Häger	Enable Banking, Regional Manager
Dadmehr Fatehi	Insurely, VP Banking & FinTech
Fiammetta Leuzzi	Tink, Strategy Manager
Mikael Lundberg	ZTL, Managing Director Sweden
Anonymous	Employee at a Nordic bank

We contacted our interviewees via email, LinkedIn, or by talking to them at the Stockholm FinTech Week (2023, February 15-16). The most effective method was approaching potential interviewees in person at the Stockholm FinTech Week, or being referred or introduced by a previous interviewee, whom we asked to recommend further interviewees. Even though we found a lot of great interviewees by putting a lot of effort into a personalized way to contact them, many other potential interviewees did not respond to our request.

3.2.2 Setting and Conducting the Interview

Setting

Interviews were either conducted online via the video conferencing tools Zoom, Microsoft Teams, and Google Meet – or in person at the office of the interviewee, or at our university. Meeting online was usually the preferred option by our interviewees. It was time efficient and low effort for interviewees, and easy to transcribe for us since this enabled the best possible sound quality for our recording. However, meeting in person created a better connection with the interviewee. For instance, interviewees seemed to be far more willing to agree to longer interviews of 60+ minutes and were happier to introduce us to further interviewees (Olliffe, 2021).

Interview Guide

Following the instructions from Jacob et al (2012), and doing iterative improvements, we prepared our interview guidelines before each interview and improved them afterward. We generally started interviews by building trust with small talk based on background information about the interviewee, we introduced ourselves, clarified the goal for the interview, gave context, asked for permission to record the audio of the interviews to transcribe them later on, and made them aware that we will send them any quotes so they could have the opportunity to remove or edit them before we publish them in our thesis.

In the main part of the interview, we asked every interviewee what they consider to be the opportunities and threats implied by Open Banking for traditional banks. Further questions were mostly adjusted to the role of the interviewee. Moreover, we asked open-ended questions, to explore what was in the interviewee's head and to learn about the interesting experiences and opinions (Jacob, 2012). We finished the interview by mentioning the next steps and asking if there was something missing that the interviewee would like to talk about. A detailed interview guideline can be found in Appendix III.

3.3 Processing the Empirical Data

During the interview, we took notes and transcribed the interview with an AI tool. After the interview, we optimized the AI-generated transcripts with the audio recording or transcribed them from scratch if the quality was low. Then we made summaries based on the transcripts and our notes. Quotes were sometimes slightly adjusted to make them easier to read. Drafts of their quotes were sent to the interviewees so they could edit or remove them, which some interviewees did.

3.4 Discussion of the Method

According to (Yin, 2009), good case studies share the characteristics of reliability and validity. However, (Yin, 2009) mentions critics who suggest that case studies may not always fulfill these criteria. Firstly, in the past, many case studies have lacked rigor in their research which led to biased results influencing results. There could be, for instance, a self-selection bias. Some groups of the contacted interviewee candidates may not have wanted to share their insights with us, and we could only learn from those who did. To encounter biases, we followed systematic procedures, carefully prepared interviews, and diligently documented our findings. Secondly, it is difficult to scientifically generalize case studies. For instance, most of our interview partners are from Sweden. That leads to two possible mis-generalizations.

Firstly, Open Banking is developing differently in different regions around the world, mostly due to different drivers, and different regulations. Sweden is the third most digitally progressive country in the EU (European Commission, 2021). That might lead to biases in the interviewees' mindset and views on possible Open Banking use cases. For instance, there is BankID in Sweden, which can be used to identify one's identity for various purposes like renting a car by using a bank account in Sweden. Identification might therefore not be an important use case in Sweden, but very important in other countries and regions. Secondly, it may be difficult to generalize because our findings may change with time since technological progress continues, Open Banking adoption increases, and regulation changes over time. One possible way to solve the generalization problem could be to conduct multiple case studies, with the goal of broadening and generalizing theories. Anticipating the second issue, we talked about how the introduction of Open Banking was perceived, how interviewees think about Open Banking today, and what interviewees expected from the future – namely Open Finance.

Historically, a common criticism is that case studies were too long or too elaborate. While writing, we consolidated the most important information and focused on the key takeaways. Also, we kept interviews efficient with meetings geographically close to the authors or via Zoom. Moreover, case studies are not well suited to explain causal relationships. We do not consider this to be a concern since we focus on exploring new insights and the research questions and consolidating them.

To improve the quality of our thesis, we improved the validity and reliability with several tactics. We applied triangulation to guarantee the construct validity. We did so by comparing findings from different sources. We started doing so by comparing our findings from the interviews with external sources and consultants' outside-in perspectives on the topic. Next, we compared the findings of different stakeholders of the ecosystem, such as banks and FinTechs. Finally, we compared our findings from the interviews with findings in academic literature. To improve reliability, we checked for consistency in the interviewees' responses and carefully collected and documented our data (Yin, 2009).

4. Case Introduction

In this section the case of Open Banking at Nordea will be introduced in four sections, starting with a background on the regulation that has initiated the Open Banking era. Second, the concept of Open Banking and its technology is explained. Third, an overview of the Open Banking ecosystem and its adoption is given. Lastly, Nordea is introduced, and its Open Banking strategy is described.

4.1 Background: Regulation

The regulation plays an important role in the Open Banking space, as it acts as a main driver of change and sets the rules that the market participants need to adhere to. The European Union intended to create a single market for payments within Europe through regulation. This regulation was meant to foster innovation and increase competition in the financial services industry. In the following subsections, the two payment service directives and the Open Banking technology will be described.

4.1.1 Payment Services Directive 1

In 2007, the first Payment Services Directive (PSD1) was introduced. The regulation established a legal foundation for safer and more innovative payments in the European Union single market (European Commission, 2018). Prior to this directive, cross-border payments were slow, costly, and complex due to the different payment systems used within the European Union (Claussen & Pedersen, 2022). The PSD1 regulation aimed to improve this by making cross-border payments easier and more efficient within the European Union.

Since its introduction in 2007, the PSD1 legislation improved the European economy by promoting access for new market entrants, thus increasing competition and choice for consumers. PSD1 can also be credited for introducing the Single Euro Payments Area (SEPA). The SEPA standard resulted in cost-effective, simple, and secure cross-border transactions (HSBC, 2021). In addition, PSD1 can be credited for increased transparency and information for consumers and reduced execution times, with payments being often credited to the receiver within 24 hours (European Commission, 2018).

4.1.2 Payment Services Directive 2

In 2013 the European Commission recognized the need to revise and modernize the Directive as the payment landscape had evolved:

The commission observed that Open Banking service providers had emerged since the first Payment Services Directive. There was a need to bring these operators within a regulated framework because when they first emerged outside the law, they were facing a lot of hostility from the incumbent banks and by supervisors of some countries. So it was felt indispensable to regulate this new business of accounting information service provision and the payment initiation service provision. [...] It was also felt indispensable to further protect the integrity of payment transactions. This has led to the introduction of Strong Customer Authentication (SCA) to combat fraud and increase the security of payments.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

The second Payment Services Directive (PSD2) went into effect in 2016. The Directive expands on the regulation set out by PSD1 and brings Open Banking service providers into a regulated framework. Its primary objectives are to protect consumers, level the playing field so that new entrants can enter the market more easily, make payments safer, and contribute to an integrated and efficient European payments market. (European Commission, 2018). Payments are being made safer by the introduction of Strong Customer Authentication (SCA), which is a part of the PSD2 regulation. SCA requires multi-factor authentication for online payments. The multi-factor authentication requires two identifications out of three possible categories. The first category is something that the customer knows, such as a password. The second category is something the customer owns, such as their smartphone. The third category is a personal feature of the customer, such as their fingerprint. By combining two factors, SCA makes online payments more secure and less susceptible to fraud (Adyen, 2021).

We have already seen evidence that it [SCA] has achieved many of its goals to bring more safety and security in transactions, especially card-based transactions.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

The revised Directive includes new payment services in its scope. These new types of payment services include Payment Initiation Services (PIS) and Account Information Services (AIS). These are online services that, with the user's consent, access the user's payment account to initiate the transfer of funds on their behalf (PIS) or provide consolidated information on payment accounts held by the user (AIS) (Financial Conduct Authority, 2017). By including these in the scope of the Directive, transparency, security, and innovation in the European

single market may be improved. In addition, payment initiation services may lead to increased competition and lower prices by providing alternatives for Internet payments (European Commission, 2018). To be able to provide PIS and AIS services, the Payment Service Provider (PSP) must be authorized as a payment institution. A PSP can become authorized by applying to the respective authority in their home member state. The application requires several documents, such as a business plan, security procedures, risk assessments, and more. (European Banking Federation, 2019) If the payment institution wants to provide PIS services, it must also provide evidence of capital of no less than 50 000 EUR. Furthermore, as a condition of authorization, the payment institution must hold professional indemnity insurance that covers their service territories (European Parliament, 2015).

Once their application is approved, the payment institution is allowed to provide PIS and/or AIS services, depending on their authorization, throughout the European Union. If an individual wants to execute a payment transaction and provides its consent to the payment institution, the relevant credit institutions must provide access to their payment accounts that are extensive enough for payment institutions to provide their services in an efficient and obstacle-free manner (European Parliament, 2015).

4.2 Open Banking

In this section, we introduce the definition of Open Banking and its underlying technology.

4.2.1 Open Banking Definition

The definition of Open Banking may differ across geographic regions. Our thesis will use the European interpretation of the Open Banking definition. In Europe, Open Banking emerged from the PSD2 regulation. The concept of Open Banking generally refers to the access that authorized third parties have to a bank customer's account and payment data. Using this data, the third party may provide account information services (AIS) and payment initiation services (PIS). This data is accessed using Application Programming Interface (API) technology (Laplante & Kshetri, 2021). Access to this data may serve as the catalyst for lower barriers to entry, new features, and more innovative business models. Ultimately, this may improve competition in payment services and benefit the consumer (Brodsky & Oakes, 2017).

4.2.2 Open Banking Technology

While API technology is not directly mentioned in the PSD2 regulation, APIs are deemed to be a secure and reliable method to facilitate access to customer financial data for external

parties. In essence, an API is a way for two or more applications to interact with each other. One could imagine an API as an electric socket that other applications can plug into. There are several types of APIs, most notably, private, and public APIs. Private APIs are commonly used within banks to share information between teams. Unlike private APIs, public APIs are accessible by most parties and require little to no contractual agreements. Although terms and conditions provided by the API provider must be adhered to (Zachariadis & Ozcan, 2017). In the context of Open Banking, it is the public APIs that facilitate third parties to access a customer's bank data, and these customers must provide explicit consent to the third party before the third party can access their data.

4.3 Industry Overview

In this section, an overview of the Open Banking industry will be given. Firstly, the players in the Open Banking Ecosystem will be introduced. Secondly, the Open Banking market will be described in terms of size and competition.

4.3.1 Open Banking Ecosystem

The PSD2 regulation has created an Open Banking ecosystem with several players. First, the account providers can be referred to as account servicing payment service providers (ASPSP). This is the party that provides the data, such as banks and other financial institutions. Secondly, the third party providers (TPPs). These providers are generally referred to as PISPs and AISPs. TPPs can offer their PIS and AIS services using the data from the account providers. Thirdly, the Technical Service Providers. This party may provide the infrastructure for the transfer of financial data between those that provide the data and those who request it, such as aggregators. Lastly, the regulator plays an important role within the Open Banking ecosystem, as it defines the scope and rules of the services that may be offered (Open Banking Implementation Entity, 2023).

4.3.2 Open Banking Market and Adoption

In 2023, there is an estimated revenue of USD 25.14 billion in Open Banking services globally. The Open Banking market and the players within it are expected to expand substantially, as the market is expected to be USD 135.17 billion by 2030, implying an annual growth rate of 27.2% (Grand View Research, 2022). In Europe alone, the market size is expected to reach USD 48.31 billion in 2030, denoting an annual growth rate of 23.18% from 2021 to 2030 (Allied Market Research, 2022).

