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Traditional banks vs. Fintech :

Analyzing the Challenges and Opportunities for Banks in the Fintech Era

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TIIVISTELMÄ:

Fintech = Financial Technology eli Finanssiteknologian nopea kehittyminen on noussut keskeiseksi tutkimuskohteeksi sen suuren vaikutuksen vuoksi globaaliin rahoitusalaan. Fintech tarkoittaa uutta ja innovatiivistä tapaa teknologian integroimiseen raituspalveluihin, ts. Miten rahoitustuotteet toimitetaan ja miten niitä käytetään. Tämä kandidaatintutkielma tutkii Fintechin muutosvoimaista roolia rahoitussektorilla keskittyen siihen, kuinka se haastaa ja täydentää perinteisiä pankkijärjestelmiä. Teknologioita kuten lohkoketju, tekoäly ja digitalisaatio tarkastellaan niiden roolissa tehokkaampien, saavutettavampien ja innovatiivisempien rahoituspalveluiden kehittämisessä. Näiden edistysaskeleiden on osoitettu haastavan perinteisiä pankkimalleja, mikä vaatii sopeutumista tai yhteistyötä Fintech- yritysten ja vakiintuneiden rahoituslaitosten välillä.

Finanssiteknologian vaikutusten analysoimisessa keskeisiin osa-alueisiin, kuten maksamiseen, lainoittamiseen ja rahoitusosallisuuteen, käytettiin viitekehyksenä liiketoimintamallia (Business Model Canvas). Työssä syvennytään Fintech-yritysten kohtaamaan sääntelyyn, kyberturvallisuuteen ja kestävyysongelmiin. Huomiota kiinnitetään myös lisääntyvään yhteistyöhön ja kumppanuuteen Fintech-yritysten ja pankkien kesken osoittamalla yhteistyön edistävän innovaatioita ja parantavan operatiivista toimintaa.

Johtopäätökset korostavat sääntelysopeutuksen ja kestävien liiketoimintamallien kehittämisen tärkeyttä pitkäaikaisen menestyksen varmistamiseksi kehittyvässä globaalissa rahoitusympäristössä. Tämä tutkielma tarjoaa näkemyksen Fintech-yritysten potentiaalista ja sen vaikutuksesta perinteisten rahoituslaitosten tulevaisuuteen.

AVAINSANAT: Fintech, Blockchain, Digitalization, Artificial Intelligence, Business Model Canvas

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1 Introduction

FinTech, defined as financial technology (Dorfleitner et al., 2017) hypes abound. In the news, FinTech is “disruptive”, “revolutionary” and armed with “digital weapons”, that will “tear down” barriers and traditional financial institutions (World Economic Forum, 2017). The financial world has changed drastically over the last decades as a result of recent advancements of new financial and technological innovations that have pushed the boundaries. Until recently, the financial sector remained untouched. Services such as loans and payment services, which were previously exclusive to licensed credit institutions, are now widely offered by new providers and firms (EBA, 2017 & Nicoletti, 2017). Financial services firms have long been implementing internal technological solutions to support their data handling and there have been outsourcing arrangements with external service providers for implementing new technological solutions. Therefore, the integration of technology within the financial services sector is not a recent development. After serious investments in innovative technologies over the last decade and the emergence of new firms offering financial services, the process has been taken to a new level. (Nicoletti, 2017).

According to Forfleitner, Hornuf, Schmitt and Weber (2017) the aim for Fintech companies is to attract customers by offering better products and services, which transcend services currently available by being more user-friendly, efficient, affordable, automated, and transparent. Fintech is driven by emerging technologies such as blockchain, artificial intelligence, smart contacts, and machine learning (Nicoletti, 2017), alongside innovations such as cryptocurrencies, equity crowd funding, peer-to-peer lending, and mobile payment systems (Ajlouni & Al-Hakim, 2019). New opportunities have created new start-up- and technology companies (EBA, 2017). The growing and increasing momentum of Fintech is driving changes in consumer- and market behaviour while disrupting service models and regulatory frameworks (Nicoletti, 2017).

It is no surprise that public authorities have begun examining FinTech’s impact on financial systems, as its rapid growth continues to raise concerns. Its potential impact on

financial institutions and banks remain uncertain and the question between stability and a healthy competition is questioned (Navaretti et al., 2017). Navaretti, Calzolari, Mansilla-Fernández and Pozzolo (2017) debates if its efficiency to get into the high entry barrier markets overcome its caused disruptions and financial instability.

1.1 Key concepts

Fintech

The adoption of innovative digital technologies in delivering financial services has fuelled the rapid rise of FinTech companies (hereafter Fintech's). These Fintech companies can range from start-ups to established enterprises, each possessing capabilities for either disrupting or enhancing traditional financial services. (Haddad and Hornuf, 2019). Laidroo and Avarmaa (2020) highlight that the prevalence of Fintech varies significantly across countries. Iman (2020) emphasizes that obtaining accurate counts, especially by activity type, is challenging due to the lack of a universal definition and standardized classification system for Fintech's.

According to Dorfleitner et al., (2017) and IOSCO (2017), the term ''Fintech'' stand for companies that combine financial services and innovative business models with new emerging innovative technologies. The term Fintech stands for ''Fin'', which means financial and ''Tech'', which designates from technology (Mention, 2017). The Financial Stability Board (2017) defines Fintech as a financial innovation that leverages technology to develop new models, processes, and products (also, Mention, 2017). Some researchers equate the Fintech business model closely with the specific services or products that the company provides (e.g., Lee and Shin, 2018; Liu et al., 2020). In other words, they see the business model as being defined primarily by what the company offers, such as digital payments or investment services. Other researchers believe that the Fintech business model involves more than just the products or services a company offers,

considering a wider set of factors like technology, customer engagement, and business operations (e.g., Lee and Teo, 2015; Eickhoff et al., 2017). Iman (2020) emphasizes the necessity for further research on the specific characteristics of Fintech in various environments. Kavuri and Milne (2019) observe that there is a lack of comparative data regarding the various activities (products and services) offered by Fintech companies.

Blockchain

The origins of blockchain can be traced back to a white paper authored by Satoshi Nakamoto (2008). In this paper, Nakamoto presented a peer-to-peer electronic cash system knowns as bitcoin, enabling direct online payments between parties without the need for centralized financial intermediaries. As part of the bitcoin implementation, Nakamoto also created a ledger referred to as ‘’a chain of blocks” (Nakamoto, 2008, p. 7). This chain of blocks underpins the latest iteration of electronic cash (The Economist, 2015) and later came to be known as blockchain. Since Nakamoto’s initial introduction of the concept, numerous other blockchain technologies have been developed. Blockchain is a decentralized, digital ledger technology that enables secure, peer-to-peer transactions without intermediaries and forms the foundation for digital assets such as cryptocurrency, which can be exchanged and verified in real-time. (Swan, 2015; Scheibach, 2016).

