

THE FUTURE OF BANKING: STRATEGIC ALLIANCES BETWEEN BANKS AND FINTECHS

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**Author: Aleksandr Fofanov
Subject: Banking and International Finance
Supervisor: Juha-Pekka Juntila**



**JYVÄSKYLÄN YLIOPISTO
UNIVERSITY OF JYVÄSKYLÄ**

ABSTRACT

Author Aleksandr Fofanov	
Title The Future of Banking: Strategic Alliances Between FinTechs and Banks	
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<p>Abstract</p> <p>The impact of disruptive innovation-related modern information systems has recently changed the way businesses operate, resulting in positive implications for those willing to adapt. The digitization of financial services created opportunities for new entrants in the financial industry, known as FinTechs. FinTech refers to the use of modern technologies by nonbank businesses to deliver financial services through online software. Due to factors such as highly regulated environments and solid infrastructures, traditional banks have maintained their dominant positions in the financial service industry for a long time. Nevertheless, new entrants seek to challenge traditional banks and have the potential to reshape financial services in the near future.</p> <p>This thesis explores the collaboration aspects between traditional banks and FinTechs, as well as the regulatory implications in Finland. The study's primary objective is to examine what drives traditional banks and FinTechs to collaborate rather than compete and how the current regulatory framework affects the development of the FinTech industry in Finland. This research was conducted as a quantitative survey with the inclusion of Finnish bankers, FinTech company representatives, as well as other actors with some involvement in financial technology as the target group. A total of 70 respondents from Finland participated in the survey.</p> <p>According to the study's findings, the majority of representatives in each industry category believe that banks' ability to adapt to digitization is critical. As such, cooperation is seen by both sides as a beneficial alternative, allowing both parties to share their key competencies, resulting in, for example, improved and diversified banking services. However, there are certain concerns about the cooperation, which bank executives fear could exacerbate security vulnerabilities. In contrast, it was viewed that Finnish regulation had neither an incentive nor a deterrent to the development of the FinTech industry in Finland. An intriguing finding was that, on average, respondents expected regulation to be altered so that all lenders would be subject to the same regulations.</p>	
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1 INTRODUCTION

1.1 Background and Motivation

The advancement of digital technology in the financial industry is one of the primary drivers of modern economic growth. Financial technology, often known as FinTech, is a key breakthrough in the financial sector that has revolutionized the efficiency of intermediation by enhancing the delivery of financial services. (Galazova & Magomaeva, 2019.) As a result, the financial system is now evolving to meet the new demands of digital economics (Mbama & Ezepue, 2018).

For its considerable influence on traditional financial services, the FinTech industry has recently piqued the interest of regulators, its users, and academics (Cai, 2018). It is widely assumed that the emergence of the FinTech industry began after the 2008 financial market crisis when the bank's reputation weakened, and credit became more difficult to get (Galazova & Magomaeva, 2019). Following the crisis, several reforms and laws were implemented, and many regulatory modifications increased compliance costs and diminished bank profitability (Pant, 2020). Since the new financial service innovations are falling beyond the scope of traditional bank regulation, FinTech companies have a significant advantage over banks (Magnuson, 2018). This so-called regulatory arbitrage enables the provision of more efficient financial services at significantly lower costs.

The FinTech industry has grown dramatically in the recent decade. According to Statista's 2020 estimate, global investments in FinTech startups totalled \$9 billion in 2010. However, the FinTech industry's investments decreased over the next two years, with total investments falling to \$4 billion in 2012. The amount invested peaked in 2015 at \$67.1 billion before declining for the next few years. The year 2019 set a new high in terms of FinTech popularity, with \$215.4 billion invested in the industry. It can be assumed that the FinTech market has a significant influence on the global economy and, as such, should be thoroughly investigated and monitored. FinTech has become, according to Magnuson (2018), more widely recognized as an essential component of the financial system.

Apart from lending money, FinTech businesses are also known for a wide range of goods and services, including mobile payments, wealth management, loans, crowdsourcing, and capital markets, for example (Lee & Shin, 2018). People have been utilizing FinTech products more frequently since the rise of the digital era. This could be attributed to FinTech companies offering convenient and efficient financial services online. As a result, it would be relevant to study how the rapidly expanding FinTech industry may impact conventional financial intermediaries such as banks and how they will respond to this disruptive challenge.

1.2 Research Objectives

This study aims to examine what drives banks and FinTechs to collaborate rather than compete with one another and the related legal aspect. Moreover, this study analyzes the primary aspects that influence FinTech adoption and how they affect traditional financial intermediaries. Due to the existing literature focusing primarily on the United States and China's FinTech markets, this study will examine the Finnish FinTech industry. FinTech businesses are believed to benefit the most in emerging economies where individuals cannot count on traditional banks to obtain loans. As a result, it will be fascinating to analyze the influence of FinTech in Finland, a highly industrialized country where the government may secure individuals financially.

The research is based on two major research issues:

What drives banks and FinTech startups to collaborate rather than compete with one another?

First, it is essential to analyze the evolution of the FinTech industry in Finland in order to determine its relevance. Buchak et al. (2018) stated that the FinTech industry has been increasing globally due to numerous factors, including efficiency, service time, and an unlimited range of services in the financial industry. However, the 2008 financial crisis and the subsequent regulatory changes that impacted the banking industry are frequently cited as the primary reasons for the formation of FinTech companies. Since both incumbents and FinTech startups have distinct advantages in terms of expertise, technology, and customer base, competing with one another may be counterproductive. The purpose of this study is to examine the factors that influence traditional banks' and FinTech companies' willingness to collaborate rather than compete with one another.

How does the existing regulatory environment affect the FinTech industry's growth in Finland?

FinTech firms are frequently portrayed as bank rivals as they can provide financial services outside of traditional bank regulatory frameworks. However, FinTech services include a wide range of products apart from lending services. It is argued that the FinTech industry is becoming a mandatory component of the present financial sector's development. As Temelkov (2020) has stated, traditional banks must include FinTech services into their business models to be able to compete. This thesis explores how the current regulatory framework affects the development of the FinTech industry in Finland.

1.3 Research Method

The literature review of this study is based primarily on scientific research. The empirical study's objective is to investigate how the current rise of the FinTech industry impacts traditional financial intermediaries such as banks in Finland. The focus will be on the benefits and drawbacks of the collaboration between FinTechs and traditional banks.

The empirical section of the thesis will be conducted via a questionnaire. There are a total of 18 questions which are divided into three categories. In the first section of the questionnaire, respondents are asked about their backgrounds, namely: gender, age, highest degree, and what industry they currently work in. The second section focuses on the core theme, the factors influencing the collaboration willingness between FinTechs and banks. Toward the end, a few regulatory-related questions will be explored in order to gain a broader perspective on the issue.

The data for this study will be gathered through a questionnaire distributed to professionals involved in the FinTech industry. The respondents will be contacted online and selected based on their experience within the FinTech industry as well as the field they represent. Respondents include representatives from banks, FinTech companies, and other professions, such as researchers and consultants.

1.4 Definitions

The keywords of this research are FinTech, P2P lending, and cryptocurrency. The use of digital technology in financial services is defined as financial technology or also known as FinTech (Sangwan, Prakash & Singh, 2019). According to Ryu (2018), FinTech is an innovative and emerging field that may revolutionize the way banks operate. Thakor (2020) states that FinTech has the goal of minimizing costs associated with finding transacting parties and collecting their individual contact information, enabling economies of scale and a cheaper and more secure way to transfer information. FinTech services cover a wide variety of products.

Peer-to-peer (P2P) lending refers to people lending money to other people without the intervention of a financial institution. Hence, there is no need for middlemen, such as banks, in the transaction process. In the absence of a traditional bank, P2P platforms act as an intermediary between borrowers and lenders, charging a fee for the service. (Serrano-Cinca, Gutiérrez-Nieto & López-Palacios, 2015.)

A cryptocurrency is an alternative form of payment built on so-called blockchain technology that exclusively exists online. Cryptocurrency is a type of digital cash or virtual currency designed to be faster, cheaper, and more reliable than a traditional central bank or government-issued money (Hossain, 2021). The

value of cryptocurrencies is determined by their algorithm rather than any tangible asset, company, or country's economy, which makes them extremely volatile (Corbet, Lucey & Urquhart, 2019). The first decentralized cryptocurrency, Bitcoin, was introduced in 2009 by Satoshi Nakamoto. As of today, Bitcoin is the most popular and widely used cryptocurrency (Cermak 2017).

1.5 The Structure of the Study

This thesis begins with an introductory chapter that provides an overview of the topic. The chapter justifies the topic selection, the essential concepts, as well as the thesis research questions and methods. This is followed by a literature review in which relevant existing research is explored. The third chapter digs into the thesis actual topic, financial technology, and presents it from various aspects. The fourth chapter describes the research method more specifically and the questionnaire body structure. Finally, the research findings, as well as the associated discussion and research conclusions, are presented.

2 LITERATURE REVIEW

2.1 Financial Intermediation Theory

The increasing usage of the internet, as well as technological advancements, have revolutionized the design and delivery of a wide range of financial services. The cornerstone for understanding intermediary theory has always been transaction costs and asymmetric knowledge. In recent decades, both have experienced a significant decrease (Allen & Santomero, 2001). As a result, traditional banks' influence has waned in various ways over this period. Consequently, the new digital era has introduced innovative financial technology-enabled competitors to the financial intermediary market.

The services of intermediaries can be used to influence consumption decisions made by clients on an intertemporal and government level. However, government regulation prevents financial intermediaries from altering the products they generate to meet technology and customer preferences changes. (Benston & Smith, 1976.) According to Philippon (2015), the objective of the finance sector is to develop, trade, and settle financial contracts that may be used to collect funds, share risks, transfer assets, offer information, and provide incentives. The provision of these services is the main source of income for financial intermediaries.

Financial intermediaries are fundamentally banking institutions, much like other non-bank entities that collect deposits and loan them out, according to the current theory of financial intermediation (Werner, 2016). According to the theory, financial intermediaries cannot generate funds; instead, Kashyap et al. (2002) discovered that financial intermediaries' deposit-taking and lending functions, particularly those of banks, are two different expressions of the same function – providing liquidity on demand. Nevertheless, Rajan (1996) argues that banks are more crucial as liquidity providers than any other financial intermediaries. Figure 1 demonstrates the basic concept of the financial intermediation theory.

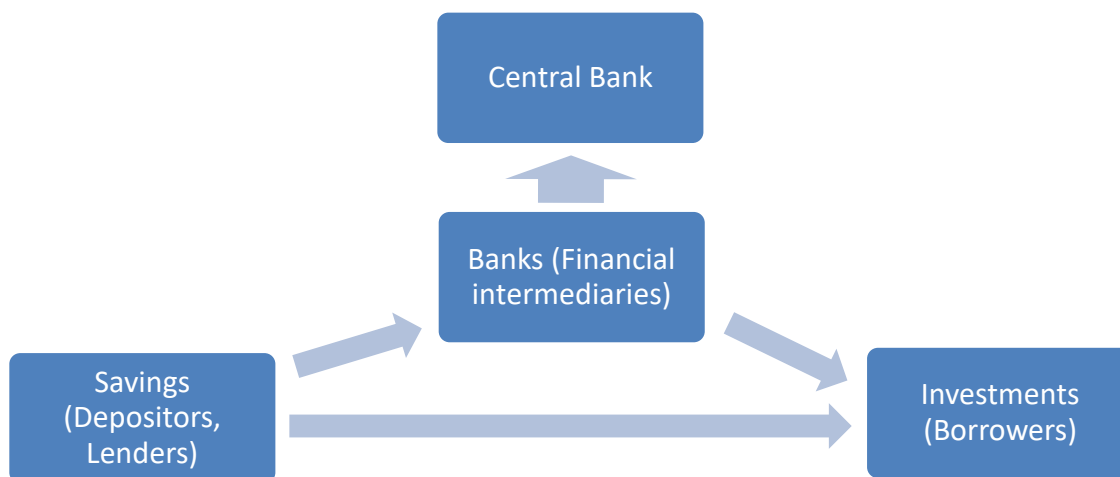


Figure 1. Financial Intermediation Theory (Adapted from Werner, 2016).

Figure 1 illustrates the financial intermediation process of banks. In capitalist economies, savings are arranged by banks that act as financial intermediaries, making them a crucial instrument for economic progress. These intermediaries borrow money from depositors and lend it to businesses in need of financing. (Gorton & Winton, 2003.) Consequently, the bank exposes itself to risk by purchasing financial assets and incurring obligations on its own account.

Allen & Santomero (1997) contend that the intermediation theory lacks a behavioural component and should be reconsidered. They claim that the current approach focuses too heavily on functions of financial institutions that are no longer necessary in developed economic systems. Instead, financial intermediation theory should be capable of explaining the day-to-day activities of financial markets and their function in the real economy.

