

UNIVERSITY OF LJUBLJANA
SCHOOL OF ECONOMICS AND BUSINESS

MASTER'S THESIS

**REVENUE IMPLICATIONS AND OPPORTUNITIES OF PSD2
DIRECTIVE FOR RETAIL BANKS**

Ljubljana, September 2023

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LIST OF ABBREVIATIONS

sl. – Slovenian

AISP – Account Information Service Provider

API – Application Programming Interface

ASPSP – Account Servicing Payment Service Provider

BaaS – Banking as a Service

C2B – Consumer-to-Business

CSC – Common and Secure Communication

ECB – European Central Bank

EBA – European Banking Authority

EEA – European Economic Area

EMI – Electronic Money Institution

EU – (sl. Evropska unija); European Union

EIB – (sl. Evropska investicijska banka); European Investment Bank

FI – Financial Institution

GDPR – General Data Protection Regulation

IP – Instant Payments

JIT – Just in Time

P2P – Peer-to-Peer (or Person-to-Person)

PFM – Personal Finance Management

PISP – Payment Initiation Service Provider

POS – Point of Sale

PSD1 – Payments Services Directive 1

PSD2 – Payments Services Directive 2

PSD3 – Payments Services Directive 3

PSR – Payments Services Regulation

REST API – Representational State Transfer API (Application Programming Interface)

ROI – Return on investment

RTS – Regulatory Technical Standards

RT1 – Real-Time 1

RT2 – Real-Time 2

SCA – Strong Customer Authentication

SEPA – Single Euro Payments Area

TIPS – Target Instant Payment Settlement

TPP/TPPSP – Third-Party Payment Service Provider

TSP – Trust Service Provider

XS2A – Access to Account

1 INTRODUCTION

The banking sector is undergoing a substantial change, including a demanding regulatory environment, fast technical improvements, the way how customers conduct their banking business and finally constant digitalization.

The banking industry has made significant advancements in today's era of constant digitization and digital transformation. The industry has been changed by developments and enhancements like introductions of customer-oriented m-banking solutions, e-wallets, crypto, open-source and similar paradigm. It has actually revolutionized the sector. These changes have also highlighted the growing importance of regulating the payment services sector. According to Haataja (2015), the changing landscape of the payments industry is forcing banks to make strategic choices about their role. They must decide whether to be a behind-the-scenes supporter of customer-focused solutions provided by others, or a prominent player in consumers' everyday financial activities. The Payment Services Directive (PSD) and its updated version, PSD2, play a crucial role in shaping these decisions. PSD2 is designed to promote competition and drive digital transformation within the financial services sector.

This thesis aims to cover relevant topics related to PSD2 (Payments Services Directive 2), mainly the opportunities it assumingly represents for the retail banking sector as the thesis' targeted industry niche. It consists of five chapters and a conclusion, out of which the first three chapters follow the general part, starting with covering details of payment services regulations within the European Union, followed by main and relevant literature reviews and key concepts. The empirical part of the thesis, covered in the last two chapters and the conclusion, is based on interviews as the primary data method, where the feedback provided gives an additional and practical overview of the thesis' subject while serving as an appropriate background for the final discussion and conclusion.

1.1 Background

PSD2 is creating productive tension in the market, setting up financial services and transaction processes to another level of security and user experience. On the other hand, it also motivates and activates data-driven apps and services to enter and leverage the new era in banking. In other words, it creates the environment for new financial services and applications, leading to a more accessible and interconnected banking ecosystem and, thus, setting the background for Open banking.

Several new business models are supporting new potential revenue streams, which the banks in question could take advantage of and which all represent concrete potential in the context of new revenue streams:

- Providing new offers and capabilities through partnerships: within the partnership model, different partners are co-creating pool of opportunities and set the background for commercial distribution (Moen & Helgøy, 2018).
- A bank as a marketplace: managing the marketplace and providing new set of aggregated services from loans, budgeting software, to insurance and mortgages (Moen & Helgøy, 2018). According to Guibaud (2017), "the marketplace is one of the key transformative strategies banks should consider", while the Open banking platform model, according to Skinner (2017), is the most effective approach for achieving consistently high profit margins.
- Monetization of core services by providing them as-a-service to Fintechs and other distributors of financial services.
- Monetizing the data: In anticipation of AIS (Account Information Service), many banks are starting with implementing measures to monetize their own data.,
- Other indirect new sources of revenue, as direct implications of PSD2 requirements: for instance, by utilizing their own customer data, banks can build better relationships and create a customer-centric digital banking portal.

The relation with PSD2 and Open banking is a highly relevant topic since it is still undergoing development and transforming the financial industry (Woods, 2021). While PSD2 is a prescriptive regulatory framework with specific requirements for payment service providers, Open banking is a more flexible and market-driven approach that allows for various business models and service offerings.

1.2 Research questions and objectives

The thesis argues that the PSD2 calls for a deep strategic revision and business model change by banks, as it simultaneously generates substantial opportunities for a bank. Different financial impacts and strategic potentials will be evaluated and compared using pre-defined primary and secondary research methods.

Specific research questions the thesis aims to target and evaluate are the following:

1. What specific strategic and operational efforts could banks take to stay competitive in the post-PSD2 environment?
2. What are the potential new revenue streams with PSD2 adoption, and how to embrace them?
3. How can banks adopt an open business model with PSD2 and become platform providers?

The thesis focuses on the evaluation of what potential options a retail bank has, to take advantage of opportunities, which are expectedly opening up with the introduction of PSD2 and Open banking, including the potential new revenue streams, while also taking into consideration all the disruptive implications for the retail banking industry in the context of PSD2. The evaluation is supported with specific feedback provided via semi-structured

interviews by representatives of selected financial institutions. The provided data is compared with the available data and the findings of relevant literature.

The objective of the thesis is therefore two-folded: on the one hand, to analyze the potential strategic transformation factors, threats, opportunities, and business model changes, while on the other hand, to concretize all new revenue stream potentials and other benefits, which any retail bank can take advantage of while adapting to PSD2 requirements.

1.3 Methodology

The thesis will include semi-structured anonymous interviews used as the primary research method, done either in person or via e-mail. The interviews will be conducted with decision-making representatives within the financial services industry from Slovenia and focused on addressing different perspectives and implementations of PSD2 strategy and/or mainly on opportunities and concrete benefits gained with PSD2 compliance. The respondents, as representatives of bank(s) and selected Open banking service providers, which already have some measurable results as an outcome of PSD2 legislative or their Open banking strategy, will be invited.

The strategic recommendations for retail banks will be based on data available from selected Slovenian and EU banks regardless of their size and market. The main selective filter will be based on banks which are already using new or completely changed business models and already gaining or expect to gain concrete and measurable benefits with exceeded basic PSD2 requirements.

The literature-based institutional theories, organizational responses and evaluation of different business-models banks are using or are planning to use will be used as secondary research methods. The literature source will be mainly online material, professional and scientific books, blogs, articles, reports, and data related to the targeted bank. The information gathered using this method will serve as the basis of the theoretical part of the thesis.

2 PAYMENT SERVICES REGULATIONS

2.1 Background

In the past, bank regulation and supervisory in the EU were in domain of domestic regulators. However, the global financial crisis revealed that national governance was inadequate for the interconnected European banking sector, especially within the Eurozone, where the single Euro currency facilitated fast integration of the financial system.

During the financial crisis in period of 2007-2009, government involvement was considered inevitable to prevent further and more severe economic consequences. To keep things stable, governments gave promises, boosted liquidity and capital, and took assets from banks that had failed. As per the European Commission (2015), the EU has implemented a regulation that mandates consumers to have the option of requesting their payment and credit history information to be shared with parties. The main goal of PSD2 is to make the process of transferring institutions efficient thereby increasing convenience, for customers. Additionally, it aims to empower EU member states to prevent credit institutions from limiting access to payment accounts. The regulation also seeks to make sure that financial services providers have same access to the payment account services provided by credit institutions (European Commission, 2015).

2.2 EU Rules on Payment Services

In 2007, the European Union (EU) introduced a set of common payment standards known as PSD1. This directive laid out guidelines for information that had to be provided to customers by payment service providers, as well as the rights and responsibilities associated with using such services. It also created a new category of providers beyond traditional banks, fostering increased competition and choice for customers. Additionally, this regulation established the background for the Single Euro Payments Area (SEPA), which enables seamless transactions across the Eurozone with consistent conditions (European Commission, 2017).

2.2.1 Payment Services Directive 1 (PSD1)

Initial payment services directive, PSD 1, set the basis for the Single Euro Payments Area (SEPA), which "allows consumers and businesses to make payments under the same conditions across the Euro Area" (European Commission, 2017), all with the objective of improving security of all financial transactions inside the European Union (EU) and accelerate the innovation.

The PSD 1 directive covered three key point areas: authorization, information requirements and rights and obligations. To be able to do business inside the EU, institutions that provide payment services must first get authorization, which is provided by national authorities. For authorization, robust governance mechanisms are required, and a specific amount of capital must be held, with the exact amount dependent on the payment services that are offered. (EUR-Lex, 2015).

Consumer protection regulations within PSD1, required customers to receive clear and comprehensive information about payment options. This includes disclosing all fees and providing the necessary steps for addressing complaints. It is the responsibility of PSPs to ensure that this information is readily accessible- to the public (EUR-Lex, 2015)

Since 2007, the European economy has benefited greatly from this Directive, which paved the way for new market entrants and payment institutions, ultimately giving consumers more options and competition. (European commission, 2015)

2.2.2 Reasons for Reformation

New forms of payment services, such as PIS, needed revisions to the PSD 1. The formerly unregulated businesses have ushered in innovation and competition, expanding, and often lowering the cost of available online payment methods. The European Commission claimed, that by regulating them under the Payment Services Directive (PSD), single market security, innovation, and transparency had increased and leveled the playing field for different types of payment service providers (European Commission, 2015).

PSD1 adoption in the European payments industry enhanced efficiency, resulting in substantial advancements in technology and the introduction of new electronic services. TPPs provide these services, which give specialized payment choices in both the mobile and online payment sectors. PSD1 is largely seen as a regulatory triumph for the European Union's payment industry (Moen & Helgøy, 2018).

Providers that facilitate transactions without using credit cards for online purchases, for instance, were not covered by PSD1 but are covered under PSD2. Regulation of these emerging markets and service providers is essential to sustaining and fostering competition, it ultimately benefits the service industry by creating parity. Harmonizing a disjointed European regulatory framework will provide proper business environment for PSPs within and across nations (Moen & Helgøy, 2018).

From a consumer rights standpoint, PSD2 is essential as well. Customers require assurance that the increasingly sophisticated services they are using are secure. With the increasing technological complexity of electronic payments, PSD2 helps guarantee that the available solutions and services are adequately safe. In addition, it became clear that several of the things that were not covered by PSD1 were too nebulous, too generic or too out of date, leading to legal ambiguity, payment chain security problems, and a lack of consumer protection. Therefore, it became necessary to introduce PSD2 (The European Union, 2015).

2.3 Payment Services Directive 2 (PSD2)

The Payment Services Directive 2 (PSD2) is applicable since January 13th, 2018. Its main objectives, according to the European Commission (2015), are to:

- "Contribute to a more integrated and efficient European payments market,
- Improve the level playing field for payment,
- Make payments safer and more secure,
- Protect consumers,

- Increase harmonization,
- Encourage a more competitive market" (European Commission, 2015).

As PSD2 makes it possible for bank customers to outsource the management of their financials to a third party, the banking industry will stop competing with one another just with other banks, but rather with any company, authorized to provide financial services. The PSD2 is thus transforming the payment value chain in the utilization of account information, in the types of business models that are lucrative and in fulfilling the customers' expectations (Hafstad et al., 2016). PSD2 introduces two new categories of participants in financial environment:

- AISP (Account Information Service Provider) –a service provider with access to the account information of bank customers.
- PISP (Payment Initiation Service Provider) –a service provider, which initiates the payment process on user's behalf.

As Biczok (2018) noted, PSD2 with all the benefits of its predecessor regulation, is aimed to regulate these innovative payments industry entrants, AISPs and PISPs. It is aimed to boost EU competition, so consumers could be able select from variety and cheaper services, while respecting industry standards. The model initially required member nations to properly identify, license, manager and regulate these emerging payment providers. Secondly, PSD2 expanded its geographical reach and includes all currencies; while the primary emphasis of PSD1 was on cross-border transactions within EU member countries (Biczok, 2018).

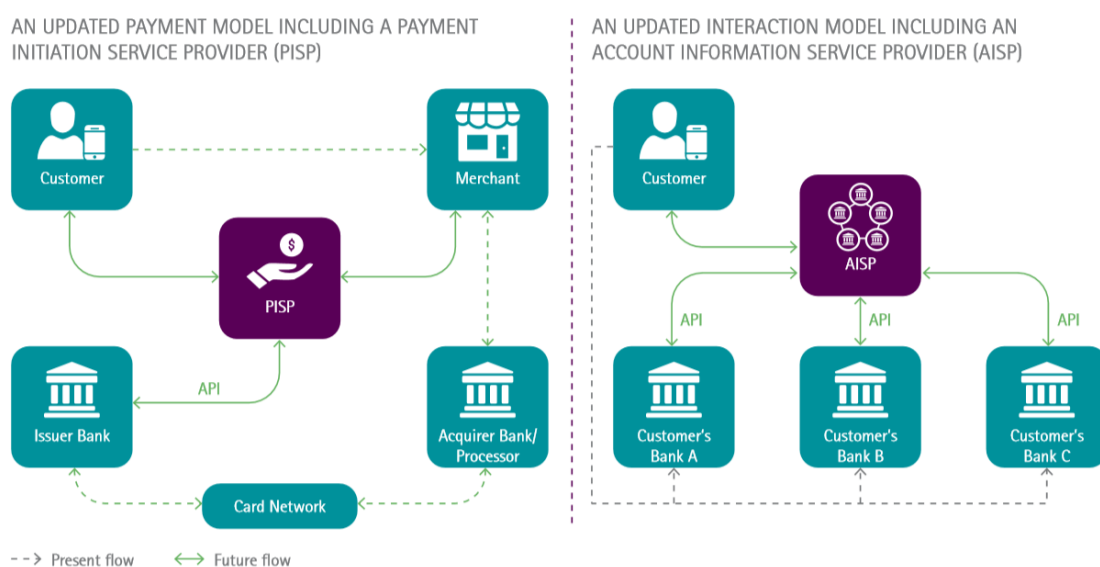
To emphasize the most significant variations between PSD1 and PSD2, it is crucial to explain that various new kinds of TPPs arrived on the market, which altered the payment flow that was previously recognized. This may be done by considering that the payment flow was altered. They were a direct result of the proliferation of worldwide eCommerce companies, international mobile banking apps, and payment methods that are designed for usage with cell phones, such as contactless (NFC) solutions (Biczok, 2018). In the realm of conventional payments, the following entities are the most important participants in the process of making a payment, as per Biczok (2018):

- Banks: the issuing banks are issuing the customers' bank accounts, credit or debit cards; the acquiring banks, which are opening up merchant accounts for businesses to collect payments and initiate settlements.
- Merchants: to receive incoming payments and to commence settlements, merchants are required to have a merchant account.
- Payment Service Providers (PSPs or PISPs): essentially the technological gateways or platforms, that connect buyers and sellers.
- Card Schemes: clearing for transactions is supplied by card schemes, in the event that payments were made using cards.