It is important to define several key terms related to blockchain. In accordance with the framework proposed by Swan (2015) and Evans-Greenwood, Harper, Hillard and Williams (2016), we define the terms as follows : ‘’Blockchain’’ (without the article) refers broadly to the overarching concept of the technology. "Blockchain technology" or "a blockchain" (with an indefinite article) refers to the foundational system—a network of computers and algorithms that support Bitcoin and other distributed ledger applications. In contrast, "the blockchain" (with a definite article) specifically denotes the technology that powers Bitcoin.

Digitalization

Digitalization is the process of leveraging digital technologies to transform business models, processes, and services, with an emphasis on enhancing efficiency and innovation. This process involves integrating digital tools such as cloud computing, automation, and artificial intelligence to improve operations. By adopting digitalization, companies can streamline workflows, make data-driven decisions, and enhance customer experiences with personalized services like online banking. It also enables new business models, such as subscription services or remote work platforms, fostering innovation and market competitiveness. While digitalization offers numerous benefits, it also presents challenges, including data security, privacy concerns, and the need for employee upskilling. The impact of digitalization is evident across various industries, reshaping sectors from finance to healthcare. It plays a critical role in driving modern economic and social transformations. (Schwertner, 2017)

Artificial Intelligence (AI)

Artificial Intelligence refers to the creation of computer systems capable of performing tasks that usually require human intelligence. These tasks encompass problem-solving, learning, language understanding, and decision-making. (Sajid et al. 2023). AI systems use algorithms, data, and machine learning techniques to improve their performance over time (Price, 2019; Bassano, 2019). AI is utilized across multiple fields, including robotics, natural language processing, image recognition, and autonomous vehicles. It has the potential to transform industries by automating processes, enhancing decision-making, and enabling personalized services. (Sajid et al (2023).

Business Model Canvas (BMC)

The Business Model Canvas is a strategic tool used to visualize and develop a company's business model. It consists of nine building blocks: Customer Segments, Value Propositions, Channels, Customer Relationships, Revenue Streams, Key Resources, Key Activities, Key Partnerships, and Cost Structure. These components help businesses map out how they create, deliver, and capture value. By using the BMC, companies can analyze their

current model, identify opportunities for improvement, and explore new ideas. It's widely used by startups and established companies for its simplicity and ability to provide a clear, one-page overview of a business. The BMC encourages a holistic view of the business, making it easier to align strategy with exécution. (Vuorinen & Huikkola 2023:296-304).

1.2 Research questions and objectives

The primary aim of this thesis is to examine the evolution of fintech and its increasing competition with traditional banking institutions. The financial services landscape has been significantly transformed by digital innovations, leading to new challenges for traditional banks. This study seeks to understand the key question: *What challenges do traditional banks face when competing with the fintech sector?* To explore this central question, the following supporting research questions are addressed:

- How are banks and Fintech companies collaborating to create new financial products and services?
- How can traditional banks benefit from adopting fintech-driven technologies and business models?
- How are technological innovations reshaping the business models of firms within the financial sector?
- How are financial transactions evolving due to Fintech?

These research questions will be addressed by analysing the role of technology in reshaping financial services, the competitive dynamics between Fintech companies and banking institutions, and the potential for collaboration. We will be using business model canvas as a tool to understand these differences better. The goal is to deliver a thorough

understanding of the current state of Fintech and its potential implications for the future of the banking industry.

1.3 Structure of the thesis

This thesis is divided into five chapters. First chapter introduces the topic of Fintech, outlining the main research questions, objectives, and key concepts. It introduces the background and relevance of Fintech in the financial sector, preparing for the detailed analysis. The second chapter focuses on the evolution of Fintech, beginning with the historical development of the term and the factors driving its emergence. This chapter discusses key phases in Fintech's history, from its origins in the 19th century to its current role in the digital economy and highlights the reasons for its rapid growth. Chapter three examines technological innovations within the financial sector. It introduces the BMC framework, which will be employed to compare the business models of Fintech companies and traditional banks. This chapter also explores how technological advancements such as AI, blockchain, and mobile technologies have transformed financial services.

Chapter four addresses the research questions posed in this thesis. It compares the offerings and competitive strategies of traditional banks and Fintech firms, examining how they collaborate, compete, and innovate to meet changing customer demands. It also looks at how technological innovations have affected international financial operations. Finally, the last chapter presents the conclusions and discussion of the thesis, summarizing the key findings. It examines the wider impact of Fintech's growth on the banking sector and proposes areas for future research.

2 The evolution of Fintech

This chapter provides an overview of how Fintech has evolved from its early origins to its current form. It outlines the key phases in the development of financial technologies and examines the driving forces behind Fintech's growth, such as advancements in digital tools and the changing needs of financial services. The chapter also explores the various services Fintech now offers, including lending, payments, investments, and personal finance, and how these innovations have altered traditional banking models. Additionally, the chapter touches on the challenges Fintech companies face in maintaining growth, such as regulatory and security concerns, and the competition with both established financial institutions and newer players. Finally, the chapter aims to offer a comprehensive understanding of the many-sided nature of Fintech and its ongoing impact on the financial industry.

2.1 The history of Fintech

The current Fintech term dates to the 21st century, but its history and use goes back more than 150 years (Treu, 2022). Figure 1 below illustrates this evolution.

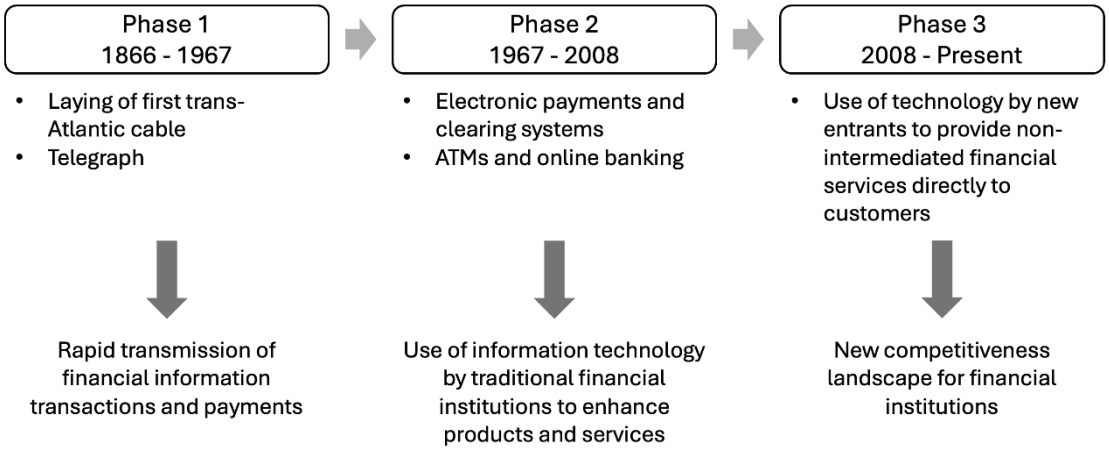

Figure 1. The three phases of Fintech ((Author's own elaboration, (Consumers International, 2017))

Telegraphy was the first example of a technological innovation used to increase efficiency as early as the 19th century (Arner et al., 2015; Nathmann, 2019). Consequently, Fintech can be divided into three phases. The first phase (Fintech 1.0) spans from 1866 - 1967, when telegraphy was used. The second phase (Fintech 2.0) runs from 1967 until 2008, which is described as the transition from the analog to the digital age. (Arner et al., 2015; Thakor, 2019). The financial crisis led to a loss of trust and created uncertainty, causing people to rethink the resources and reliability of financial service providers (Retacka, 2020). Consequently, customers realized that financial services no longer needed to be offered by regulated financial institutions and banks. The third and current phase of Fintech (3.0) began with the financial crisis of 2008 and is still in use today (Retacka, 2020). Arner et al., (2015) argue that new technologies, such as AI, machine learning and new massive databases (Big Data), created a new market gap and led to the emergence of new financial service providers.