The adoption of Open Banking has accelerated around the world and particularly in Europe, driven by the PSD2 regulation. Nevertheless, there are differences within Europe when it comes to Open Banking adoption. In the United Kingdom, there are 200 companies and 70 account providers that offer products and services based on Open Banking (Thomas, 2023). Furthermore, the number of monthly API calls in the UK has risen from 139 million in 2019 to 977 million in 2022. The most popular feature that API calls are used for is financial decision-making, with over 60% of API calls being attributed to this use case (Strategy&, 2022). In a report by Yapily (2022), Sweden placed 3rd in a ranking of Open Banking maturity and adoption in Europe. Sweden achieved this result due to its highly developed digital infrastructure. Moreover, Sweden is home to one of the highest numbers of TPPs in Europe. According to data from the Swedish Financial Supervisory Authority, Sweden has 20 ASPSPs and 36 TPPs (Banq, 2023).

4.4 Open Banking at Nordea

In this section, an overview of Nordea and its approach to Open Banking will be described. Firstly, a brief background about Nordea is given. Secondly, Nordea's Open Banking strategy will be discussed.

4.4.1 History

Nordea is a financial services group headquartered in Helsinki, Finland. Nordea has a rich history with roots dating back to 1820 when a bank was founded under the name Sparekassen for Kjøbenhavn og Omegn. By 2001, through a series of mergers, over 300 banks have turned into one, incorporating under the name Nordea. The name is inspired by the words Nordic and Ideas, signifying Nordic values such as equality and openness, and the ability to develop ideas that create high-quality solutions (Nordea, 2023).

4.4.2 Open Banking Organisation and Strategy

Even before the PSD2 regulation was introduced, Nordea started working on API technology from a commercial perspective. Therefore, Nordea was not caught by surprise when PSD2 was introduced. We interviewed Berger who has led the Open Banking initiative at Nordea since its start in 2016:

I did not feel burdened by the fact that we had to build an open API platform.

Nordea has already decided to go the way of API technology to be competitive. [...]

Otherwise, I would have thought that this becomes extremely expensive for the bank if it's just for compliance.

Gunnar Berger, Head of Open Banking at Nordea, 23/01/2023

While the regulation meant that the Open Banking team had to focus on compliance purposes, it did not mean that the commercial perspective was let go. Instead, everything that the team builds for PSD2 would be reusable for commercial APIs, which Nordea calls premium APIs. Compliance APIs are those that are required by PSD2, while commercial APIs are those that the bank offers from a commercial perspective. Furthermore, compliance APIs are provided at no charge to the user, while commercial APIs can be charged for. Recently, another idea for reusability was identified:

We have started taking reusability to the next step. Not only are we taking components from our compliance APIs for reuse in commercial APIs, but we also reuse components for internal APIs that help us simplify processes in the bank.

Sanela Dulic, Head of Open Banking Platform at Nordea, 06/03/2023

The implementation of API technology in Nordea faced several challenges. Bringing Nordea's legacy systems into the API world would prove to be a significant undertaking:

Looking back, one of our biggest challenges was the huge complexity of our systems in the bank. How you should visualize it is that we have a huge number of background systems for our accounts, payments, cards, and so on. On top of those, we have different legacy systems. In total, we have around 25 different online channels, mobile banks, net banks, etc. So with PSD2 APIs, we needed to rebuild the functionality of 25 different online channels into the API World. Of course, it's not as black and white. We did not always have to fully rebuild from scratch, but in many cases, we actually had to. So to expose that huge complexity in an API world was a huge operation.

Sanela Dulic, Head of Open Banking Platform at Nordea, 06/03/2023

Given that API technology was relatively new, there was no prior knowledge within the bank that could be leveraged in its implementation:

When we started with Open Banking we looked internally for people who've been building open APIs previously, but no one had. This meant we had to build that competence internally, first with consultants. Then, these consultants had to

teach our own people. Many people had to be taught, as the Open Banking team had grown to 150 people when I left.

Sarah Häger, Regional Manager at Enable Banking, 02/02/2023

Despite the challenges in its implementation, Nordea strived to be one of the leading platform providers. Therefore, considerable effort went into promoting the developer experience. According to INNOPAY (2022), one of the first banks to take a proactive approach to Open Banking was Nordea. Their Open Banking Monitor measures the developer experience and API product offering of banks. In this ranking, Nordea ranks among the top players:

When it comes to the developer experience, Nordea has ranked among the top players ever since the start of our ranking, and this year it took the leap to become the frontrunner in this area.

INNOPAY, 07/06/2022

When looking at Nordea's developer portal, one can see why Nordea is ranked so highly on developer experience. On Nordea's developer portal, developers can view the extensive documentation that Nordea provides regarding its APIs, which includes sample code. Regarding the developer portal, Berger states:

We have put a lot of effort into having a really kick-ass developer portal because that was our original intention from the commercial initiative that we started in 2016. We have kept that high standard in everything we develop and in the way we support third parties.

Gunnar Berger, Head of Open Banking at Nordea, 23/01/2023

Up until 2020, Open Banking has not experienced much use, as measured by API calls. However, the technology is now used extensively:

We have I think somewhere roughly around 500 external API consumers, people using our APIs, and they are generating around 60 million API calls on a monthly basis. So it's actually used quite extensively. You know, we went from basically zero in 2019 to 60 million monthly calls today. And that is a mix of both, the usage of our compliance services and our commercial services.

Sanela Dulic, Head of Open Banking Platform at Nordea, 06/03/2023

Some of the data that is now available through Open Banking was previously obtained through screen scraping. This is a practice where the third party collects data by accessing a platform using the login credentials of the customer. Within the European Union, this practice is prohibited as of September 2019 (Basel Committee on Banking Supervision, 2019). Berger argues that the uptake of use in API calls may be linked to the restrictions imposed on screen scraping.

Before 2020, the use of PSD2 was basically nonexistent. Then the Financial Supervisory Authority (FSA) in their respective country put pressure on third parties to use the PSD2 API solutions instead of screen-scraping. If third parties would not start using PSD2 APIs, they may risk sanctions. From this point onward, the use of our APIs has grown to many million calls every month and this continues to grow.

Gunnar Berger, Head of Open Banking at Nordea, 23/01/2023

To sum up, Nordea approached the PSD2 regulation from a reusability perspective. Using what was made for compliance APIs to create commercial services, which they call premium APIs, and for internal APIs. Furthermore, a lot of work has been put into creating a leading developer platform, which has resulted in an excellent developer experience. Nordea seizes the opportunities of Open Banking, Dulic points out banks should be proactive:

My best advice is to be proactive because Open Banking is here to stay. I think there are probably only a few banks that have set this up as a small project. They might just fill up requirements, then close the project. I don't think that's a wise approach.

Sanela Dulic, Head of Open Banking Platform at Nordea, 06/03/2023

Nonetheless, what works for one specific bank [like Nordea] does not necessarily work for every bank, Lange argues:

I think when it comes to choosing a strategy, it's not either-or. It depends on what your strengths are and what your business model is. So, what products do you offer and where do you want to position yourself in the future? [...] Have a clear business case and build up use case by use case to tackle the complexity. So don't get lost in too many directions that don't pay off in the end.

Matthias Lange, Co-Head FinTech and Partner at McKinsey, 16/03/2023

5. Opportunities

In this section, we will present five opportunities for traditional banks. Alongside these opportunities, we provide three deep dives into specific use cases that Open Banking enables.

Our interviewees highlighted the importance to seize the opportunities that Open Banking provides, instead of only complying with the regulation. Ducoulombier, who is responsible for the review of PSD2 and works on PSD3, explicitly recommends banks to seize the opportunities of Open Banking work on their own Open Banking business.

Banks should see the opportunities of Open Banking and develop their own Open Banking business. And many do and many have done that. So my recommendation would be not to see Open Banking as a threat, but more as an opportunity.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

In Table II, we provide an overview of the five opportunities that banks can leverage to succeed in the Open Banking era.

Table II
Overview Opportunities

The table shows an overview of the opportunities that we discuss in the case study.

Opportunity	Main revenue-generating mechanism(s)	Example(s)
Premium APIs	Increasing sales directly by charging for APIs, or indirectly through increasing frequency of transactions, and customer satisfaction	Nordea's Auto FX APIs: FX Market Order API, FX Listed Rates API
Embedded Finance	Increasing the number of customers by accessing customers outside of the bank's channel	Nordea Consumer Finance embedded with Finnair
Account Aggregation	Increasing sales per customer by cross-selling due to higher app usage, and increasing number of customers	Multi-banking enabled by Tink Offer Insurance via Insurely
Data Analytics	Increasing sales through cross- and up-selling, and number of customers due to new service offerings	Fast-paced credit decisions at the point of sale, offering financial coaching
Trust	Supporting the acquisition and retention of customers	Certain parties prefer doing business with banks rather than with FinTechs

5.1 Premium APIs

In this subsection, we discuss the opportunities that premium APIs offer to traditional banks, and we will provide a deep dive into automated foreign exchange (FX) APIs at the end of the section. While Compliance APIs are APIs that banks must provide to comply due to regulations, premium APIs are APIs that banks do not necessarily have to provide, they are rather offered for commercial reasons. Banks can generate additional income by charging for premium APIs, adding them as a feature in a larger bundle, or getting access to new sales channels. Nordea offers 15 premium APIs and 23 compliance APIs (Nordea, 2023). Premium APIs cover various use cases.

One compelling opportunity for banks is to offer premium APIs. Premium APIs are APIs that are not enforced by the regulator. There are several use cases for premium APIs, for example around APIs for analytics, mass payments, or FX trading.

Johannes Gärtner, Director at Strategy&, 16/03/2023

At Nordea, compliance APIs that were built for PSD2 are reused to create premium APIs. These APIs can then be provided to corporate customers to generate additional income:

Everything we build for PSD2 is reusable for premium APIs. So without or with very little extra development, we can monetize our PSD2 APIs by reselling them to our corporate customers.

Gunnar Berger, Head of Open Banking at Nordea, 23/01/2023

The type of customer Nordea sells its premium APIs to, is rather a large corporate, whereas with compliance APIs they must serve every segment. Large corporate customers are more accessible for Nordea and are willing to spend on services that automate and streamline their processes. Dulic outlines the reasons why Nordea primarily focuses on corporate customers:

In the commercial space we currently mostly focus on large corporates for two reasons. First, it's much easier for them to utilize API technology, since they typically have their own IT departments which can implement the API technology. Secondly, there are typically sales organizations in the bank that are having dialogues with corporates already. That makes setting up agreements with them very natural and easy. For SMEs, it would be very, very difficult for us to reach many of them at the same time. So we haven't really taken that step yet, however,

collaborations with Enterprise Resource Planning system (ERP) vendors might help us to reach that segment, which has a lot of potential.

Sanela Dulic, Head of Open Banking Platform at Nordea, 06/03/2023

Nordea monetizes premium APIs in different ways. Some APIs are directly monetized via pay-per-call, and others are indirectly monetized by using them as an additional sales channel for Nordea's products.

We have different models to monetize premium APIs. For some, we do charge for APIs; pay per call, for instance. In some other cases, we do not charge for API calls as such. But there is a natural gain because your financing products get offered to a much larger group of customers. That's why so you have these different models.

Sanela Dulic, Head of Open Banking Platform at Nordea, 06/03/2023

According to Jansell, there are three critical factors to succeed as a bank with premium APIs.

Firstly, you need really good documentation for developers. Secondly, you need to educate the most common developers, which could be ERP system vendors, treasury system vendors, or IT consultancies. Thirdly, you need to be part of the implementation and support your partner.

Kristoffer Jansell, Director at Nordea, 17/04/2023

While some banks like Nordea have worked a lot to provide easy-to-use premium APIs with value-adding functionality, clients may not be able to use them. The reason is that many IT-system vendors still don't support the banks' premium APIs. That implies a lot of potential for premium APIs in the future.