PISPs contribute to issuing banks' basic services, according to Biczok (2018). To get bank account information, these PISPs must obtain prior authorization from account and cardholders, thus allowing them to connect to ASPSP via API call (Biczok, 2018).

This setup (Figure 1: PSD1 vs. PSD2: Changed interaction models between consumers and banks) eliminates the need (requirement) for credit or debit cards to initiate credit transfers. It is though still possible to utilize transactions directly from bank accounts. PISPs must have a PSD license from their native country and rights to operate in the EU due to the increased security risk of this new payment method. (Biczok, 2018).

Figure 1: PSD1 vs. PSD2: Changed interaction models between customers and banks



Source: Accenture (2016).

2.3.1 Market Efficiency and Integration

With introduction of PSD2, the scope compared to its predecessor, has been expanded and is including transactions in all currencies and those transactions, where only one PSP is in the EEA (one-leg transactions). Furthermore, PSPs are required to disclose their fees and terms for both national and international EEA payments, while they also hold responsibility for any service-related concerns that may arise (European Commission, 2015).

2.3.2 Consumer Protection

According to EUR-Lex (2015), the primary focus of PSD1 was on consumer protection, while PSD2 is set to increase that emphasis. PSD1 outlined the regulations for the needs of clear information, such as the availability of information on transaction costs on payment transactions. The objective is to raise consumers' awareness of the fees they may face when

making a purchase. Furthermore, PSD2 is enhancing consumers' legal protections against fraudulent or otherwise inappropriate charges to their payment accounts. The revised regulation simplifies and further harmonizes the liability requirements in case of unauthorized transactions, protecting the legitimate interests of payment users more effectively against potential losses (EUR-Lex, 2015).

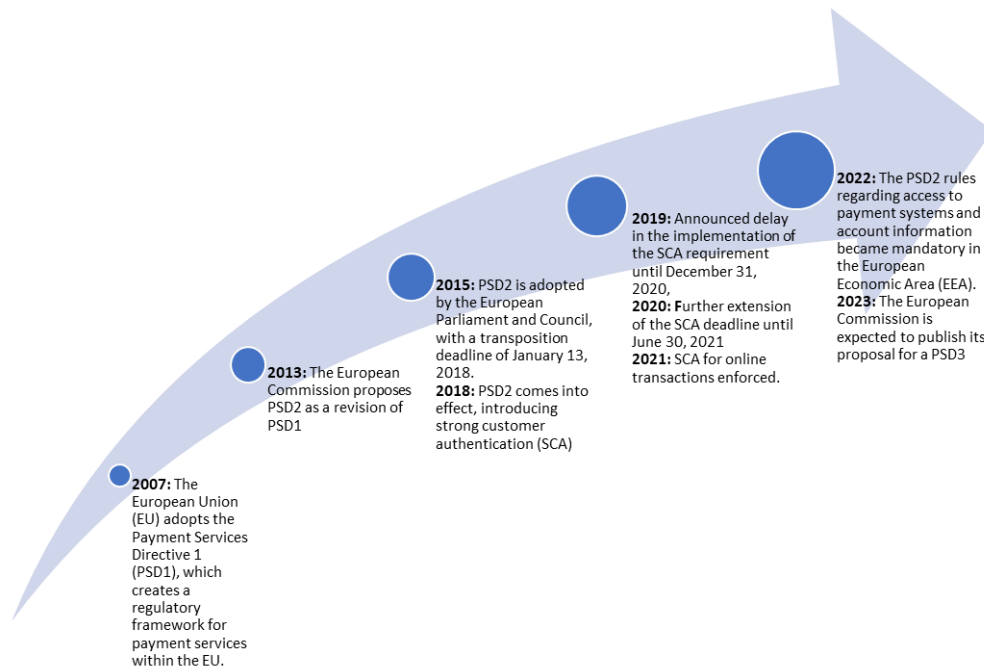
2.3.3 Competition

The primary implication of PSD2 is to allow authorized third parties access to customers' account information, but not without customers' permission. As seen in Figure 1, this shifts the burden of initiating payments and keeping tabs on accounts away from banks and onto third parties. The latter motivates upstarts to enter the payment sector as TPPs, such as Fintech firms or BigTech firms (like Amazon and Meta). It was anticipated, that PSD2 would have a significant financial effect on company models and the value chain. By allowing non-banks to legally build on top of banks' data and infrastructure, not only may these companies establish services comparable to those offered by banks, but also whole new financial services (European Commission, 2015).

2.3.4 PSD2 Implementation Timeline

Since its implementation in 2007, PSD2 has driven technological advancement in banking sector and has enabled the creation of completely new services and business models that benefit customers and increase competition. Though it noted several updates and changes since its introduction (note Figure 2), as of 2023, PSD2 is well-established across the European Union, and banks are continuing to innovate and develop new services in response to the regulation.

Figure 2: PSD2 Implementation timeline 2007-2023 with key milestones



Source: Own work based on ECB (2018).

3 LITERATURE REVIEW AND KEY CONCEPTS

3.1 Introduction to APIs

APIs are software tools, that allow two computer programs to communicate. Through predefined protocols and routines, application establishes an interface with an associated software by stating what data may be accessed, how and in what format (Borgogno & Colangelo 2019).

"APIs are the cornerstone of the modern digital economy. Every time you buy from Amazon, use an App, make a payment, you are probably using APIs." (The Berlin Group, 2018, page 2). Moen and Helgøy (2018) divided APIs into following three categories:

- Private APIs: Banks utilize private or internal APIs for an extended period. APIs are established to link applications and improve business information availability. Both the API producer and user belong to the same organization.
- Partner APIs: Private APIs become Partner APIs when they are utilized by partners to be able to utilize services based on their relationship with the bank. Partner APIs provide opportunities for banks in potential expansion and providing new services.
- Open APIs: with Open APIs, bank's business data and functionalities, are accessible also to non-banking TPPs and to internal developers or external entities with proper credentials.

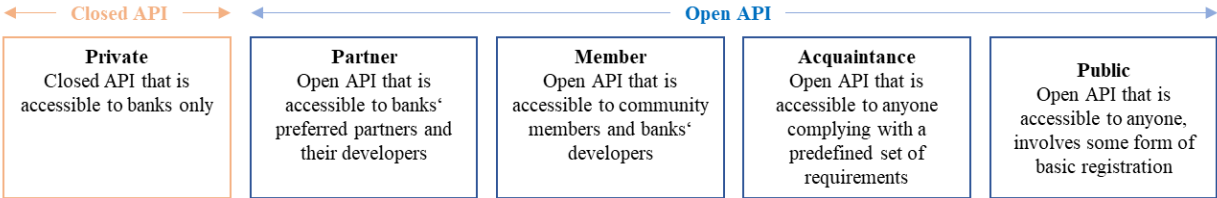
To comply with PSD2, banks must utilize Open APIs, thus allowing TPPs to have non-discriminatory access to APIs. Alternatively stated, what PSD2 requires from banks though, is to share payment account data with TPPs through Open APIs. (EUR-Lex, 2015).

As Moen and Helgøy (2018) noted, it is not necessary to disclose details about other types of accounts through Open APIs. Banking software that includes details on the client's mortgage circumstances or fund savings, should not have open and distributed APIs in order to communicate with customer savings accounts. To expand beyond payment initiation and AIS, however, FIs are free to make more of their APIs available to TPPs and these APIs should be treated as "premium" (Moen & Helgøy, 2018).

According to EBA (2016), there are different levels of API openness (Figure 3):

- **Member APIs:** All formal members of a community with clear membership criteria and rules may apply to use these APIs. The API provider grants access to community members who follow membership requirements while joining, thus only approved or registered TPPs may access PSD2-mandated AIS and/or PIS.
- **Acquaintance APIs:** Inclusive API, thus available to anybody who meets the conditions provided by developer portals, including their predefined agreements. An example of Acquaintance API category is Merchant access to point-of-sale (POS) API.
- **Public APIs:** Available to anyone, usually with registering while providing required identity and authentication information .

Figure 3: Levels of API openness



Sources: Own work based on EBA (2016).

3.1.1 API Adoption

Regulation, rivalry, consumers and the need for new income sources are all pushing banks toward API usage. As per Navaretti et al. (2023), even less opaque banking might transform financial intermediation. However, users must be prepared to give their data, and APIs and cloud computing must be in place to allow easy data access.

Ozcan and Zachariadis (2016) noted, that the use of APIs is in a significant rise in Europe and other regions, (also) due to the implementation of regulations like PSD2 and Open Banking. These guidelines push banks to be more receptive to new market players, allowing for innovation and improved customer service. To achieve this openness, banks often utilize

APIs as a common method. However, API adoption has been driven more prominently in some locations compared to others, as according to Ozcan and Zachariadis (2016).

As new players enter the financial industry, customers are increasingly receptive to the options they offer and in turn expect traditional banks to match this same level of service and innovation. With customer turnover increasing, conventional banks are striving to enhance their product and service offerings, while improving the overall customer experience (Brackert, 2018). They recognize, that forming strategic alliances with TPPs can provide a competitive edge and that embracing an open-banking environment can greatly enhance the quality of service provided to customers (Brackert, 2018).

3.1.2 The Role of Standardization

According to Borgogno and Colangelo (2019), notwithstanding the several legislative proposals made thus far by the European Commission, there is still no clarity on who and how shall define APIs. Consequently, this is a touchy subject since how the industry handles the technical aspects of any data-sharing policy is crucial to its success. Interoperability ensures that all businesses can use and benefit from data access rules across the market.

What Borgogno and Colangelo (2019) were further referring to is that in order to create and distribute data enabled services effectively, open and standardized APIs play a vital role. These APIs facilitate collaboration, compatibility, and seamless data exchange across the entire value chain.

3.1.3 PSD2 API Standards

The API standards used by banks to comply with PSD2 requirements vary, depending on their technical capabilities and resources. According to Cazacu (2022), with PSD2, Open banking interfaces from FIs must adhere to certain standards. As a result, several standards bodies were established, such as the Berlin Group, STET, PolishAPI and similar. Their common aim is to provide guidelines for APIs, the technology behind specialized user interfaces. However, implementation has been left up to individual banks for the time being. The phrase "API standard" is therefore a misleading term, as per Cazacu (2022).

The growth and development of any sector, heavily rely on standardization in technology and compatibility. One important aspect of this is the use of APIs, which have the potential to revolutionize industry design by enabling modularization when widely adopted (Dinckol et al., 2023).

As per Cazacu (2022), there are many technical requirements, but there is no collaboration on their implementation and performance. The same APIs are implemented and function differently. Even under the same standard, banks interpret and apply it differently. PSD2 and Open banking providers must evaluate each API individually. It is worth noting, that there

is a big difference between establishing a standard and implementing it consistently, according to Cazacu (2022).

3.1.4 Business Value of APIs

As per Parashar (2021), APIs connect banks and other companies digitally, enabling integrated client experiences and minimizing development time and cost. Large banks can provide API services to other (smaller) banks, generating revenue while utilizing their infrastructure and at the same time reducing the ROI. The bank should serve as a hub in an ecosystem that provides ease, simplicity, and customized experiences (Parashar, 2021).

New banking business models should be built on APIs. Several banks have taken early moves, but many are still attempting to find the optimal solution. Although API-driven design has proven its ability to enhance user experience and speed up the creation and rollout of new products, many banks still seem to be far from leveraging these advantages.

3.2 Customer data

As per Moen and Helgøy (2019), within travel, entertainment, or any other service sector, customers place a premium on ease, user friendliness, and accessibility when making their selections. But the data, the essential source and background of driving proper user experience, is still owned by the customer, not the banks or any other entity. Banks have had access to customer data for years, even decades, but they have not used or tried to own it, neither in the interest of the client nor for their personal gain.

3.2.1 Sharing and Provisioning of Customer Data with Third Parties

As per Kumar (2014), banks are increasingly focusing on data-centric strategies to differentiate on certain markets, strengthen customer relationships and achieve sustainable growth. Data governance and data management are therefore considered as crucial factor for FIs to transform their business models and improve customer experience across various channels they provide (Kumar, 2014).

As further noted by Borgogno and Colangelo (2019), while the right to data portability under the GDPR is considered a new development in EU within data protection context, similar regulatory efforts have not been previously pursued, with an exception of the AIS within PSD2.

Data portability is expected to rebalance the relationship between digital customers (data subjects) and digital platforms (data controllers), by validating their authority and autonomy in managing their personal data, thereby reducing the prevalence of personal data lock-in and fostering greater competition (Borgogno & Colangelo, 2019). While APIs offer a

valuable solution for streamlining system integration and accessing data, ensuring the privacy and security of sensitive information presents a noteworthy technical challenge (McKinsey, 2017).

3.2.2 Capitalization on Customer Data

As Westermeier (2020) noted, the FIs future success will not be based on monetary resources (alone), but will significantly rely on the growing importance of data. Transactional information is already today playing a significant role, while infrastructure is primarily designed for facilitating transactions and flows, it also produces valuable data as a byproduct.

To use PISP or AISP services, users are required to provide transaction history information from their payment accounts. This allows TPPs to track consumption trends, as this data can include details such as transaction amount, type, and time, which all can be leveraged and utilized in multiple ways. This is considered an asset for TPPs. Furthermore, this kind of information can also play a crucial role in facilitating efficient payment and account management processes (Moen & Helgøy, 2018).

Controlling data may present tremendous power and managing it properly, also tremendous competitive advantage. As most of us make payments daily, banks have extensive transaction records on all their customers. As per Deloitte (2011), most banks utilize procedures and software that generate a growing volume of data, and this trend is expected to continue expanding.

In the context of positioning as AISP or PISP, Moen and Helgøy (2018) recognize the following consumer data potential:

- Account overview: consumer accounts might be consolidated by an account overview service as tracking bank accounts, pensions, and loans with several logins, applications, and portals may be time-consuming. Having a single view of them might help consumers stay on track with their expenditures. The service provider earns money if the consumer switches their primary bank, pension arrangement, etc.
- Budgeting and saving: An AISP uses consumer data to offer spending insights, budgeting and savings advice. They can earn money by opening savings accounts for clients and charging banks based on savings. They can also market saving products from multiple banks and charge for advertising or service usage.
- Purchase recommendations: AISP can use transaction history to advise consumers on purchase decisions before they search for a product or service. This service can generate revenue by charging suppliers for advertising and customers switching suppliers based on AISP recommendations. Additionally, banks can benefit from this service by collaborating with AISPs to analyze customer consumption patterns, allowing them to better understand their customers and provide personalized services.

A PISP can initiate payments on behalf of a customer only if the consumer has given his or her explicit permission to access their payment account(s). This is opening up new opportunities for the development of innovative and/or unified solutions supporting financial transactions (Moen & Helgøy, 2018).