2.2 Digital Banking

Digital banking services have emerged as a hot topic in the financial industry, and the modern technological era has brought a wide range of opportunities for both businesses and individuals. Banks, like many other industries, have been undergoing rapid changes due to the digital age. Digitalization has resulted in, for example, new operations, products, and services offered by banks. (Mbama & Ezepue, 2018.) Digital banks that exclusively operate online are also known as branchless banks. Customers' aversion to digital-only banks indicates that they

will only be able to transact via digital banking channels, including internet banking and mobile banking. (Nel & Boshoff, 2021.)

Why, then, do traditional banks seek to become digital? Temelkov (2020) investigated the critical distinctions in business models between digital banks and neo banks in his research. The concept of neo banks can be defined as digital banks that lack any physical presence, such as branches. Due to similar business models, he determined that comparing neo and digital banks to traditional banks was a more reasonable option. According to Temelkov (2020), some of the most significant advantages of digital banks are operational expenses, operating efficiency, data processing capability, client acquisition costs, and organizational design. As such, the costs of branch offices and automated teller machines (ATM) are higher than those of fully digitalized neo banks. Furthermore, digital banks have developed sophisticated credit scoring systems, allowing them to understand better their clients' behaviour and adapt to changing circumstances more quickly. It is often argued that digital banks are more efficient than traditional banks in this sense. (Temelkov, 2020.)

The total amount of services and products supplied by banks has altered considerably since the evolution of the digital era. Traditional banks offer a suite of products and services critical to the economy's financing and liquidity management. In contrast, many of the processes and responsibilities that banks perform in the retail market sector are now overlapped by digital bank initiatives (Lumpkin & Schich, 2020).

Galazova & Magomaeva (2019) investigated how the core activities of traditional banks are affected by digitalization. The findings indicate that competition in the banking industry is increasing, and even the largest banks with conservative strategies may lose a substantial portion of their clients if new technologies are not integrated into the service mechanism. In other words, the integration of financial technology into business operations is revolutionizing the banking sector of the economy on a systemic and global scale, marking a new stage in the evolution of the banking industry. The key differences between digital and traditional banks will be examined in greater depth in Table 1.

Table 1. Key differences between traditional and digital models of banking (Galazova & Magomaeva, 2019).

Distinguishing features	Traditional model	Digital model
Customer service time frame	Limited. Service is carried out only at a clearly defined time	Unlimited. Possibility of round-the-clock access
The speed of customer service	Depending on the qualification and experience of the Bank employee	Immediate
Approach to service	Flexible, however, is limited to a small variety of service channels	Flexible and carried out through any convenient channel for the client
Maintenance cost	High, taking into account the bank's costs for the personnel and maintenance of departments	Low, often services are provided free of charge
Scope of service	Limited branching of the branch network and staffing	Unlimited, can go beyond the geographical location of the banking institution
Status of the operator in the service process	Functions of the operator are performed by an employee of the bank	Functions of the operator are performed by the bank's client
The procedure for learning new services and promotions	Requires time and cost	Carried out quickly, via SMS and e-mail newsletter

The table above demonstrates how Galazova & Magoema (2019) compared the differences between digital and conventional banks. Customer satisfaction, efficiency, and extent of service were among the seven differentiating criteria employed in this approach. In summary, it can be assumed that customers will find digital banking to be more efficient and convenient than traditional banking. Instant and often free service, 24-hour access, and an almost limitless range of services are all among the most significant advantages of digital banks. However, traditional banks, as opposed to digital banks, may be, for some customers, a better alternative since they are generally perceived as trustworthy and are better suited for clients desiring a more personalized service. Cash deposits can also be made at traditional bank branches.

As illustrated in Figure 2, branch numbers have declined significantly since the advent of digital banking. This might be attributed to the fact that digital banks provide substantial advantages in terms of cost savings over traditional banks. Wadesango & Magaya (2020) define digital banking as digitizing conventional banking activities and programs previously only available to customers when physically inside a bank branch, such as withdrawals and transfers, savings account management, money deposits, and account services. Compared with in-person bank branch visits, performing bank-related transactions online may be regarded as considerably more convenient for a customer.

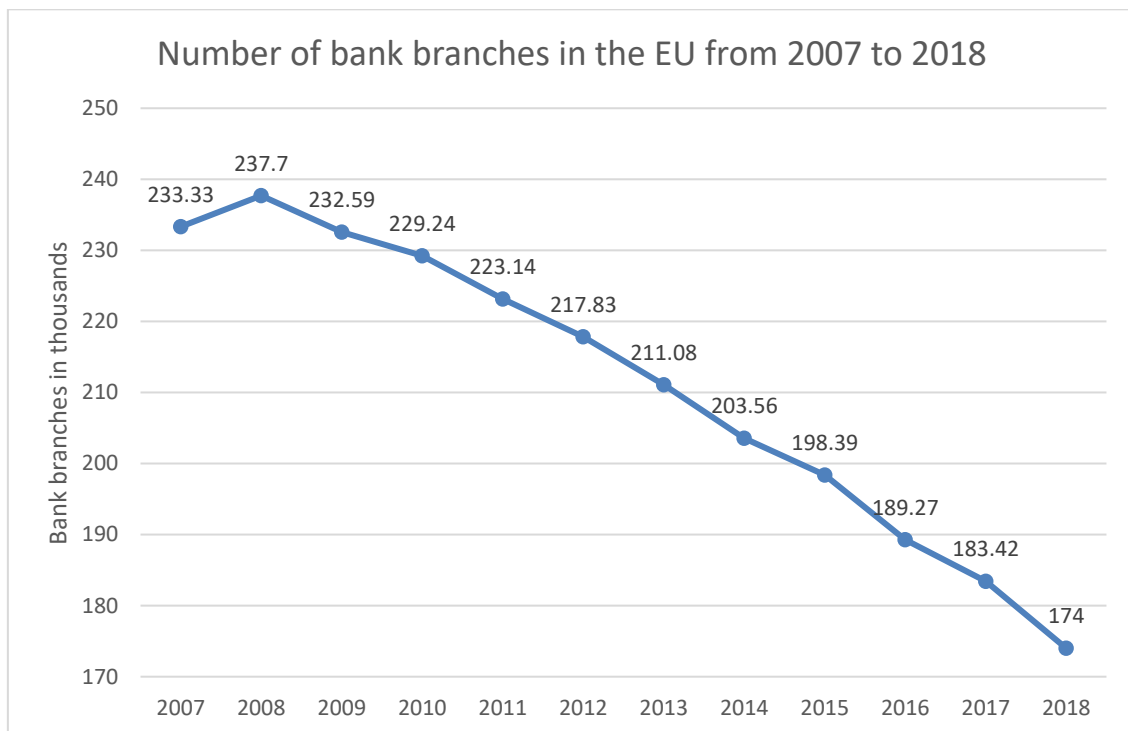


Figure 2. The number of bank branches (in thousands) in the EU from 2007 to 2018. (Adapted from EBF, 2019).

Figure 2 illustrates that between 2007 and 2018, the number of bank branches in the EU decreased by roughly 59 thousand. French et al. (2013) argue that bank branches may be seen as inefficient and costly remnants of a pre-digital banking system. Two primary explanations have been presented to explain the decrease in conventional banking, according to Buchak et al. (2018): increasing regulatory pressure on conventional banks and disruptive technology. The regulation hypothesis proposes that conventional banks have been subject to increasing legal and regulatory restrictions in the wake of the financial crisis. These constraints have increased prices and reduced the range of products that traditional banks may offer. The technology hypothesis proposes that advances in lending technology have led to a decline in the number of conventional banks since digital banks are known to produce more sophisticated credit scoring systems, for example. (Buchak et al., 2018.)

Banks' marketing and financial management models are changing due to the shift to the digital era, making it critical for traditional banks to understand the impact of digital banking on customer experience and financial efficiency (Mbama & Ezepeue, 2018). As a result, conventional banks must adapt to the new digital environment in order to compete with the new entrants in the financial industry. Apart from the numerous advantages provided by digital banks, such as efficiency, they also have the advantage of expanding the client base.

2.3 Shadow Banking

During the preceding decade, the financial services industry has transformed tremendously, and traditional banks are increasingly losing their market share to less regulated entities, such as shadow banks (Buchak et al., 2017). According to Dang et al. (2021), shadow banking is defined as credit intermediation that occurs outside of the conventional banking system. In contrast, Le et al. (2021) claim that all financial services offered by uninsured and unregulated financial companies are classified as shadow banks. Shadow banks have been in the spotlight since the global financial crisis, which is widely regarded as one of the primary causes of the financial crisis.

Shadow banks, like financial institutions, offer maturity transformation services but are not financed by deposits (Thakor, 2020). While shadow banks may provide new funding, they cannot issue covered liabilities or access central bank liquidity during times of global market crisis, unlike regular banks (Irani et al., 2021). As with P2P platforms, shadow banks rely on information technology to facilitate lending, but they do not just link borrowers and lenders; instead, they invest their own capital (Thakor, 2020).

Due to restricted access to bank loans, many emerging economies see shadow banking as one of the primary sources of funding for companies and individuals (Alam et al., 2019). SME (small and medium) suppliers in China face difficulty borrowing money, leaving them with little choice except to turn to friends or family for assistance. Consequently, shadow banks assist individuals in acquiring the financing they require. (Tsai & Peng, 2017.)

It is widely acknowledged that China has one of the world's largest economies. The development of China's shadow banks has been exponential since the financial crisis, and their effects on financial stability and economic development are heavily debated (Liang, 2016). Due to the explosive growth of shadow banking, China implemented several regulatory actions in 2016 to manage financial risk and protect the economy's financial stability by focusing on national debt reduction. Nevertheless, this has many unintended consequences. Deleveraging, for example, exacerbated the financial troubles of SMEs, leading to significant corporate bond defaults. (Le et al., 2021.)

The scale of China's shadow banking business is enormous, with estimates ranging from USD 7.8 trillion to USD 14 trillion, and in 2016, shadow banking accounted for roughly 87 % of China's GDP (Dang et al., 2021.) Essentially, shadow banks do constitute not only a significant portion of GDP in China but also exert a huge influence globally. Hence, it is reasonable to expect authorities to re-examine the shadow banking sector's comparatively light regulatory framework in the future.

2.4 Cryptocurrencies and Bitcoin

Cryptocurrencies have been a hotly discussed topic among academics over the last few years. Since Satoshi Nakamoto initially presented Bitcoin in 2008, cryptocurrencies have received much attention from investors, authorities, and the media. Cryptocurrency is defined as a new type of digital money that claims to replace traditional payment systems by validating transactions through a decentralized mechanism rather than a centralized authority (Hsieh et al., 2018). According to Wingreen et al. (2020), since their introduction, cryptocurrencies and their associated markets have been recognized for their extremely high volatility.

Cryptocurrencies are peer-to-peer electronic cash systems that enable internet payments to be transferred directly between parties without using a financial institution. The low transaction fees, peer-to-peer system, and government-free architecture of cryptocurrencies have all contributed to their increasing popularity. (Corbet et al., 2018.) According to Enajero (2021), cryptocurrencies serve as both money and non-money assets, and there is no perfect equivalent. Since Bitcoin is the first decentralized digital currency and dominates the cryptocurrency industry, we will focus on it in this study.

Bitcoin is the first decentralized digital currency, established in 2008 by Nakamoto, and is the current market leader in the cryptocurrency market. Bitcoin is based on blockchain technology, which is a public digital record of transactions that maintains data in a form that is hard to hack or manipulate. The blockchain is essential to the operation of the Bitcoin system since, in the absence of a centralized authority to record user information and balances, this ledger is utilized to validate the transaction's legitimacy. (Ilk et al., 2021.) The public key cryptosystem of blockchain allows a user to sign transactions that move assets from their account to other accounts (Gramoli, 2020). Nevertheless, since this type of blockchain, on which Bitcoin, for example, is based, is entirely open, anybody may join and participate in it.

In recent years, Bitcoin has experienced a huge appreciation in value. Bitcoin's market capitalization is at the end of 2021 estimated at \$844 billion, whereas at the beginning of January 2017, it was only \$17 billion (CoinMarketCap, 2021). The major drivers of Bitcoin price are widely accepted to include supply

and demand variables, investor interest, macroeconomic and financial trends, and technological considerations. (Chen et al., 2020.)