I would guess that many banks are disappointed with how little their premium APIs are currently used on the corporate side. Others [ERP and treasury management system providers] have to do their job as well. There is much to come – but we are dependent on other players.

Kristoffer Jansell, Director at Nordea, 17/04/2023

In the long term, Nordea wants to seize the opportunities of premium APIs and wants to have an industry-leading API market.

Premium APIs: AutoFX

In 2016, Nordea built the first version of their currency robot, called AutoFX. We spoke with Kristoffer Jansell, Automation lead at Nordea, to learn more. AutoFX consists of three categories, AutoFX Liquidity Management, AutoFX Hedging, and AutoFX APIs. The first two categories are services that allow companies to use plug-and-play services that are built on Nordea's internal APIs, while the latter category allows companies to connect their own systems with Nordea's external AutoFX APIs. This includes four premium APIs, two of which are trading APIs while the other two are information APIs.

The FX Market Order API is a trading API that facilitates the automatic execution of FX trades based on a set of rules and triggers that are chosen by the customer. For example, companies doing business in multiple countries may have a mismatch in currencies, where there is a negative balance in USD and a positive balance in EUR. A rule could be set to ensure there are no negative currency balances. Subsequently, whenever a currency balance goes negative, a trade is initiated to top up this balance. As a result, unnecessary interest payments on negative balances can be avoided (Nordea, 2020).

The second trading API is called the FX Listed Rates API which allows companies to integrate currency rates into their systems, these currency rates are fixed for periods of up to 24 hours. As a result, companies can display prices in their customer's preferred currency. This API is particularly useful for online retailers that want to offer shoppers the option to pay in their currency. When this option is not offered, a third of online shoppers may abandon their shopping carts (Nordea, 2023). Not only can this feature increase sales, but it can also reduce currency risk for companies, as the exchange rate is fixed for a certain period. As a result, Nordea bears the currency risk instead of the customer.

The two information APIs are the Trade Retriever API and the FX Pricing API. The Trade Retriever API can automate the post-order processing of all FX trades executed with Nordea, essentially automating accounting. The FX Pricing API allows customers to view real-time FX rates directly from their system, which can be useful to view before executing a trade.

Before AutoFX, every FX transaction had to be manually executed and processed, this method was error-prone and slow. Now, with the use of AutoFX APIs, many of these processes are automated. As a result, less time is spent on these tasks, leading to cost

savings and fewer errors. Furthermore, currency risks are reduced as currency mismatches can be balanced in real-time. Jansell sums up the benefits of using these APIs:

Companies can now trade in a fully automated way with APIs. You are still guaranteed the same price you would get on our other trading platforms or channels. You can still achieve the best execution, now with the post-trade bookkeeping handled automatically.

Kristoffer Jansell, Director at Nordea, (Nordea, 2020)

While Nordea does not charge for the use of these APIs, they do generate revenue when customers use their APIs to do FX trades through spreads. Additionally, a long-term customer relationship is formed because of two reasons. First, by connecting with the clients through these APIs, Nordea will understand their customers' processes and needs in a better way, which often results in a tailor-made solution. Therefore, switching to another vendor might be time-consuming and the client may end up with a worse solution. Second, customer satisfaction may improve due to the use of these services.

5.2 Embedded Finance

In this subsection, we discuss the opportunity of embedded finance and provide an example of embedded finance in practice. According to Lange, Partner at McKinsey & Company, embedded finance is an important opportunity for traditional banks implied by Open Banking. Embedded finance means that banks offer their services via APIs in other parties' channels.

As a bank, you can embed yourself into various touchpoints of various customer journeys. That can be an additional revenue stream for banks. Imagine, you give out loans at the point of sale. [...] This is a new sales channel where banks can create additional revenues.

Matthias Lange, Co-Head FinTech and Partner at McKinsey, 16/03/2023

Furthermore, Lange emphasizes the relevance of embedded finance to traditional banks.

Selling banking products via APIs is part of the future business model of any bank. It's like in any other new distribution channel, they cannot just ignore it.

Matthias Lange, Co-Head FinTech and Partner at McKinsey, 16/03/2023

Before customers could access their finances via TPPs, customers had to use the banks' proprietary channels to access their finances. But since the era of Open Banking has begun,

banks do not need to use the bank channel to sell financial products anymore. They can embed their products in other channels. Therefore, the bank has the opportunity to meet new customers that it did not have in its channels before. According to Claesson, embedded finance is not only beneficial for banks, but also for the banks' partners, and the end user.

There are triple benefits when it comes to embedded banking: For the bank, it's a new or more efficient distribution channel, reaching existing or new target groups and the possibility to remove manual managing of sales or onboarding of a service. For the one embedding the banking service, it's improving/extending the customer offering, increasing sales, and automation. For the end user, it's a more comprehensive service and better offering, a better customer experience with a real-time embedded banking service.

Ulrika Claesson, Head of Open Banking Solutions at Nordea, 15/03/2023

Embedded Finance: Financing Plane Tickets

Nordea's Consumer Finance API can be used to support credit applications in the platform of other parties. The Consumer Finance API can be directly built into web shops and different checkouts, where customers can finance their purchases with consumer financing. The use of this API allows for a seamless experience where the consumer remains within the same online environment and can gain consumer financing in seconds.

An innovative example is Nordea's collaboration with Finnair, an airline based in Finland. When a customer wants to purchase plane tickets with the airline and they do not have access to the full amount of money that is required to purchase these tickets, there arises a need for consumer financing. The customer can choose to apply for Nordea's consumer financing, even if that customer is not a client of Nordea already. The customer can apply directly from Finnair's checkout platform to finance the required amount of money. If a customer chooses to apply for this credit, the customer must provide personal information, credit information, and financial information. This credit application would arrive in Nordea's systems where a credit decision is made. This decision would then be presented on the airline's platform. If approved, the customer can immediately get access to the credit that was applied for (Nordea, 2019). The underlying product is a credit card, which the customer would also receive.

Prior to the use of this API, the credit application process happened outside of the airline's platform, included several manual steps, and was time-consuming. The credit decision could take several days, after which the customer may no longer be interested. However, with the use of this API, the process has been fully automated and digitized. The API allows for real-time connection between Finnair's and Nordea's systems to offer the customer a seamless experience (Nordea, 2021).

Embedded finance benefits all involved parties. Nordea benefits because it gains a new distribution channel in which it can reach new customers. Finnair can increase sales as more customers can afford tickets with Nordea's financing. Customers can enjoy a smoother experience where they can apply and receive financing in real-time, whenever they need it.

5.3 Account Aggregation

Next, we discuss the opportunity for traditional banks to use Open Banking to offer account aggregation for consumers. Account aggregation, or so-called multi-banking means that consumers can have all their financial data in one place and interact with their finances in one place. Fatehi emphasizes the opportunity of becoming the consumers' main interface for financial services.

I think that the opportunity is that you could basically become the ecosystem for consumers' financial lives. Be the epicenter of that by collecting all financial product needs into your existing app.

Dadmehr Fatehi, VP Banking & FinTech at Insurely, 23/03/2023

On top of that, he emphasizes, that this becomes very relevant now since consumers start having many different financial service providers and banks, and having one login to all these places is a good customer experience.

Consumer behaviors have changed quite dramatically during the last 10-12 years. Whereas traditionally, consumers only had one bank where they did everything, nowadays, the financial services and the financial products you as a consumer use are very often spread around at different banks or FinTech companies. [...] Instead of you having to log into like three or four different places, it is much more convenient for you as a consumer to see everything in one place.

Dadmehr Fatehi, VP Banking & FinTech at Insurely, 23/03/2023

For traditional banks, account aggregation could be crucial to compete with FinTechs and neobanks. Especially younger consumers appreciate a banking app that provides a great customer experience – which can be enhanced by Open Banking (Strategy&, 2022).

Open Banking can enable a bank to include several accounts in their banking app, even those of other banks. Allowing account aggregation is truly an Open Banking use case. [...] Some consumers argue that account aggregation is crucial for them. This is a use case where banks get challenged by FinTechs who often provide faster and more convenient apps including account aggregation features.

Johannes Gärtner, Director at Strategy&, 16/03/2023

Banks can implement multi-banking to retain their customer-facing position. Lange argues that for banks with certain business models, retaining the customer-facing position is important.

If a bank has a great brand and the best customer service and offers rather complex or once-in-a-lifetime products such as life insurance or mortgages, then keeping the customer interface is quite important.

Matthias Lange, Co-Head FinTech and Partner at McKinsey, 16/03/2023

Account aggregation comes with direct benefits for consumers. The benefits for banks are often rather indirect. Banks can improve the customer experience, which attracts younger customers with a preference for good User Experience (UX), and stops them from switching to a Neobank or another competitor. Especially in banking, it is expensive to acquire new customers, and therefore it is important to keep the existing customer base. The banks can use account aggregation to strengthen their primary relationship with their customers while also driving engagement with the banks' interface. As a result, they do not lose their customer-facing position to TPPs. Being the customers' primary interface and having high engagement offers the opportunity to increase up- and cross-selling and selling other parties' financial products within your interface for a commission. This is perfectly aligned with many banks' 90%+ digital sales targets. Having access to the aggregated data leads to further advantages:

The opportunity to offer account aggregation enables traditional banks to provide a better value proposition to their customers. This can drive cross-selling and increases customer loyalty.

Johannes Gärtner, Director at Strategy&, 16/03/2023

An example of monetizing the stronger primary customer relationship via selling other financial products via their interface is selling insurance products for a commission. This helps to optimize one of the banks' most important KPIs, return on equity:

By selling insurance in the banks' interface, the bank is not only improving the revenues but also the return on equity, which is the most important KPI for banks. Banks don't need to allocate any capital for that revenue, since the insurance company still takes the risk, and the bank becomes a sales channel.

Dadmehr Fatehi, VP Banking & FinTech at Insurely, 23/03/2023

In the B2B world, the aggregating bank can initiate FX trades on behalf of other banks, while the aggregator still gets the fees. Open Banking enables this as it allows to fetch account information to offer aggregation, and to initiate a payment as a third party in another bank account. It is explained why this is such a significant use case.

Large corporates use several banks, often between 5 to 15 banks. As a bank, you could, with the corporate's approval, connect to these other banks via APIs, collect account information, and then provide the information in your own portal. The information collected from other banks could for example be used to optimize the corporate's FX exposure and execute automatic FX trades.

Anonymous, Employee at a Nordic bank, 13/03/2023

It is argued that it simplifies handling finances for people working in treasury departments of corporates, and Häger adds, that this is a great opportunity for traditional banks who offer account aggregation:

A traditional bank can do the FX trades on behalf of other banks. Customers might not do the FX trades in, let's say Nordea, but they'd be able to do it on behalf of Swedbank or on behalf of SEB. So enabling their own customers to initiate FX transactions in other banks, but they get the FX fees for it. It's a brilliant case, it's one of the best use cases for multi-banking. Especially, since big corporates are still paying high fees on the FX side.

Sarah Häger, Regional Manager at Enable Banking, 02/02/2023

For banks who consider competing with FinTechs on the customer-facing position with account aggregation, Fatehi recommends being an early mover.

If you are one of the first movers to become this financial super app, you would benefit massively. Being in the backseat while someone else is creating this ecosystem is costly since it's very difficult to get your clients back. You need to protect your customer relationships, upsell on them, and then acquire new clients.

Dadmehr Fatehi, VP Banking & FinTech at Insurely, 23/03/2023

Nicander, Head of One Digital at Nordea notes that his bank was very early to allow its customers to aggregate external holdings in Nordea's channels, hence Nordea is a multi-banking first mover. Also, he points out the value for customers and Nordea, and how it works:

Customers benefit from an overview. [...] Banks benefit from customer loyalty, and Nordea benefits from additional business opportunities in external product data. [...] When a consumer gives Nordea consent, Nordea asks Tink to retrieve the data from other banks, and this data is then presented on Nordea's platform.