3.2.3 PSD2 and GDPR

Some banks have viewed data custody and security as a responsibility, rather than a valuable financial asset. Financial data exchange follows strict risk-based protocols, requiring permission and undergoing audits to ensure regulatory compliance and effective risk management. However, there are opportunities for enhanced security through improved identity validation, fraud detection, and know-your-customer processes. For example, the technological requirements introduced by PSD2 may help addressing long-standing issues like screen-scraping, that have plagued banks (McKinsey, 2017).

Data processing must be done in compliance with EU and national data protection regulations, as stated in PSD2's wording (Article 94). In addition, Article 67 of PSD2 stipulates that all services must be founded on users' explicit agreement and in conformity with data protection regulations. Providers are also forbidden from asking for or exploiting sensitive payment information for anything other than the user's desired account information service (Politou & Alepis, 2019).

PSD2 fundamental principle is based on the fact, that a TPP must obtain permission from the account holder to access and perform transactions on their behalf. Different types of TPPs have their own specific privacy concerns. The GDPR aims to establish consistent safeguards for personal data across all EU member states. These rules apply to both payer and payee information under the X2A legislation. The regulation also promotes data portability among systems, although certain cases have seen a watering down of the "right to be forgotten" provision, which now goes by "right to erasure." (McKinsey, 2017).

3.3 Open Banking

3.3.1 Open Banking Landscape

The financial services industry's future is uncertain due to changing client preferences, new regulations, competition from digital ecosystems like Google, Apple, Facebook (now Meta), and the need for innovative business models. Open banking is emerging as a persistent trend, highlighting the need for adaptability and innovation (Fintech Futures, 2018).

Open banking refers to a cooperative framework whereby financial data is exchanged through application programming interfaces (APIs) across several independent entities, with the aim of providing improved functionalities to the market (McKinsey, 2017). APIs are

being utilized to facilitate the development of personal financial management software, show billing data on financial institutions' websites, and link developers to payment networks such as Visa and Mastercard.

As Brackert (2018) noted, the potential advantages of Open banking are several. These advantages include an enhanced user experience, new sources of revenue and nonetheless a form of service that is viable for historically underserved populations. Both end users, as banks and non-banks may benefit from Open banking while entering new areas of innovation and competition.

3.3.2 Open Banking and PSD2

When compared to PSD2, Open Banking is a considerably more all-encompassing and complex paradigm change in the delivery of financial services throughout the whole value chain (Jelicic, 2019). The term "Open banking" is often used interchangeably with the PSD2, though they are not identical concepts. Open banking is a broader term that is in its essence based on sharing financial data between TPPs and traditional FIs in a secure and regulated manner (Jelicic, 2019).

As per Navaretti et al. (2023), Open banking refers to the practice of allowing TPPs to access to information that is normally protected by the confidentiality between a supplier of financial services and its customer. PSD2 is a regulatory framework developed by the- EU for EU to create fair competition and enhance consumer protection among PSPs. Open Banking on the other hand allows banks to collaborate with external developers, gaining valuable insights into the market and end users. This collaboration empowers banks to make informed decisions about products and channels (Jelicic, 2019).

According to Ozcan and Zachariadis (2021), Open banking and PSD2 are designed to prioritize customer needs and redefine ownership and data-sharing rights. If successfully implemented, they can set an example of regulation coming before innovation.

Further per Jelicic (2019), PSD2 is designed to foster competition within the financial services industry, Open banking enhances this role with additional focus on customer-centricity, financial integration, value-added services, and fee reduction. Open banking has a long-term influence on the FIs' relationship with clients, as well as the overall banking industry. It ensures sustained growth and innovation even after the implementation of PSD2.

3.4 Instant Payments

Instant payments can potentially revolutionize the way that individuals and businesses conduct financial transactions, and PSD2 has created the regulatory framework necessary to enable this change. PSD2 has made it possible for Fintech companies and other innovative players to create new instant payment services that are fast, convenient, and cost-effective.

Regulated status for Instant Payments (IP) will significantly affect competition and innovation in European payment. The emergence of a single regulated IP standard for Europe, amid mandatory projects like high-value payment system migration to ISO 20022, will provide new opportunities for global tech giants and Fintech start-ups, affecting banks' resources and budgets simultaneously (Olofsson, 2019).

According to Olofsson (2019), reducing fragmentation across Europe requires the development of enabling infrastructure and interoperability in Open APIs and IP interfaces.

3.5 Background to the Potential of PSD2 for banks

The banking industry is being significantly impacted by changing market conditions, new digital technologies and regulatory pressures. These factors not only threaten traditional models, but also present opportunities for new revenue streams. Models can range from compliance with PSD2 requirements to incorporating new services, aggregating banking core and data, while creating value through economies of scope in production and innovation (Omarini, 2018).

3.5.1 Impact on Organizational Structure

Banks will need to shift their focus from product-centricity to customer-centricity, placing the needs of the customer at the heart of everything they do, as Open banking and PSD2 are centered on improving the customer experience by empowering consumers with more information governance options and allowing them to access more personalized services.

There may be several real-world effects of PSD 2 on businesses and the industry. Industry (or field) structures may become more fragmented or centralized due to the directive, as claimed by Greenwood et al. (2011). Fragmentation is on the highest level of external elements, that affect an organization's ability to function (Greenwood et al., 2011).

When banks include TPPs in their scope, they practically incorporate them as their partners in the industry. As per Haataja (2018), this may give them more influence in the network and have far-reaching effects on field dynamics. To begin, a wider variety of companies will take on roles formerly performed by fewer. This has the potential to create competition for the services that the third-party suppliers can provide more cheaply and quickly. Some companies may decide to concentrate on what they do best in response to rising levels of competition. As a result, certain services may begin to gravitate toward a few of companies at the sector's epicenter.

As Haataja (2018) notes, as more companies focus on specific services, market fragmentation and concentration of essential services may increase, leading to significant changes in the industry's structure and increasing institutional complexity.

According to Milanesi (2017), banks must adapt their organizational structures to support a data-driven operating model, enable faster decision-making, deliver a unique customer experience, and adapt to changes. PSD2 mandates secure data management and sharing, requiring banks to have the necessary technical infrastructure and expertise to effectively manage customer data.

3.5.2 Change of Culture

According to Milanesi (2017), enhancing the delivery of financial services requires banks to prioritize cross-team collaboration and cultivate a dynamic environment for innovation. Instead of merely being gatekeepers, compliance and risk-management teams should be empowered to act as problem solvers and enablers. Additionally, fostering an innovative culture will attract talented individuals like data scientists and engineers, who are crucial for success in an Open banking landscape. To facilitate this transition, it is recommended that banks foster a shared vision and common values throughout their entire organization (Milanesi, 2017).

The financial services industry is subject to ongoing changes. Determining the organizational culture enables financial institutions to effectively react to changes that take place in both the internal and the external contexts. According to Stanciu (2017), employees working in a company that is through a transition process should be both inventive and supportive of change. Established financial institutions confront several issues, one of which is competition from those competitors, that are more inventive and agile. As a result, these institutions need to be able to respond in a manner that is both flexible and agile (Dapp, 2017).

When working in the field of financial services, one of the goals that is regularly faced is to bring about a transition in the company's culture. According to Fanning (2022), because to the rapid speed of technical, economic, and competitive change, all big companies, including banks, must rethink how they run their businesses and how their employees do their jobs.

For the banking industry, there are additional factors that are driving them in this way. The stricter regulations that were put in place in the wake of the crisis added numerous levels of complexity and bureaucracy to their enterprises. The ability to be agile and responsive may be hindered because of this. According to Fanning (2022), personal responsibility for decision-making may hinder spontaneity, while conventional hierarchical organizations might foster rigidity.

Digital culture has recently become prevalent in businesses as a direct result of recent developments in the use of technical advancements. According to Uzelac (2010), the introduction of digital technologies results in an increase in the complexity of the corporate environment. According to Loonam et al. (2018), the development of a digital culture is an essential step in the digital transformation process that leads to success. Schwarzmüller et

al. (2018) further claims, that in order for a bank to successfully undergo digital transformation and as a result successfully adapts to Open banking business models, it has to firstly establish a culture that encourages training, creativity, and decision-making.

3.5.3 Hinderances for Transformation

Banks' outdated technology systems, known as technological legacies, pose a hindrance to their transformation into platforms. These rigid and inflexible systems make it challenging to implement changes and create real-time interfaces that are practical and efficient. Furthermore, these outdated software designs fail to meet modern requirements for data sharing across multiple systems, further impeding banks from functioning as platforms. (Immonen, 2018).

FIs are often reluctant to allow access to their infrastructure- to external service providers, because they may not perceive these firms as true partners. Research by Immonen (2018) and the interviews he conducted, indicate that banks prefer to build barriers around their organizations, rather than actively seek out business partnerships. This approach can hinder growth for the institution and potentially open doors for competitors from outside the traditional financial industry.

Immonen (2018) further identifies the additional obstacle within management, which encompasses various challenges. These challenges include a lack of knowledge, unawareness of changes in the competitive landscape, limited risk-taking abilities, and difficulties with decision-making. Overcoming these obstacles requires the implementation of more effective management strategies. To keep pace with the ever-changing environment, management must demand decisive and proactive actions.

Retail banks face barriers in developing open-banking initiatives due to their own barriers. They often adopt a gradual approach to innovation, focusing on financial services integration or compliance with legislation. This leads to short-term and defensive considerations, and compartmentalizes projects under IT, resulting in excessive technical focus and little attention to the larger business model. Additionally, many financial institutions misinterpret the business model, assuming APIs to be synonymous with Open banking, when APIs are just one component of the Open banking ecosystem. (Brackert, 2018).

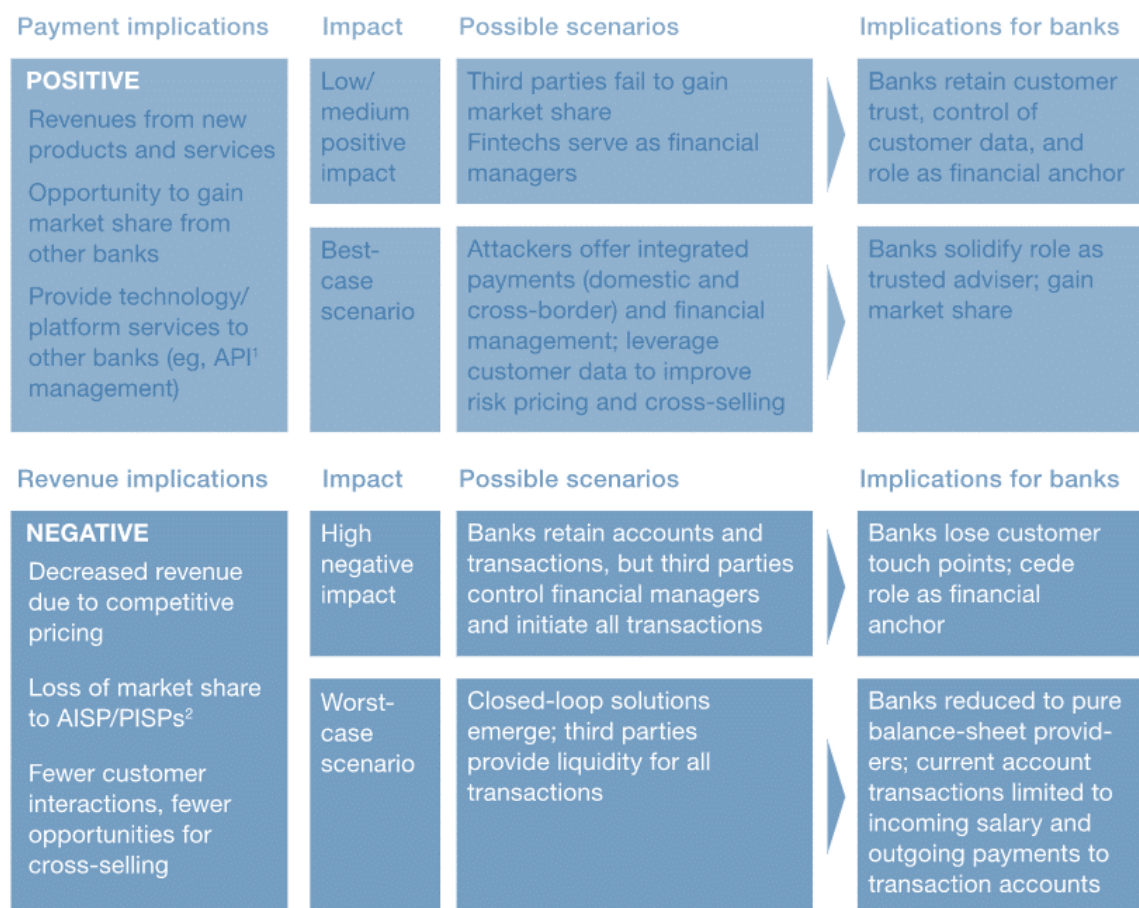
3.5.4 Competitive Implications of PSD2 on Retail Banks

To remain competitive, banks are under enormous pressure to innovate and offer new value offerings to their consumers. PSD2 impacts retail banking by enabling the creation of tailored financial products and services. Since both banking systems and APIs rely on interoperability with their surroundings, the legislative drive for banking openness is a push

towards platformization of financial services. Banks that can capture opportunities quickly and effectively may retain their role as trusted financial anchors (Westermeier, 2020).

On the other hand, there is no assurance that FIs will maintain their position as safe and reliable advisor. It is possible for closed-loop ecosystems to emerge, which would relegate banks to the position of balance-sheet providers in the worst-case scenario. Current account transactions would be confined to incoming salary deposits and outgoing payments to fund transaction accounts at another PSP, as shown in Figure 4. This would result in a considerable reduction in the number of client contacts that take place now. Third parties would handle all transactions and accumulate customer data (Westermeier, 2020).

Figure 4: Range of PSD2 Potential implications for banks



Sources: Own work based on Botta et al. (2018).

Furthermore, legal requirements for banks to expose their APIs therefore promote the platformization of financial services. This may happen either by permitting Fintech to companies to extend banks' platforms or by permitting technology businesses to include transactional data inside their platforms. By increasing the usage of APIs, the flow of transactional data may be made easier since APIs enable the sharing of this data between various parties. However, since platform providers choose the conditions of exchange, the

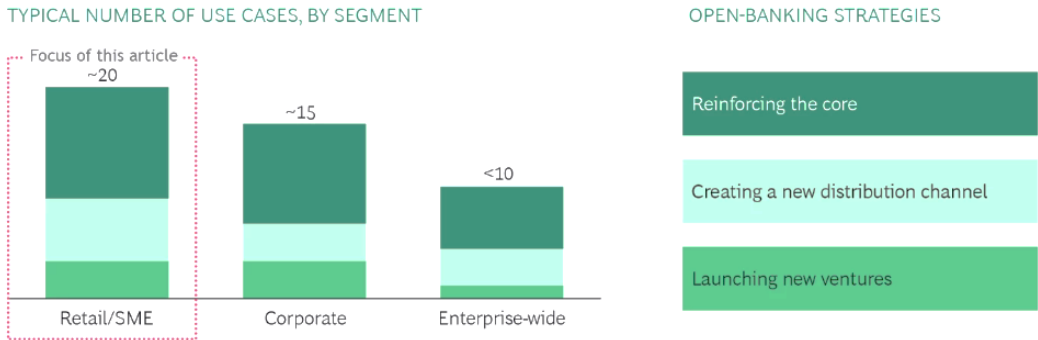
usage of APIs is not exactly a neutral method of communicating with one another in a two-way fashion (Westermeyer, 2020).