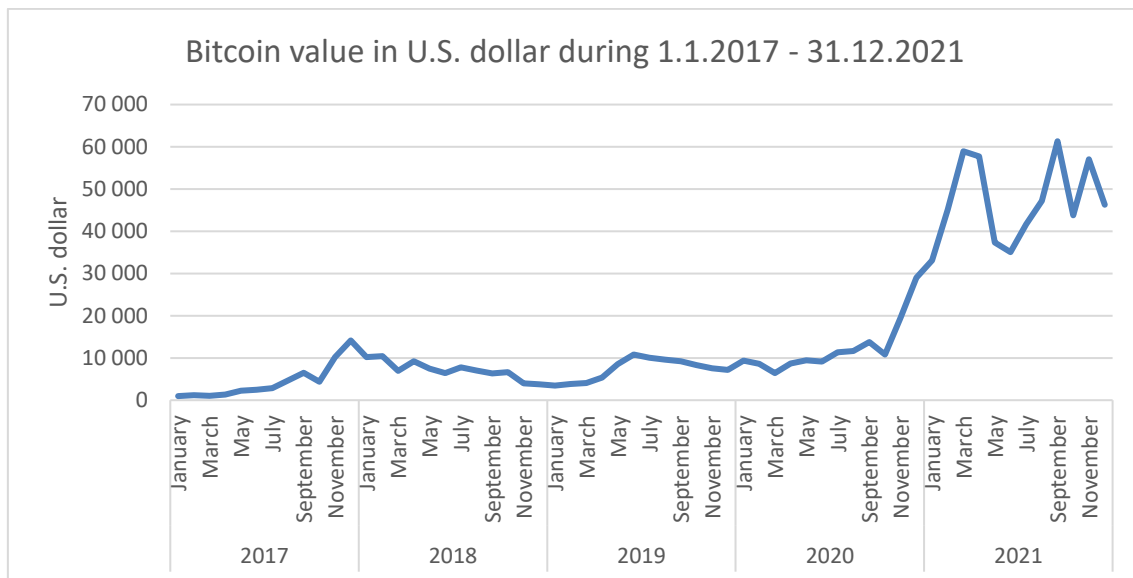


Figure 3. Bitcoin value in U.S. dollar during 1.1.2017 - 31.12.2021. (Adapted from Yahoo! Finance, 2022).

Figure 3 demonstrates the price of Bitcoin from January 1, 2017, to December 31, 2021. As can be observed, the value of Bitcoin was extremely volatile from 2017 to 2021. The price of Bitcoin has been around \$1000 at the beginning of the chosen period and about \$13000 a year later at the beginning of 2018. However, the price dropped to approximately \$4000 in early 2019 and then doubled to over \$8000 a year later. The price has risen to about \$40000 by the beginning of 2021. In April 2021, Bitcoin peaked approximately at \$64805.

There is a lot of debate among researchers about what causes Bitcoin's heavy price fluctuations. Due to its high volatility, Bitcoin has been categorized as a speculative investment rather than a currency, according to Cheah & Fry (2015). Despite its high volatility, Enajero (2021) claims that Bitcoin still outperforms other financial assets in terms of return on investment since Bitcoin can be used for more than just storing wealth; it can also be used for payment, derivatives, and settlements, for example. Furthermore, Aalborg et al. (2018) found that Bitcoin's trading volume predicts, to a lesser extent, its daily returns. The data show that Bitcoin trading volume is associated with numerous factors studied, with just two predicting Bitcoin trading volume. These are Google searches for the phrase "Bitcoin" and the Bitcoin network's transaction volume. For these reasons, it can be expected that, at least for the time being, it is challenging to predict Bitcoin price fluctuations, which are primarily influenced by its supply and demand.

Chen et al. (2020) investigated the price behaviour of Bitcoin during the Covid-19 pandemic, and they discovered that rising fear of the pandemic leads to negative Bitcoin returns and heavy trading volume, implying that Bitcoin

behaves more like other financial assets during market turmoil than conventional safe-haven assets like gold. In contrast, Shahzad et al. (2019) found that Bitcoin, along with gold, and the commodities index, may all be regarded as poor safe-haven assets. Mariana et al.'s (2021) research back up Shahzad et al.'s (2019) findings by demonstrating that Bitcoin exhibits short-term safe-haven features for stocks. The findings suggest that Bitcoin's daily returns correlate adversely with S&P500 returns during the Covid-19 pandemic. However, the findings contrast with those of Bouri et al. (2020), who discovered that Bitcoin, along with four other cryptocurrencies, has negative predictability from the S&P 500. This implies that when the US market-wide equities index suffers significant losses, each of the cryptocurrencies is highly probable to see significant profits in the days that follow. As a result, we may deduce that academics have yet to agree on how the ongoing Covid-19 pandemic influences the price behaviour of Bitcoin and associated cryptocurrencies.

3 FINTECH

3.1 What is FinTech?

The advancement of digital technology in the financial industry is one of the primary drivers of modern economic growth. Financial technology, often known as FinTech, is a key breakthrough in the financial sector that has revolutionized the efficiency of intermediation by enhancing the delivery of financial services. (Galazova & Magomaeva, 2019.) Despite the industry's recent popularity, there is no single definition of FinTech. Rather, scholars are still debating what characteristics are included in the term "FinTech," and the definition varies depending on the author (Schueffel, 2016).

It is widely assumed that the emergence of the FinTech industry began during the 2008 financial crisis, when there was a lack of trust in banks and access to credit became increasingly more difficult (Magomaeva & Galazova, 2019). Banks remained unaltered for a long time until the new digital era and subsequent financial innovations came into the market. As a result, the rise of internet platforms has sparked much controversy about their potential to destroy conventional banking. According to Havrylchyk et al. (2019), the introduction of new FinTech firms has enhanced the efficiency of financial intermediation services and redefined the range of products available. In addition, P2P lenders argue that their operating costs are lower than conventional banks, making them more efficient. (Havrylchyk et al., 2020.)

According to Di Maggio & Yao (2020), FinTech lenders' more hazardous business strategy enabled them to gain a substantial market share in the financial industry. This is due to FinTech businesses' advanced credit scoring algorithms, which allow them to analyze their clients' behaviour better and hence make more reliable loan decisions (Temelkov, 2020). Since people and businesses in emerging countries have the most difficulties obtaining loans from traditional banks, most FinTech companies are based there. The new financial intermediaries provide the essential loan in more favourable conditions, allowing riskier lenders to get the funds they need (Tsai & Peng, 2017). For these reasons, China and India are the world leaders in FinTech, with a proportion of banking activities done using financial technology exceeding 50 % (Magomaeva & Galazova, 2019).

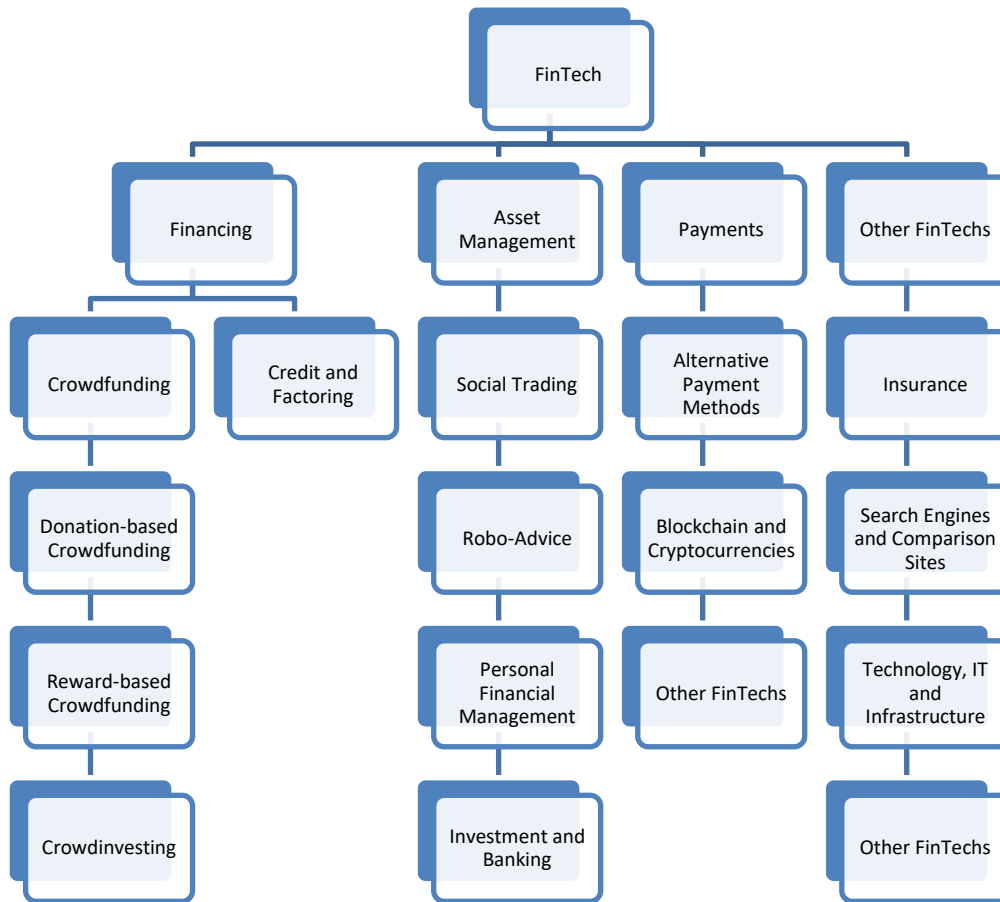


Figure 4. Elements and segments of FinTech industry (Adapted from Dorfleitner et al., 2017).

FinTech has successfully established itself as a distinct component of the financial services business during the last decade. According to Dorfleitner et al. (2016), FinTech is comprised of various components classified into four key categories: asset management, financing, other FinTechs, and payments. Figure 4 represents the key categories of FinTech along with their subdivisions.

3.2 Size of FinTech

Every year, the FinTech industry continues to grow, and the market is beginning to fill up with financial services providers to satisfy client needs and shape the financial future. Moreover, the FinTech sector has lately attracted the attention of regulators, consumers, and academics due to its significant impact on traditional financial services. (Cai, 2018.) The scale of FinTech and the causes for its rise will be discussed in further detail in the following sections.

FinTech has grown significantly in recent years for a variety of reasons and is becoming increasingly apparent as a crucial component of the financial system (Magnuson, 2018.). Efficiency, service time, and a variety of services, to

name a few, are its primary benefits over traditional financial intermediaries from a customer's point of view (Buchak et al., 2018). However, so-called regulatory arbitrage is widely regarded to be the critical driver of FinTech businesses, according to Huang (2018). Many scholars argue that the FinTech revolution occurred during the global financial crisis of 2008, when credit became exceedingly challenging to get, and banks' reputation was weakened. Due to regulatory arbitrage, FinTech firms are able to provide more efficient intermediation services than traditional banks.

FinTech's magnitude is difficult to measure due to varying definitions since some estimates may include technology-assisted products offered by banks, which distorts the results, for example. (Thakor, 2020; Buchak et al., 2018.) That said, it is near impossible to estimate the actual size of the FinTech market. However, in 2016, Nasdaq introduced a financial technology index to track the performance of FinTech companies. Figure 5, which is based on data provided by Statista (2021), demonstrates the total investments in FinTech startups from 2010 to the first half of 2021.

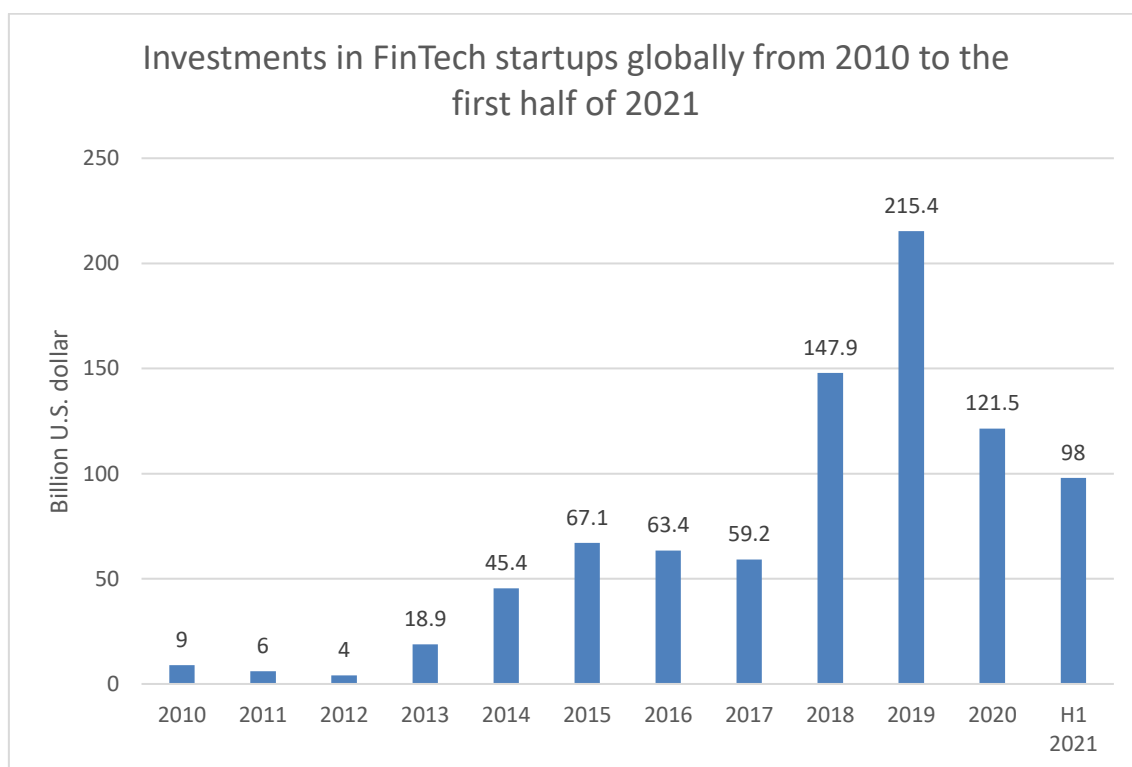


Figure 5. Global investments in FinTech startups during 2010-2021 (Adapted from Statista, 2021).