Anders Nicander, Head of One Digital at Nordea, 06/03/2023

As Nicander mentioned above, account aggregation is enabled by so-called Technical Service providers, such as Tink. They help third parties and banks aggregate accounts to access other banks' APIs. Dulic elaborates on that:

Since there is no standardized way to expose data, it has become a lot of work, to integrate into a large number of banks. That has made room for the business models of technical service providers, who aggregate the data and expose it in a somewhat standardized way to third parties or us.

Sanela Dulic, Head of Open Banking Platform at Nordea, 06/03/2023

Nicander adds that using such a technical service provider is beneficial for the bank as well.

Tink offers us a connection to more than 3000 banks. It wouldn't make any sense for all banks to build Open Banking APIs themselves. It would be too costly and it would take too long.

Anders Nicander, Head of One Digital at Nordea, 06/03/2023

Tink and its Account Aggregation Feature

Tink is Europe's leading Open Banking platform provider. This Stockholm-based FinTech gives access to aggregated and enriched data from over 3.400 European banks through a single API (Tink, 2020). Tink depicts itself as "an engine laying behind the bank's digital services that power specific use cases. Nordea's partnership with Tink was announced in May 2020 (Tink, 2020). As of today, Leuzzi depicts four primary use cases of Open Banking that they enable: Firstly, consumer engagement that comes with account aggregation and financial coaching. Secondly, creditworthiness checks that speed up and improve risk and credit decisions. Thirdly, customer onboarding enables accountholder validation. And fourthly, Tink enables smoother and more trusted payments flow for Payment Initiation Services, such as "pay with your bank / pay per link".

In this deep dive, we will focus on Tink's account aggregation offering which is part of its consumer engagement pillar. The feature enables banks to let their customers aggregate other bank accounts into their interface. From a return-on-investment perspective, the feature increases banks' revenues and supports cost savings. Their feature can increase revenues for two reasons. Firstly, higher chances of cross-selling due to stronger customer engagement. Having the primary relationship with the customer can lead to a higher chance of cross-selling. Secondly, banks get more access to data, so they can get to know their customers better, and can use that for targeted marketing. For instance, the bank can see if the customer moves money to an investment platform, and then target the customer with its own investment offer. From the cost savings perspective, banks can save time and money, since an aggregator like Tink provides one API that banks need to connect to, instead of an API to every other bank.

When aggregating accounts, the process and data flow resembles the following. In the front end, the user gets the option to aggregate accounts, chooses that option and will be forwarded to an authentication page. Then, the customer selects their bank and will be app-to-app redirected, where the customer can log into their banking app. Following this, the customer will return to the interface, and will then see all the aggregated data. In the backend, the user gives consent to Tink to access his data, then Tink calls the API of the bank, Tink fetches the data, and displays it into the chosen interface. The feature is

monetized with a combination of a fixed platform fee that depends on the size of the client, and a unit fee, that depends on the usage of the feature.

Having high digital maturity can be very beneficial when collaborating in the Open Banking space:

We are proud and happy to work with Nordea. Nordea is a very collaborative partner. Probably, because we interact directly with people that are rather on the IT and digital/mobile channel side, who are close to the end user. Even though it is sometimes challenging since Nordea is a large institution and Tink is a fast-moving startup, our long-standing collaboration is smooth, especially since Nordea is a Nordic bank with high digital maturity.

Fiammetta Leuzzi, Strategy Manager at Tink, 24/03/2023

5.4 Data Analytics

In this subsection, we discuss the opportunity of data analytics. We will discuss two ways in which data analytics can add value to traditional banks. Firstly, it supports fast-paced credit decisions and account verification. Secondly, it enables data-driven insights that can be used for financial coaching and targeted marketing.

5.4.1 Credit Decisions and Account Verification

Data access through Open Banking can be used to enable credit decisions and account verification. Lange points out that fast-paced credit decisions can improve the customer experience:

You can give out loans at the point of sale and get a credit decision almost instantly as you get the chance to pull all your data together to make the decision.

Matthias Lange, Co-Head FinTech and Partner at McKinsey, 16/03/2023

Gärtner mentions a well-known example of that use case, which is Buy Now Pay Later (BNPL).

Buy Now Pay Later providers need to conduct a credit check. This is often done through a 'look' into the customer's bank account.

Johannes Gärtner, Director at Strategy&, 16/03/2023

Klarna is a BNPL service. Veldkamp, who used to work for Klarna, explains that they use data acquired via Open Banking to feed its credit models. With this data, the models are more reliable than previously, hence, better credit decisions can be made. At Klarna, good credit

decisions were defined as giving out credits that the customer can afford. Preventing customers from defaulting is preventing customers from having a bad experience and reducing Klarna's costs of defaulted loans.

Traditional banks could also benefit from lower default rates and higher customer satisfaction if they manage to make more accurate credit decisions. Tink also offers its customers a credit check feature. Leuzzi elaborates on how this creditworthiness feature adds value and why the assessment via Open Banking is more reliable than self-assessment:

One of Tink's use cases is accessing people's accounts to run credit checks for the purposes of personal loans, credit cards, or revolving credit and mortgages, for example. The focus is on the smaller types of credits where, let's say you're buying something online, and you want to get a loan to get it or even just the BNPL. But let's say that the vendor offers to give you this 50,000 SEK loan, then you need to show your last or last two pay slips. The journey for the end user is so annoying, and it could be forged quite easily, or it could be the old pay slip but in the meantime, you've lost your job. Whereas connecting through Open Banking and accessing the account information in the background, we would send the account statement for the past 12 / 24 months to the vendor or to the provider of the credit and just get an analysis of it so that they can check it with their own creditworthiness assessment.

Fiammetta Leuzzi, Strategy Manager at Tink, 24/03/2023

At Nordea, this feature drives efficiency gains as it saves Nordea time in the mortgage application process. Nicander noted that through Tink, Nordea can, for instance, verify the salary of its customers at other financial institutions to make better and faster credit decisions. Looking at the future of Open Banking-enabled credit decisions, Leuzzi from Tink could imagine risk decisions with dynamic credit lines and continuous risk assessment.

On top of that, banks can allow account verification via Open Banking. Banks can become ubiquitous for their customers and gain additional data by allowing them to identify with their bank accounts. Today, in most countries there are no safe ubiquitous identification platforms working like BankID in Sweden, but rather a fragmented landscape where many banks have their own identification.

One underrated thing is the identity side. You could use Open Banking on an individual to be quite certain that this is in fact that individual. In countries like Sweden, this might be a bit overlooked, because BankID is such an amazing tool. But in other countries, there is no BankID, or at least not in a similar way.

Lucas Veldkamp, Senior Technology Consultant at EY, 06/04/2023

Open Banking can be used to validate the bank account, the name of the account holder, and the account balance. This information can also be used to give proof of identity. Leuzzi notes that this new way of authentication enables smoother customer journeys.

You can use access to people's bank accounts for authentication to a specific platform. So instead of authenticating by providing your driver's license or providing some other manual input, you just log into your bank.

Fiammetta Leuzzi, Strategy Manager at Tink, 24/03/2023

5.4.2 Financial Coaching and Targeted Marketing.

Additionally, data analytics can be used to generate personalized and actionable insights. These insights can be used to offer customers financial coaching and targeted marketing. Financial coaching is supporting customers with personalized and actionable insights based on the analyzed accounts and payment information. Nicander mentions that Nordea will use actionable insights to make their customers better off:

From next month, we will also start to provide you with some actionable insights which means that we will propose some actions that you can take to make yourself better off. So that over time our customers will have a better state or financial well being than our competitors' customers.

Anders Nicander, Head of One Digital at Nordea, 06/03/2023

Lange claims that the creation of actionable insights based on data that is already available is the biggest business-building opportunity in the Open Banking space. Banks could seize this opportunity to improve the customer experience and enable new revenue streams. According to Lange, that makes a lot of sense right now since a lot of players currently open up their data.

What you find at the moment is lots of different providers that open up their data. You have something like Tink, Plaid, or Finleap Connect that aggregate such data,

but how do you make sense of this, how do you create insights, how do you harmonize the data so that you can use it across players?

Matthias Lange, Co-Head FinTech and Partner at McKinsey, 16/03/2023

Leuzzi notes that financial coaching with personalized actionable insights can be useful for consumers and businesses - especially since physical branches disappear:

Many banks, especially in Northern Europe have started to reduce the number of physical branches. And they have ambitions to have up to 90% going through digital channels. This means that financial coaching is super important for users.

Fiammetta Leuzzi, Strategy Manager at Tink, 24/03/2023

Furthermore, banks can provide financial coaching on all accounts of their customer, including those at other banks. This is useful as a customer might be doing well in one account but have other accounts where they spend too much money. Moreover, budgets could be set for certain categories, for example customers could set a maximum budget for alcoholic beverages. Due to Open Banking, the financial coaching would apply to all your accounts. Moreover, one could control the fixed spending for subscriptions.

These days people pay about SEK 3-4k for subscriptions per month. That piles up and they don't even know that. Identifying the payments when they are in free trial mode, identifying those in other accounts, and moving payments to optimize the repayment capacity helps to get control back and save money as a consumer.

Fiammetta Leuzzi, Strategy Manager at Tink, 24/03/2023

Lange adds that banks can benefit from offering actionable insights as value-adding services:

There are lots of opportunities to take the data as it's available, and then create value-adding services on top of it.

Matthias Lange, Co-Head FinTech and Partner at McKinsey, 16/03/2023

One insight could be sustainability as a service, where your carbon footprint is measured based on transaction data retrieved via Open Banking. Another example is that of benchmarking, where transaction data is compared to that of your peers. Based on this analysis, recommendations could be made on where to optimize spending. By providing value-adding services, such as financial coaching, customers may feel more well-connected with the bank. The banks can then benefit from increased loyalty and trust.

Insights generated by data analytics can also be used for targeted marketing. While consumers can directly benefit from actionable advice given via financial coaching, banks can also use the insights to recommend certain products to their customers. As Gärtner explains, through data analytics, marketing can be better targeted and more efficient.

Marketing is an exciting use case of Open Banking. Account and payment data can be used to provide more targeted offers. For example, a retailer with a loyalty program can ask the customer for consent to share his data. Then, the retailer can see where, and how much a customer is spending. Targeted offers can be made based on that data.

Johannes Gärtner, Director at Strategy&, 16/03/2023

5.5 Trust

Lastly, we discuss the opportunity for banks to leverage their trust. The banks' customer relationships are sticky, and banks can leverage their customers' trust to acquire more data and offer more services. Getting consent from their customers to access their financial data from other account providers is crucial in Open Banking. Hence, the trust helps traditional banks to offer additional Open Banking-enabled features. Gärtner explains that banks will have it easier acting as a TPP retrieving data from other banks to improve their customer's experience, and that they could leverage that as a competitive advantage:

Trust is certainly a competitive advantage for traditional banks since their customers are more likely to give them consent to use their data. They have an advantage over other players; FinTechs, big tech, or other third party providers that try to compete with traditional banks. Banks could use this leap of faith to position new offerings.

Johannes Gärtner, Director at Strategy&, 16/03/2023

Veldkamp shares the same opinion as Gärtner and states that a TPP needs trust to get consent from its customers. That's why banks have an easier time acting as a TPP:

I guess whether or not getting consent is very much dependent on if a consumer trusts an institution. [...] And there is in general still more trust in the traditional banking system. That's why I think the traditional banks might have an easier situation.

Lucas Veldkamp, Senior Technology Consultant at EY, 06/04/2023

The lack of trust in neo-banks and FinTechs has been confirmed by a study. According to this study, 20% of respondents are willing to share financial data with traditional banks, while only 5% are willing to share their financial data with Neobanks or FinTechs (Strategy&, 2022). Due to trust, traditional banks are more likely to get consent from customers to fetch financial data. Another implication of less trust in emerging TPPs is, that some customer groups might not use them at all.

For example, my parents would not use Klarna because they don't like it, they don't trust it because it doesn't seem like a serious institution.