The "old banking" model, which is heavy on both assets and compliance, is going to be put to the test, and banks are going to be compelled to think about alternative ways of doing things. The terms "innovation," "competition," and "collaboration" may be used to describe the process of disruption (Moen & Helgøy, 2018)

3.5.5 PSD2 Monetization Opportunities

With the ability for third-party budget applications to automatically receive transactions from bank accounts, PSD2 has opened new possibilities for personal financial management apps. Brackert (2018) is promoting utilization of use cases of several banks, based on client results, profit potential, scalability, and competitive distinctiveness and using this information to establish suitable relationships with third parties (Figure 5).

Figure 5: Prioritized use cases by leading banks



Source: Brackert (2018).

In the context of use cases and as per Botta et al. (2018), there are several further opportunities PSD2 is unleashing, mainly in the sense of concrete business opportunities in the retail banking segments, for instance:

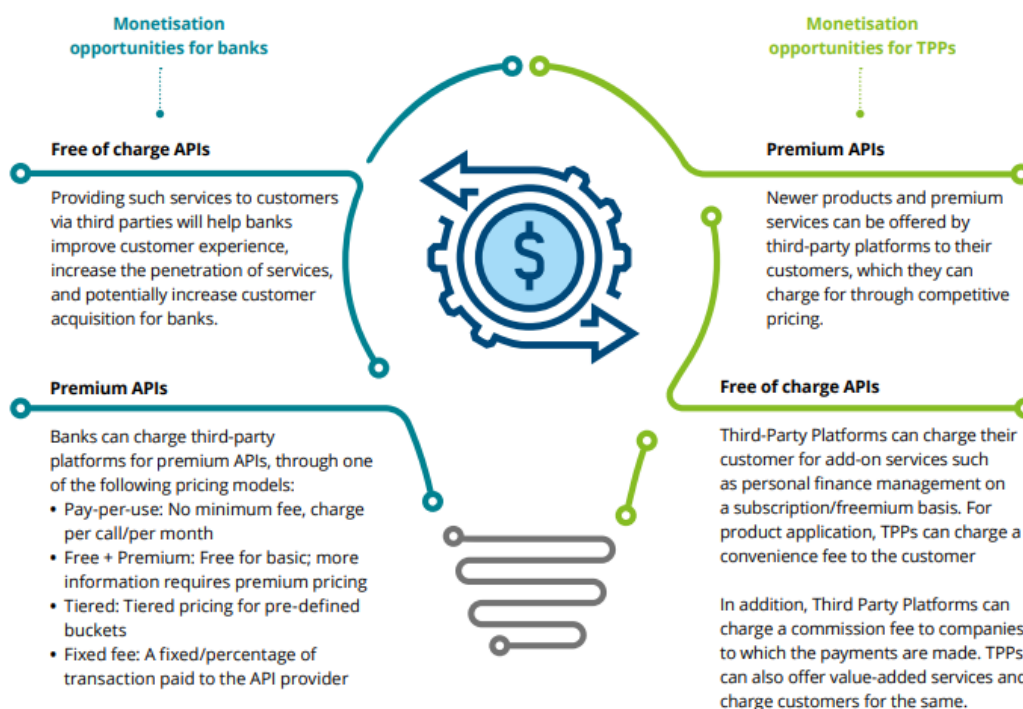
- Account aggregation: linking all accounts, tracking expenses, setting and planning saving goals, self-administration.
- Peer-to-peer (P2P) payments services: mobile money transfer directly from an account
- Consumer-to-business (C2B) payments: point-of-service money transfer directly from an account.
- Products cross-selling (banking and non-banking products): identifying leads for lending or investment products, for insurance and utilities offers.
- Lifestyle offerings: enable payments and services beyond payments.
- Identification and authentication services: providing digital identity.

According to Fintech Futures (2018), banks typically use transaction-based models, which are similar to traditional transaction banking services. However, APIs differ in how businesses allow TPPs to integrate and use their services through plug-and-play APIs, expanding their customer base and increasing payment volume.

APIs that banks provide, usually follow either the freemium or the premium-like (chargeable) business model. Freemium might be the first step toward subscription models and pricing that is determined by the number of API calls made. In this kind of business strategy, banks provide free access to a portion of their APIs to software developers while charging a fee for complete access. According to Paypers (2020), premium APIs are goods, services and platforms that make use of Open banking technology, but do not reside under its direct regulatory framework (note Figure 6).

According to Deloitte (2021), banks can benefit from access to data in a number of ways, including the production of leads, the cross-selling of services, the evaluation of risk, the development of collection strategies, and the creation of new products and services. Open banking also provides the opportunity to expand client onboarding at distant locations via the use through accelerated process and provide alternative credit risk assessments, together with other methods of determining creditworthiness. Strategy in setting prices is essential, and it may even provide a competitive edge.

Figure 6: Monetization opportunities



Source: Deloitte (2021).

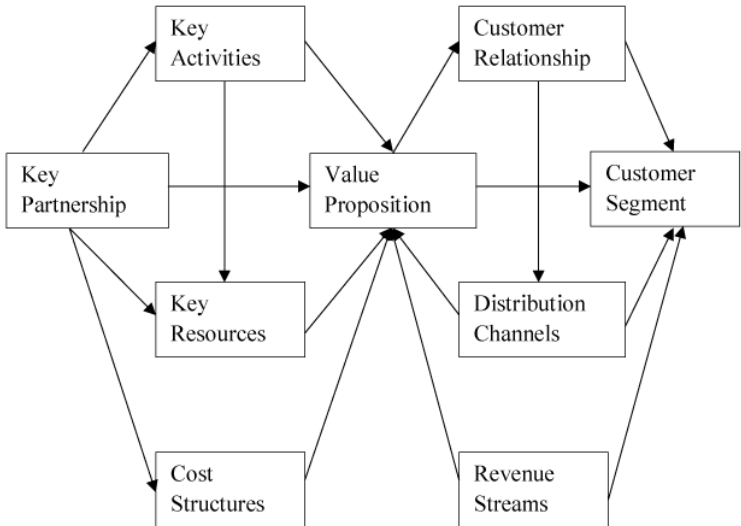
3.6 Business models

Banks need to get a head start on modifying and adjusting their business model as soon as possible, to remain competitive in an age, in which income from retail payments is expected to decrease. Not only they are obliged to do this to be compliant with the legislation, but they should also go above and beyond this approach to give what their consumers need and to obtain new income sources. According to Zott and Amit (2010), business models are essentially blueprints that companies follow to integrate themselves successfully into the industries in which they compete. Osterwalder et al. (2005) further elaborates on the term, as the word "business model" was first used in academic literature in 1957 by Bellman, Clark, Malcolm, Craft, and Ricciardi. These individuals were responsible for the first usage of the term. On the other hand, it did not become widely used until the middle of the 1990s and the early 2000s, when Internet-based enterprises began to flourish (Osterwalder et al., 2005).

As Osterwalder et al. (2005) noted, business model outlines how a company functions in regard to the processes of producing, capturing, and distributing value. Keeping that in mind, we can conduct an analysis of business models in a way that is both simple and comparative.

Osterwalder et al. (2005) categorized the business model into nine distinct components, and Chesbrough (2010) created a visual representation of those components, which may be seen in Figure 7.:

Figure 7: Business model structure



Source: Chesbrough (2010); Haataja (2018).

It is essential to know not just what a business model is, but also why and how it evolves. It is essential for a business to be nimble to thrive, especially in technology-oriented sectors where competition may rise rapidly due to new entries and mergers (Linder & Cantrell, 2000).

An organization's change model, as described by Linder and Cantrell (2000), may account for how it adapts to new circumstances. According to Schweizer (2005), companies that engage in dynamic industries need business models that reflect that volatility. Schweizer's (2005) research suggests, for instance, that an invention might pave the way for more lucrative supplementary services or assets. This means the pioneer could desire to join the complementing assets along the road. The innovator would need to adopt a more flexible business strategy to account for these shifts.

However, the fluidity of developing business models has pushed researchers explore alternate theoretical frameworks, even though the literature on business models has typically been linked to more traditional forms of management and entrepreneurial studies. Petrovic et al. (2001) found a connection between system dynamics and business models during their analysis of these models. This connection helps to justify the need of learning to understand complex systems and adopting a systems perspective.

3.6.1 The Evolution of Financial Models

Returning to first principles on the rationale for FIs' presence and the justification on which they coexist with financial markets, it is helpful to analyze the impact of PSD2 on retail banks. Therefore, a review of the development of business models is provided in the following chapters.

Direct finance, the traditional financial markets model, traditional banking model, and the Fintech model are the four types of financial systems referred to by Moen and Helgøy (2018).

In direct financing, agents who have spare capital are matched with those who are in need of capital. The difficulty of locating a reliable contracting partner is an issue with this strategy. Time and energy are needed to find a good match, and this is known as "observable transaction costs" (Moen & Helgøy, 2018).

Traditional financial markets model: in this model, a marketplace connects agents who would not have met otherwise. Finding the correct contract partner results in lower transaction costs, that can be observed and measure. Those who have money and those who need it, are brought together via the financial market. The model's disadvantage is the potential asymmetric information issue, which in turn generates the hidden transaction costs of disadvantageous choice and moral hazard. That means the market will function less efficiently (Moen & Helgøy, 2018).

Traditional banking model: The function of banks in this framework is to mediate between borrowers and lenders. Investors put money in the bank and get interest payments from the FI. The bank then lends the money to those who need it and charge them interest to do so. Borrowers in direct financing contracts may misrepresent their creditworthiness in order to get funding for more high-risk projects than were originally discussed. But a bank can

mitigate information asymmetry issues more effectively than financial markets can (Moen & Helgøy, 2018).

Fintech: as Beau (2018) noted, there are several factors contributing to shift of the European paradigm of financial intermediation away from its current emphasis on banks. As per Moen and Helgøy (2018), Fintech services are able to go beyond the capabilities of traditional banks, because they include and use IT, data, and analytics. At a lower cost, these services may serve the same purpose as traditional financial intermediaries.

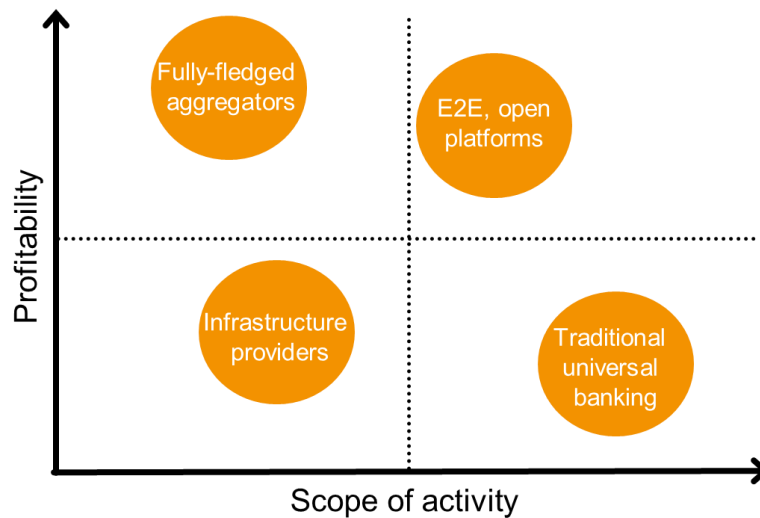
3.6.2 (Open) Banking Business Models

A business model of a retail bank can be defined as a set of resources and that a bank employs to create, deliver, and capture value in the form of financial services provided to consumers and SMEs. According to Osterwalder and Pigneur (2010), a business model, relevant in context of retail bank, consists of nine building blocks, as noted in Figure 7.

Researchers like Ramdani et al. (2020), have- highlighted the potential of Open banking to disrupt traditional retail banking models and give rise to innovative digital business models. Through their examination of several different digital banks, they concluded that technological advancements in these new models have been achieved by expanding on established retail banking activities, creating digitally-enabled new activities and by leveraging open innovation practices. It is crucial, as Ramdani et al. (2020) emphasized, that the success of these new models is reliant on utilizing existing networks of cooperation, collaborating on digitally enabled activities, through electronic banking platforms and analytics and with harnessing open-API for online communities and external application developers.

According to Skinner (2017), there are four distinct business models that may be applied to banks in terms of typology and the breadth of their operations as well as their profitability (Figure 8). According to additional explanation provided by Skinner (2017), the asset-intensive and low-margin characteristics of the classic universal banking model as well as the infrastructure provision model, render both business models unappealing. Skinner (2017) further noted that the universal banking model is unsustainable since it needs the bank to produce and distribute all of its goods. In addition, the model calls for universal banking to be implemented and the aggregator model has the opportunity for extremely high profitability despite the strategy's low asset intensity; nonetheless, it may be challenging to defend. According to Skinner (2017), the most effective strategy for maintaining profit margins at a high level over time is to use a business model that is both integrated vertically and open platform-based.

Figure 8: Open banking business models



Sources: Skinner (2017).

Westermeier (2020) noted that financial infrastructures are everywhere, and they make it possible to organize one's financial life by making transactions, meeting financial commitments, and trading easier. Tech-driven businesses are looking to get exposure to these systems and are attempting to incorporate transactional data into their platforms without taking the form of banks. The acquisition and ongoing maintenance of a banking license is considered as a burden for technology businesses owing to the regulatory constraints that go along with it. The introduction of the platform model into the global landscape of finance does not result in the replacement of existing financial infrastructures; rather, platforms extend and expand on the capabilities of existing financial infrastructures.

Hanafizadeh and Marjaie (2021), on the other side, identified and nominated four different types of business models, that can be built upon micro-foundations: socialist, enabler, facilitator, and financier. Banks have the flexibility to select and adopt these models depending on their strategic focus or competitive strategies. While additional business models could potentially be developed, further research is necessary to explore and document them.

The socialist banking business models prioritizes social responsibility and equitable wealth distribution, enabler on the other hand focuses on developing business models that benefit a range of industries and companies. Another model, known as facilitator banking, addresses common problems or needs individuals and businesses encounter by providing solutions. When it comes to distributing loans and investments, financiers employ a similar approach to traditional banks. (Hanafizadeh & Marjaje, 2021).