2.1.1 The emergence of Fintech

There are many arguments and reasons behind the emergence of Fintech. Christensen (2011) applied the terms appearance to the Fintech phenomenon of new innovations or technologies than can replace existing products, services, or technologies from the market. Kerenyi and Monlar (2017) and Faykiss et al. (2018) argue that market conditions are fundamentally shaken, and new innovations can change or remove existing business models from the markets entirely.

Philippon (2017, 2019) states that the existing inefficiencies in the financial system in the USA are another reason for the emergence of Fintech. Frost (2020) argues that financial services have been expensive in the last decades and Philippon (2017) supports this argument with his study, which shows high costs of financial intermediation have been historically at the same level for decades. According to Philippon's study (2017), the

finance sector can be viewed as an industry with high entry barriers and inefficient regulations. According to this view, the emergence of Fintech is explained by economic considerations, in which competition and maximizing profits would bring efficiency gains in financial intermediation.

Claessen's et al. (2018) identify two additional reasons for the emergence of Fintech, noting a positive correlation between a country's economic growth, the level of economic and financial development, and the presence of Fintech in light of these objectives. According to them, a negative correlation between strict bank regulations and Fintech activities is also found. They further argue that Fintech's emergence may be related to intense competition in credit markets and propose a theory in which less competitive banking systems mean higher margins for bank loans, thereby boosting the use of alternative forms, such as Fintech.

2.2 Current development of Fintech

The Fintech landscape is characterized by a diverse range of companies offering financial services. Dorfleitner et al. (2017) categorize these Fintech companies into four main segments based on their business models: financing, asset management, payments, and other Fintechs. This segmentation not only highlights the various functions these companies perform but also reflects the unique challenges and opportunities they face within the financial ecosystem.

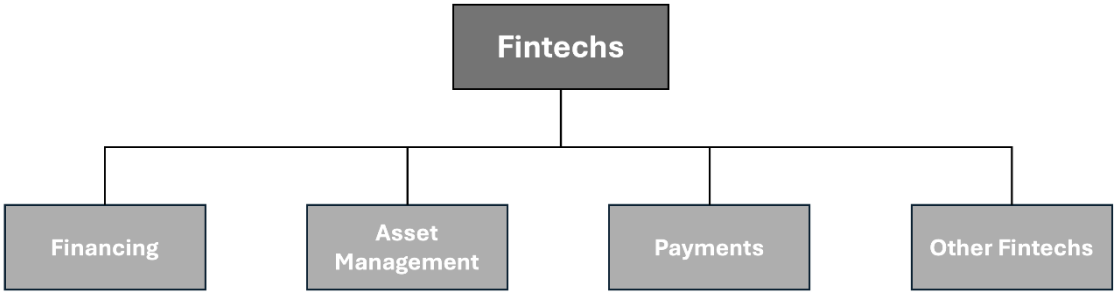

Figure 2. Segments of the Fintech Industry ((Author's own elaboration, (Dorfleitner et al., 2017, p.230))

2.2.1 Financing

The financing segment covers companies that facilitate lending and borrowing activities, often leveraging technology to improve access to credit. Milne and Parboteeah (2016) describe peer-to-peer (P2P) lending, also known as "marketplace lending," as a process that allows individuals and businesses to loan money directly without the involvement of a traditional bank. In this model, borrowers submit loan applications, and the P2P platform performs a credit analysis to evaluate the risk. Lenders then place bids on the loan amounts and interest rates, and the platform consolidates these bids into a single loan. Unlike banks, P2P platforms do not fund loans with deposits but collect fees from borrowers and lenders for their services. This innovative approach has gained traction in the U.S. and Europe since the 2008 financial crisis, offering an alternative source of financing for those underserved by traditional banking institutions (Hornuf et al., 2020). Understanding the nuances of P2P lending compared to conventional bank lending is crucial for understanding its impact on the financing landscape.

2.2.2 Asset management

In the asset management segment, Fintech firms focus on investment services, providing automated platforms and robo-advisors that help individuals and institutions manage their portfolios (Dorfleitner et al., 2017). These platforms utilize algorithms to offer

personalized investment advice, making wealth management more accessible and affordable. The emergence of low-cost investment options, such as exchange-traded funds, have accelerated this trend, enabling users to optimize their investment strategies without incurring high fees typically associated with traditional asset management firms (Frost, 2020). This expansion of investment services has opened doors for a broader audience, transforming how individuals engage with their finances.

2.2.3 Payments

The payments segment includes companies that facilitate financial transactions through digital means. Blockchain technology stands out as an advancement in this area, allowing for the secure and reliable exchange of digital assets without centralized intermediaries (Nakamoto, 2008). Rometty (2016) characterizes blockchain as a digital ledger created by its users, providing a transparent and secure record of transactions. Morkunas et al. (2019) explain that when a transaction is proposed, it undergoes a series of algorithmic validations across a distributed network of computers. This ensures that all transactions are recorded and verifiable. Consequently, blockchain technology enables faster, cheaper, and more secure international transactions compared to traditional banking methods, significantly altering the payments landscape (Scheibach, 2016).

2.2.4 Other Fintech’s

The category of "other Fintech’s" cover a wide array of companies that do not fit neatly into the previously mentioned segments. This includes firms focused on insurance technology, regulatory technology (regtech), and cybersecurity solutions tailored for the financial sector. (Dorfleitner et al., 2017). These companies play a vital role in enhancing the overall efficiency and security of financial services, addressing regulatory compliance challenges, and providing innovative solutions to reduce risks associated with digital transactions (Navaretti et al., 2018). Their contributions are essential for fostering a resilient financial ecosystem that can adapt to the rapidly evolving technological landscape.

In summary, the segmentation of Fintech companies into financing, asset management, payments, and other Fintech's provides a comprehensive framework for understanding the diverse roles these firms play in the financial ecosystem. Each segment is characterized by unique business models and operational challenges, but together, they contribute to the ongoing transformation of the financial services industry.