Figure 5 depicts the overall rise in the aggregate value of dollars invested in FinTech on a worldwide scale over the preceding 11 years. As can be observed, overall investments in FinTech startups have grown exponentially throughout the years. For example, aggregate investments peaked in 2019 with a value of over \$215 billion, whereas in 2010, the value was just \$9 billion. However, as seen

in Figure 5, the development of aggregate investments has been cyclical, as the quantity has both increased and decreased throughout the years. Due to market and regulatory changes in China, global FinTech loan volumes have decreased in 2018–19 (Cornelli et al., 2021). As a result, a significant number of FinTech companies and investors have abandoned the Chinese market. Nonetheless, FinTech lending is still expanding outside of China. Various elements, such as political and geographical concerns, are likely to influence the development of the FinTech industry globally.

According to FinTech Farm (2022), Finland has over 200 FinTech startups in a variety of sectors, such as payments, insurance, and wealth management. Nonetheless, Finland's core areas include financial software, back-end technology, finance, and payments. In 2020, the most prominent Finnish consumer lending companies lost some revenues, while the others, particularly young firms, grew rapidly. The pandemic, which caused a temporary interest rate cap of 10 %, adversely affected a number of companies, especially in the consumer lending industry. In the FinTech industry as a whole, revenues decreased slightly from €1.3 billion in 2020, primarily because some of the biggest companies experienced drastic drops in revenue that had a considerable effect on the entire industry. (FinTech Farm, 2022.)

3.3 Key Products and Services

FinTech is usually characterized as a technology that delivers financial services more efficiently than traditional financial intermediaries. Due to the widespread use of online trading platforms and an immature banking system, China has been at the forefront of FinTech development. A key advantage of FinTech lenders over traditional banks is the ability to tailor services and pricing to specific consumer groups. This is accomplished through so-called big data and data mining (Hau et al., 2019). Furthermore, FinTech firms offer a range of products and services beyond lending money. These include mobile payments, wealth management, loans, crowdsourcing, capital markets, and insurance, whereas mobile banking and asset management are examples of conventional financial services that employ technology to complement traditional financial services like online banking. (Lee & Shin, 2018; Lim et al., 2019.)

3.3.1 Mobile Payment

The digital era has had a significant influence on financial technology innovation, with mobile payment being one of the most widely utilized FinTech services. As the mobile payment system evolved, customers are now able to make their regular purchases via mobile devices (Kim et al., 2010). Furthermore, with the expansion of the internet industry, there is an increasing need for mobile payment services that provide convenient online and offline payment methods

(Kang, 2018). As an example, the current rise of the mobile payment business, driven by new mobile FinTech payment solutions such as Apple Pay, Samsung Pay, and others, demonstrates that it is one of the fastest expanding areas from a customers standpoint (Lim et al., 2019). According to Kim et al. (2010), mobile payments can be classified into two categories: payments for purchases and payments for bills.

In China, paying using a mobile phone has been a common practice in recent years. Eight of the world's top 27 FinTech companies are based in China, giving the country a commanding position in the mobile payment market (Cho & Chen, 2021). Chinese Ant Financial (or Alipay), which is owned by the world's largest e-commerce corporation Alibaba, is the most valued FinTech firm in the world, with a market capitalization being \$60 billion in 2018 (Lu, 2018). Alipay is a payment platform that may be utilized on any mobile device or operating system. Alipay operates on the basis of a unique Quick Response (QR) code generated by the platform and is scanned by the cashier. The payment information sent to the smartphone is then authorized, and the transaction is completed. (Kang, 2018.) This way, many Chinese people use mobile payments to pay for their groceries in stores on a daily basis.

3.3.2 Crowdfunding

Crowdfunding, one of the most successful technology-enabled ventures in the FinTech revolution, has generated a substantial amount of research. According to Cai (2018), crowdfunding may eliminate the need for financial intermediaries in the future. Both individuals and businesses can utilize the relatively new process of financial intermediary.

Schwienbacher & Larralde (2012) define crowdfunding as funding a project by a group of individuals rather than professional parties such as venture capitalists and business angels. Crowdfunding is based on a large number of individuals collectively investing in a venture via some internet platform. The relatively new funding method eliminates the need for middlemen by raising funds directly from individuals, primarily through the internet. According to Schwienbacher and Larralde (2012), crowdfunding may be classified into two categories: investment-based crowdfunding and reward- and donation-based crowdfunding. Funders who are willing to invest in a specific campaign and expect financial returns fall into the first category of crowdfunding, which includes equity-based, royalty-based, and loan-based crowdfunding. The second class offers no financial incentive for sponsors; rather, they are given a token in exchange for their support, such as clothing. Many studies on major crowdfunding platforms like Kickstarter illustrate the importance of prosocial motivation. While physical rewards are appreciated, contributors want to give others the chance to bring their ideas to life (Kuppuswamy & Bayus, 2017).

Every year, the amount of money raised through crowdfunding increases all over the world. According to Simpson et al. (2021), hundreds of thousands of startups have successfully presented and sold their new goods to millions of individuals using various platforms such as Kickstarter and Indiegogo. While research on crowdfunding focuses on logical variables like project and entrepreneur quality, the findings of Kuppuswamy & Bayus (2017) show that perceived effect is more important in motivating crowdsourcing donations. That said, it is logical to infer those crowdfunding activities are not always beneficial to so-called investors.

Pietro & Butticiè (2020) examined the growth rate of the crowdfunding market size. Based on formal and informal institutions, the study explores variables impacting crowdfunding in different nations from 2014 to 2017. In 2014, China had the most prominent crowdfunding market with \$2 billion, and the second and third largest markets were the United States with \$0.9 billion and the United Kingdom with \$0.2 billion. By 2017, crowdfunding had grown exponentially. Among crowdfunding markets, China remained the largest (\$358 billion), followed by the United States (\$48 billion) and the United Kingdom (\$7 billion).

3.3.3 Crowdlending

Due to the advent of digital technology, the lending business has undergone a dramatic transformation in its structure and nature. Crowdlending, also known as peer-to-peer lending, is defined by Pierrakis & Collins (2013) as money-lending activities conducted via internet platforms that connect lenders and borrowers. As of today, crowdlending platforms seek to challenge traditional banks by providing revolutionary lending services to individuals and companies at a low threshold.

P2P lending platforms are regarded as one of the primary challengers to traditional banks. Crowdlending platforms have a significant advantage in terms of pricing since their processes, such as connecting lenders and borrowers, are more efficient than those of traditional banks. Furthermore, using crowdlending platforms, the needed funding can be sourced from various sources without requiring interaction with the borrower. (Caglayan et al., 2021.) Moreover, the less regulated nature of P2P lending platforms, for example, leads to lower costs and lower entry barriers (Irani et al., 2021). In turn, since P2P platforms have no minimum capital requirement to function, there is no guarantee that borrowers will receive their money back in the event of a crisis or economic downturn.

Caglayan et al. (2021) investigated the crowdlending market from a behavioural standpoint. The study examined the largest Chinese microlending site Renrendai.com, which offers extensive information on borrowers' financial details and demographics, in order to determine if herding behaviour exists in P2P lending markets. According to the findings, among the entire range of accessible listings, investors favour those that have earned more money in the

preceding hour, resulting in the evidence that the P2P investors herd. (Caglayan et al., 2021.)

3.4 Open Banking and PSD2

In the last decade, the way banks and clients interact has changed dramatically, as did regulations. For a long time, the banking sector has been closely controlled and severely regulated. Contrary to other sectors, technology has generally wrought evolutionary rather than disruptive changes. In spite of that, nonbanks are touted as potentially reshaping the future of banking, either positively or negatively. According to Premchand & Choudhry (2018), due to the open banking upheaval, banks are again on the verge of disruption. Hence, it is possible that clients will only be able to interact with banks through digital apps powered by third parties in the near future.

In 2018, all EU member countries implemented the Revised Payment Services Directive (PSD2). Among the stated objectives of this legislation was to facilitate the further development of an enhanced and integrated E-payments market within the EU through technological and business model changes (Bär & Mortimer-Schutts, 2020). In order to comply with open banking and PSD2, banks must grant third parties access to client account data through Application Programming Interfaces (APIs) (Premchand & Choudhry, 2018). In other words, banks are obligated to open the data of their customers to third parties upon request by the customer, therefore allowing more market participants, including FinTech companies, to utilize financial services.

Despite the disruption in the financial industry appearing negative, banks could benefit from the implementation of open banking in Europe. Banks, for example, might generate new income streams by offering a broader range of services by collaborating with FinTech companies. In contrast, consumers have access to extra tools and features to support their financial literacy and management. Moreover, users can use the desired financial services right from their smartphone with an app that does not require the assistance of a bank employee.

3.5 Regulatory Arbitrage

FinTech has reached a moment when the impact it will have on the financial services industry is more imminent than ever before. The regulatory framework has failed to reflect the emergence of FinTechs and the fundamental changes they have brought. For example, many academics and policymakers believe that the uncontrolled operations of nonbanks have substantially exacerbated the

vulnerabilities of the global financial system and caused the financial crisis to spread among countries (Cai et al., 2019). These developments necessitate a comprehensive reconsideration of financial regulation since the new financial service innovations fall outside the scope of conventional bank regulation (Magnuson, 2018).

One of the key elements of FinTech's success, when compared to traditional banks, is its comparably low regulatory framework. For example, P2P lending is regulated by the Securities and Exchange Commission (SEC) and must comply with state laws in the United States, although the regulatory load on these platforms is significantly less than that on banks (Thakor, 2020). As a result, it is reasonable to assume that new financial inventions, such as FinTech firms, could take advantage of so-called regulatory arbitrage.

The total number of traditional banks has experienced a dramatic decline since the new financial service providers entered the market. Regulatory arbitrage is widely acknowledged as the primary driver of shadow banking. It is found that regulatory burden, for example, accounted for almost 60 % of shadow bank expansion between 2008 and 2015. (Huang, 2018; Buchak et al., 2018.) Banks responded to greater competition by engaging in regulatory arbitrage, which included establishing specialized non-bank firms and outsourcing several financial services there (Górnicka, 2016). Due to the regulatory expenses imposed on regular banks, shadow banks have greater chances for regulatory arbitrage, which is described as a situation in which nations with looser regulatory frameworks attract foreign investments from financial institutions based in countries with stricter regulations (Frame et al., 2020). As a result, shadow banks, which are not constrained by these restrictions, have increased their market shares by filling the gaps left by conventional banks (Buchak et al., 2018). Górnicka (2016), however, asserts that banks and shadow banks are only competitors when implicit guarantees are absent and that otherwise, they complement one another.

The fact that most regulatory agencies are not technology specialists makes assessing and understanding new financial services models and practices difficult. In addition, policymakers' resources are limited when it comes to technology-driven innovations, making regulating shadow banking companies more difficult. (Alam et al., 2019.) However, the existing regulatory framework for non-banks is likely to alter in the future. Over the last decade, the rapid growth of shadow banks has increased the market share of loosely regulated FinTechs to the point where regulatory change is required to prevent a financial disaster. In contrast, for example, Tsai & Peng (2017) state that regulation should be light to encourage innovation to promote digital financial inclusion.

3.6 Perceptions Towards FinTech

When the PSD2 and open banking were introduced, there was a lot of debate among academics about whether the new form of banking would have a completing or disruptive effect on traditional incumbents. Since open banking and PSD2 are still relatively new concepts, there is little research on the subject, making it difficult to make reliable conclusions. It is believed, however, that the changes in financial services are more of a revolution than a set of less influential adjustments. As a whole, financial services are due for major improvements in efficiency, customer centricity, and informedness, as stated by Gomber et al. (2018). The following sections will discuss three different assumptions about the impact of FinTechs on the financial industry at three different points in time: 2015, 2017, and 2020. The publications demonstrate how general assumptions about FinTech's disruptive potential have shifted over time.