Lucas Veldkamp, Senior Technology Consultant at EY, 06/04/2023

A possible explanation for the low trust in FinTechs is that they find it more challenging to cope with regulation and to ensure security. For instance, Swedish BNPL startup Klarna had a serious incident in 2021. Some Klarna users temporarily saw a subset of their personal or financial information exposed to other Klarna users (Klarna, 2021). However, Dulic, Head of Open Banking Community at Nordea, mentions that while there was generally low trust in new players at the beginning, this is improving now. Nordea is aware of its opportunity to leverage its trust from retail and corporate customers. According to Berger, corporate customers may be inclined to work directly with Nordea.

Some corporate customers have financial policies which don't allow them to work with FinTech as their middleman, which is the reason why they prefer to use our premium APIs.

Gunnar Berger, Head of Open Banking at Nordea, 23/01/2023

6. Threats

Open Banking poses several threats to traditional banks. In this section, these threats will be uncovered based on a series of interviews with experts in the Open Banking field. In these interviews, five distinct threats are identified and summarized in Table III.

Table III
Overview Threats

The table shows an overview of the threats that we discuss in the case study.

Threat	How does it affect the bank?	Example
Payments	Lower revenues and profit margins due to increased competition	ZTL challenging banks on B2B payments
Loss of Customer-Facing Position	Lower revenue due to loss of cross-selling and up-selling opportunities	FinTechs stealing customer-facing position from banks by offering account aggregation via Tink's API
Technology	Increased costs due to required investments in data sharing infrastructure. Loss of market share as FinTechs may implement technology faster	Neobanks like Revolut, may implement technology faster and better, hence swaying customers
Data Privacy & Security	Loss of customers due to reputational damage and loss of trust in event of data leakage	Klarna data breach on the 27 th of May, 2021
Fraud	Cost of fraud prevention, repayments of defrauded funds	Quick payments through PSPs leave banks with no time to prevent fraud

6.1 Payments

In this sub-section, the threat of losing payment services to new players is discussed. One of the key goals of the PSD regulation is to support competition in retail payments and level the playing field for new entrants. As a result of the regulation, third parties can more easily provide account information and payment initiation services.

Open Banking has contributed to more innovation and competition. We now have about 500 new FinTechs that are active in the domain of payments. Most of them were not present before PSD. One could say that they were born because of PSD.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

When 500 new FinTechs enter the payments domain, the increased competition in this domain may lead to margin pressures and loss of revenue. Fatehi describes the concept of a wallet, that the new entrants in the payments domain may take a share of:

There are a lot of new entrants into the [payments] market that are trying to take a share of the wallet as we call it. The concept of the wallet is that when a consumer pays 100 euros a month for all financial services, that 100 euros would traditionally belong to the bank, because I had all my financial services with one bank. Nowadays, maybe 60 euros belong to the bank and 40 euros belong to other players. However, I believe that there is also a risk that the bank will be left with the less attractive products. For example, your salary account and debit card, which are very small products in terms of profit. The most profitable products may go to someone else. From a commercial point of view, that is definitely a threat.

Dadmehr Fatehi, VP Banking & FinTech at Insurely, 23/03/2023

Fatehi describes a twofold threat. Not only are banks at risk of losing a share of the wallet to third parties, but they also risk being left with the least profitable products. However, Berger argues that PSD2 did not impact banks significantly in countries where third parties used screen scraping:

We have seen a steep increase in the use of our PSD2 APIs since the beginning of 2020, but most of those transactions ran through our systems already before PSD2 when third parties were using screen-scraping, a.k.a. reverse engineering or direct access. It's not like the regulation has created a massive move of business from banks to non-banks, it's rather so that the payment traffic is now more controlled from a supervisory perspective and more safe for the consumers. The exception to this is for countries where screen-scraping has been forbidden by law and where the introduction of PSD2 more significantly has strengthened the competitiveness of the third-party collective.

Gunnar Berger, Head of Open Banking at Nordea, 23/01/2023

Prior to PSD2, FinTechs were using screen scraping or reverse engineering to perform many of the services that are now possible with PSD2 APIs. Third parties can use these methods to decipher how a bank's system works. Once the third party understands how the system works, it can send in the data that makes a bank's system act the way it wants to, for example to initiate a payment. However, third parties now use the bank's API infrastructure to access customer data and initiate payments in a more secure manner. Therefore, PSD2 did not suddenly cause business to move from banks to third parties. However, in countries where screen scraping was banned, such as Finland, PSD2 did pose a serious threat and did

strengthen the competitiveness of third parties. To establish to what degree payment revenue has been impacted by PSD2, Sancho suggested analyzing these revenue streams:

I think the best learning is to have a look at revenue streams, from payments for traditional banks, because I think it has not decreased as much as banks thought.

Karin Sancho, Head of Financial Services and Partner at KPMG, 01/02/2023

The analysis can be found in Appendix IV and suggests that payments revenue is down by 17.9% since 2019. Another subset of payment services is FX services. Thanks to PSD2, consumers are now able to initiate payments with third parties, who can offer competitive rates on FX services relative to the bank:

When I transferred our savings from Germany to Sweden. Instead of transferring it through my bank, I got it sent through a third-party service, which would then do the FX and then send it to my Swedish account. It was a lot cheaper.

Sarah Häger, Regional Manager at Enable Banking, 02/02/2023

The willingness to bank with non-bank providers is confirmed by a Strategy& study (2022). Interestingly, this seems to depend a lot on the country where people were asked. For instance, in Sweden, 50% of respondents were willing to bank with non-bank players, which is almost twice as many compared to 27% in Germany.

ZTL – Disrupting B2B Payments

Founded in 2018, ZTL is a “B2B platform that challenges the banks’ Transactional Banking Services and their domain on corporate payments and remittances. Their global payments solution is built on smart technology utilizing PSD2” (ZTL Payment Solution AS, 2023). We spoke with Mikael Lundberg, ZTL’s Managing Director in Sweden, to learn more about how ZTL tries to disrupt the B2B payments industry.

While ZTL provides solutions for payment initiation, account aggregation, and a consent and onboarding API, we will focus on the payment product. ZTL’s end users are mostly SMEs using an ERP system that ZTL collaborates with but could also be corporates. The payment product enables end users to improve work processes and the seamless settlement of payments. They can pay invoices by link, make payments directly from their

ERP system, and automate remittances. In contrast to traditional banks, where cross-border payments can take 2-3 days, ZTL enables real-time booking processes at a lower price and high transparency.

ZTL's customers are usually ERP system providers who integrate ZTL's APIs into their systems. The benefit for ERP system providers is that they do not have to integrate with all the banks anymore, they can use one unified API from ZTL that they can access via the cloud to connect with all the banks. For ZTL this has the advantage, that it enables the scalability of their business. To make its business work, ZTL relies on partners. Their most important partner is Citibank, which ZTL uses as a payments rail. ZTL's clients have an account in Citibank, which is used to collect money from the customer's bank account and forward it to the correspondent banking network, which will then be forwarded to the ultimate beneficiary bank account.

The market ZTL is operating in is quantified by the total revenue of Nordic banks in transactional services, which is €2bn (2018). Of that, €900m was generated by receiving remittances by ERP systems. To operate in the field of payments, ZTL obtained payments initiation service provider (PISP) license, which is needed to access APIs under the PSD2. That means, that ZTL must monitor, and classify the risk of all their clients. Nevertheless, Lundberg considers that as an advantage for ZTL against traditional banks, since ZTL uses smart technology for compliance while banks allocate a lot of resources on that topic. For instance, ZTL can onboard customers within three minutes, while it can take banks several days. In addition to the mentioned higher pricing transparency, which comes with real-time rates and fees as well as competitive prices, ZTL offers a smoother and better UX. On top of that, ZTL provides faster ways to make payments, namely pay per link in contrast to the old-fashioned time-consuming booking process. Finally, they see a competitive advantage since banks face challenges with their legacy systems, while ZTL is agile. Lundberg summed up how ZTL threatens their business.

With the banks' data, small tech companies like ours provide much better service to clients. We are faster, cheaper, and provide a better UX. Banks couldn't offer similar service with similar quality, even if they came up with some nice UX.

Mikael Lundberg, Managing Director Sweden at ZTL, 07/03/2023

6.2 Loss of Customer-Facing Position

In this sub-section, the risk of losing the customer-facing position, and the consequences of this risk, will be discussed. With the advent of Open Banking, it has become easier for consumers to use third parties for their financial services. As a result, traditional banks may lose their customer-facing position, particularly in the retail banking area:

I think the most evident threat is becoming invisible towards the customers. And that very much played in the area of personal banking, because that is where we are used to having the interface towards our customers, being visible, and owning that whole channel towards them.

Sanela Dulic, Head of Open Banking Platform at Nordea, 06/03/2023

Leuzzi, Strategy Manager at Tink, agrees that losing customer interaction is a clear threat because banks benefit from having the one strong relationship with customers. The big difference now from 2020 onwards is that customers do not need to use the banks' proprietary channel anymore to view their accounts or initiate payments. They can use a third-party channel, and then they will find the bank embedded in that channel. However, when banks provide financial products via the channels of other parties, these banks bear the risk of being replaced with any other account provider:

The result of losing the customer interface is that the client no longer sees the bank's logo or trademark, the bank is moved to the background. They become an infrastructure provider that can easily be exchanged with other account providers.

Anonymous, Employee at a Nordic bank, 13/03/2023

When customers no longer use the bank interface, banks lose their customer-facing position. However, when the third party only provides the customer interface, and not the financial product, the value of the customer-facing position is unclear. The consequence of losing the customer-facing position may be the opportunity to cross-sell. The thinking behind cross-selling is to sell an attractive product, which could entice the sale of further products. For banks, this may involve offering the most attractive deposit account to draw in customers. According to Leuzzi, the weakening of the relationship with the customer may cause them to choose services from other providers:

The disintermediation is becoming more and more relevant. The fact that users can just pick and choose the services that they get from different providers. [...]

Deposits have always been an important source of primary connection with a customer. So, when I have a bank account with, for example, Nordea, I am likely to at least consider a mortgage or a loan with that bank. However, if I start having 10 different accounts, then that privileged relationship becomes less relevant.

Fiammetta Leuzzi, Strategy Manager at Tink, 24/03/2023

6.3 Technology

In this sub-section, the challenge of technological change for traditional banks will be discussed. The PSD2 regulation mandated that banks provide safe infrastructure that enables the sharing of their data with third parties. This has caused banks to make significant investments in API technology:

Technology may be the largest challenge for banks. It is super expensive to make this transformation for most involved parties. Even if you complete the transformation, it is even more expensive to be good at it. This is the same challenge as when the internet came. It is not as super visible as the internet in the way that it changed the way we have as people. However, the API change, from a technology perspective, may be even bigger than that of the internet.

Gunnar Berger, Head of Open Banking at Nordea, 23/01/2023

It is suggested that the technological transformation that Open Banking poses may be even larger than that of the Internet. This transformation comes at great expense to the banks, especially when a bank wants to excel. Not only will this transformation require significant investment, but it will also benefit their competitors:

The banks are still not entirely happy with this, banks consider that they have spent fortunes in developing APIs to enable their competitors, namely FinTechs to access the data of their clients and the banks had the feeling that these data from their clients belonged to them, so they have this impression that they are unfairly sharing data with others.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

Also, traditional banks may not be the best at leveraging this new technology. Leuzzi provides an example:

In general, the digital players have been better and faster at building API technology. Traditional banks are not necessarily the savviest from a technology

perspective. In that sense, Open Banking and the technology surrounding it have posed a threat because traditional banks didn't have the right infrastructure to approach implementing such Open Banking solutions. For example, the credit assessment process when applying for a loan. It could take up to three days to approve a loan with the traditional methods. However, with Open Banking, it can be reduced to up to 40 minutes. If users can get the loan approved in one hour versus three days, then of course users would prefer that. This makes it very easy for a new player to compete with a bank.