3 Technological innovations change the financial world

In the previous chapter, we discussed the rise of Fintech companies and their transformative role in the financial sector, particularly in relation to traditional banks. The discussion highlighted the need for financial institutions to adapt to technological advancements to remain competitive. This provides the stage for a closer examination of how Fintech companies are innovating and how traditional banks are responding to these challenges.

In this chapter, we will explore how technological innovations have reshaped the financial world, particularly in the context of business models. One of the most effective tools for analysing and understanding these changes is the Business Model Canvas (BMC). The company's business model and its different areas can be described in several different ways. One of the most popular tools for this is the BMC, developed by Swiss entrepreneur Alexander Osterwalder (2013) and his team. BMC allows companies to present their business models visually, clearly, and comprehensively, offering a structured approach to analysing key business components (Vuorinen & Huikkola, 2023, P. 296-304).

Fintech companies and traditional banks differ significantly in their approach to financial services. While traditional banks have long-established, regulated business models based on physical branches and centralized systems, Fintech companies leverage technology to offer more flexible, digital, and often decentralized solutions. These differences drive innovation in the financial sector, with Fintech challenging established banking practices by providing more accessible, efficient, and user-friendly services.

The inclusion of the Business Model Canvas (BMC) in this thesis is essential because it provides a flexible framework for analyzing and comparing the business models of both Fintech companies and traditional banks. Given the disruptive nature of Fintech, it is crucial to examine the evolving business models of these two sectors. BMC is a valuable tool for both startups and established organizations. For Fintech startups, whose

business models are often still evolving, the BMC helps structure and define their operations more clearly. For larger, established financial institutions, the BMC framework serves as an analytical tool to critically evaluate their existing business models, many of which may not have been thoroughly assessed in recent years.

By using the BMC, we can gain deeper insights into how Fintech companies are innovating their business models and how traditional banks are rethinking their models in response to technological disruptions. This analysis will allow us to explore the innovative business practices within Fintech and identify the strategic adjustments traditional banks must make to remain competitive in the evolving financial landscape.

3.1 Business model canvas

To provide a structured discussion of the potential impacts of blockchain technology on business models, we utilize the BMC framework to structure these impacts. The Business model canvas, created by Alexander Osterwalder and Yves Pigneur (2010), is a strategic management tool which helps organizations to visualize, develop, design, challenge and test their business models. Osterwalder and Pigneur (2013) state that the canvas is a visual chart that covers the main four elements and areas of business describing a firm's products and service's value propositions, customers, infrastructure and financial viability. According to them, these four areas are divided into nine different blocks which represent the key elements of the business model: customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partners and cost structure. When these elements are aligned correctly and combined, they can create and deliver value. (Osterwalder & Pigneur, 2010, P. 15; Vuorinen & Huikkola, 2023, P. 296-304). To gain a better understanding of the framework, refer to Figure 3.

For BMC to be effective and efficient, it must be simple, timely and easy to use while still recognizing the complex nature of business. By actively updating the model and

considering changes and different trends in the economy, the company can remain competitive and successful. By utilizing the model, companies can achieve clarity into their internal operations and develop more effective strategies. (Drucker, 1994 & Osterwalder et al, 2010). They can create multiple models and scenarios and test them to see which ones work best (Osterwalder & Pigneur, 2010, P. 15). This allows them to make informed decisions about their operations and create a more efficient and successful business (Vuorinen & Huikkola, 2023, P. 296-304).

Figure 3. Business Model Canvas (Osterwalder & Pigneur 2010, p.15.)

The BMC is particularly useful for its visual representation, which allows companies to see how different elements of their business interact and how adjustments in one area might impact the others. It provides a structured way to assess both the internal and external factors that influence a company's success. By mapping out each of the nine building blocks, organizations can ensure they are addressing all critical aspects of their operations while remaining adaptable to changes in the business environment. (Vuorinen & Huikkola, 2023, P. 296-304; Drucker, 1994 & Osterwalder et al, 2010).

The nine building blocks of the BMC are as follows:

Customer segments define the groups of individuals or organizations that a business intends to serve, requiring a thorough understanding of the target market and the value they seek. Value propositions describe the unique offerings that differentiate a company from its competitors, emphasizing the products or services that meet customer needs. Channels refer to the various means by which a company delivers its products or services to customers, including physical stores, online platforms, and other distribution methods. Customer relationships describe the ways in which a company interacts with its customer base, whether through personalized services, automated solutions, or community-building efforts. Revenue streams define how the company generates income from its offerings, whether through sales, subscriptions, licensing, or other mechanisms. (Osterwalder, 2014; Vuorinen & Huikkola, 2023, P. 296-304).

Key resources encompass the critical assets, whether physical, intellectual, or human, that are necessary for the business to operate. Key activities include the essential tasks and processes that a company must perform to deliver its value proposition, which can include everything from product development to marketing and sales. Key partners refer to external entities such as suppliers, alliances, or strategic partners that a business relies on to perform its key activities. Cost structure involves all the expenses a company faces in operating its business model, which could include both fixed and variable costs depending on the nature of the organization. (Osterwalder, 2014; Vuorinen & Huikkola, 2023, P. 296-304; Drucker, 1994; Osterwalder et al., 2010).

The BMC framework plays a crucial role in helping businesses navigate dynamic and evolving environments. Its simplicity and flexibility allow companies to continuously assess and update their strategies in response to changes in the market, customer behavior, or technological advancements. By using BMC, organizations can clearly map out their current business models, identify potential weaknesses or areas for improvement, and explore new opportunities for growth and innovation. (Vuorinen & Huikkola, 2023, P. 296-304).

Osterwalder and Pigneur (2010) emphasize that the BMC is most effective when it is updated regularly to reflect the current business environment. This enables businesses

to stay competitive by anticipating market trends, customer needs, and shifts in industry dynamics. Additionally, the framework encourages collaboration and communication across different departments within an organization, as it provides a common language for discussing and refining business strategies. (Vuorinen & Huikkola, 2023, P. 296-304).

In summary, the Business Model Canvas serves as a comprehensive and practical tool for analyzing and understanding how businesses create, deliver, and capture value. Its nine building blocks provide a clear structure for organizations to examine all aspects of their operations, ensuring they are well-positioned to adapt to changing market conditions and continue to succeed. By employing the BMC framework, companies can gain deeper insights into their internal processes, external partnerships, and customer interactions, allowing them to make more informed decisions and maintain a competitive edge. (Osterwalder, 2014; Vuorinen & Huikkola, 2023, P. 296-304; Drucker, 1994; Osterwalder et al, 2010).

3.2 Business model canvas for Fintech sector

Fintech companies have introduced innovative business models that diverge significantly from traditional financial institutions. Using the BMC, we can break down their unique operational approach across nine building blocks. This section explores these elements, highlighting how Fintech companies capitalize on technology to meet evolving customer needs. Figure 4 summarizes the Business model canvas for Fintech and the text below elaborates on each section explaining how this canvas was designed.