In general, and in the context of PSD2 and Open banking, several different banking business models have emerged, mainly characterized by their approach to leveraging open APIs to create new value for customers and partners:

- **Marketplace Model:** the bank acts as an intermediary and offers its own products and services besides those of TPPs. As Deloitte (2021a) noted, some static offerings will be displaced by just-in-time (JIT) services, incorporated in user flows, as financial products become more modular. Exemplary case could be flight insurance included in ticket sales. Establishing marketplaces with APIs to provide financial products and services to other parties, may help expand customer reach. Exclusive collaborations with large third parties are essential to maintain competitive edge. (Deloitte, 2021a)
- **Partnership Model:** the bank partners with TPPs offer joint products and services to their customers. As per Padoan (2023), creating a collaborative network of partners, who offer a wide range of products and services, tailored to different markets and customer needs, while also acting as intermediaries between these partners and clients, can be a strategic approach for (mainly large) banks. In exchange, FIs can provide specialized services in which they maintain a strong competitive advantage over Fintech companies or smaller banking establishments. (Padoan, 2023)
- **Banking as a Service (BaaS) Model:** the bank provides its banking infrastructure and services to TPPs, enabling them to offer financial products and services under their own brand. According to Remolina (2019), BaaS enables FIs to distribute their services fully digital through the use of APIs. This expands banking capabilities beyond traditional physical branches and opens up opportunities for business through modern channels, providing seamless mobile and online user experiences. (Remolina, 2019)
- **Banking as a Platform (BaaP) Model:** BaaP refers to a business model, in which a FI incorporates services provided by Fintech companies and makes those services available to its own consumers. In practice, this is the opposite of BaaS (Beatty, 2022). With BaaP, banks can target a specific customer demand by extending their offering and bundling TPPs' services with their own while maintaining and strengthening their entire customer relationship.

Accenture (2018), on the other side, identifies the openness of a platform from the perspective of sponsors and one or more providers:

- "Proprietary Platform (one sponsor, one provider),
- Licensing Platform (one sponsor, many providers),
- Joint Venture Platform (many sponsors, one provider),
- Shared Platform (many sponsors, many providers)." (Accenture, 2018).

3.7 Bigtech and Fintech

Open banking legislation is one step toward permitting and regulating a deeper disruption of banking business models. This allows banks to use open innovation platforms, which are

becoming more common across sectors. Tech Titans or GAFAM), as formerly referred to and today is represented by: Alphabet (Google), Amazon, Facebook (now Meta), Apple, and occasionally Microsoft. These are firms that develop technology and their customers are the people and institutions who embrace, nurture, and exploit it. BigTech corporations have become associated with whole sectors by successfully deploying and defending platform business models, which leverage on winner-takes-all dynamics and powerful reinforcing feedback loops. BigTech enterprises dominate the market by using their main capabilities as multi-sided commerce and innovation platforms. (Jones & Ozcan, 2021).

As Petralia (2019) noted, BigTech and Fintech compete with banks in many ways. Banks may see Fintechs as technological partners and rivals, while large IT companies are also rarely considered or rarely becoming partners. Fintech and Bigtech organizations on the other hand have multiple technical advantages over conventional banks: they do not have to deal with old IT systems, offer agile, contemporary platforms that allow for faster pivots, and they can use new and current technologies. (Petralia, 2019)

According to Beau (2018), Fintech companies have had a profound impact on the financial industry, bringing the customer-centric ethos on the traditional financial services and putting many of the established banking structures under scrutiny.

Therefore, as Beau (2018) also pointed out, Bigtechs have more possibilities than Fintechs to transform financial intermediation. Bigtechs shall also incorporate all financial services into online ecosystems, not try to replicate the universal banking model. It is not likely, that banks will become superfluous intermediates, but it is more likely, according to Beau (2018), that huge digital enterprises' platforms may become bank interfaces. On the other hand, Petralia et al. (2019) perspective is, that banks see Fintechs as technology partners and rivals, while Bigtech are less likely to be perceived or even contribute as collaborators.

3.8 Financial intermediation

Historically, banks have played the role of an intermediary between their consumers and the suppliers of financial services, making available various goods and services to fulfill the requirements of their clientele. As a result of the implementation of Open banking and PSD2, financial institutions can now play the role of intermediaries between their consumers and third-party service providers. Beau (2018) is referring to new intermediation models, emerging and being categorized into four: traditional banking intermediation, non-bank financial intermediation (formerly shadow banking), re-intermediated model, supported by Fintechs and Bigtechs, and fully disintermediated model, supported by blockchain and peer-to-peer economies. These models aim to finance corporate sectors, retail segments, and the retail sector.

The function of financial intermediation is shifting, considering PSD2 and Open banking, and banks will need to adapt to maintain their position as market leaders. Banks can establish

new value propositions for their consumers and stimulate innovation within the financial services sector if they adopt Open banking and form partnerships with third-party suppliers.

3.8.1 Variety of Financial Intermediaries

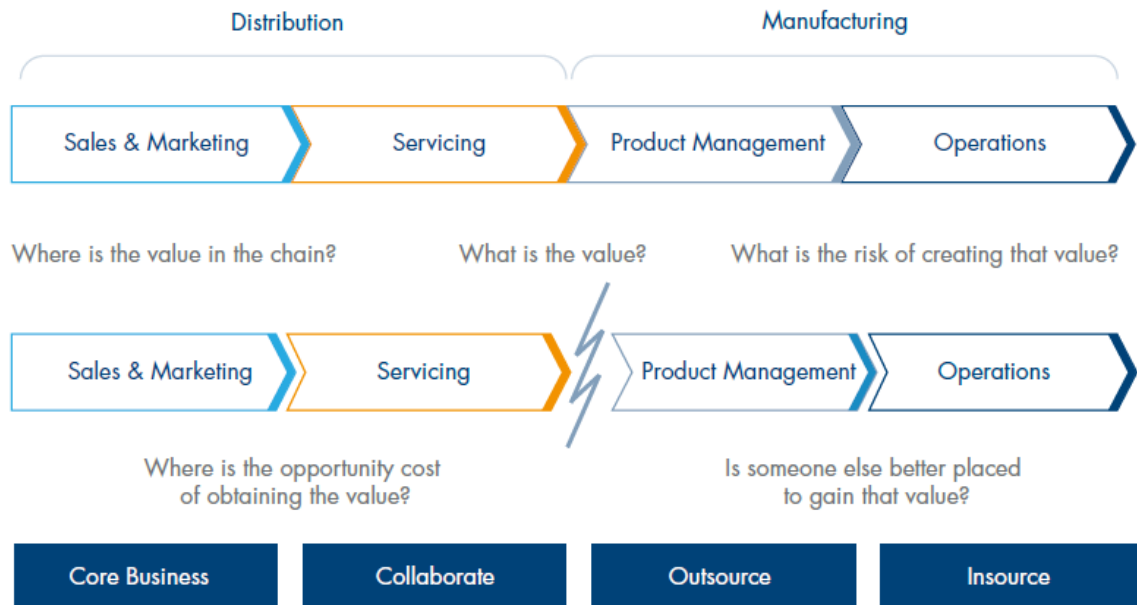
Greenbaum and Thakor (2019) define financial intermediaries (FI) as organizations that act as intermediaries between financial capital consumers and suppliers. They differentiate their operations based on their services and whether they use deposits as a funding source. Deposit-type or depository FIs raise capital through deposits, while non-depository FIs do not. Their operations can be analyzed from various perspectives due to their diverse responsibilities and roles (Greenbaum & Thakor, 2019).

3.8.2 Disintermediation of Banking Value Chain

According to Odorovic (2023), Fintech companies are disrupting the banking industry (also) by disintermediating finance. Regulators in several areas have adopted Open banking policies to allow third-parties accessing banking data, which is a matter of customer consent. However, data access is seen as a competitive constraint and customers have ultimate ownership over their data. Odorovic (2023) further assesses the promises of Open banking by assessing market entry limitations and market specific cooperation between banks and Fintechs and outlines the economic trade-offs of different regulatory solutions, potentially helping regulators considering introducing or designing Open banking policies (Odorovic, 2023).

As per Temenos (2019), the financial services industry went through significant changes since the 2008 financial crisis. We are facing the rise of digital banking services, especially among tech-savvy and less financially committed consumers. This rise is aligned with the growth of low-cost service disintermediation platforms, like pricing comparison websites for example, and the exponential growth of non-traditional players such as Fintechs, retailers and technology providers. All these have contributed to a shift in how products and services are being delivered by banks. This transformation is eliminating traditional end-to-end manufacturing processes within banks (Temenos, 2019), as noted in Figure 9.

Figure 9: Banking value chain disintermediation



Source: Temenos (2019).

The use of mobile wallets and innovative electronic payment services, which can be used on modern mobile devices, are helping to digitalize payment services. Payment services are now offered also by Fintech companies and other types of businesses that are non-financial institutions. The XS2A rule and the implementation of APIs within PSD2, allow for the initiation of payments and make it possible for PSD2 to permit payments to be transferred with smooth user experience from one bank account to another. If more customers start using alternative payment methods, financial technology companies and other third parties will earn the trust of those customers and have the potential to change the position that banks and credit card companies serve in the financial transaction value chain (Moen & Helgøy, 2018).

The transformation of the bank-centric model of financial intermediation in Europe towards a more diverse and unbundled model, is influenced by several factors. To achieve a secure transition to this evolving form of intermediation, increased financial integration at the European level is essential. In this regard, the progress of the European regulatory strategy holds great significance (Beau, 2019).

3.9 Digital Platforms

Digital platforms have become a major pillar of Open banking and PSD2, allowing banks to collaborate with third-party enterprises and deliver new services to clients.

The future of banking and financial services is set to be significantly impacted by open APIs and open platform technology. This shift will lead to new consumer propositions and the

exponential influence of network effects, signaling a new age for banks and their clients. BigTechs have demonstrated the potential of technology-driven, platform-based business models and are actively implementing them in various sectors. Digitalization has simplified and reduced the costs associated with creating, expanding, and using platforms, leading to the rise of platforms like Uber, Airbnb, Amazon, YouTube, and Facebook (Meta). As Open banking, APIs and regulatory pressures to open business models all gain traction, the platform economy is expected to significantly impact the financial services industry as well or in particular (Accenture, 2018).

To evaluate the implications of a platform based business approach, it is vital to describe how a platform operates and the advantages and disadvantages it may provide. Moen and Helgøy (2018) in this context expose Vipps, an online payment service, based on a platform, that facilitates transactions between internet merchants and customers. The success Vipps and of other similar and successful online retailers is contingent on the actions and choices of others, a phenomenon known as network effects. These are part of the group that is considered a network, because they consistently make the same usage choices (Moen & Helgøy, 2018).

According to Omarini (2022), banks and other FIs are- increasingly collaborating to offer customers seamless online banking experiences. As a result, customers today expect solutions that address a wide range of challenges, often driven by their emotions. To maintain strong relationships with customers, managers need to explore new strategies. This includes utilizing situational information, demonstrating social consciousness, and providing customer education to convey a genuine sense of care- about their financial well-being (Omarini, 2022).

3.10 Business Value of the Platform

Businesses operating as platforms facilitate seamless value transfers between suppliers and consumers. These transactions pave the way for interactions on the supply and demand sides, which in turn produce network effects, that magnify their impact. (Accenture, 2018). The integration of payments into platforms is transforming circulation perception, influenced by the growing significance of financial events as memorable occurrences (Westermeier, 2020).

As per Parker et al. (2016), platforms facilitate user matches, enabling value creation by producers and consumers. They grow faster than traditional businesses due to their lack of control over resources. This model has transformed major industries and is expected to continue. The financial industry is undoubtedly no exception.

According to Gorwa (2019), both PSD2 and Open banking advocate for the platform model as a governance structure, which in turn supports the growth of financial platforms through a regulatory framework.

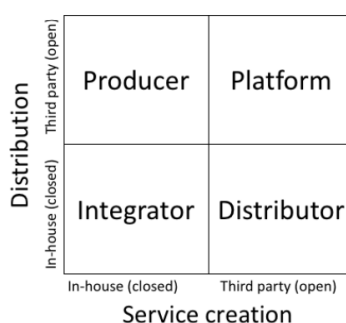
3.11 Strategic Approaches Toward Open Banking

By adopting a platform strategy, banks and other financial institutions, acting either as partners or competition, may quickly face a wide variety of service providers, which are expanding their product and service offerings. Adopting a platform strategy has the potential to enhance competitiveness for financial institutions within an Open banking environment as they strive to deliver value to their customers.

As Westermeier (2020) further noted, there is a deliberate intent behind the creation of these platforms to design the generation of data. Infrastructures, on the other hand, may profit by facilitating the movement of monetary and other products for a price or other economic incentives. The platform concept expands upon preexisting payment infrastructures rather than replacing them. As a result, closed loops may be generated within of a platform by combining transactional data with other data streams (Westermeier, 2020).

As Gozman et al. (2018) pointed out, by opening systems to third-party development and distribution of new services, Open banking allows more players to produce reusable and scalable financial services. The diffusion of services has a similar effect in that it also opens new markets to third parties. Figure 10 depicts how the two-dimensional analysis of the retail banking value chain has led Gozman et al. (2018) to identify four general roles: integrator, producer, distributor, and platform. Gozman et al. (2018) further found, that most banks serve as mainly three types of intermediaries: integrator, producer and distributor, throughout their numerous segments. On the other hand, role 4 (the platform) is in its infancy, according to Gozman et al. (2018).

Figure 10: Classification of banking roles



Source: Gozman et al. (2018).

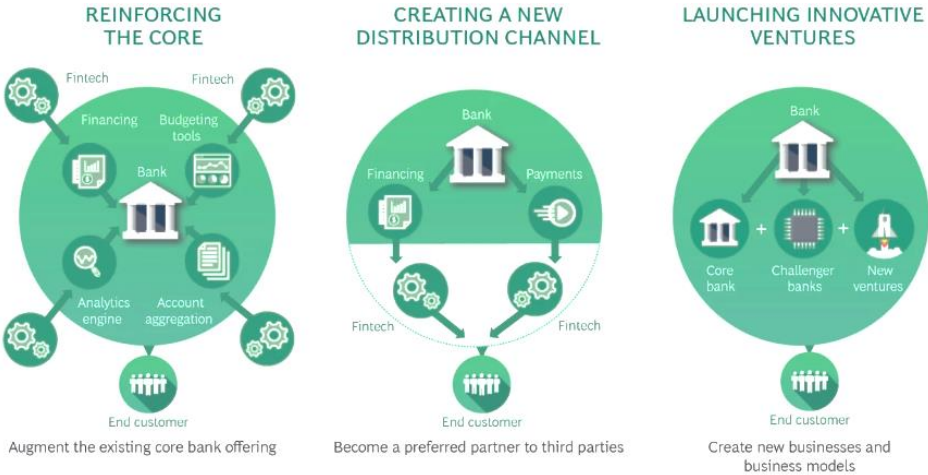
Banks should view their API strategy as an essential part of their business strategy and not as part of IT strategy. Offering free API access may increase bank's brand perception and allow other suppliers entering new channels. This may, on the other hand also not be sustainable over time. Therefore, only proper execution of the strategy, can lead to successful business models (Fintech Futures, 2018).

To implement an Open banking platform strategy, according to Accenture (2018), banks should look at the following steps:

- Strategically adopting an open platform banking model and defining the critical capabilities and investments required to make it happen is the first step in developing an open platform model.
- Focus on the fundamentals. While consolidating accounts might cut down on losses, it is not expected to spur meaningful expansion. Instead, other API services should be used to target deep and precise financial situations.
- Provide more than just banking. To reach more users and encourage more third-party development, additional one should look for partners that can provide premium APIs.
- Cultivate tactical ecosystems. For network effects to take root, it is necessary for open platform banks to develop their business models via strategic ecosystems of partners. Pick an ecosystem model that aligns with your business goals and target audience.
- Create novel approaches of doing business. Reevaluate your business's revenue structures, your product roadmap, and your strategy for commercializing open APIs' further development.