As financial technology has become more widespread, researchers' perceptions have changed continuously over the years. For example, according to a World Economic Forum report from 2015, the most apparent repercussions of disruption will be noticed in the banking industry, as new entrants will prioritize addressing client needs, forcing banks to reassess their positions. FinTech, which enables direct bank account linkages and seamless point-of-sale vendor financing, may increasingly replace the use of credit cards. Lower fees on bank account transactions will disrupt the current credit card loyalty model, forcing banks to develop new ways to grow their customer bases. (World Economic Forum, 2015.) Consequently, we may conclude from this that the financial technology industry was characterized as a revolutionary change that has the potential to replace traditional banks.

Two years later, in 2017, the World Economic Forum published a report concluding that expectations about the FinTech industry's disruptive effect on traditional incumbents have shifted. Despite changing the structure, provisioning, and consumption of financial services, FinTechs have yet to establish themselves as dominant players, and some financial institutions have turned the threat of FinTechs into an opportunity. The proliferation of FinTechs provides financial institutions with a "supermarket" for capabilities, allowing them to rapidly deploy new offerings through acquisitions and partnerships. However, incumbent institutions are not the only ones who may look to the FinTech sector for expertise; new entrants now face considerably reduced technology barriers to entry into financial services, which might have long-term ramifications for the competitive landscape. The evolution of talent will radically alter the function of human capital inside financial institutions, with artificial intelligence (AI) being in high demand, for example. Technological advancements are anticipated to come in waves, which means that AI will have a distinct impact on different parts of the business at different times. Banks, for

example, will have to compete for talent with huge tech firms, raising the cost of technological personnel while maintaining their fundamental value proposition. (World Economic Forum, 2017.)

In 2020, the World Economic Forum stated that having a detailed forecast on emerging technology clusters is critical for financial services, as the business of financial services is becoming heavily dependent on the deep understanding, intelligent assembly, and customized implementation of technology-driven capabilities. For example, in the financial services industry, AI has progressed from a point solution enabler to a true cross-business intelligence layer in recent years. These technology clusters are establishing the architecture for the financial institution of the future by unlocking unique pathways for innovation in financial services. As transformative technologies become more widely available, the competitive standard for all participants will rise. In order to differentiate themselves, financial institutions must be able to establish, acquire, or collaborate with FinTechs. (World Economic Forum, 2020.)

We may conclude from these three papers that perceptions about FinTech companies and their impact on incumbent financial actors have shifted over time. As FinTech companies exploded in popularity in 2015, there was widespread concern that new players might replace banks, endangering economic stability. One possible explanation that the new FinTech firms may have been approached with scepticism is the relatively recent financial crisis in 2007. In 2017, it was discovered that FinTech would not be able to replace banks in the near future; instead, the importance of collaboration between FinTechs and banks was recognized, making the implementation of this practice more timely. A year later, the PSD2 directive was implemented in the EU. PSD2 permits third parties, such as FinTechs, to access a customer's bank account information with consent from the account holder. This was a factor that enabled collaboration between banks and FinTechs. The 2020 report outlined a number of developments, primarily driven by technology that has the potential to shape the financial sector. Among other things, the importance of artificial intelligence in various areas of the financial sector was recognized, and collaboration with FinTech and technology companies became one of the banks' significant competitive advantages.

4 METHODOLOGY

4.1 Research Approach

This study is conducted in a quantitative manner. There are several rational reasons for conducting quantitative research; however, the major one is the ability to quantify the effect of the investigated issue. According to Watson (2014), quantitative research refers to a variety of methods for conducting systematic investigations of social phenomena using statistical data. As a result, quantitative research entails measurement and assumes that the concept under investigation can be measured. Quantitative research methods can help identify trends and relationships and validate measurements.

This thesis examines how FinTech companies affect traditional financial intermediaries in Finland and the major challenges of the expanding sector. Specifically, this thesis examines both traditional banks' collaboration with FinTechs and the associated regulatory framework in Finland. Various aspects must be considered to obtain such information, and the quantitative technique allows for structured responses from specialists in those sectors. Quantitative research comes in a variety of forms. Survey research, correlational research, experimental research, and causal-comparative research, for example, are all sorts of quantitative research with their own unique characteristics (Sukamolson, 2007).

This study utilized a questionnaire as its method of collecting data due to its ability to present many questions and its relatively fast way of extracting data. The questions are divided into three major categories, the first of which is an introduction to the research and questions about the respondent's background. The second section focuses on the research's main subject, which is the factors that influence collaboration willingness between FinTechs and banks. Finally, the final section focuses on the regulatory aspect from the standpoint of Finland in order to obtain a more comprehensive picture of the development of the FinTech industry in Finland. Furthermore, one question concerning Central bank digital currency (CBDC) was introduced in order to obtain a clearer overview of potential regulatory changes.

4.2 Data Collection

The interviewees for this thesis were chosen based on their assumed expertise in the financial technology industry. The respondents for the thesis are from the bank's FinTech department, representatives from FinTech companies, and others.

The other groups besides FinTechs and banks primarily consist of researchers, consultants, and others who are involved with financial technology in some capacity through their work. However, since only a few major banks in Finland are involved with financial innovations, such as Danske Bank, OP Group, or Nordea, the majority of responses come from the FinTech representatives.

This survey was conducted on the Internet using the reporting tool Webropol. This study's participants were selected from a comprehensive list of Finnish FinTech enterprises on the website www.helsinkifintech.fi. The directory includes the names of each FinTech company, along with their primary business category, founding date, and website. Contact information of bank representatives, on the other hand, had to be discovered through a variety of articles as well as word-of-mouth.

4.3 Survey Design

This thesis' survey comprises 18 questions separated into three categories. The survey begins with an introduction and background questions designed to measure respondent proficiency with respect to the thesis' main topic, financial technologies. The second section introduces key concepts and terms related to the subject, such as digitalization, a collaboration between FinTechs and banks, and FinTech's potential to replace banks in some aspects. This section has eight questions which all have structured response options. The final component of the survey focuses on the regulatory side of the FinTech business, which is a prevalent issue among politicians and academics. This section discusses FinTechs' present regulatory framework in relation to traditional bank regulation, as well as the open banking Payments Services Directive 2, which is viewed as a critical component in allowing collaboration between the two entities.

The questions were created with the help of the literature framework. Each question was provided directly in a source or adjusted to satisfy the thesis requirements better. Several of the questions in this thesis have been adapted to reflect the focus on the Finnish market. There are 21 scientific sources provided, each with its own hypothesis on the questions. Thus, it is more reliable to analyze study results if they can be directly compared with the hypotheses and outcomes provided in the literature.

5 RESULTS AND DISCUSSION

This survey was conducted on the Internet using the reporting tool Webropol. After gathering survey responses, the data were transferred into IBM SPSS software, where statistical analysis of the survey results was conducted. For the survey results, all calculations were conducted with the SPSS program, from which separate tables and figures were generated in Microsoft Excel.

5.1 Background Information of Respondents

As background information for the questionnaire, respondents were asked about their gender, age, educational level, and industry in which they work. A total of 70 respondents participated in the survey, among whom 30 % represented banks, 41 % represented FinTechs, and 29 % represented others. Respondents who did not fall into either FinTech or bank categories included representatives from the government, central bank, consulting companies, and other sectors. Nevertheless, these respondents are expected to have sufficient knowledge and experience in either FinTech or the banking industry to take standing on the issue of the research.

Table 2 describes the gender, age, and educational level distribution of the responders. The majority of responders, 50 in total, were men (71.4 %), 15 were female (21.4 %), and 5 responded: "prefer not to answer" (7.2 %). Participants in the survey ranged in age from 18 to 65 and older. However, the greatest age groupings were 35-44 (31.4 %) and 45-54 (27.2 %). As a result, we may presume that the majority of respondents are experienced professionals in the sector with adequate expertise to contribute to the survey questions. The second and third largest age groups were 25-34 (21.4 %) and 55-64 (15.7 %). Responders aged 18-24 and over 65 represented the lowest proportions, with only 2.9 % and 1.4 %, respectively.

Table 2. Demographic characteristics of the respondents.

Gender	Frequency	Percent
Female	15	21.4 %
Male	50	71.4 %
Prefer Not to Answer	5	7.2 %
Total	70	100.0 %

Age	Frequency	Percent
18–24	2	2.9 %
25–34	15	21.4 %
35–44	22	31.4 %
45–54	19	27.2 %
55–64	11	15.7 %
65 or older	1	1.4 %
Total	68	100.0 %

Group	Less than a high school diploma	High school degree or equivalent	Bachelor's degree	Master's degree	Doctorate degree
Bank	0 %	4.8 %	9.5 %	76.2 %	9.5 %
FinTech	0 %	3.5 %	27.6 %	65.5 %	3.4 %
Other	0 %	0 %	5.0 %	70.0 %	25 %

According to the table of demographic characteristics of the respondents, the majority of respondents have a high level of education. Approximately 86 % and 69 % of bank and FinTech representatives have master's degrees or higher. As indicated by the survey's optional employment background questions, the third "Other" category is mainly composed of researchers, government representatives, and consultants. In the "Other" group, 95 % of respondents have a master's degree or higher. As may be concluded, the majority of people in all three groups are highly educated. The distribution of respondents across the main three categories is presented in Table 3.

Table 3. The distribution of respondents by the group.

Group	Frequency	Percent
Bank	21	30.0 %
FinTech	29	41.4 %
Other	20	28.6 %
Total	70	100.0 %

The responses are separated into three groups: bank workers, FinTech professionals, and others. The majority of the survey analysis in this research will

be conducted in comparison to the responses of the specified categories. Henceforth, in this research, bank representatives will be referred to as banks, FinTech representatives as FinTechs, and "others" as others. Of those who responded to the survey, 30 % represented banks, 41 % FinTechs, and 29 % others. The relatively low response rate among bank representatives can be attributed to a lack of contact information; it was challenging to reach banking industry representatives dealing with financial technology. Instead, the respondents' emails had to be discovered through a variety of articles as well as word-of-mouth. However, there are sufficient responses from FinTech and bank representatives to allow a comparison of the target questions.

5.2 Collaborative Advantage Aspect

The collaboration aspect between banks and FinTechs was investigated in this study by utilizing respondents' knowledge-based and opinion-based questions. The questions focused on the respondents' objective evaluation of the relevance of digitization, whether it would be beneficial for both parties to collaborate, what type of partnership would be ideal from the bank's standpoint, and what specific operations the collaboration will affect and how. Those questions address the benefits and challenges of cooperation and their practical implications for businesses. According to the motivation for the questions posed, the following chapters describe how survey responses are distributed among the three groups.

In question 6, the respondents were asked about their perception of how significant a traditional bank's ability to adapt to digitalization is. Specifically, the question is presented to examine whether the bank has the capacity and ability to adapt to a new environment as the advancement of digital technology in the financial industry is one of the primary drivers of modern economic growth (Galazova and Magomaeva, 2019). Technological advancements in the financial sector have revolutionized intermediation through improved financial service delivery, so this aspect was important to consider in the survey. The results of question 6 are presented in Table 4.

Table 4. Mean and standard deviation values on traditional banks' ability to adapt to digitalization.

Group	Mean	Std. Deviation
Bank	4.62	0.50
FinTech	4.69	0.60
Other	4.80	0.41
Total	4.70	0.52

The answers to the question were emphasized in Table 4, where number 5 was described as "a vital condition", number 4 as "very important", number 3 as "important", number 2 as "not relevant", and number 1 as "harmful". The results were weighted to be able to analyze the significance of the responses numerically. The results for each of the three groups were then averaged and the standard deviation calculated. There were no significant differences between the groups based on the responses; instead, the majority of all respondents agreed that the bank's ability to adapt to digitalization is a critical condition for its operations. Accordingly, the weighted average of 4.7 calculated between all groups is rounded down to answer option 5, "a vital condition".

In question 7, respondents were asked whether they believe FinTechs and banks should collaborate with each other rather than compete with one another. This question is related to the previous question since collaboration with FinTechs is one option available for adjusting to an increasingly digital environment. Among the respondents, each group was asked whether its members considered cooperation between FinTech and a bank a more advantageous alternative to the competition. According to Románova and Kudinska (2016), FinTech companies can be divided into two groups: those that provide services that complement bank services (e.g., those that provide technologies used by banks to provide financial services) and those that provide services that banks traditionally provide (e.g., payments). Due to the fact that entrants are able to offer similar services to banks while bearing a lower regulatory burden, it is important to evaluate whether both parties are motivated to collaborate rather than compete with one another.