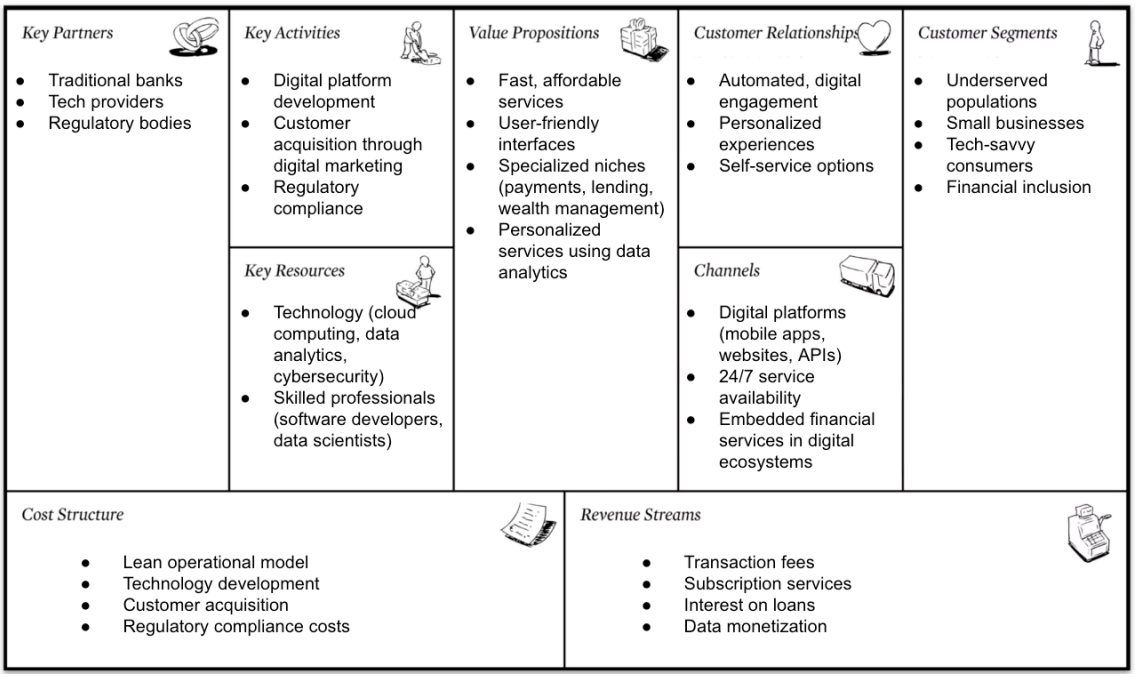

Figure 4. Fintech sector Business Model Canvas (Author´s own elaboration)

Customer Segments: Fintech's target a diverse range of customer segments, including underserved populations such as the unbanked, small businesses, and tech-savvy consumers (World Economic Forum, 2017). By focusing on financial inclusion and tailoring their services to specific customer needs, they extend their reach beyond traditional banks, which tend to cater to more established customers (Nicoletti, 2017).

Value Propositions: Fintech's differentiate themselves by offering faster, more affordable, and user-friendly services, often through digital channels. They excel in specialized niches like payments, lending, and wealth management, providing highly personalized services using data analytics and artificial intelligence. Their ability to unbundle traditional financial services creates a sharper focus on customer value. (Mention, 2019).

Channels: Digital platforms such as mobile apps, websites, and APIs form the core distribution channels for Fintech's, eliminating the need for physical branches (Arner et al., 2015). These companies leverage technology to deliver services anytime, anywhere, often integrating financial services within larger digital ecosystems such as e-commerce platforms or mobile apps (Laidroo et al., 2021).

Customer Relationships: Fintech's build relationships primarily through automated, digital channels, using big data and AI to offer personalized experiences (Haddad & Hornuf, 2019). With self-service options and user-friendly interfaces, they engage customers more flexibly and responsively than traditional banks, appealing especially to younger, digital-native customers.

Revenue Streams: Fintech's generate revenue through a variety of models, including transaction fees, subscription services, and interest on loans. They often scale their platforms quickly by leveraging data monetization and partnerships, offering new revenue opportunities beyond traditional banking's reliance on interest income. (Hornuf et al., 2020).

Key Resources: Technology serves as the foundation for Fintech companies, with cloud computing, data analytics, and cybersecurity recognized as essential assets (Osterwalder & Pigneur, 2013). Additionally, skilled professionals in software development and data science play a crucial role in this landscape, empowering Fintech firms to drive innovation and sustain competitive advantages (Chemmanur et al., 2020). By leveraging these technological resources and talent, Fintech companies can adapt quickly to market changes and meet the evolving needs of their customers.

Key Activities: Core activities include the development of digital platforms, customer acquisition through digital marketing, and compliance with evolving financial regulations. These companies continuously innovate to meet market demands, while balancing regulatory challenges inherent in financial services. (Amstad, 2019).

Key Partners: Fintech companies rely on partnerships with traditional banks, tech providers, and regulatory bodies to deliver services. Banks provide access to established financial infrastructure, while tech companies support their digital platforms. (Hornuf et

al., 2020). Partnerships help Fintech companies scale quickly and ensure compliance with legal frameworks.

Cost Structure: Fintech companies maintain lower cost structures, utilizing digital-first models that minimize physical infrastructure costs (Laidroo et al., 2021). Major expenses include technology development, cybersecurity, and customer acquisition, with regulatory compliance costs growing as they scale (Beck, 2020).

The Fintech business model, with its reliance on technology, flexible customer engagement, and lower cost structure, presents a significant shift from traditional banking practices. As we move into the analysis of the traditional banking business model in the next section, the contrasts will further illuminate the unique challenges and opportunities Fintech poses to established financial institutions.

3.3 Business model canvas for traditional banking industry

The traditional banking sector has long been the foundation of the financial system, offering a diverse array of services to individuals, businesses, and governments. The Business Model Canvas for traditional banks illustrates how they create, deliver, and capture value in a competitive financial landscape. Figure 5 summarizes the Business model canvas for traditional bank system and the text below elaborates on each section explaining how this canvas was designed.