Retail banks can capitalize on Open banking opportunities by leveraging their trusted-advisor status and institutional depth to expand their services, enter new markets, and grow their customer reach. (Brackert, 2018). All by utilizing one three key areas, as suggested by Brackert (2018) and illustrated on Figure 11.

Figure 11: Potential Open-Banking strategies



Source: Brackert et al. (2018).

Banks that effectively integrate TPPs’ solutions, can enhance their core bank and gain market share on less agile rivals. These kinds of solutions require minimal technical investment and allow banks to quickly improve existing services. Services that utilize transaction data, account aggregation, analytics and PFM tools are especially attractive to individuals and SMEs. (Brackert, 2018).

As Brackert (2018) further noted, by using APIs and third-party partnerships, banks may create innovative, non-core business models. Autonomous rival financial institutions or new enterprises catering to a certain vertical market or product are two examples of how this strategy might be implemented. Open banking facilitates the launch and growth of innovative enterprises, even though this approach is not novel for financial institutions.

Some FIs have already figured out how to benefit from Open banking and have started to monetize these benefits. They realized that conventional approaches of defining, incubating, and scaling will not work, if they want to succeed with Open banking. They need to start differentiating from traditional banking approach. Furthermore, banks must address client friction spots. Banks must examine major segment customer journeys to find broken areas and unmet demands to create value. Banks can choose the best open-banking approach, APIs and partners by recognizing client potential (Brackert, 2018).

Cortet et al. (2016) identified four strategies addressing Open banking paradigm:

- Comply: The bank will open up only if required to do so by regulation and to the extent defined by regulation. The value proposition in this model shall be seriously rethought. Certain, long-standing income sources are being disrupted, and the bank itself is being disintermediated by third-party interfaces. In this context, banks continue to serve as AISPs and form the system's backbone.
- Compete: Banks are reassessing their overall offering, operations, costs, income and channels in order to meet regulatory requirements and compete for customer loyalty by providing personalized interfaces.
- Expand: More than just account information is disclosed in this approach. Banks may release open APIs to generate additional revenue. This is particularly true for providing third parties with comprehensive account information and data management and identity verification services. Financial institutions become gateways for other parties to obtain data and other services.
- Transform: banks provide a basis for other players to develop their service and match people across groupings. This company concept is completely rethought.

PwC (2017) similarly categorized Open banking models based on the value offered and the transparency chosen by banks. This has resulted in various models that banks can adopt, as per PwC (2017), including:

- Compliance with PSD2 with a low added value in terms of offer and minimal transparency at the required levels (comparable to the "comply" method).
- A low degree of openness combined with a significant increase in value added via the creation of additional exclusive services and functions (analogous to the "compete" strategy).
- Allowing for the greatest amount of openness possible, while maintaining a low value for the information and data provided to third parties (similar to "expand" strategy)

- With analogy to the "transform" approach, fourth approach aims to provide full openness and high value by enabling the embedding of third-party apps inside the fundamental features of the platform, allowing enhanced data and information to be provided, and actively integrating both internal and external products within the platform architecture (PwC, 2017).

As Christensen et al. (2002) noted, that causes of failure in businesses include excessive spending on wrong strategies, placing inexperienced individuals in authority positions, failing to follow tests and initiating growth initiatives ad hoc. To prevent failure, executives should understand potential hazards and make disruptive new enterprises a corporate process, focusing on organizational competence. As Christensen et al. (2002) further suggests, this approach can help build a foundation for sustainable growth and ensure the company's future success.

4 RESEARCH METHODOLOGY

Due to a limited number of financial institutions in Slovenia that are suitable for the research purpose of the thesis, as well as due to limited resources, three representatives of financial institutions in Slovenia were interviewed: the CEO (president of the board) of a retail bank and two director-level representatives of Open banking services company (one holding the position of managing director). They all provided the required data via semi-structured interviews, which served as the primary data collection method.

4.1 Literature Study

In this thesis, the literature study as the initial step - reviewing printed and online sources - has been used to understand and evaluate the thesis' main topic and thus enable the discovery of the theoretical perspectives that are relevant for the thesis' conclusion and results. According to Sharp et al. (2002), The literature review serves two main purposes. First, it helps to generate and refine research ideas through a preliminary search. Second, it plays a critical role as part of a comprehensive research project, known as a critical literature review. Furthermore, Saunders et al. (2012) defines a "critical review of the literature" as a thorough analysis of articles published in different publications such as books, magazines, reports etc.

These forms of literature, as per Saunders et al. (2012), are crucial for generating research ideas, as they provide a well-researched examination of the state of knowledge in a specific subject area. Academic review papers offer a rich array of ideas, potentially indicating areas that require further investigation. Recent articles from relevant journals were also analyzed to generate potential study suggestions. Reports, often available online, are an additional source of relevant material for the thesis, as the subject is relatively new and constantly evolving. Books, though less current, provide a comprehensive summary of research, potentially sparking further ideas. Overall, these literature reviews are essential for generating valuable research ideas for a thesis (Saunders et al., 2012).

4.2 Data Collection

4.2.1 Primary Method of Data Collection

As per Saunders et al. (2012), a research interview is a structured conversation where two or more individuals engage in building rapport, asking clear questions and in active listening. It serves as a valuable method for data collection by providing accurate and reliable information that aligns with the research questions and anticipated objectives of the thesis. In this thesis, three semi-structured interviews were delivered, utilizing a list of ideas and important questions to guide the discussion. The researcher may adapt their use of these questions, depending on the interviewee's responses, allowing for minor adjustments during the interview process to explore subjects of special interest in greater depth (Saunders et al., 2012).

The respondents in the study are top role of responsibility and decision-making individuals. By having the CEO of a retail bank, the director of innovation and the managing director of Open banking services provider, all bringing their experience and knowledge within the areas of interest of this thesis, is strengthening the added value of conducted interviews. Targeting the top decision-making roles within chosen institutions as respondents, per Saunderson et al. (2012), strengthens the study's accuracy and reliability.

The selected respondents are presented in Table 1.

Table 1: List of interviewees

Respondent	Position	Company	Interview form	Interview structure	Date
I-1	CEO (President of the board)	Retail bank	In-Person interview	Semi-structured	6.6.2023
I-2	Managing director	Open banking services company	E-mail interview	Structured	19.6.2023
I-3	Business Development Director	Open banking services company	E-mail interview	Structured	14.6.2023

Source: Own work.

Since interviewees confidentiality was ensured, all the respondents were willing to discuss openly, reveal personal opinions and present their opinion in context of potential negative aspects of PSD2 or aspects below the potential initial expectations.

4.2.2 Secondary Method of Data Collection

In order to corroborate the results of the thesis, based on the main data that were gathered via the semi-structured interviews, secondary data were also gathered. According to

Saunders and colleagues (2012), it is advised to collect the secondary data to reinforce the findings. For the purpose of this thesis and as mentioned in Chapter 4.1 (Literature Study), a review was conducted of the available published and online material as well as books; all these sources constitute the primary source of secondary data method. In addition, many relevant papers that are readily accessible to the public were researched in order to cross-check and supplement the information that was previously gathered.

4.3 Validity and Reliability

Trustworthiness is crucial in research, as reliability refers to the probability that future researchers will reach the same findings and conclusions if they conduct a similar investigation (Saunders et al., 2012). My interviews' objective can be considered a reliable source of information due to the work experience in the field of all three interviewees, their position in the company, and the relevant market position of the bank or company they are employed by.

The interviewers may avoid providing personal opinions or opinions which might clearly contradict the position or interest of a bank. However, to avoid any form of biases, the interview questions are prepared to avoid providing extensive personal opinions which might put the interviewee in an uncomfortable position, be it either to imply an answer upfront, to be in contradiction with known financial institution position or to ask subjective questions (Saunders et al., 2012). In addition, leading inquiries were avoided, and the interview objectives were allowed to be communicated freely.

Validity refers to the suitability of measurements, precision of data analysis, and generalizability of conclusions (Saunders et al., 2012). Nasim et al. (2016) claims that the methodology used in a study is essential for collecting accurate data in qualitative research. Ensuring its validity is crucial, as any flaws could lead to misinterpretation of the study's findings.

Grindsted (2017) further notes, that the semi-structured study interview is frequently criticized for its lack of reliable data due to interviewer bias, non-commitment and potentially also its high cost as an information collection tool.

As Saunders et al. (2012) further claims, when there is a choice between primary and secondary data sources, the interviewer's capacity to collect either kind of data may be depended on their ability to access the right source(s) and gain required information. The quality of the data is considered as one of the most important aspects to be taken into consideration and, according to Saunders et al. (2012), can be broken down into four categories: generalizability, validity, forms of bias and reliability.

Related to forms of bias, Saunders et al. (2012) further identified three- types of potential bias in research: interviewer bias, response (or interviewee) bias and participation bias.

Interviewer bias can arise from the personal prejudices of the interviewer, which may influence how the interviewees respond to questions. Interviewee's responses to questions are in this case biased as a result of the interviewer's possible remarks, tone, or nonverbal cues.

Another bias, as per Saunders et al. (2012) is interviewee or response bias. Interviewees may feel uncomfortable discussing sensitive topics due to probing inquiries or lack of authorization. They may choose not to disclose certain aspects of the subject, creating a partially accurate picture of their situation or portraying their employer in a favorable or unfavorable light. This bias can manifest either directly or indirectly, particularly in more detailed or semi-structured interviews.

The lengthy demands of an interview may cause some of the people to be less reluctant to participate. This might skew the data obtained and is, per Saunders et al, (2012) considered as participation bias.

4.4 Result Limitations

With a relatively new research topic, a limited availability of academic papers, and few opportunities to acquire concrete and dependable data to support the thesis's initial hypotheses, I used my best judgement to make sure that our secondary data sources are of the highest quality and reliability available and possible. Secondly, another potential limitation is the research design itself, which means that a different form of research, e.g., including reliable statistical data as part of the analysis instead of only a limited number (three) of interviews with the same number of interviewees, may have produced different results.

Thirdly and likely the most challenging part was data availability – on one hand, receiving concrete data and information from target financial institutions means dealing with confidential data, which is, in its essence, challenging and most of the time impossible. On the other hand, it was also found during the primary and secondary method of data collection that the results, i.e., concrete revenue implications as results of monetizing Open banking, were not as initially expected and it was, therefore, hard to gather concrete and reasonable data. Potential reasons for that are discussed in the last chapter of the thesis (Chapter 5 – Results and Discussion) and its subchapters, as well as in the concluding chapter. Similar challenges were identified with other master theses covering analogous topics, like, for instance, Grieco (2020), who noted that the main limitation of his conducted research was that financial institutions were not interested in participating in any interview and sharing sensible data in general. This was fortunately not the case with this thesis study, though anonymity of data was required, and its availability was limited.

Thus, the findings of this thesis study are, in general, limited; there was enough information and data gathered in attempting to comprehend how financial institutions, primarily banks,

perceive and exploit the potential introduced by PSD2 and Open banking as its paradigm extension. The findings are not intended to be generalized, as interviews were conducted at a particular time with specific individuals. Nonetheless, the thesis study may serve as the basis for additional research, which can lead to generalizable conclusions regarding the revenue implications and opportunities of PSD2.

Lastly, an interview is frequently biased on both sides, compromising its objectivity and, consequently, the credibility of my work. In addition, the findings from the interviews in this qualitative study could be interpreted differently by other researchers.

5 RESULTS AND DISCUSSION

In this chapter, the results are given and analyzed based on the specific subjects extracted and summarized in the analysis of the gathered data. These topics were determined based on what was discussed in the previous section. The questions are categorized into three categories, reflecting the subject related to the initial research questions. All interview questions are based on the initial research questions and are provided in a manner to retrieve the maximum possible relevant information and deliver smooth discussion flow during the interview session as all the interviews are semi-structured, leaving some gap for discussion and unplanned questions.

As the questions differed for the bank representative compared to the ones for the representatives of Open banking services company, the categorization is listed in detail in Table 2.

Table 2: Interview questions – subject summary

Subject	Question	
	Retail bank	Open banking services company
Business impact of PSD2	Q1, Q2	Q1
Opportunities and new revenue streams	Q3, Q5	Q1, Q2, Q3
Competitive strategic positioning and future role	Q4, Q6, Q7	Q4,Q5,Q6

Source: Own work.

The theoretical framework provided previously will serve as the point of reference for the discussion that will follow. This chapter consists of two main sub-chapters, first one (5.1 Results and Summary of Findings) covering three main sections, each of which explores a different topic: the impact on the business, opportunities and new income sources, and the competitive positioning and potential future role. Last sub-chapter (5.2 Discussion) is summarizing and exposing personal views on the topics covered throughout the thesis.

5.1 Results and Summary of Findings

5.1.1 Business Impact of PSD2

Supporting research question: *What specific strategic and operational efforts could a bank take to stay competitive in the post-PSD2 environment?*

The interview questions for the CEO, who was interviewed were aimed and structured to provide thorough overview of the business impacts of PSD2 and Open banking in the perception of a bank, shedding light on the strategies employed by banks to embrace this new era of openness and seize the opportunities it presents. As Open banking shall have transformative potential within the financial services industry, the view from the bank is confirming the aspect of fulfilling regulatory compliance as a primary step towards Open banking:

"The business impact was not as significant as expected by many. Our first objective was to achieve regulatory compliance and enable 3rd parties access to our client's data and accounts. We also looked into using PSD2 for income verification of new-to-bank retail customers in their loan applications.

To my knowledge, the main challenge was the late specification of unified detailed technical standards and their interpretation. We were expecting a flood of technical requests by 3rd parties, but these have not materialized." (I-1)

This perspective also confirms the perspective of Deloitte (2021), which notes that in an ecosystem of Open banking driven by regulation, FIs must adhere to additional statutory requirements within defined timelines. This helps the governing body in their quest for innovative ideas and growth in the ecosystem. (Deloitte, 2021).

There was, however, minimum business model adaptation required for the proper service delivery:

"In the sense of business model adaptation in order to comply with PSD2 and Open banking regulations, no significant adaptations were made. As mentioned, income verification is our primary use case supporting the loan process. No further applications are currently in the development pipeline." (I-1)

The perspective of Open banking service provider is different, as they immediately grabbed the opportunity brought by PSD2 and due to their specific position (ownership of several banks), they started with providing PSD2 infrastructure as a platform for banks and TPPs:

"In the company (also taking into account the restrictions set by the owners - banks), we conceived the PSD2 infrastructure as a platform for connecting TPPs and banks. In this way, we wanted to play the role of a consolidator of access to Slovenian banks. (I-2)

While there are many positive impacts, there are also challenging ones. As ETPPA (2019) noted, technically driven innovation is ineffective if it leads to poor customer experience and reduced TPPs' business performance. A directive (PSD2) should prioritize client requirements and explore potential solutions to mitigate the adverse effects of pre-existing regulations. Maintaining customer experience as one of the top priorities was also presented within the interview:

"Of the problems we encountered, I would point out two main ones - a bad user experience (also due to vague PSD2 standards) and the problems of all stakeholders in designing services on this platform." (I-2)

The above statement of one of the interviewees (I-2) is aligned with the outcomes and results of a European Commission study (European Commission, 2023a), which exposes, that TPPs have reported poor support and poor user experience for mobile device authentication flows, despite increasing usage for AIS and PIS services. Industry actors have complained that the card payment ecosystem is being pressured to accept and embrace 3DS solutions, even though user experience is far from optimal.