Fiammetta Leuzzi, Strategy Manager at Tink, 24/03/2023

Open Banking allows for greater efficiency in the credit assessment procedure when applying for financing. If a third party is better or faster at offering this service through Open Banking, the traditional bank may lose out. Veldkamp explains that the implementation of Open Banking may have been slower at traditional banks compared to challenger banks:

There are certain technological challenges with Open Banking, in the sense that you need to iterate rather fast to get it implemented. This is not something that traditional banks tend to be good at. I believe these smaller, more agile challenger banks can leverage this technology a lot better and can therefore capitalize on its benefits faster than traditional banks.

Lucas Veldkamp, Senior Technology Consultant at EY, 06/04/2023

Veldkamp argues that agile players, such as neobanks, could capitalize on new technology faster than traditional banks. As a result, this could cause banks to lose services to third parties. However, there are more threats to technology, as it is not always clear what technology should be pursued:

It is difficult for a bank to know what technology change is the one that will catch on, and should be invested in, or if it is a technology that will lead nowhere. This is probably the biggest threat for banks, that they are reactive and get left behind. Still, banks cannot invest in every new technology either.

Gunnar Berger, Head of Open Banking at Nordea, 23/01/2023

It may be difficult for banks to identify the technology trends that are worth pursuing. When banks do not invest in the right technology, competitors may gain market share from that

bank. At the same time, banks must face tough decisions, as they cannot invest in every technological trend. Lange highlights the importance of investing in the right technology:

If you don't invest in the technology and the right foundation that enables you to adjust your business model, then others will overtake you and you will lose a part of your market share.

Matthias Lange, Co-Head FinTech and Partner at McKinsey, 16/03/2023

6.4 Data Privacy and Security

In this sub-section, threats surrounding data are discussed. When sharing data with external parties, a risk of data leakage emerges. It is for this reason that there are high requirements set in place and that third parties need to obtain an authorization before they can access a bank's data through Open Banking. Despite precautions, data security remains an issue:

A partnership between a bank and a third party that does not have adequate data privacy standards would affect the bank's reputation. Low compliance standards for TPPs could lead to data breaches and scandals similar to the "Cambridge Analytica" scandal. If such a TPP would be in partnership with a bank, that would severely affect the bank's trust. That's why compliance and data security is very important for banks.

Sarah Häger, Regional Manager at Enable Banking, 02/02/2023

Häger highlights that banks may face reputational risk when a third party that the bank partners with experiences a data breach. Therefore, it is important that third parties comply with strict data security requirements. Fatehi from Insurely, a Stockholm-based Open Finance start up that partners with banks, is aware of the data concerns that banks face when working with a third party:

An obvious threat is regarding data privacy and security, as soon as you are using external parties for either collecting data or sharing data, there are always risks of data leakage or fraudulent behavior. We also see that when we discuss with banks, that there are very high requirements in terms of data issues. So as soon as a bank works with other parties, they need to transfer that requirement onto them. At the end of the day, if a data leakage occurs, it won't be the external party on the first page of Financial Times, it will be the CEO of that bank they're working with, even

if they are the reason for the leakage. It will affect their brand, their loyalty and their market cap much more than it will affect that of the third party.

Dadmehr Fatehi, VP Banking & FinTech at Insurely, 23/03/2023

Fatehi emphasizes the need for banks to impose requirements on their partners. Banks themselves face strict requirements when it comes to data protection. When sharing this data with external parties, it makes sense to impose these requirements on their partner as well. Both Fatehi and Häger stress the risks that a potential data breach could bring, which is reputational risk, as trust is one of the bank's most important assets.

6.5 Fraud

In this sub-section, the threat of fraud is discussed. While a primary objective of PSD2 is to increase customer safety, there remains a possibility of fraud. According to the consulting firm Accenture (2018), fraudsters may find ways to leverage the technology that PSD2 promotes:

As banks implement APIs and open their infrastructure to TPPs under PSD2, this could create a whole range of opportunities for fraudsters – at a time when banks have already lost significant amounts to fraud, and are engaged in an arms race to stay ahead of ever more sophisticated cyber-criminals.

Accenture, 18/06/2018

One of the ways fraudsters can defraud funds is by using instant payments offered by Payment Service Providers (PSPs). A PSP is a third party company that acts as an intermediary between those that receive a payment and those that make the payment. Using an example, it is explained how a bank in the Nordics experiences fraud:

A common fraud we see happening is when PSPs offer instant payments to private individuals. This service is then utilised by fraudsters looking to move victims' funds quickly. A traditional bank payment is cleared via the central clearing and at fixed times Monday to Friday. Not during the nights and weekends. PSPs can offer instant accounts-to-account transactions where funds are transferred from your bank account at any time of day, night or weekend. The fraudster can then transfer the funds to another PSP, like a digital bank, and then withdraw that money from an ATM. This goes very quickly, the money can be gone in just 10 minutes or so. It can be challenging for banks to react in time to stop the funds from disappearing.

Anonymous, Employee at a Nordic bank, 13/03/2023

A detailed example of fraud is described, where fraudsters can use instant payments offered by PSPs to make defrauded funds disappear in minutes. Funds used to pass through the clearing system, which provided banks with the needed time to react. However, now with instant payments banks may no longer be able to react in time. As a result, the cost of fraud rises as banks may repay defrauded funds. It is further explained how PSD2 has affected this type of fraud:

Before PSD2, some PSPs used screen scraping to initiate payments from a bank customer's account. With PSD2 the banks are obliged to open alternative "doors" for external parties to access the customer information, with the customers' consent of course.

Anonymous, Employee at a Nordic bank, 13/03/2023

It is explained that this type of fraud already occurred before PSD2, as PSPs were using methods such as screen scraping. However, following the PSD2 regulation, the use of screen scraping is now restricted, and banks have to offer alternative methods, such as APIs, for these PSPs to conduct their business. Therefore, the threat of instant payments did not appear because of Open Banking. Rather, the API technology that Open Banking promoted is replacing prior methods, such as screen scraping.

The PSD2 regulation has provided a safer alternative for payment services, but it can still be misused by malicious third parties. Ducoulombier suggests that while payment security is improved, fraudsters continually adapt their methods:

In a way, we have managed to increase payment security, but we are not there yet, because fraud is morphing.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

Under the regulation, third-party access to accounts can be blocked if the bank has sufficient evidence that a third party is fraudulent. To prevent fraud, banks may need to exercise their ability to block third parties (Accenture, 2018).

7. The Future of Open Banking

In this section, we will discuss what is next for Open Banking. First, views on the PSD3 regulation will be presented. Second, opinions on the Open Finance framework are explored. Stenbacka emphasises the importance for traditional banks to be aware of the future of Open Banking:

Be aware of new and upcoming regulations, what's going to happen, what actors are on the market, and what are the competitors? And of course, be aware of the market demand, what do your customers want?

Lovisa Stenbacka, Management Consultant at EY, 06/04/2023

7.1 PSD3

The PSD2 regulation has left the market with several unclarities. The intention of the PSD3 regulation is to address these concerns:

To marketplaces, it is not clear what exactly their rights and obligations are under Open Banking. The member states enforcement authorities do not know exactly what the limits of the rights and obligations are. So, they do not know how far they can enforce the rules because the rules are often not very clear. What we have learned is that if we want Open Banking to work better, it must be clear as to what exactly is expected from the various players, especially the banks and FinTechs.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

As a result of unclear legislation, the relevant authorities within Europe don't know to what extent the rules could be enforced. Therefore, the PSD3 regulation will introduce more clarity:

We want to introduce more clarity and we can do that because we have acquired years of experience with the finishing of PSD2. We can benefit from the work that has been done by the European Banking Authority, with its various opinions on Open Banking and their various Q&As on Open Banking. So, we have a lot of information which we can benefit from.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

While the PSD3 regulation will provide clarity, the Directive will remain focused on the payments domain and focus on the same goals:

We are going to adjust and modify the existing PSD2, but we are not going to add any new areas. The areas will continue to be the same; security, competition, supervision and licencing. The only thing we might do is to merge PSD with the E-money directive. Otherwise, the domains which are going to be covered by PSD3 are the same domains as covered by PSD2.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

Furthermore, PSD3 will aim to bring more harmonization to Open Banking:

We have a wealth of expertise and experience and feedback from the market about Open Banking, what worked what didn't work. So we are better placed than before to bring more harmonisation in Open Banking, which means more prescription than what was the case before.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

Using their learnings about Open Banking, the Commission will attempt to bring more harmonization to the Open Banking space. However, the European Commission does not intend to require a single API standard that all banks must follow:

We are not going to standardise the APIs, that was not done by PSD2 and we don't want to do that with PSD3. Standardisation of APIs would take a lot of time and be extremely complex. We already have central API Standards that coexist in the EU. We have the Berlin Group standard, we have the French standard, and we have some standards in Central Europe, which are more or less the same conditions as the Berlin Group. We don't see the need to come up with a brand-new API standard. It could be extremely costly to the banks if they had to redo their APIs and disrupt the market for unnecessary reasons.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

The existing API standards are considered sufficient and introducing new API standards would be too costly and disruptive. Ducoulombier concludes with the following:

We do want to introduce more clarity and probably more detail about the various rights and duties and also more clarity about what exactly is expected from the enforcement authorities.

Eric Ducoulombier, Head of Retail Finance at European Commission, 17/04/2023

7.2 Open Finance

Beyond PSD, there will be a separate initiative called Open Finance. While Open Finance will be a separate regulation, it may take some cues from PSD. Similar to PSD, the Open Finance model may provide access to data in a regulated way, subject to consent by data owners, via interfaces that are secure between the various players. While no one knows the exact content and scope of Open Finance, it is expected that it will include new business areas. Open Finance may cause new third parties to emerge and can enable new use cases. There may be opportunities in particular for those areas that have not been regulated before:

The bank's opportunities are not the biggest, the insurance companies are looking into this more, because it will make a big difference for them, because they have not seen anything as big as this in the regulatory development. Insurance companies, for example, should be able to use much more data on their clients to be able to adjust their premiums and offer other services.

Karin Sancho, Head of Financial Services and Partner at KPMG, 01/02/2023

Sancho highlights the use case of insurance companies. Client data can be used to provide personalised insurance premiums. Some experts expect insurance companies to be in the domain of Open Finance when the regulation comes into effect. The company Insurely already works with insurance companies and offers a unique value proposition that benefits all parties involved. Fatehi describes the compare and switch use case:

The compare and switch use case, which is where you can compare your existing insurances with an offering from the bank's insurance partner. From the bank's platform, you can see what your premium is, what is included, and compare this to the insurance that the bank is offering.

Dadmehr Fatehi, VP Banking & FinTech at Insurely, 23/03/2023

By incorporating insurance into their platform, banks can create a new revenue stream:

The insurance partner is getting a new client from the bank because you're signing up for their home insurance. That new client will pay the bank a commission. So then the bank has instantly triggered a revenue stream that they didn't have yesterday. In contrast to data aggregation under Open Banking, the benefit is not only soft factors such as loyalty, but the bank also makes more money.

Dadmehr Fatehi, VP Banking & FinTech at Insurely, 23/03/2023

While Insurely is already operating and providing this use case to banks and insurers, Open Finance will make it easier for the company to conduct their business. Currently, they rely on other technologies including screen scraping to collect the required data:

Today that Open Finance regulation is not in place, the insurance companies do not have to share their information. Since it is not mandatory, insurance companies do not always have the incentives to share the data because they are afraid of their revenues, their margins, and their market share. So today we're using different methods to collect the information including, screen scraping which can be very scary to some because it is misused in some markets. For this reason, to access these customers we need to wait until the regulation is put in place and everything is shared through APIs.

Dadmehr Fatehi, VP Banking & FinTech at Insurely, 23/03/2023

Once the Open Finance regulation is in place, more financial institutions, like insurers, must share their data with others, like Insurely. The new regulation will allow third parties to provide innovative services in other domains, in the same way that Open Banking has done for payments.

8. Discussion

In this section, we will discuss the findings of our case. These findings are compared to those presented in the literature review. Using these findings, our research questions are answered.