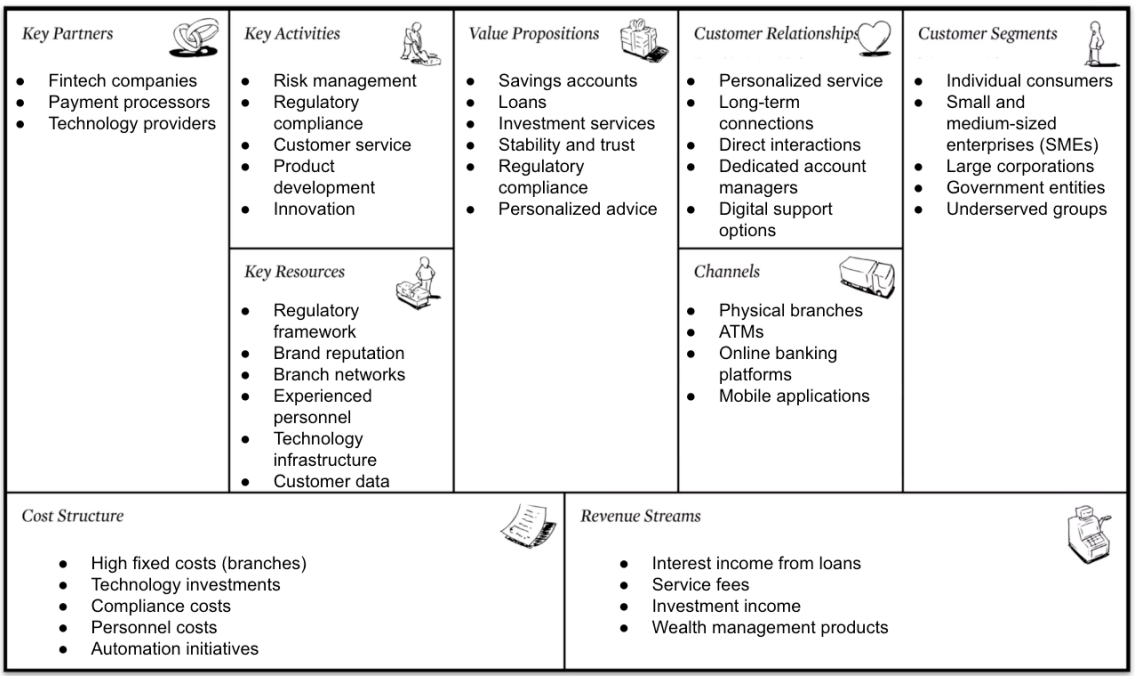

Figure 5. Traditional bank sector Business Model Canvas (Author´s own elaboration)

Customer Segments: Traditional banks typically serve a diverse range of customer segments, including individual consumers, small and medium-sized enterprises, large corporations, and government entities (Beck, 2020). Each segment has unique financial needs, from personal banking services for individuals to complex financing solutions for businesses (Frost, 2020). Recent studies indicate that banks are increasingly targeting underserved segments, such as low-income households and small businesses, to expand their customer base and enhance financial inclusion (Beck, 2020).

Value Propositions: The value propositions of traditional banks include a wide variety of financial products and services such as savings and checking accounts, loans (personal, business, mortgage), investment services, and wealth management. Banks emphasize stability, trust, and a strong regulatory framework, often backed by government insurance on deposits. (Frost, 2020).

Channels: Traditional banks operate through multiple channels, including physical branch networks, ATMs, online banking platforms, and mobile apps. While branches have been a significant channel for personal interactions, banks are increasingly

investing in digital channels to meet the growing demand for online and mobile banking services. (Christensen, 2011). These channels facilitate customer engagement and service delivery, allowing for a seamless banking experience.

Customer Relationships: Banks typically maintain long-term relationships with their customers through face-to-face interactions, personalized banking solutions, and dedicated account managers for high-value clients. However, the increasing shift toward digital banking has driven traditional banks to enhance their customer service through online support and self-service options. (Navaretti et al., 2018).

Revenue Streams: Traditional banks primarily generate revenue through interest income from loans, service fees (such as account maintenance, overdrafts, and wire transfers), and investment income. Interest income remains the most significant source of revenue. (Hornuf et al., 2020).

Key Resources: Key resources for traditional banks include a robust regulatory framework, a well-established brand reputation, a network of physical branches, and experienced staff. Additionally, technology infrastructure (including core banking systems) and customer data are crucial resources that enable banks to offer tailored services and maintain compliance with regulations. (Milne & Parboteeah, 2016).

Key Activities: Key activities in the traditional banking model encompass risk management, regulatory compliance, customer service, product development, and marketing. Banks must continually innovate their product offerings to remain competitive while ensuring compliance with an ever-evolving regulatory landscape. (Claessens et al., 2018). Risk management is particularly critical, given the financial industry's exposure to credit, market, and operational risks.

Key Partners: Traditional banks often collaborate with a variety of key partners, including Fintech companies, payment processors, and technology providers. These partnerships

enable banks to enhance their service offerings, improve operational efficiency, and keep pace with technological advancements. Regulatory bodies also play a vital role in shaping the partnership landscape, as banks must ensure compliance with laws and regulations. (Fáykiss et al., 2018).

Cost Structure: The cost structure of traditional banks are typically characterized by high fixed costs due to the maintenance of physical branches, technology investments, and compliance expenditures. Additionally, personnel costs are substantial, as banks employ a significant workforce to provide customer service and support. However, the shift toward digital channels is driving banks to reevaluate their cost structures and explore opportunities for cost reduction through automation and process optimization. (Thakor, 2020).

The Business Model Canvas for the traditional banking sector highlights the intricate interaction of various elements that contribute to value creation, delivery, and capture. While traditional banks continue to adapt to the challenges posed by Fintech innovations, their established customer relationships, extensive product offerings, and regulatory expertise remain significant assets in navigating the evolving financial landscape.

4 Traditional banks and Fintech companies

The transformation of the financial industry by Fintech has posed both challenges and opportunities for traditional banks. As technological innovations accelerate, banks face competition from the Fintech sector while also finding ways to collaborate with them. Based on the findings from previous chapters, the following research question answers are formed. This chapter examines how these dynamics play out, addressing the challenges banks encounter when competing with Fintech companies, the opportunities for collaboration, the benefits of adopting Fintech-driven technologies, the impact of technological innovations on business models, and the implications for international transactions.

4.1 What challenges do traditional banks face when competing with the Fintech sector?

Traditional banks face a wide array of challenges when competing with the Fintech sector. A significant competitive disadvantage for banks is their reliance on legacy systems and outdated infrastructures, which are less agile and slower compared to the cloud-based, digital-first approach of Fintech companies. These older systems slow down banks' ability to innovate or offer real-time services (Navaretti et al., 2017). Fintech's, on the other hand, leverage technology to offer faster services such as instant payments, digital lending platforms, and real-time asset management, which has altered consumer expectations.

Banks also face a growing threat in terms of customer service. Historically, banking services have been based on physical branches and limited customer touchpoints, whereas Fintech's have introduced a seamless digital experience. Digital customer engagement through mobile apps, chatbots, and omni-channel services provide Fintech firms an edge in delivering more personalized and responsive services (Price, 2019; Treu, 2022). This

digital engagement contrasts sharply with banks' reliance on in-person interactions, which can be slow.

Security concerns further worsen the challenges for traditional banks. Although banks have long been trusted with safeguarding financial assets, Fintech's are offering similar assurances with advanced cybersecurity technologies, often outpacing traditional financial institutions in identifying and responding to new cyber threats (Ahmed & Al-Hakim, 2018). Meanwhile, Fintech companies, because of their leaner digital infrastructures, can innovate faster in terms of security protocols compared to traditional banks' more strict frameworks.