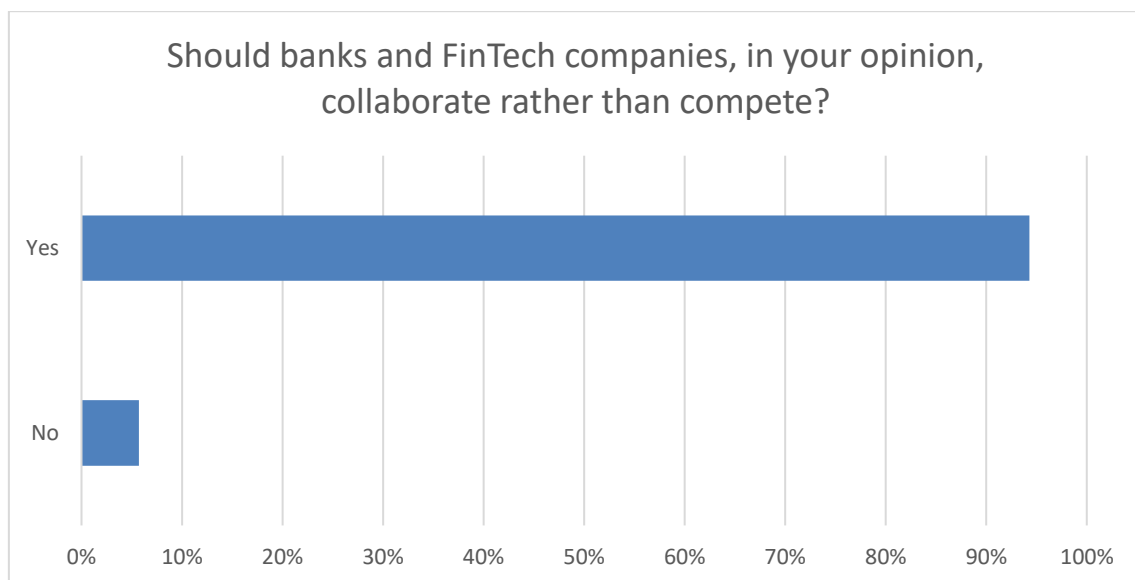


Figure 6. Survey results on a question of whether banks and FinTech companies should collaborate rather than compete.

Respondents agreed that it is more beneficial for banks and FinTechs to collaborate instead of compete. In total, approximately 94 % of all respondents agreed that collaboration was advantageous. Based on comparisons of different

groups of respondents, it appears that there is no significant difference between the responses from the mean; among those who indicated "Yes," the variance was 90-97 %. Among those who responded "Yes", 95,2 % were banks, 96,6 % FinTechs, and 90 % others.

There are a variety of reasons why a bank forms an alliance with a FinTech company, and a major challenge is deciding which is the most effective form of partnership. However, due to the fact that FinTech companies are generally small compared to traditional banks, it is natural for them to be integrated into banks' operations rather than the other way around. From the perspective of the three main groups, question 8 analyzes which type of collaboration banks prefer with FinTechs. According to Hornuf et al. (2021), with the help of FinTech, banks can maintain their existing customer base without developing new services or applications. Moreover, since many banks may use outdated software that is barely compatible with modern end-user applications, developing these applications on their own can be challenging. The preferred form of cooperation must be explored in order to obtain a deeper understanding of both perspectives' positions on this issue. Figure 7 represents the distribution of responses among three main groups.

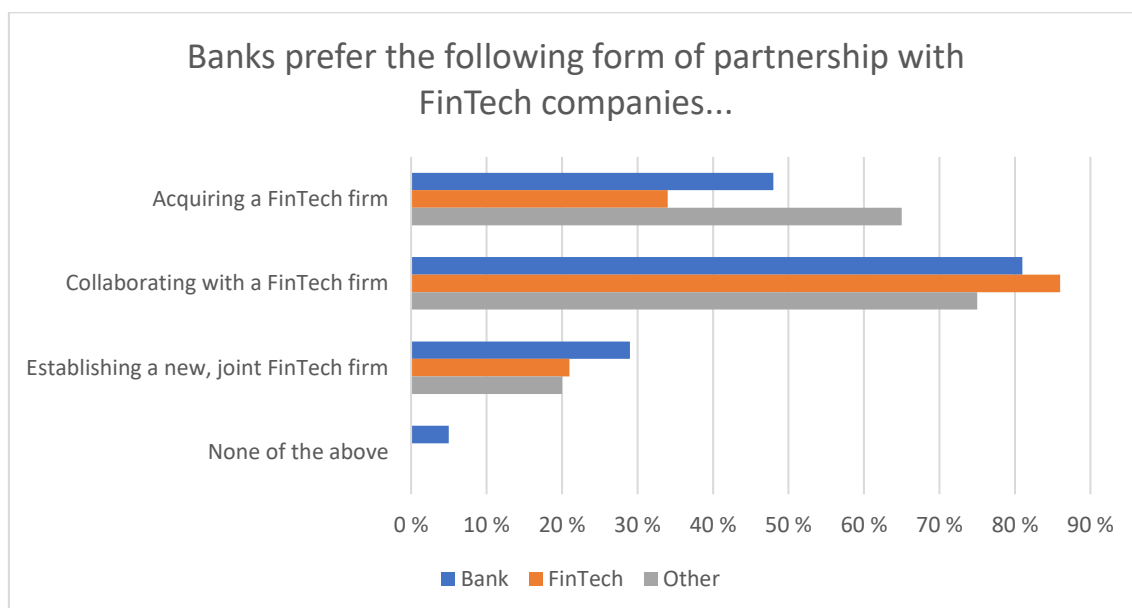


Figure 7. Survey results on a question of what form of partnership banks prefer with FinTechs.

According to the findings, collaboration with a FinTech firm is the most preferred type of partnership. The survey results further support this statement, with 81 % of banks, 86 % of FinTech firms, and 75 % of others selecting the "Collaborating with a FinTech firm." answer option. The second most chosen response option was "Acquiring a FinTech firm," which garnered 48 % responses from bank representatives, 34 % from FinTech companies and 65 % from other respondents. Finally, the respondents found the option "Establishing a new, joint FinTech firm"

to be the least preferred, with only 29 % responses from banks, 21 % from FinTechs and 20 % from others. Response, "None of the above", received only one response from a bank representative.

The findings indicate that collaboration with FinTechs is one of the most commonly selected partnership structures among all groups. One possible explanation is efficiency, as acquiring or establishing a FinTech firm necessitates extensive planning, resources, and expertise. Furthermore, it is a more time-consuming and thus inefficient method of incorporating FinTech service offerings into banks' business models. As a result, the majority of respondents, including bank representatives, believe that collaboration is the best form of partnership for banks.

To evaluate the cooperation aspect between banks and FinTechs, it is necessary to determine what effect it might have on the bank's performance in different business areas. One way to measure this is to ask respondents how they would feel certain activities, such as the level of technology or security, would change during a collaboration compared to operating independently. This issue is examined in Table 5 by presenting the seven areas where the bank may experience change as a result of cooperation.

Table 5. Survey result on a question of how collaboration with FinTechs would affect bank's different functions.

	Average bank	Average FinTech	t(dF)	Sig. (2-tailed)
Service offerings	4.3	4.5	-1.115(48)	.270
Quality of services	4.1	4.2	-.509(48)	.613
Ability to attract customers	4.4	4.3	.390(48)	.698
Prices for customers	3.4	3.1	1.062(48)	.293
Security risks	4.0	3.4	2.442(48)	.018
Efficiency	4.1	4.3	-.875(48)	.386
Technology level	4.4	4.6	-.894(48)	.376

The table above describes the mean values of banks and FinTechs perception on seven given variables. According to the same method as in question 6, the results were weighted on a scale of 1 to 5 so that the significance of the responses could be assessed numerically. However, in question 9, the description of the values goes as follows: 5= Significantly higher compared with operating independently, 4=Slightly higher compared with operating independently, 3=No effect, 2=Slightly lower compared with operating independently, and 1=Significantly lower compared with operating independently. In Table 5, two columns on the right demonstrate the values of independent t-test statistics.

An independent-sample t-test was conducted to compare two groups for seven conditions related to the outcomes of the cooperation. There was a

significant difference in the scores between the two groups and security risks conditions; $t(48) = 2.442$, $p = 0.018$. These results suggest that banks are more concerned with security risks when it comes to collaboration with FinTechs. On average, bank representatives responded 4.0, which indicates that most of the bank respondents agreed that collaboration would increase security risks compared with operating independently. In contrast, FinTech representatives averaged a score of 3.4, which rounds up to response option 3, "No effect". Consequently, we can assume that representatives of FinTech companies do not view security as a risk factor when collaborating with banks.

There was no statistically significant difference in the responses for the other variables. Nevertheless, both parties, banks and FinTechs, agreed on average on the remaining six claims. There is common agreement that the collaboration will improve service offerings, quality of services, ability to attract customers, efficiency, and technological level. Regardless of whether the two parties cooperate, the average price level for customers is expected to remain the same.

5.3 FinTech Disruption Aspect

This section focuses on the FinTech industry's impact on traditional financial service providers, namely banks. The potential of FinTech businesses replacing traditional banks, for example, in credits, deposits, and capital raising, is one of the issues examined. Furthermore, the questions in this section investigate whether FinTech companies will continue to capitalize on their unleveraged business practices, which type of FinTech companies have emerged as the top performers during the Covid-19 pandemic, and which technologies have the most disruptive potential among financial service providers.

Financial services that banks used to offer exclusively are now also offered by FinTech companies. Nevertheless, one of the most significant differences between the two entities is the way they utilize leverage in their business models. Banks are known to be extremely leveraged, whereas FinTechs are not. As stated by Thakor (2019), banks' capital structure has little equity, whereas FinTechs are all equity-financed, i.e., its investors are equity holders on loans. Furthermore, as FinTech companies invest their own equity, their balance sheets are somewhat similar to those of traditional banks, except deposits are replaced with uninsured debt financing and funding raised through securitization. Researchers are debating whether FinTechs should employ leverage practices similar to banks or remain unleveraged due to the radically different approaches banks and FinTechs take to capital structuring. Figure 8 illustrates the distribution of responses from the three selected groups on whether FinTech platforms should continue to be unleveraged or adopt banks' leverage practices.

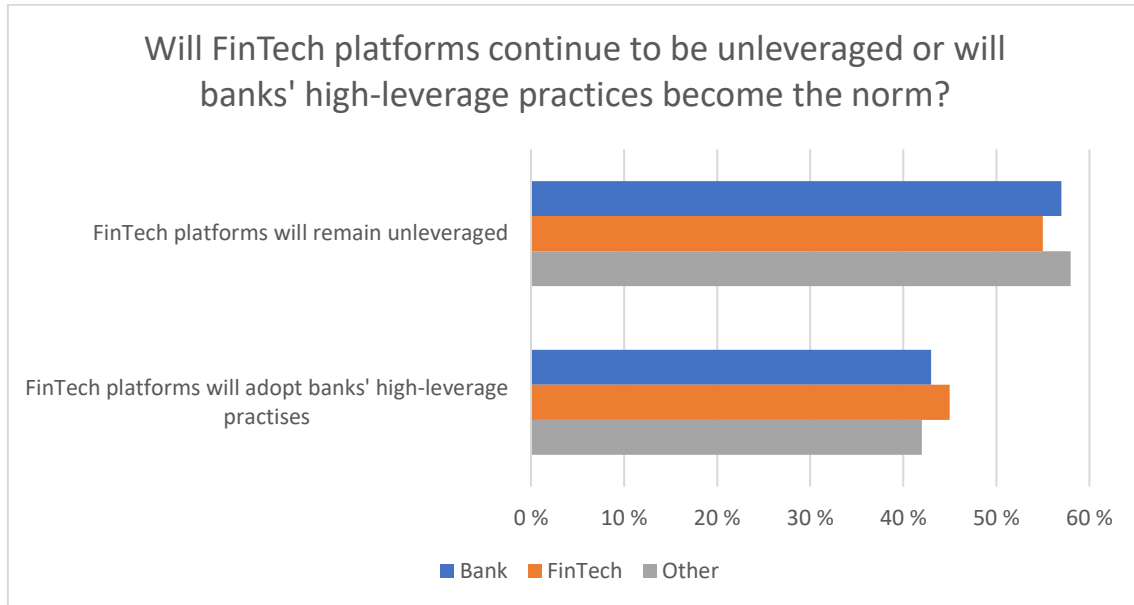


Figure 8. Survey results on a question of whether FinTech platforms will continue to be unleveraged or will banks' high-leverage practices become the norm.

The distribution of responses across all groups is fairly even, as presented in Figure 8. According to the survey results, the majority of respondents in each group selected the option "FinTech platforms will remain unleveraged," with 57 % representing banks, 55 % representing FinTech, and 58 % representing others. Since the results of the survey demonstrate a virtually even dichotomy, it is impossible to make a definitive conclusion on how FinTechs will approach its leverage practices in the future.

As peer-to-peer lending platforms provide an alternative to bank loans and established cryptocurrencies such as Bitcoin provide non-fiat-money-based currency alternatives to cash, the question of whether FinTech will be capable of replacing traditional banks in terms of credits, deposits, and capital raising arises (Thakor, 2019). Aspects of FinTech companies replacing banks in the credit, deposit, and capital raising markets are assessed in question 11. Figure 9 discusses whether FinTech platforms will replace traditional banking in regard to credit, deposits, and capital raising.