In that context and as per ETPPA (2019), regulators must be aware of the fact, that TPPs must prioritize innovation and uniqueness to enhance customer experience efficiency. While redirection is crucial, it should not be the sole choice. Lack of standards can allow companies with poor customer service to hide in the shadows, highlighting the importance of fostering innovation (ETPPA, 2019). Nonetheless, Koepl and Kronick (2020) note, that the basic objective of Open banking is the creation of value for customers.

5.1.2 Opportunities and New Revenue Streams

Supporting research question: "What are potentially new revenue streams with PSD2 adoption, and how to embrace them?"

The interview questions in this category are structured in a manner that elaborates on exploiting the new potential revenue streams as concretely as possible. As already noted, gaining data and information, which are in its essence confidential and generally hard to receive from target financial institutions, was one of the main challenges in the preparation phase of the primary method of data collection via interviews. Furthermore, concrete and significant revenue implications as results of monetizing Open banking were not as initially expected and were proven as hard to gather. Nonetheless, as interviews were semi-structured, the study aimed to receive the maximum possible relevant and concrete data in this context.

As Omarini (2019) noted, new banking paradigms, characterized by increased third-party openness and the integration of modular services, are being utilized to capitalize on available opportunities.

"The key advantage of Open banking, or rather an open economy, is the cooperation of all participants in the creation of new, not yet existing, comprehensive user services, which are no longer based on the offer of an individual market participant, but on the needs of the customer himself. A banal illustration of such an approach is that, for example, a craftsman will not need several business applications for various aspects of his business (accounting, payment, insurance, contact with customers, etc.), but it can be combined into one application on the PSD2 platform..." (I-2)

Nevertheless, it starts with addressing the low-hanging fruits:

"We see it as support to our current processes, the adoption of PSD2 replacing screen scraping as the previous approach used in certain markets (Croatia). This will simplify and speed up the process and reduce required documentation. No additional revenue will be derived from this, but it will improve the delivery of our USP – speed and simplicity." (I-1)

As per Frei (2023), some customers utilize method called screen scraping, which allows sharing login credentials with third-party service providers. However, this practice increases risks and may expose personal data and information.

FI not having access to proper credit history information of new customers, could lead to a higher number of loan defaults in the future and may result in rejecting customers, who have lower chances of defaulting. This could ultimately reduce profitability for the FI (Hjelkrem et al., 2022).

"We are a specialist consumer loan focused - bank and thus offer limited banking products and services, therefore, also limiting opportunities for the use of PSD2.

Regarding the development of products and services to capitalize Open banking, our bank is currently actively working on and has already launched consumer loans on third party applications – using 3rd party digital wallet for now – and is looking to expand this further to other similar applications to execute our wherever-whenever availability loan strategy." (I-1)

Nam (2022) interestingly fully confirms the above, noting that riskier borrowers share more data, increasing loan approval probability and reducing interest rates. The impact is significant for borrowers across the credit spectrum, including those with lower credit scores and those with better ratings. (Nam, 2022).

As two of the interviewees further noted:

"..Now, we create income mainly from banks, for which we provide a common infrastructure for accessing bank accounts. Other revenues from this title are negligible." (I-2)

"...As for new revenue stream potential, we are offering banks a comprehensive set of solutions and services, which enables them to effectively outsource PSD2 compliance to us.

Our business now has access to an entirely new source of revenue streams, thanks to this development. However, the volumes are still rather low (especially on PIS), and in order to attain the predicted (expected) revenues, we need a larger acceptance rate of PSD2 services among the end customers." (I-3)

It seems evident that Open banking is a vast opportunity; it depends a lot on how you start leveraging it and how you position your architecture capabilities. According to Padoan (2023), managing the complexity of bank legacy systems requires significant investment in IT architecture and infrastructure, requires compatibility with current and future offerings and integration of external suppliers. Migrating or supplementing legacy systems and introducing external solutions requires significant number of resources, time, and money.

Deloitte (2021) further noted that banks should develop an agile architecture that can handle API-enabled use cases as they establish core capabilities. A streamlined API management system, including a sandbox environment, an API gateway and API lifecycle management, is crucial for banks to effectively serve API-enabled use cases, as per Deloitte (2021). One of the interviewees pointed out:

"Open banking has been mostly an opportunity for our company. We were well positioned to provide banks with new, compliance-related services such as PSD2 XS2A service. We entered that market and became the largest provider of PSD2 solutions in our country. Later on, we expanded our services portfolio to provide Open banking services not only to banks but also TPPs." (I-3)

The above is aligned with what Padoan (2023) noted, that in order to fit the needs of different customer segments and their specifics, major banks are exploring the idea of establishing a network of partners that offer a diverse range of innovative products. By acting as intermediaries between these partners and consumers, banks aim to provide customized solutions. Additionally, FIs can offer specialized services to support FinTech, startups or SMEs, enabling them to maintain a strong market position. One potential approach is the revenue sharing model, where banks collaborate with third parties in co-creating new products and services, thereby sharing future income generated from their joint efforts (Padoan, 2023).

It is essential to adapt business models and Open banking service offerings to different target groups. As Grieco (2020) already noted, Open banking enlarges customer choices in terms of products, services and channels from where it is possible to get them:

"To leverage our role, we have provided three distinct categories of services related to PSD2:

1. Comprehensive PSD2 XS2A compliance suite (customers: banks).
2. Connectivity hub that allows licensed TPPs to access any account in the country via a single API (customers: licensed TPPs).

3. License as a service solution (customers: companies requiring AIS service, but not having an AISP license of their own)." (I-3)

It is further evident, as per the literature review as well as according to both data collection results, that Open banking did provide the immediate transformative impact on the payments industry that was initially anticipated. The adoption of Payment Initiation Services (PIS) has been slower than expected, possibly due to various factors such as limited consumer awareness, concerns over data security, and the complex nature of implementation. According to Majumdar (2022), the initial adoption of PIS was slow, mainly because the regulations were implemented slowly, and the same pace is still noted throughout Europe. Among early adopters of Open banking payments have been Fintechs, neo-banks and merchants. The slow acceptance pace is confirmed by the interviewee:

"Coming from the payments industry, it was my expectation that Open banking will have a big impact on payment services since PIS radically differs from established payments solutions (e.g., cards). Not only from the technological perspective, but also regarding the completely different business model.

However, time has shown that PIS did not really take off in Europe. It seems that there have been simply too many obstacles in the way, particularly due to inconsistent user experience across different banks. On the other hand, there seem to be certain AIS use cases where these kinds of pain points are not as emphasized, therefore, today, I can conclude that AIS has done significantly better than PIS. But overall, I had higher expectations from Open banking initiative." (I-3)

It is worth noting, that the long-term impact of PSD2 and Open banking on the payments industry may still unfold as stakeholders continue to adapt and innovate in this evolving landscape.

5.1.3 Competitive Strategic Positioning and Future Role

Supporting research question: "How can banks adapt an open business model with PSD2 and become platform providers?"

Petrovic (2020) claims, that PSD2 implementation will require banks to adapt their current operations and business models, which might potentially cause them to lose control over the client interface. Consequently, most banks are adapting defensive "Wait and see" strategy, which minimizes risks, while it maintains their current positions.

The interview questions in this section already allude to the potential competitive strategic positioning and future role of FIs in question in the context of Open banking. Questions and interview discussions are also related to how interviewees perceive the future related to the potential future evolvement of Open banking.

Starting with data as one of the main topics of discussions, challenges and surely one of the main "ingredients" of future strategies, related to Open banking. As Deloitte (2021) already pointed out, data value has increased significantly, allowing customers to access FIs globally. Different districts are implementing Open banking policies based on regulatory climate and industry development. Financial institutions are now custodians of data, not owners, and are transitioning to alternate income sources after client approval. This shift is driven by the growing global access to financial institutions and the need for regulatory compliance (Deloitte, 2021). One of the interviewees confirms the argument:

"As for strategic and operational efforts our bank took, I would stress out working on internal processes, decision making, other data use and client-facing applications to improve customer experience for our clients. One of the competitive advantages I perceive is access to data the clients have in accounts with larger banks." (I-1)

In the competitive landscape of Open banking, the level of user experience becomes a focal point for competitors. With equal access to customer data and capabilities, the design of the digital interface plays an increasingly crucial role in shaping a seamless and user-friendly Open banking user experience (Kreger, 2023). And the one who will continuously improve this part, is the one who is gaining the needed competitive edge.

"..Providing a better customer experience on a specific product/service and by this using available data or payment options become the bank-of-choice for a specific targeted segment or larger customer pool in general."(I-1)

The future of Open banking may be influenced by further regulatory developments, technological advancements, and customer adoption rates, though the views and perceptions of interviewees regarding this topic are different:

"In the future, we will see a larger role of aggregators and other intermediaries providing value in comparison offering of generic products and services, specific applications offering a superior customer experience and bundling up of financing into other products and services. I believe banks should continue to differentiate themselves and work on improving their product and services to meet customer needs and demands wherever (brick&mortar and/or digital, including embedded) and whenever (24/7) they arise. Time and place plus speed and simplicity are the keys to staying competitive in the evolving financial ecosystem."(I-1)

"The strategic approach we took in order to take maximum advantage of PSD2 opportunities was establishing a common PSD2 infrastructure for most Slovenian banks and promoting collaboration between different industries based on our PSD2 platform. As for the future, I think we need PSD3 and possibly other, complementary technologies (e Identity, digital euro, etc.) that will give impetus to the open economy." (I-2)

5.2 Discussion

The interviews were conducted to provide a proper basis and background for further critical discussion of all the empirical (also secondary data) findings, as well as the literature review. The initial research questions provided background to retrieve feedback, creating a meaningful discussion basis related to the thesis topic and are provided in the following subchapters. These subchapters are structured in a manner that they reflect main issues, challenges, and essential elements derived from both primary and secondary data collection methods, as well as research questions, all for banks to be able to pull the maximum possible potential out of Open banking in proper and structured means.

To enrich and complement research questions, the following corresponding subchapters were added to support key findings and recommendations for retail banks related to obstacles, challenges and opportunities identified in interview results and supported with relevant literature:

- Choosing the right business model and strategic approach.
- Challenges and limitations for retail banks.
- (Not) delivering the potential.

5.2.1 Choosing the Right Business Model and Strategic Approach

As Zaleska and Kondraciuk (2019) noted, FI should adopt a venture capitalist approach to reduce costs associated with trials and sponsoring promising ideas. This can be achieved by utilizing technology advancements, agile development practices, and minimum viable products (MVPs) for rapid course correction, user input collection, and creative experimentation. The bank should also define what is great and allow room for research and experimentation and consider TPPs as significant customers.

According to Jelcic (2019), FIs and businesses can benefit from forming partnerships and accessing a broader range of data sources provided by other financial and non-financial service providers. This allows them to offer additional services that provide value to their customers. As Padoan (2023) noted, it is crucial to carefully evaluate and analyze the significant cost of defining a suitable data strategy. This includes establishing a clear roadmap for investment in technology, tools, and expertise needed to improve the integration of data and modern analytics.

As for the latter and to entice potential TPP partners, banks need to provide access to a sizable customer base and make it easy for customers to collaborate by providing necessary institutional support. They need to invest some time in learning about the requirements and expectations of their partners and be on the lookout for chances to give value, such as providing software development kits and lively communities for developers.

As per Odorovic (2023), it is undeniable- that there is a need for increased competition in financial service markets. In response to this, regulators have implemented Open banking. It is aimed to address this issue by enhancing competition and market oversight.

In my opinion, in the context of opening towards partners, a reliable API approach and strategy are practically the most crucial element of success. They lay the background for open economy, as one interviewee implied (e.g., I-1, "...In the future, we will see a larger role of aggregators and other intermediaries providing value in offering of generic products and services, specific applications offering a superior customer experience and bundling up of financing into other products and services."). As the original purpose of APIs was to enable two different computer systems to communicate, it is now evident that APIs serve a far broader purpose than that. They really are crucial elements in gaining all the potential PSD2 with Open banking is providing; APIs have developed into full-fledged suites of services. Something C-level decision-makers in banks and all senior individuals need to grasp in depth.

According to Padoan (2023), Open banking requires a comprehensive strategy, including redesigning old infrastructure and establishing compatible APIs to meet current and future technological needs. Transitioning to Open banking requires process transformation and optimization to maintain relevance in the competitive environment. This includes modifying process characteristics, techniques, and technologies, investing in upskilling and reskilling programs for current personnel and onboarding appropriate people from outside. This approach is crucial for FIs to maintain their relevance in the current competitive environment (Padoan, 2023).

In the context of implementing cultural transformation and adapting strategy to culture (or vice versa), the process itself needs to be insight-driven to be successful. Banks need to have a laser-like focus on where they are right now, how they are acting as an organization, and how well they are doing in contrast to key indicators. This will allow them to make the most informed decisions possible. This should serve as a baseline for their operations. The latter indicates that a strategy driven by data is necessary, and after that, successful programs for culture change placed people, customers, and workers at the center while also requiring management and employees at every level to participate in defining and facilitating change. Finally, it is essential to implement change everywhere. Therefore, the heads of banks need to show that they are manifestly dedicated to the change by really implementing it and making it a part of everything they do. But as change is initiated and performed by individuals in an organization, it cannot be performed if the employees are not willing to live, promote and in general actively participate in change initiatives (Samal et al., 2019).

5.2.2 Challenges and Limitations for Banks

Concerns have been raised about PSD2 in various different areas, including directory services and dispute procedures, API standards, API performance KPIs, fragmentation of

SCA techniques, diverse customer journeys, varied RTS interpretations, and directory services. However, there are some specific challenges and limitations of higher importance, that need to be noted to properly and as preferably assess, in order to embrace the opportunities of PSD2 and Open banking:

- Instant payments and PSD2: in general, there must be less fragmentation and a bigger focus on the standardization of payment procedures and infrastructure throughout Europe to unlock the potential of PSD2 and IP. As Olofsson (2019) highlighted, both are interconnected and support the creation of a fully effective European payment scheme. Therefore, now is the moment when the European financial institutions will rally. They are already able to contribute significantly to the process of establishing a new payment infrastructure for Europe if they decide to collaborate to eliminate gaps, promote standardization, and collectively fight fragmentation. This will allow them to play a significant and vital part in the process. If European banks do not take forward and grasp the chance to help construct the future of European payments today, there is a risk that this may never happen. And this risk is also a threat.
- Effects of intermediation of the banking value chain: as Beau (2018) noted, the disintermediation of the banking value chain has significant implications for traditional banking institutions. It undermines their role as exclusive controllers of customer information - an asset that is now freely shared between customers and third-party providers under PSD2 regulations. As banks seek to remain competitive in this environment, they must confront this challenge head-on by exploring new partnerships and innovative approaches to data management. Banks must adopt fresh business models and strategic partnerships to generate value for customers in today's banking industry. However, as intermediary players within the banking value chain are excluded, achieving regulatory compliance becomes more convoluted.
- Customer data: as stated by van der Cruijssen (2020), consumers value the confidentiality of their payment information and consent to its use depends on the circumstances. They believe it is inappropriate for banks to sell their data or spending patterns to other organizations. They also believe that special offers from restaurants aren't enough to compensate for the loss of privacy, as per van der Cruijssen (2020).