Another crucial challenge is the emergence of BigTech companies (Apple, Amazon, Google) in financial services, providing banking-like services such as payment processing and small-scale lending without adhering to the strict regulatory requirements of traditional banks. BigTech firms leverage their expansive customer data, sophisticated algorithms, and massive capital reserves to enter financial services easily, further disrupting the banking sector. (Freixas & Rochet, 2008; World Economic Forum, 2017)

4.2 How are banks and Fintech companies collaborating to create new financial products and services?

Despite the competition, there has been a growing trend of collaboration between banks and Fintech companies, with both parties benefiting from their respective strengths. This collaboration helps banks overcome their slow pace of innovation while allowing Fintech's to tap into banks' vast customer bases and regulatory expertise (Hornuf et al., 2020).

One visible area of collaboration is in the payments sector. Banks have integrated Fintech payment solutions into their operations, particularly for digital and mobile payments.

Partnerships with Fintech companies like Stripe and PayPal allow traditional banks to offer modern payment services without the need for large investments in developing these solutions internally (Nicoletti, 2017). By utilizing Fintech innovations, banks can offer faster payment services, cross-border transactions with lower fees, and blockchain-enabled security features, which are particularly appealing to businesses (Nakamoto, 2008; Scheibach, 2016).

In lending and asset management, banks are collaborating with Fintech firms to modernize and diversify their offerings. Fintech companies have introduced P2P lending platforms, robo-advisors, and AI-driven loan approval systems that enhance banks' ability to offer quick, personalized, and more accessible services (Milne & Parboteeah, 2016; Dorfleitner et al., 2017). These collaborations enable banks to provide loans with lower transaction costs and personalized investment solutions, which appeal to a broader customer base.

Moreover, partnerships with Fintech's provide banks access to RegTech solutions, which streamline regulatory compliance processes, making it easier and more cost-efficient for banks to meet legal requirements. This collaboration helps banks to keep up with the increasing complexity of regulations while maintaining cost-efficiency (Amstad, 2019; Fáykiss et al., 2018). By leveraging Fintech innovations, banks can more easily navigate complex regulatory environments, reducing the risk of fines and penalties.

4.3 How can traditional banks benefit from adopting Fintech-driven technologies and business models?

Traditional banks can gain considerable advantages from adopting Fintech-driven technologies and incorporating more agile business models. First, digital transformation provides an opportunity to enhance operational efficiency. By integrating AI technology, banks can automate routine processes such as customer service inquiries, risk assessments, and loan approvals. This automation reduces operational costs and improves the

speed of service delivery, helping banks compete more effectively with Fintech's (Hornuf et al., 2020; Mention, 2019).

Additionally, blockchain technology presents a significant opportunity for traditional banks. Blockchain's distributed ledger system allows for greater transparency, faster settlement times, and reduced costs in cross-border payments and securities (Nakamoto, 2008; Swan, 2015). By adopting blockchain tevhnology, banks can streamline international transactions, reduce the need for intermediaries, and increase security, ultimately improving customer trust and satisfaction.

Moreover, big data and predictive analytics are reshaping how banks engage with their customers. By utilizing Fintech technologies that analyse customer behaviour and preferences, banks can offer more personalized products and services. For instance, banks can use AI-powered robo-advisors to provide tailored investment advice, a service previously reserved for high-net-worth individuals. This increased personalization enhances customer engagement and retention, which is crucial in a competitive landscape (Nicoletti, 2017; Liu et al., 2020).

Banks adopting Fintech-driven business models can also benefit from more flexible and scalable operations. Fintech firms' lean and scalable structures allow them to enter new markets more rapidly. Traditional banks, burdened by extensive physical infrastructures and legacy systems, can use Fintech technology to reduce costs and improve their agility (Navaretti et al., 2018).

4.4 How are technological innovations reshaping the business models of firms within the financial sector?

Technological innovations are fundamentally reshaping the business models of firms in the financial sector. Fintech companies, built on digital-first principles, are typically more agile and cost-efficient than traditional banks. Their reliance on technology for core

operations, such as blockchain for payments and AI for customer interaction, enables Fintech's to operate with lower resources and reach more customers through digital channels (Dorfleitner et al., 2017; Laidroo et al., 2021).

Blockchain technology is a disruptive force in financial services. Blockchain's decentralized ledger system allows for real-time settlement of transactions without intermediaries, challenging the role that traditional banks have long played in payment processing, clearing, and settlement (Nakamoto, 2008). As blockchain adoption increases, banks will need to shift their focus from being transaction intermediaries to providing value-added services like financial advisory and asset management.

Another innovation transforming business models is the application of AI and machine learning. These technologies enable financial firms to make faster, more accurate decisions, from assessing creditworthiness to managing investment portfolios. AI-driven automation not only reduces the cost of operations but also enhances customer satisfaction by providing more tailored services (Lee & Shin, 2018; Frost, 2020).

Digitalization also extends to customer relationship management, with firms increasingly adopting omni-channel strategies that blend physical and digital interactions. Traditional banks are restructuring their business models to include more mobile and online banking services, focusing on creating better customer experiences that Fintech's provide (Price, 2019; Bassano, 2019).

4.5 How are financial transactions evolving due to Fintech?

Digitalization has revolutionized international transactions by making them faster, cheaper, and more transparent. In the past, international transfers required intermediaries, leading to long processing times and high fees. Fintech companies, using blockchain technology, have significantly improved the speed and cost-effectiveness of cross-border transactions. By eliminating the need for intermediaries, blockchain allows

international transfers to be completed in real time, drastically reducing settlement times and operational costs. (Nakamoto, 2008; Rometty, 2016).

Fintech's have also introduced platforms like TransferWise (now Wise), which have reduced the costs associated with foreign exchange and cross-border payments. These platforms provide transparency in exchange rates and fees, something that was lacking in traditional bank transfers. This transparency has forced traditional banks to re-evaluate their fee structures for international operations (Scheibach, 2016; Chemmanur et al., 2020).

Despite the benefits of digitalization, international operations are exposed to bigger cybersecurity risks. The increase in digital transactions has made financial institutions more vulnerable to cyberattacks, leading to greater regulatory inspection and the need for more robust security measures. Fintech companies are investing heavily in security innovations, which could serve as a model for banks looking to strengthen their cybersecurity infrastructure (Fáykiss et al., 2018; Amstad, 2019). Digitalization has also created a more complex regulatory environment, as firms must now comply with the differing regulations of multiple jurisdictions regarding data privacy, anti-money laundering (AML), and customer identification processes (Amstad, 2019).

In conclusion, while digitalization has brought big efficiencies to international transactions and operations, it has also introduced new challenges that banks and Fintech's must navigate together. Through collaboration, both sectors can leverage each other's strengths to overcome these challenges and drive further innovation in global financial services.

5 Conclusions and discussion

Fintech has proven to be more than a buzzword; it is a global phenomenon that is fundamentally reshaping the financial sector. As discussed throughout this thesis, Fintech blends financial services with innovative technologies, offering faster, cheaper, and more accessible solutions to a broader range of consumers than traditional banking institutions. Whether through blockchain, AI, or mobile technologies, Fintech is driving the financial sector toward a more digitized, customer-centric model. The evidence presented supports the view that Fintech is not just disrupting the financial system but transforming it in ways that will have lasting effects on both the industry and consumers (Nicoletti, 2017; Amstad, 2019).