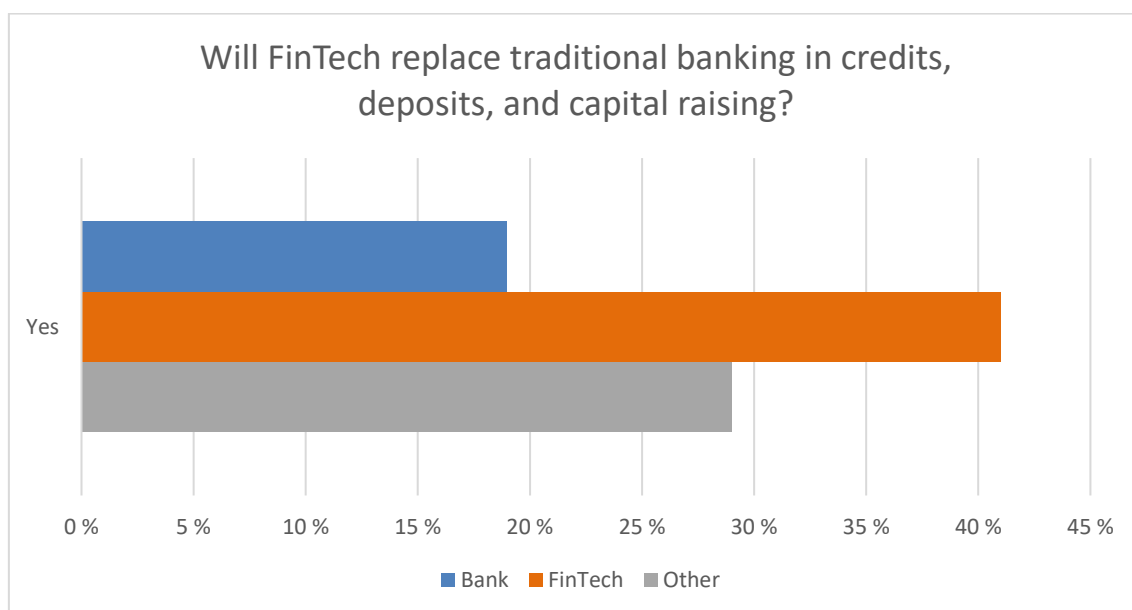


Figure 9. Survey results on a question whether FinTech will replace traditional banking in credits, deposits, and capital raising.

As can be seen, the majority of respondents agree that FinTech will not replace traditional banks in these categories in the foreseeable future. Among those who responded "Yes" to the question, 19 % work for banks, 41 % work for FinTechs, and 29 % work for others. As far as credits, deposits, and capital raising are concerned, 81 % of banks, 59 % of FinTechs, and 71 % of others believe FinTechs will not replace traditional banks in these aspects. There is a significant disparity in responses when banks and FinTech representatives are compared. By observing bank representatives' responses, it can be concluded that they rely on their role as primary credit, deposit, and capital providers. On the contrary, FinTech is the largest group to believe that at some point in the future, they will be able to replace banks in these areas.

Scholars and policymakers debate whether the market structure has changed between traditional incumbents, newer FinTech companies, and BigTech firms since the Covid-19 pandemic. To investigate this issue, Fu and Mishra (2021) classified P2P providers into four groups: traditional incumbents, BigTechs, FinTech incumbents, and FinTech startups. Traditional incumbents are banks that were created prior to the year 2000, BigTech refers to the 10 main technological businesses of influence, FinTech incumbents are founded between 2000 and 2015, and FinTech startups are founded prior to 2015. Table 6 presents the distribution of respondents on which providers have emerged as "winners" during the Covid-19 pandemic.

Table 6. The survey results on a question of which types of providers emerged as "winners" during Covid-19.

	Bank	FinTech	Other
Traditional incumbents (banks): founding date prior to 2000.	48 %	14 %	35 %
BigTech companies: Alibaba/Ant Financial Group, Tencent, Samsung, Facebook, Google, Baidu, Mercado Libre, Square, Rakuten, PayPal	71 %	72 %	65 %
FinTech incumbents: non-BigTech and founding date between 2000 and 2015	33 %	34 %	50 %
FinTech startups: non-BigTech and founding date from after 2015 to present-day	33 %	41 %	20 %

As can be observed from Table 6, roughly half of bank executives believe that traditional incumbents, or banks, emerged as the winners during the Covid-19 pandemic, while only 14 % of FinTech and 35 % of others support this statement. A majority of survey respondents viewed BigTech companies as the most successful during the pandemic, with at least two-thirds of all categories responding in favor. Approximately a third of bank and FinTech representatives and half of the others, including researchers and government officials, for example, believe FinTech incumbents emerged as winners during the pandemic. Representatives from banks comprised one-third of respondents to the option related to FinTech startups, while the representatives from FinTech companies represented 41 %, and other respondents comprised the remaining 20 %.

There has been much discussion among scholars and financial service providers over which technology will have the most influence in the near future. For example, as new entrants such as FinTechs provide innovative financial services, the question of which of these technologies will gain traction emerges. Respondents were asked to indicate which of the following technologies will have the greatest impact on the financial service sector in five years' time

Table 7. The survey results on a question of which technologies do respondents believe will have the greatest impact on the financial services industry in five years' time.

Technology	Bank	FinTech	Other	Average
Blockchain	48 %	52 %	25 %	43 %
Payments	48 %	62 %	70 %	60 %
Asset Management	29 %	21 %	20 %	23 %
Deposits	10 %	7 %	5 %	7 %
Financing/ Lending	52 %	38 %	20 %	37 %
None of These	5 %	0 %	0 %	1 %
Other	24 %	14 %	15 %	17 %

The table above illustrates the spread of the three group's responses to the question of what technologies will have the greatest impact on the financial services industry in five years' time. As can be seen, the payments category is regarded as the most influential technology in the five years of time, with an average of 60 % responding accordingly. With an average of 43 % responses, blockchain and its subcategories are the second most selected category, and financing and lending services are the third most chosen option with an average of 37 % responses. Asset management (23 %) along with deposits (7 %) received the least number of votes in this question. The other category received on average 17 % of responses with specifications, including AI, cloud technologies, and decentralized finance.

5.4 Regulatory Aspect

The survey's final section emphasizes the regulatory component. Questions include how PSD2 affects the banking sector, how the present regulatory framework supports the FinTech industry development in Finland, and how Finland should govern FinTechs in terms of rule clarity, market integrity, and innovation. Moreover, one question about the development of central bank digital currency and the openness of central bank facilities to the general public was introduced to acquire a broader picture of prospective regulatory changes.

PSD2 is regarded as the foundation of enabling FinTechs and banks to collaborate in Finland. Since the implementation of PSD2, there has been a lot of debate since 2016 about whether the new directive will threaten or benefit the banking industry. In order to examine this issue, the respondents were asked whether they consider PSD2 as a threat or the opposite for banks. Figure 10 illustrates the response distribution across the three groups for the question of whether PSD2 threatens or benefits the banking industry.

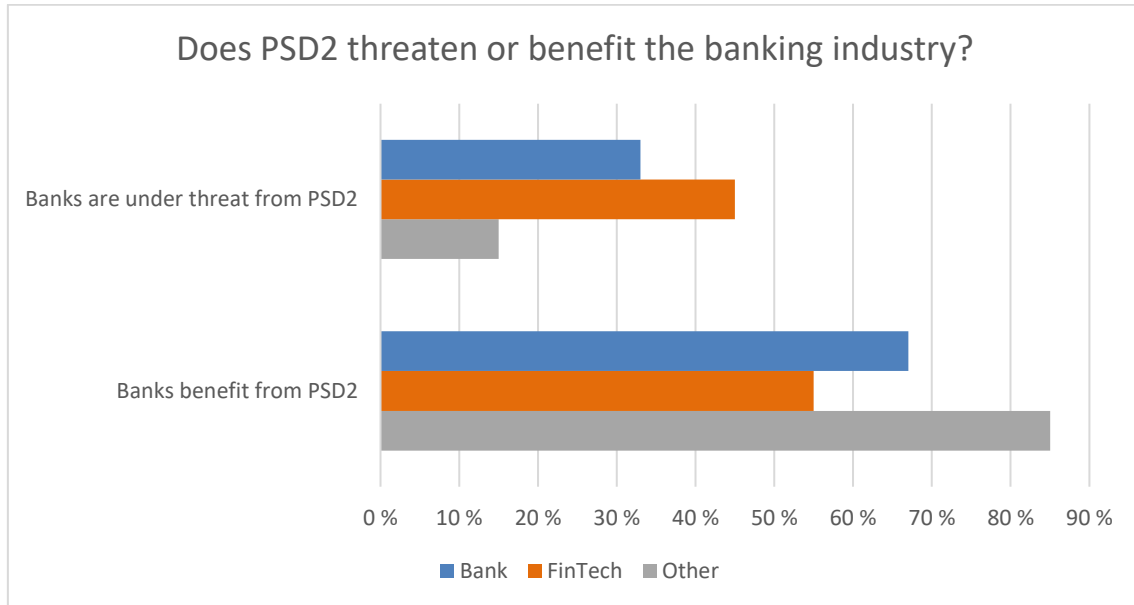


Figure 10. The survey results on the question of whether PSD2 threaten or benefit the banking industry.

Overall, most respondents indicated that banks would benefit from the new regulation, with 67 % of bank representatives agreeing with this statement, followed by 55 % for FinTechs. A noteworthy conclusion appears to be with the others group, with around 85 % stating that the adoption of PSD2 will most certainly benefit banks. This group, which includes researchers, government representatives, and others, may be considered the most unbiased of the three.

As previously mentioned, one of FinTech's major competitive advantages over traditional banks is its relatively low regulatory burden. According to Cai et al. (2019), however, nonbank operations have significantly exacerbated the global financial system's vulnerabilities and have caused the financial crisis to spread across nations. As a result, regulations surrounding FinTech have been modified in order to protect broader economic stability better. Nevertheless, it is well known that excessive regulation slows innovation. This is why it is interesting to examine how Finnish regulation affects the development of the FinTech industry, the findings of which are presented in Figure 11.

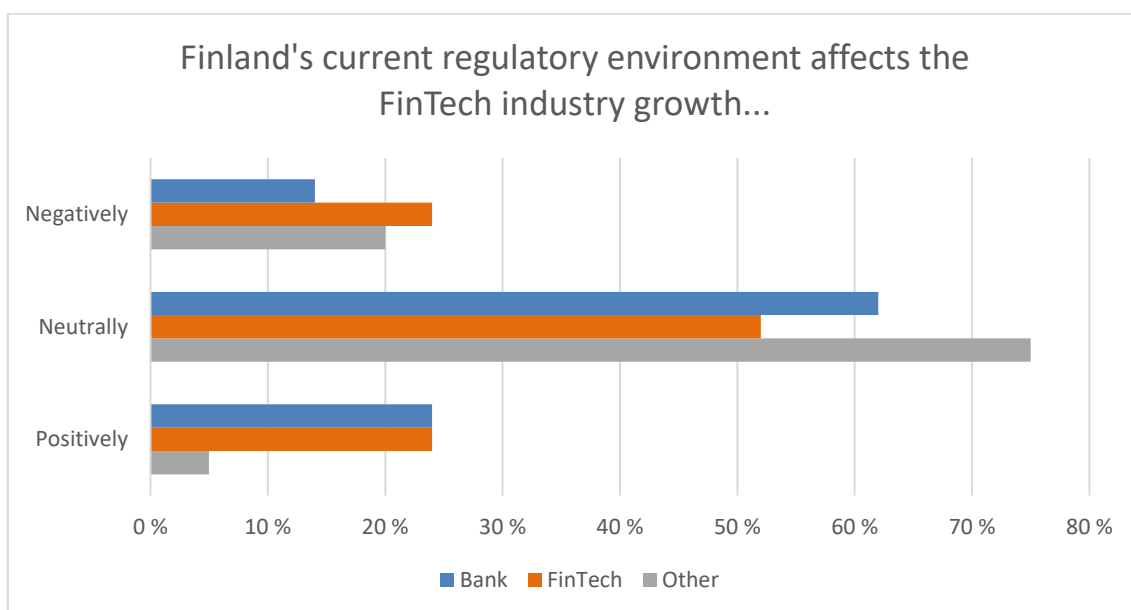


Figure 11. The survey result on a question of how Finland's current regulatory environment affects the FinTech industry development.

Question 15 supplements the preceding PSD2 question, the answers to which are displayed in Figure 11. From the perspective of the FinTech industry's development, respondents were asked whether they perceived the current Finnish legislation as encouraging or not. There are three options available for answering the question, with the respondent being able to answer either positively, neutrally, or negatively. According to the responses, most people opposed the legislation "neutrally," which refers to the fact that the legislation does not help or hinder the development of FinTech in Finland. However, this option may also be interpreted as an inability or unwillingness on the part of respondents to make a statement on this subject.