(i) What are the opportunities of Open Banking for traditional banks?

In the case study, five opportunities are uncovered. Firstly, providing premium APIs. Premium APIs enable several use cases, such as automated FX trading. Banks can generate additional revenue by charging customers for the use of premium APIs or by offering underlying services, such as FX trades, through the API. Moreover, the use of premium APIs can improve efficiency for its customers, which benefits the customer experience. Secondly, embedded finance refers to offering their services in the channels of other parties through the use of APIs. By embedding financial services in other channels, banks gain a new distribution channel and reach more customers, including those that do not have an account with that bank. Not only can this provide more revenue for the bank, but it can also provide customers with a smoother and more automated experience as seen in the Finnair case. Thirdly, banks can employ account aggregation to provide an overview of all financial accounts of a customer. This overview provides customers with a better experience as the customer no longer needs to log into different systems. Banks have an opportunity to become the customer's main interface for financial services and thus maintain their customer-facing position. This position can be leveraged by the bank by cross-selling financial services. Fourthly, by using data analytics, banks can provide helpful tools to their customers. Open banking has made data collection much more convenient than before. Through technical service providers, such as Tink, quick account and income verification can be provided, which may be useful for credit decisions. Furthermore, banks can use data analytics to generate personalized and actionable insights. Based on these insights, financial coaching can be provided to help customers save money, and targeted marketing can be applied to increase revenue for banks. Fifthly, banks can benefit from their trust. This trust can be leveraged as a competitive advantage to obtain more data and offer services instead of third parties. Based on a study performed by Strategy& (2022), only 5% of respondents are willing to share financial data with FinTechs, such as Neobanks. The lack of trust in FinTechs may disqualify their use to some customer groups altogether, such as corporate customers and older generations. This can be explained by a perceived lack of regulation and security at FinTechs, amplified by scandals.

Compared to the literature, all the opportunities found in our case study have been identified in prior studies. Brodsky and Oakes (2017), noted that Open Banking could enable new revenue streams by delivering new services to its customers. This opportunity has come to fruition in the form of personal insights, financial coaching, and premium APIs, which are given examples of in our thesis. The study by Nanaeva, Aysan and Shirazi (2021) highlights the possibility that customers may be able to better manage their finances when their financial data is aggregated. This possibility has been made possible by the multi-banking feature that now exists in several banks. We provide an example of how Nordea provides such a feature together with Tink. Furthermore, Brodsky and Oakes (2017) remark the significance that trust can have and how this can play to the banks' advantage, which is an opportunity that was also observed in our case study. Gozman, Hedman, & Olsen (2018) identified more opportunities regarding offering services to clients at other banks or third parties, and data sharing between financial institutions to prevent fraud. The opportunity to offer services to clients outside of the banks' channel has come to fruition in the form of embedded finance. Our thesis contributes with an example of embedded finance, where Nordea is integrated into the check-out platform of the airline Finnair. The opportunity to share data between institutions to prevent fraud was not discussed in our case study.

(ii) What are the threats of Open Banking for traditional banks?

The case presented five distinct threats that Open Banking poses to traditional banks. First, banks may lose market share in the payments industry to new players. The PSD2 regulation was introduced to support competition in the payment industry. Therefore, it seems evident that the market share of banks within payments is at risk. The entrance of 500 new FinTechs in the payments domain since the introduction of PSD provides credibility to this hypothesis. Second, the customer-facing position of banks may be lost. Open Banking has made it easier for consumers to use financial services outside of their bank's channel. Third-party channels may offer a more user-friendly or convenient interface that draws customers to their platform. According to Strategy& (2022), 50% of Swedish respondents are willing to bank with non-banks. The consequence of losing the customer-facing position is the loss of the cross-selling opportunity. However, the value of this opportunity in banks is unclear. Third, banks may find it challenging to cope with the technological change. The implementation of new technology can require significant investments, especially if one wants to excel at that technology.

Furthermore, banks may not be the fastest or the best at implementing this technology. Third parties could implement the technology more quickly and capitalize on this technology before banks do. Fourth, there are concerns surrounding data security. Sharing data with third parties may lead to risks of data leakage. The compliance standards of TPPs tend to be lower than that of traditional banks. Therefore, it is suggested that data breaches and scandals are a possibility. Even if a data breach were to occur outside of the bank, the involved bank would likely suffer most of the repercussions, such as damage to reputation and trust. Fifth, Open Banking technology can be leveraged by fraudulent players. While PSD2 managed to increase payment security, the API technology that it promotes could be leveraged by fraudsters. Open Banking can facilitate fast payments, which allows fraudsters to make defrauded funds disappear within minutes, leaving banks with no time to react. Banks face increased costs when they use their own resources to return funds to customers.

In comparison to the literature, four out of the five threats discussed in this case match those that are identified in the literature. Firstly, Brodsky and Oakes (2017) described the threat of increased competition in the payment space, which could result in a loss of revenues or depressed margins. We provide an example of ZTL, a payment platform that challenges banks on B2B payments. Secondly, both Brodsky and Oakes (2017) and Gozman, Hedman, & Olsen (2018) recognized the threat of disintermediation. The literature described that disintermediation by third parties may cause the bank to lose brand recognition and make it harder for banks to retain their customers. This risk was recognized by our interviewees as the loss of the customer-facing position. Thirdly, most of our interviewees noted the threat of technological change. Likewise, Brodsky and Oakes (2017) remark on the required investments that banks need to make in their infrastructure, with no direct benefit to themselves. Fourthly, Gozman, Hedman, & Olsen (2018) identify the data security risk that emerges when sharing customer data with third parties. The Basel Committee on Banking Supervision (2019) highlights the trust customers have in the bank's ability to protect their data and provides this as a possible reason that banks would face the negative reaction when a third party leaks their data. Similar concerns have been reported by our interviewees. However, the committee adds that banks should invest in solutions that address these security concerns, causing further margin pressure to banks. We contribute with our fifth threat of fraud, which was not envisioned in the literature we reviewed.

(iii) *What strategies can traditional banks take to succeed in the era of Open Banking?*

Cortet, Rijks, and Nijland (2016) provide four strategies to respond to the PSD2 regulation. The first strategy defined in the literature is to only focus on PSD2 compliance. Compliance with PSD2 requires that banks provide data-sharing infrastructure. As a result, banks may have to make significant investments in API technology. If the bank chooses to only comply with the regulation and not pursue any opportunities, the bank will incur considerable compliance costs without any benefit to the bank. Therefore, our interviewees recommend going beyond compliance and seizing the opportunities Open Banking offers through offensive strategies.

The second strategy identified by the literature is to compete. Banks can choose to compete by offering payment initiation and account information services themselves. In our case, we find that Nordea is pursuing this strategy with the account aggregation service it offers in collaboration with Tink. It is suggested that by offering account aggregation, banks can become the epicenter of a consumer's financial life. As a result, the customer-facing position and the cross-selling opportunity are retained. Similar to Brodsky and Oakes (2017), we find that banks can benefit from a first-mover advantage when choosing to compete.

The third strategy described in the literature is to expand. Banks can expand by providing access to more information and services than is required by the regulation. An example of this strategy is Nordea's integration into the platform of the airline Finnair. While this gives Nordea access to more customers, it may lose its customer-facing position. As a result, the bank may no longer be able to cross-sell and could be more easily replaced.

Lastly, the strategy to transform combines the previous strategies. This means that banks become a multi-sided platform, that facilitates their own financial services as well as that of third parties. By choosing this strategy, banks can benefit from additional revenue channels while also retaining the customer-facing position that might otherwise be lost. Our case showcases this strategy with Nordea, which chooses to compete and expand.

What strategy is best for a bank depends on several factors. These factors include the business model of the bank and the bank's vision. Likewise, the literature also suggests that the right strategy depends on the banks' desired position in the value chain and its vision (Cortet, Rijks, & Nijland, 2016). Ultimately, it is recommended that banks should be proactive, seize the opportunities that Open Banking has to offer, and be aware of upcoming regulations.

9. Conclusion

9.1 Concluding Remarks

In this thesis, we presented the opportunities and threats that Open Banking poses for traditional banks. In addition, we identified four strategies that traditional banks can use to navigate the era of Open Banking.

We found that there are five main opportunities for traditional banks. Firstly, premium APIs can be offered to generate additional revenues, improve customer experience, and automate processes. Secondly, embedded finance can be used to reach new customers in new sales channels and to improve the customer experience. Thirdly, account aggregation can be offered to strengthen the primary customer relationship and generate additional sales via cross-selling. Fourthly, data analytics can be used to generate personalized and actionable insights. These insights can be offered to the customer in the form of financial coaching that helps them make better financial decisions, and to use targeted marketing to make marketing investments more effective. Fifthly, traditional banks can leverage their trust as a competitive advantage over new entrants, to acquire more data and therefore to offer more and better financial services.

Next, we identified five threats that emerged because of Open Banking. First, traditional banks face the threat of increased competition in the payments industry. As a result, the revenue and margins of banks may decrease. Second, banks could lose their customer-facing position. Since the introduction of Open Banking, customers are no longer bound to the bank's proprietary channel. When customers no longer use the banks' channel, the opportunity to cross-sell services may be lost. Third, the challenge of technological change. New technologies require significant investment, and smaller FinTechs may be faster and better at implementing the new technology. Fourth, sharing data with external parties may be a cause for security concerns. If a data breach were to occur, the bank's reputation could suffer. Lastly, Open Banking technology may be used by fraudulent players, causing the cost of fraud at banks to rise.

Furthermore, there are four strategies that traditional banks can employ to navigate the Open Banking era. Firstly, banks can choose to comply with the PSD2 regulation. This involves doing only what is required by the regulation and not pursuing any opportunities. Therefore, banks will face costs with no benefit to them. Secondly, banks can choose to

compete by offering payment initiation and account information themselves. As a result, the customer-facing position can be retained. Third, banks can choose to expand by providing access to more services and information than is required by PSD2. This strategy can enable new revenue channels for the bank. Fourth, the option to transform includes the previous strategies. As a leader in the Open Banking space, Nordea shows characteristics of the transform strategy. What strategy is right for a bank may depend on its business model and vision for the future. Nonetheless, our interviewees recommend seizing the opportunities, managing the threats, and being aware of future regulations.

We contribute to research by providing recent insights from the bank's perspective since other research focused on the benefits that Open Banking brings to the consumer instead of banks. On top of that, our study is more recent than previous studies which were mostly introduced before regulatory changes, such as PSD2. Besides regulation, technology also develops fast. Hence, early studies looked at the impact of Open Banking from a theoretical point of view, while we could examine the actual impact that stakeholders feel after adopting and working with Open Banking for some time. Moreover, we contribute to research with our Nordic perspective. Most interviewees (83%) were working in the Nordics, and the financial ecosystem in the Nordics is described as progressive. Also, people living in the Nordics tend to have digital affinity. We consider that as an advantage since consumers and banks in other places might be slower at adopting Open Banking, and therefore experience the impact of Open Banking later. Finally, we contribute to the research by providing several practical examples of opportunities and threats, as well as views on upcoming regulations.

9.2 Limitations and Future Research

To collect data, we reached out to many potential interview candidates. An implied limitation is, that only those who agreed to have an interview with us, are those who are optimistic about the topic. In addition, while focusing on the Nordics gives a unique perspective and therefore contributes to research, it also limits some results to that geographic region since regional factors might affect the findings.

Our thesis has an explorative nature, attempting to find various opportunities, threats, and strategies from diverse perspectives, while also providing practical examples. However, we did not focus on one specific finding. Future research could provide an in-depth analysis of

the results found in our thesis. In addition, the explorative nature implies that we cannot guarantee that we have included all opportunities, threats, and strategies. Future researchers and other stakeholders in the Open Banking ecosystem could find additional results. Furthermore, our thesis is a qualitative case study from which we cannot conclude the significance of our results. A quantitative study might complement our explorative findings. The most significant limitation is that the findings might be outdated in the future. New regulations and technological developments might impact our findings. Therefore, future research could study the impact these changes have on the findings in this study.