As noted by World Bank Group (2021), in Open banking systems, users are required to authorize access to their account data, opening the doors for the transferability of data and gives customers access to a broader range of services from different providers. This is made possible by utilizing customer information. In the past, consent forms were often lengthy and hard to comprehend. However, advancements in technology now enable consent mechanisms that offer customers greater control over their own data compared to traditional methods such as paper forms or checkboxes on websites. This ultimately leads to more convenient and cost-effective services from a wider array of providers (World Bank Group, 2021). On the other hand, if not done properly, this can present significant limitations and risks for the bank in tracking the path towards Open banking.

- Security framework: as in the context of PSD2 security and legal framework limitations, Wolters and Jacobs (2019) claim, based on their PSD2 security framework analysis, that the payment services market is often given higher priority over security and privacy, which are seen as subordinate concerns. According to Wolters and Jacobs (2019) analysis of the PSD2 security framework, PSD2's design lacks adequate protection for users' personal data, with restricted access to accounts and the GDPR applicable to payment services. The broad scope of AIS allows innovators to enter the market and providers to bypass restrictions. GDPR fails to address potential privacy risks from widespread data collection and processing. As Wolters and Jacobs (2019) further exposed, banks are expected to have faith in this process, even though PSD2 and regulatory technical standards do not explicitly require banks to confirm payment order's authenticity or legitimacy.
- User experience: user experience plays a critical role in the adoption and success of PSD2 and Open banking. To accelerate their adoption, it is essential to address the issues related to fragmentation, strong customer authentication, standardization, and technical challenges to create a more seamless and user-friendly financial ecosystem.
- Lack of standardization: as per Borgogno and Colangelo (2019), despite the European Commission's numerous legal proposals, there is still no consensus on the definition of APIs and their application. The effectiveness of data-sharing rules is heavily influenced by the sector's technical application, making this topic sensitive. Interoperability is crucial for all businesses to benefit from and utilize available data access regimes, as it ensures interoperability and accessibility for all market participants.
- Complex and Legacy IT Infrastructure: today, most banks' IT systems are dominated by legacy applications and older systems, banks are recognizing the need to modernize their operations and are investing in building a new layer on top of their existing systems. This allows them to transition to new technologies and transform their old way of operations into more streamlined services. The business reasoning behind, is usually their current IT environment, which was created for IBM Mainframes, and which may be over 20 years old and is for sure not designed for the Internet era, for cloud computing and open APIs.
- Challenges and limitations of monetizing APIs: bank's customers often resist paying for API-enabled applications, despite their significant value to their daily lives, as they are used to receiving free banking services and are not used to pay for applications on their smartphones. This resistance is evident even when these applications provide significant value (Finastra, 2018). As the adoption and utilization of open APIs is further growing, the process of education is required to ensure that consumers appreciate what they are paying for. Additionally, banks may wish to expose their premium APIs to non-licensed consumers. This necessitates the implementation of a mandate management system by institutions. This system is required for onboarding, authenticating, authorizing, tracking, and tracing Premium API users. Connecting to the APIs exposed by institutions can also be difficult for users of premium APIs. Despite the absence of a mandatory standard in PSD2, there is a degree of standardization.

- **Technical Challenges:** user experience can also be impacted by legacy systems as well as technological problems. There is a possibility that financial institutions would encounter challenges when attempting to design user-friendly interfaces or create smooth linkages with TPPs. This may result in a less-than-ideal user experience and may also hinder the implementation of PSD2 and Open banking.

5.2.3 (Not) Delivering the Potential

As of today, the expected rate of adaptation and the potential of PSD2 are not being realized. Since its adoption in 2018, Open Banking and Payments System Directive 2 (PSD2) has made modest progress (EBF, 2022). Regulatory challenges are one of the main reasons why PSD2 has not been widely implemented yet, as the rules are complex. Banks and FIs have encountered roadblocks due to these criteria, including SCA, data security standards, and regulatory certification for TPPs. As a result, progress toward fully realizing the benefits of PSD2 has been slowed down (EBF, 2022).

Security worries over data sharing procedures, according to EBF (2022), on the other hand, have also contributed to the slow pace of PSD2 deployment. Stakeholders are nonetheless wary of sharing private financial data with TPPs, despite PSD2's mandate for stringent procedures on data protection and SCA. Both customers and banks may be affected by this fear, which may slow down their adoption of Open banking.

Furthermore, according to EBA (2022), there is a low level of client knowledge and trust. The widespread adoption of PSD2 and Open Banking has been hampered despite the benefits they potentially offer to the financial sector in terms of individualized services and increased access to credit. As it was also further noted in interview answers (interviewee I-2), "...in order to attain the predicted (expected) revenues, we need a larger acceptance rate of PSD2 services among the end customers." Consumers' low levels of involvement are much below projections because they are not aware of the possible benefits of these activities.

Initially, Open banking was seen as an innovative way to accomplish what would change the way the financial sector works. It was anticipated that more competition and better ideas would help the players in the financial sector while also making things better for customers. Unfortunately, though, it has been hard to meet these needs due to several problems, such as a lack of laws that make consumers less aware of their options, negative stereotypes about established financial service providers, and technical problems, among others. There is an urgent need for lawmakers and regulators to work with all relevant players to come up with solutions that address all the problems preventing Open banking from becoming a success that helps everyone involved.

In my opinion, PSD2 and GDPR are complementary regulations that must be considered together. Payment service providers must comply with both regulations when accessing and handling customer data, and banks must ensure that their processes for sharing customer data

with third-party providers are in line with both PSD2 and GDPR requirements. In this way, the two regulations work together to promote innovation and increase involved entities' competitive edge in the payments industry, while ensuring the protection of customer data and privacy rights.

6 CONCLUSION

The thesis set out to evaluate PSD2's potential in terms of its monetization options, the impact it would have on new income sources for retail banks and its role as a prerequisite to the Open banking paradigm. Retail banks face a few challenges and threats that must be overcome before a new strategy, business model, organizational culture adaptation, and other crucial factors can be developed and implemented successfully to facilitate Open banking.

The qualitative part of the thesis identified several challenges and opportunities of PSD2 and Open banking and, via interviews with selected representatives of financial institutions in Slovenia, discussed how these factors are impacting financial institutions and how they are coping with its barriers and opportunities. Findings, as results and outcomes identified out of primary and secondary methods of data collection, may be summed up as follows:

- The business impact of PSD2 is insignificant or lower than initially expected.
- PSD2 and Open banking track a much slower adaption rate as it was anticipated.
- Customer data is the basis for Open banking-based services, though customers find it unacceptable for banks to deal with their transaction history or habits of spending. Banks thus need to find proper balance.
- Legacy systems and processes as one of the main challenges and barriers to successfully embrace the Open banking paradigm.
- Opening to other industries and platformization of services present key steps toward open finance and open economy.
- User experience, as a key element of faster and more successful adaptation of services, based on Open banking.

The introduction of PSD2 and the adoption of banking have had both positive as well as negative impacts on retail banks. While the enforced competition has driven innovation and efficiency in the sector, it has also posed challenges for banks in terms of maintaining customer relationships and attracting talented individuals. To remain competitive, retail banks need to leverage exactly that - their strengths in customer connections and reputation while embracing technologies and collaborations.

As banks develop strategies to address pool of opportunities presented by APIs and Open banking, they must consider certain factors. Opening systems to partners through APIs alone is not enough, if there are no instant payment options, Digital ID or secure customer verification processes. Above all, customer experience is crucial. That was noted as one of

the outcomes of the interviews, as well as it is clearly stated in the relevant literature studied. Therefore, all banks should approach Open banking and payments platform development with the aim of providing experiences for both customers and businesses while also meeting heightened expectations for speed, convenience, and mobility. Having customer experience in mind should be, without a doubt, a top priority. Ultimately, customer' preferences will continue to shape success despite any disruptions caused by the push towards Open banking.

Traditional banks do not need to try to replicate the platform implementation and adaption speed of BigTech when moving towards Open banking. The rapid user acquisition seen in other industries is unlikely to be replicated in the financial services sector. While there may be some opportunities for growth in existing areas, most markets have already reached saturation point and acquiring new customers can be costly.

However, there are a few things that banks may learn from platforms used in other sectors, such as aligning their incentives with those of third-party providers and developing marketplaces. Banks must also be innovative when it comes to designing platform strategies for the landscape they are entering. It is important for them to anticipate scenarios as the environment continues to evolve.

In the future, the impact of Open banking will likely go beyond the services such as payment processing and account aggregation. In fact, banking tasks might seamlessly integrate into people's routines, making them "invisible". Banks need to be ready today to adapt to the future - by services platformization and building a network of partners. All this could involve combining services to cater to aspects of customers' financial lives, like offering cashback at their preferred stores or providing money-saving tips for commuting. It will also allow banks to expand their reach beyond their customer base by offering functionalities for other businesses, such as verifying customer affordability in real time and facilitating quick reconciliations. And this is what Open banking should be all about in its essence.

What also presents a challenge is whether to wait for PSD3 as PSD2 is obviously not delivering as initially expected. According to the European Commission (2023), a comprehensive set of proposals is prepared to be introduced, aiming to prioritize consumer protection, competition, security, and trust. The first set of measures seeks to revise the existing Payment Services Directive (PSD2) and establish the Payment Services Regulation (PSR). The plan is to strengthen focus on combating payment fraud, enhance consumer rights, further improve banking competition, enhance Open banking advantages in general and enhance regulation harmonization and enforcement.

In my view, PSD3 has the potential to dramatically change the way financial transactions are handled within the European Union. The new rule would probably try to improve consumer safety, make markets more open, and stimulate competition. In addition, this will result in the imposition of new regulations concerning the use of digital currencies, the acceptance of payments started by merchants, and the disclosure of information on financial

account balances. Furthermore, it would seek to improve cross-border payments, streamline the regulatory landscape, and promote innovation and competition in the payment services sector. Nonetheless, also recent European Commission study (European Commission, 2023a), highlighting the inefficiencies and high costs associated with these transactions, for merchants as well as for banks, confirmed the need to enhance cross-border payments.

To fully leverage the potential for strategic differentiation and network effects provided by open-platform banking, it is imperative that financial institutions undertake certain preliminary actions. These actions include outlining a clear vision for Open banking based on their current position, identifying and prioritizing use cases and monetization opportunities, selecting appropriate partners, specifying technology requirements, and developing comprehensive implementation plans. Collaborating with outside experts may aid in effectively navigating this complex process. The introduction of technology into contemporary society has resulted in an immense impact, and it is my belief that this influence has been substantial. The results, however, can be transformative.

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APPENDICES

Appendix 1: Povzetek (Summary in Slovenian language)

Magistrsko delo se osredotoča na vpliv Direktive o plačilnih storitvah II (PSD2) na bančni sektor, zlasti na banke, usmerjene k poslovanju s prebivalstvom (t.i. *Retail* banke), in ob tem analizira vpliv regulativnega okolja, hitrih tehnoloških sprememb ter digitalizacije poslovnih procesov in ostalih strateških ukrepov, ki so nujni za učinkovito uvedbo koncepta odprtega bančništva, katerega podlaga je ravno PSD2.

Direktiva PSD2 določa specifične zahteve za ponudnike plačilnih storitev in je regulatorna in vsebinska podlaga za uvedbo odprtega bančništva, ki omogoča različne poslovne modele in ponudbe storitev. PSD2 tako omogoča in spodbuja digitalizacijo bančnega poslovanja in odpira vrata novim finančnim storitvam ter aplikacijam. Magistrsko delo nadalje analizira in primerja različne poslovne modele, ki jih banke lahko izkoristijo za potencialno ustvarjanje novih prihodkov, začevši z mandatnim uvajanjem PSD2, z vzpostavljanjem partnerstev s tretjimi ponudniki storitev (t.i. *Third Party Providers* oz. *TPP*), s platformizacijo storitev in produktov, monetizacijo API in podatkov ter drugimi potencialnimi možnostmi monetizacije.

Z izvedbo intervjujev s predstavniki izbranih finančnih institucij v Sloveniji se magistrsko delo osredotoča tudi na perspektive in izvedbe strategij PSD2 v praksi, analizira in primerja prednosti, konkretne koristi ter tudi slabosti z vidika posameznih finančnih institucij in v kontekstu usklajevanja s PSD2. Sekundarna metoda pridobivanja virov pa temelji predvsem na relevantni literaturi, vključno s spletnimi viri, strokovno in znanstveno literaturo, blogi, članki, poročili in podatki, ki so javno dostopni.

Glavni cilj magistrskega dela je identificirati in primerjati različne strategije in priložnosti, s katerimi banke lahko ostanejo konkurenčne v okolju po uvedbi PSD2, ugotoviti, kaj so morebitne slabosti in kako jih nasloviti ter obenem prepoznati nove možnosti za generiranje prihodkov, ki so lahko priložnosti in izzivi obenem in s katerimi se soočajo banke pri implementaciji PSD2.

KLJUČNE BESEDE: PSD2, poslovni modeli, odprto bančništvo, strategija, API, storitev odreditve plačil (PIS), storitev zagotavljanja informacij o računih (AIS), banke, tretji ponudniki plačilnih storitev (TPP), platforma

Appendix 2: Interview questions – Retail bank

1. How has PSD2 impacted your retail bank, and what challenges did you face during the implementation process?
2. How has your bank adapted its business model to comply with PSD2 and Open banking regulations?
3. What are potential new revenue streams with PSD2 adoption, and how to embrace them? What are the most significant opportunities that you see for your bank within the Open banking ecosystem? Did your bank achieve them (if not, why not)?
4. In your opinion, what specific strategic and operational efforts could banks take to stay competitive in the post-PSD2 environment?
5. Can you provide examples of specific products or services your bank has developed or plans to develop to capitalize on Open banking opportunities?
6. What do you think are the main competitive advantages for smaller retail banks in the Open banking landscape, and how can they differentiate themselves from larger banks?
7. How do you envision the future of Open banking and your bank's role in this evolving financial ecosystem?

Appendix 3: Interview questions – Open banking services provider

1. What challenges and opportunities did your company face during the financial market transition towards PSD2 and Open banking "world"? In what ways has your company adapted its services and offerings to accommodate the Open banking environment?
2. What do you (personally) consider the most significant opportunities within Open banking for companies like yours? Are you satisfied with how you embraced these opportunities?
3. What are your company's potential new revenue streams with PSD2/Open banking adoption? Is this potential being leveraged already today, or when do you (personally) consider your company can deliver positive financial impact as a consequence of embracing the Open Banking paradigm? (Any concrete numbers, estimations, percentages etc., would be beneficial but are not required.)
4. Can you provide examples of any new services or partnerships your company has pursued as a result of Open banking and PSD2?
5. What strategies has your company employed to monetize Open banking opportunities?
6. What role do you see for companies in your financial industry segment in the future of Open banking, and how do you envision the industry evolving?