One of the main insights from this study is that Fintech has effectively delivered financial services to underserved populations. According to the World Bank (2018), approximately 1.7 billion adults worldwide lack access to formal financial services, and Fintech is addressing this gap by offering more inclusive, efficient, and affordable financial solutions. Digital payment platforms, P2P lending models, and mobile banking services are examples of Fintech innovations that allow people in remote or underserved areas to access financial tools that were previously unavailable or too costly (Treu, 2020). This democratization of finance challenges the traditional banking monopoly, which has long been characterized by high barriers to entry and restrictive pricing models (Claessens et al., 2018).

At the same time, traditional banks are beginning to view Fintech not merely as competition but as an opportunity for collaboration. As mentioned in Chapter 4, banks are increasingly partnering with Fintech firms to enhance their own service offerings. By leveraging Fintech's agility and technological advancements, traditional banks can improve customer experiences, reduce operational costs, and expand their digital service portfolios (Navaretti et al., 2018). This fusion between traditional banking and Fintech companies has led to the creation of innovative products and services, particularly in areas like

digital payments and blockchain-based solutions, allowing banks to maintain relevance in an increasingly digital world.

Technological innovations, especially AI, blockchain, and big data analytics, are playing crucial roles in reshaping business models within the financial sector. Fintech companies operate with leaner, more agile business models compared to traditional banks. By harnessing technology to streamline operations and personalize customer interactions, Fintech firms can scale faster and more efficiently (Osterwalder & Pigneur, 2013). Meanwhile, traditional banks, burdened by legacy infrastructures and resource-intensive models, are driven to integrate these technologies to stay competitive (Thakor, 2020). The BMC analysis in Chapter 3 highlighted the notable differences between the lean, technology-driven approach of Fintech firms and the more structured, resource-heavy models of traditional banks.

However, alongside the opportunities Fintech brings, there are considerable risks. As discussed in Chapter 4.1, cybersecurity and regulatory issues remain key challenges. Fintech's reliance on digital infrastructure exposes it to cyberattacks, data breaches, and fraudulent activities (Ahmed & Al-Hakim, 2018). Moreover, the rise of BigTech companies such as Apple, Google, and Amazon pose a further threat. These companies have the resources, technology, and customer base to quickly dominate areas of financial services, potentially crowding out smaller Fintech firms and exerting significant pressure on traditional banks (Nicoletti, 2017).

In conclusion, while Fintech presents enormous potential for financial efficiency, and innovation, its growth must be managed carefully. Both Fintech firms and traditional banks need to navigate the risks of digitalization and cybersecurity, and regulators will need to keep pace with the rapid evolution of financial technologies to ensure stability. The future of Fintech depends on how well the industry adapts to these challenges while continuing to innovate.

The main research question addressed in this thesis is: *What challenges do traditional banks face when competing with the fintech sector?* Based on the findings from this study and the supporting research questions, figure 6 below summarizes 10 key challenges for traditional banks (listed challenges are not in priority order).

Key challenges for traditional banks :
1. **Legacy Systems**: Traditional banks struggle with outdated infrastructure, which makes it difficult to innovate and provide real-time services compared to agile Fintech firms.
2. **Customer Expectations**: Fintech's seamless digital services set new customer expectations, leaving banks at a disadvantage with their reliance on in-person interactions.
3. **Cybersecurity Risks**: Banks face challenges in keeping up with Fintech's advanced cybersecurity technologies due to their more rigid security frameworks.
4. **BigTech Competition**: BigTech firms like Apple, Amazon, and Google disrupt traditional banks by offering financial services without the same regulatory burdens.
5. **Operational Costs**: Traditional banks are burdened by high operational costs and inflexible systems, making it harder to scale quickly compared to Fintech firms.
6. **Regulatory Strain**: Banks must navigate complex regulations, while Fintechs often have more flexibility in compliance, adding strain on traditional institutions.
7. **Consumer Trust**: Fintech's innovation and customer-centric approach make it harder for traditional banks to regain consumer trust and meet modern demands.
8. **Slower Innovation**: Traditional banks struggle to innovate quickly, while Fintech firms leverage technologies like AI and blockchain to stay ahead.
9. **Digital Payments & Blockchain**: The shift to digital payments and blockchain creates pressure on banks to modernize, while Fintechs have already integrated these technologies.
10. **Lack of Agility**: Banks' rigid structures and resource-heavy operations hinder their ability to respond quickly to market changes and consumer needs, unlike Fintech firms.

Figure 6. Key challenges (Author's own elaboration)

5.1 Suggestions for further studies

While this thesis has provided an in-depth view of Fintech's role in transforming the financial sector, there are numerous areas that require further research. One significant area is the long-term impact of Fintech. While initial data suggests that Fintech is making financial services more accessible, further research is needed to determine how sustainable these services are in the long run, particularly in developing countries where traditional banking infrastructure is minimal.

Another area for research is the development of regulatory frameworks that balance innovation with security. The rapid growth of Fintech has surpassed regulatory

frameworks, leading to concerns regarding consumer protection and financial stability. Future studies could explore how different countries are adapting their regulatory approaches to oversee Fintech firms without slowing innovation. Additionally, understanding the role of RegTech could offer valuable insights into how technology can help regulators manage the complexities of the financial sector more efficiently.

The sustainability of Fintech innovations is also a key area for further exploration. As Fintech continues to grow, it is essential to understand how Fintech firms can build business models that are resilient and adaptable to economic shifts, regulatory changes, and evolving consumer demands. Research into the long-term sustainability of these technologies, particularly in terms of environmental impact and resource efficiency, would be beneficial to ensuring that Fintech's growth is not only economically viable but also environmentally responsible.

The growing presence of BigTech in the financial space also presents a key area for further investigation. While this thesis has touched on the potential threat BigTech poses to both Fintech firms and traditional banks, a deeper analysis is needed to understand the broader economic and regulatory implications of this shift. As companies like Amazon and Google expand their financial services offerings, research could focus on how they might reshape the competitive landscape and alter consumer trust in both Fintech and traditional banking institutions.

Finally, cybersecurity remains a critical concern for the Fintech industry. As Fintech continues to grow, so does its vulnerability to cyberattacks. Future studies should examine how Fintech firms are developing and implementing innovative cybersecurity solutions to safeguard their operations. Additionally, there is a need to explore how the collaboration between Fintech firms and traditional banks can improve cybersecurity resilience across the financial sector. By understanding these challenges and opportunities, further research could help shape the future direction of both Fintech and traditional financial services.

In summary, while Fintech has made substantial leaps in revolutionizing the financial industry, the full scope of its impact is still unfolding. Continued research in these areas will be crucial to ensuring that Fintech's growth remains inclusive, secure, and sustainable.

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