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Appendix

Appendix I

Interviewee Biographies

Gunnar Berger is the Head of Open Banking at Nordea. He joined the bank in 1996. Since 2015, he is responsible for building an API platform at the bank, and in 2018 the scope of his responsibilities has heavily increased. Berger holds a Bachelor's degree from Uppsala University in Computer Science and Political Science.

Ulrika Claesson is the Head of Open Banking Solutions at Nordea. She joined Nordea in 2001 after graduating with a Master of Science in Business and Economics from Kristianstad University. Claesson is responsible for building API products at Nordea.

Sanela Dulic is the Head of the Open Banking Platform at Nordea. She joined Nordea in 2002 and works with Open Banking since 2016. In her role, she covers Nordea's compliance angle, and to some extent the bank's commercial scope, too. She went to Selandia College where she completed a degree program in Computer Science.

Anders Nicander is the Head of One Digital at Nordea. He joined Nordea in 2011 after he worked in sales, and as a product manager at Handelsbanken. Being responsible for Digital Banking, means that he works on the development and support of Nordea's net banks and mobile app. Nicander holds a Master's in Finance degree from Stockholm University.

Kristoffer Jansell is a Director at Nordea. He joined Nordea in 2011 and his current responsibilities include Nordea's automated foreign exchange (FX) APIs, which are four premium APIs. He started his career at Nordea as a relationship manager and then moved to Nordea markets where he works with FX. Jansell holds a Degree in Business Administration from Lund University and a degree in Banking and Finance from Kristianstad University.

Anja Kögel is a Senior Legal Counsel at Nordea. She joined Nordea in 2020. Prior to Nordea, Kögel worked for 7 years at Klarna. She holds a Master of Laws – LL.M.Eur, from Leipzig University.

Lovisa Stenbacka is a Management Consultant within Financial Services at Ernst & Young. Prior to EY, she worked at Tink on the legal team. Stenbacka is an LLM graduate from Uppsala University.

Lucas Veldkamp is a Senior Technology Consultant at Ernst & Young. Prior to EY, he worked for 3 years as a Senior Data Analyst and as a Data Engineer at Klarna. Veldkamp holds a master's degree from KTH Royal Institute of Technology in Environmental Engineering and Sustainable Infrastructure.

Karin Sancho is the Head of Financials Services and Partner at KPMG Sweden. She worked with Nordea on an Open Finance Strategy. She is also the author of "Open Finance: the next step on the journey towards Open Economy" on the Nordea blog. Prior to KPMG, Sancho was a Partner within Advisory Services at Ernst & Young and worked for SEB's Merchant Banking division. She holds a degree from the Stockholm School of Economics.

Matthias Lange is Partner at McKinsey & Company. He leads McKinsey's business-building work in banking and is co-leader of the firm's FinTech sector in Germany. Prior to becoming a Partner at McKinsey, he was Managing Partner at finleap – Europe's leading FinTech incubation, where he built several successful Open Banking enabled businesses, such as Solaris Bank and finleap connect. Lange holds a Bachelor and a Master of Science in Information Systems from the University of Münster, and a PhD in Management Information Systems from Humboldt University zu Berlin.

Johannes Gärtner is Director at Strategy& and part of the financial services practice. He joined Strategy& in 2016. His areas of expertise are payments, FinTech, and Retail Banking. He worked on several Open Banking related projects and is a co-author of the study "The calm before the storm". Gärtner holds a Bachelor's and a Master of Science in Business Administration from Ludwig-Maximilians-University.

Eric Ducoulombier is the Head of Retail Finance at the European Commission. He became head of this unit in 2019. His unit was responsible for writing PSD2. Currently, he is writing the review for PSD2. He is also in charge of the PSD3. Ducoulombier holds a degree in European Law from University of Lille 1 Sciences and Technology.

Mia Bjurkell is Risk and Compliance Manager at Ark Capital. Prior to her current job, she worked as a Senior Manager for KPMG. There she was part of the project team that worked

on the Open Finance strategy for Nordea. Before KPMG, she worked as a Senior Supervisor at Finansinspektionen in the Financial Market Infrastructure department. Bjurkell holds a Master of Science in Business Administration & Economics from Linköping University.

Sarah Häger is Regional Manager at the Open Banking startup Enable Finance. Before joining Enable Banking in 2022, she was the Head of Open Banking Community at Nordea where she worked for more than 13 years. Häger holds a degree in Analytical Business from the University of Gothenburg.

Dadmehr Fatehi is Vice President for Banking and FinTech at Open Finance startup Insurely. Prior to Insurely in 2021, he worked for 12 years at SEB. In his role as a Strategic Advisor to the CEO of SEB, he advised him on how Open Banking affects SEB and the financial industry. Fatehi holds a degree from Mälardalen University.

Fiammetta Leuzzi is Strategy Manager at Tink. Prior to that, she was an In-house Consultant at Ericsson and an Intern at Tink. Leuzzi holds a Bachelor's in Business Administration and a Master's in International Management from Università Bocconi including a CEMS exchange at the Stockholm School of Economics.

Mikael Lundberg is the Country Managing Director of Sweden at the payments firm ZTL. Before that, he worked for almost 19 years at SEB. At SEB he worked among other departments in Digital Banking, Sales, and Business Development. Lundberg holds a Bachelor of Business Administration from the European University Brussels.

Anonymous employee working with Open Banking and PSPs for a Nordic bank.

Appendix II

Interview Schedule

The table shows an overview of the interviews that we conducted to produce the case study. Company and role reflect the role the interviewees had at the time of the case. Length is given in minutes.

Interviewee	Company and role	Interview date	Length	Location
Gunnar Berger	Nordea, Head of Open Banking	23/01/2023	120	In-person
Gunnar Berger	Nordea, Head of Open Banking	08/05/2023	30	Video Call
Ulrika Claesson	Nordea, Head of Open Banking Solutions	15/03/2023	30	Video Call
Sanela Dulic	Nordea, Head of Open Banking Platform	06/03/2023	30	Video Call
Anders Nicander	Nordea, Head of One Digital	06/03/2023	30	Video Call
Kristoffer Jansell	Nordea, Director	17/04/2023	30	In-person
Kristoffer Jansell	Nordea, Director	20/04/2023	45	In-person
Anja Kögel	Nordea, Senior Legal Counsel	21/02/2023	n/a	E-Mail
Lovisa Stenbacka	EY, Management Consultant	06/04/2023	30	Video Call
Lucas Veldkamp	EY, Senior Technology Consultant	06/04/2023	30	Video Call
Karin Sancho	KPMG, Head of Financial Services & Partner	01/02/2023	45	Video Call
Matthias Lange	McKinsey & Company, Co-Head FinTech & Partner	16/03/2023	30	Phone Call
Johannes Gärtner	Strategy&, Director	16/03/2023	30	Video Call
Eric Ducoulombier	European Commission, Head of Retail Finance	17/04/2023	30	Video Call
Mia Bjurkell	Ark Kapital, Risk & Compliance Manager	07/03/2023	30	Video Call
Sarah Häger	Enable Banking, Regional Manager	02/02/2023	60	In-person
Dadmehr Fatehi	Insurely, VP Banking & FinTech	23/03/2023	45	Video Call
Fiammetta Leuzzi	Tink, Strategy Manager	24/03/2023	60	Video Call
Mikael Lundberg	ZTL, Managing Director Sweden	07/03/2023	60	In-person
Anonymous	A Nordic bank, Employee	13/03/2023	60	In-person

Appendix III

Interview Guide

1) Introduction

- Introduce ourselves, our academic work, and the structure of the interview.
- Acquire consent for audio recording.
- Inform about the option to edit / remove comments after interview.
- Could you tell us about yourself, your role at your company, and your touch points with Open Banking?

2) Impact of Open Banking on banks

- What are the opportunities that Open Banking brings to traditional banking?
 - What factors impact Open Banking's success?
- What are the threats Open Banking poses to traditional banking?
 - In what way do third parties threaten traditional banking?

3) Open Banking business model

- What are the use cases of Open Banking?
 - Could you provide an example?
- What business models does Open Banking enable?
 - How does Open Banking add value to the bank?
 - How does Open Banking add value to the customer?
 - What effect does Open Banking have on the bank's revenues?
 - What effect does Open banking have on the bank's cost structure?
- What business models are threatened by Open Banking?
 - How are these threats addressed?

4) Recommendations for traditional banks

- What actions would you recommend traditional banks to take, in order to benefit from Open Banking?

5) Open Banking future

- What are your views on the upcoming PSD3 and Open Finance regulations?
- What are the most important changes with PSD3 and Open Finance for traditional banks?
 - Do you consider them an opportunity or a threat to traditional banks?

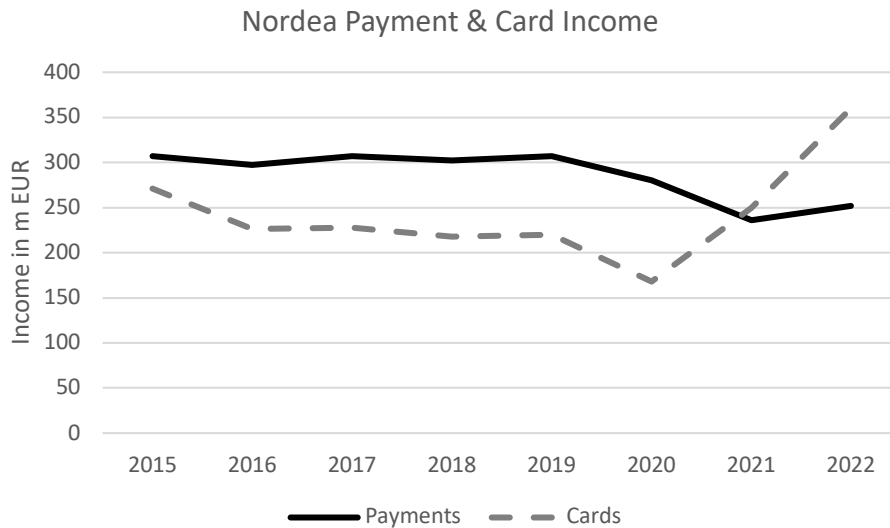
6) Conclusion

- Is there anything we have not discussed yet that you think may be interesting for our thesis?
- Do you have any recommendations on what we could focus on further for our thesis?
- Are there any people you would recommend us to speak to?

Appendix IV

Payments Analysis at Nordea

Figure 1: Payments and Card Income at Nordea, 2015-2022¹



Following Sancho's advice, the payments² and cards income³ of Nordea is analysed. Income is analysed instead of revenue to account for margin pressure. Furthermore, cards income is included as this area may also have experienced more competition as a result of PSD2. Some important dates in the graph include the draft of PSD2 on November 16, 2015, which came into full effect on September 14, 2019. However, the deadline to comply with the new regulation was extended to December 31, 2020. As can be seen on the graph, payment and cards income have declined starting in 2020. Part of this can be attributed to the COVID-19 pandemic that started in 2020. However, it is observed that income from cards has recovered since then, but that income from payments is still down 17.9% compared to 2019 (Nordea, 2023).

¹ From 2021, Payments and Cards have been altered to reflect product categorization changes.

² Payment commissions include fees for cash management and payment solutions that are recognised over time and transaction-based fees for services like domestic and foreign payments that are recognised at a point of time.

³ Card fees are categorised as interchange fees which are recognised at a point of time when the customer uses the services, or as cardholder fees which are recognised over time or at a point of time if the fee is transaction-based.

Appendix V

Abbreviations

API – Application Programming Interface

PSP – Payment Services Provider

ASPSP – Account Servicing Payment Service Providers

AISP – Account Information Service Provider

PISP – Payment Initiation Service Provider

AIS – Account Information Services

PIS – Payment Initiation Services

PSD – Payment Services Directive

TPP – Third Party provider

ERP – Enterprise Resource Planner

FX – Foreign Exchange

UX – User Experience