The banking industry is one of the most heavily regulated. FinTech's rapid expansion and the development of innovative financial solutions are expected to reshape the financial industry in the future. Regulation is therefore crucial to ensuring the stability of the financial system. According to Yadav & Brummer (2019), while drafting regulations, three factors must be considered: regulatory clarity, market integrity, and encouraging innovation. However, only two of these three are typically achievable. Based on four hypothetical situations, Figure 12 displays the distribution of responses on how FinTechs should be regulated in Finland.

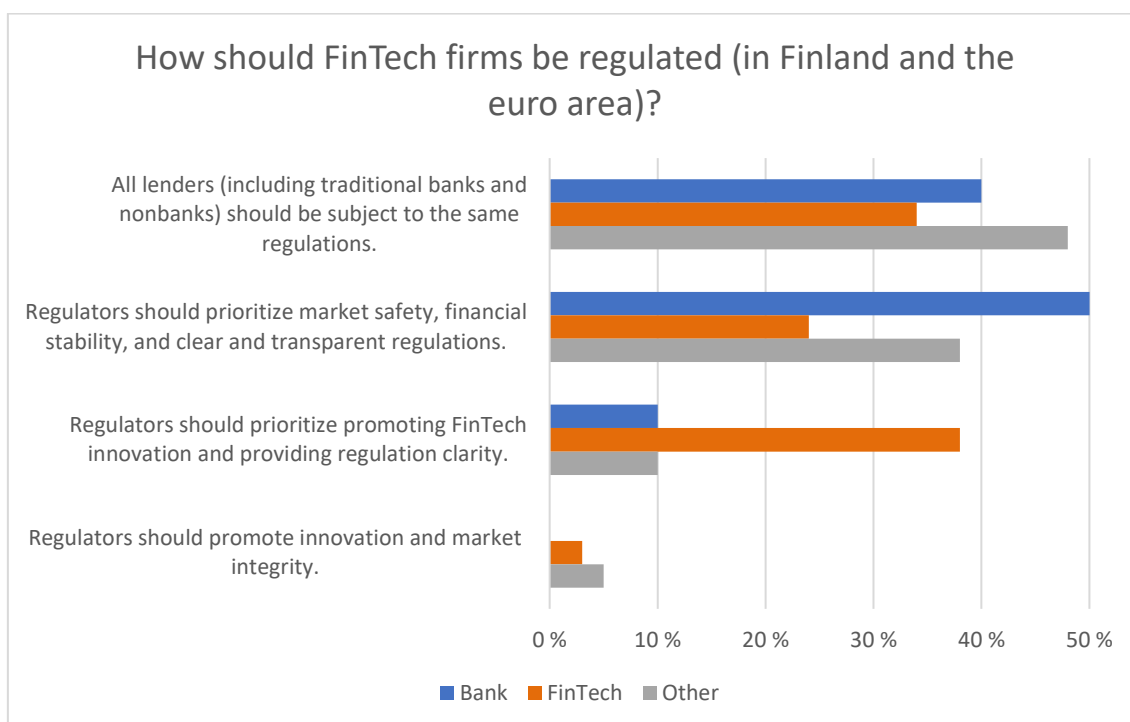


Figure 12. The survey results on a question of how FinTech firms should be regulated in Finland and the euro area.

In question 16, there were four alternative options, each of which described a distinct hypothetical circumstance. The first statement that all lenders should be subject to the same legislation was selected by 48 % of bank representatives, 34 % of FinTech representatives, and 40 % of others. According to 38 % of banks, 24 % of FinTechs, and 50 % of others, regulators should emphasize market safety and stability while compromising on innovation. 10 % of bank representatives, 38 % of FinTechs, and 10 % of others selected an option where innovation should be promoted while market stability and security are compromised. Finally, just 5 % of bank officials and 3 % of FinTech respondents supported the claim that promoting innovation and market integrity must be prioritized, which would almost certainly necessitate more complicated, less transparent, and difficult-to-understand requirements.

By introducing a central bank digital currency, known as CBDC, the central bank is able to compete with private financial intermediaries for deposits, enabling large-scale intermediation operations. Nevertheless, there is much discussion over the effects of CBDC implementation in practice and how it would impact overall financial intermediation. To explore this issue, the last question demonstrates six different scenarios of what would happen if CBDC were introduced to the general public.

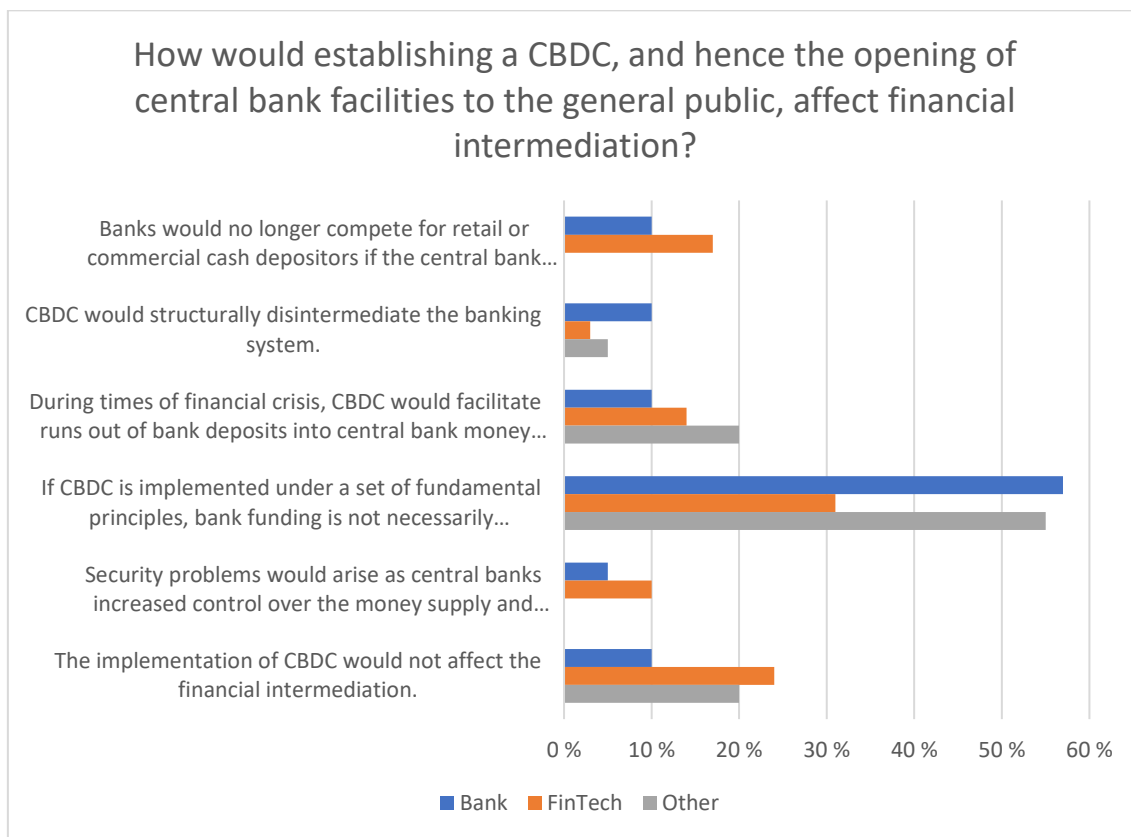


Figure 13. The survey results on a question of how would establishing CBDC would affect financial intermediation.

As can be observed from Figure 13, answer option four was the most popular choice among all the groups. More precisely, the majority believes CBDC would not necessarily decrease bank funding, credit and liquidity provision to the private sector would not be impacted, and the risk of a systemic run from bank deposits to CBDC would be minimized if implemented according to a set of fundamental principles. This is the option that is chosen by 57 % of banks, 31 % of FinTechs, and 55 % of others. Another major factor statement on the implementation of CBDC was the perception that it would have no effect on financial intermediation processes, which was endorsed by 10 % of banks, 24 % of FinTechs, and 20 % of others. The least chosen answers were related to security concerns and CBDC's ability to disintermediate banking systems, with an average of only 6 % of respondents choosing either option.

6 DISCUSSION

The research was conducted in the form of a quantitative survey. The purpose of the survey was to gather responses from representatives of banks, FinTech, and other entities regarding the bank-FinTech collaboration and associated laws in Finland. Due to the fact that the respondents were drawn from a group of individuals involved in the FinTech industry in some capacity, reaching them was challenging, and their numbers were limited.

In light of background questions, it can be asserted that the respondents comprise experienced financial experts in either banking, FinTech, or other industries. According to the survey results, the vast majority of respondents are well educated. This is evidenced by the fact that at least 65 % of all groups had a master's degree or above. Furthermore, based on the age distribution, it can be assumed that the respondents have been in employment for a number of years, as evidenced by the fact that almost 60 % of the respondents are aged 35 to 54. The survey was completed by 70 people, which were then divided into three groups based on the field they were working in: bank representatives, FinTech representatives, and others.

According to Románova & Kudinska (2016), FinTech has become an intrinsic component of banking, and banks have begun to compete outside financial services in response to increased competition from non-financial entities. Hence, they analyzed the relationship between traditional incumbents and FinTech, as well as possible future developments. Due to the disruption and threat the FinTech industry poses to traditional financial organizations, Románova & Kudinska (2016) argue that banks should partner or develop their own solutions with FinTechs to remain up to date. In this thesis, four questions were considered to investigate this aspect of bank-FinTech collaboration.

The emergence of financial technology is perceived to be primarily driven by the advancement of digitalization; hence the first question examines banks' ability to adapt to the digital world and remain competitive. It was overwhelmingly agreed that adaptation to digitalization by banks was a critical condition, which supports Románova & Kudinska's (2016) findings. Románova & Kudinska (2016) argue that traditional banks have a long-term incentive to prioritize digitalization as it will allow them to create opportunities and secure their future success.

In the second question, respondents were asked whether banks and FinTechs should collaborate rather than compete. On average, 94 % agree that the entities should cooperate instead of competing. As an expanded possibility, Románova & Kudinska (2016) point out that payments, savings products, current accounts, and consumer credit might pose a threat to banks as they are easily standardizable and require less expertise. Thus, collaborating with FinTechs on a timely basis could provide banks with new opportunities and expand their product offerings.

Another question, which directly addresses the respondents' preferences for collaboration between banks and FinTech, is how the cooperation would affect each of the bank's activities. The analysis examined, among other things, the quality of services, costs, and security from the perspective of two groups, banks and FinTech. The bank's representatives obtained somewhat higher ratings in the sections service offerings, quality of services, capacity to attract consumers, security threats, efficiency, and technological level when compared to operating independently. The findings also indicate that banks are not concerned about the impact of the partnership on customer prices. On average, FinTech representatives responded significantly higher when it came to service options and technological levels and marginally higher when it came to the quality of services, capacity to attract clients, and efficiency. Representatives of FinTech companies, however, believe that such collaboration will not have an impact on client prices or security.

Both parties believe that collaboration will improve several functions based on the results of the previous question. One issue worth noting is the issue of security risks, which is a point of disagreement between both parties. More precisely, bank representatives are more concerned about security risks on average, as evidenced by the average response option of "slightly higher compared with operating independently", while representatives of FinTech believe that cooperating would not harm overall security.

Since technology-driven enterprises that provide financial services are becoming more prevalent, traditional banks are under increasing pressure to update their fundamental business activities and offerings. Hornuf et al. (2021) analyzed which banks tended to interact with FinTechs, how intensely they do so, and which type of partnership they prefer. In this survey, respondents were asked what forms of collaboration traditional banks prefer with FinTechs: the formation of a joint FinTech firm, the acquisition of a FinTech firm, or collaborating with one.

The results suggest that cooperation between the two parties was the most popular response option. According to Hornuf et al. (2021), the nature of collaboration may be determined by what is currently valuable for both parties. The findings suggest that startup firms in need of capital may be more successful in approaching large banks because they have a tendency to invest in FinTechs; however, FinTech entrepreneurs who want to stay independent, but wish to reach new customers, may prefer smaller and specialized banks since they have a tendency to collaborate on product-related projects. Banks that have developed a clear digital strategy or have a collateralized debt obligation (CDO) are more likely to accept collaboration or investment requests from FinTech entrepreneurs.

The following survey questions examine how financial technology is perceived as a possible threat to traditional incumbents. Although the two parties' products and services are comparable to some extent, their business practices are significantly different. As a result, there has been substantial

discussion about whether they will become more or less unified. Aspects include unleveraged FinTech applications and FinTech's ability to replace banks in deposits, credit, and capital raising. Furthermore, the paper explores which providers have proven to be the most successful during the Covid-19 pandemic, as well as which technologies are expected to have the most impact on the financial services industry in the next five years.

In the world of peer-to-peer lending, also referred to as marketplace lending, lenders lend to people and businesses using internet platforms that link lenders directly with borrowers without having to go through a bank intermediary (Thakor, 2019). Thakor (2019) investigated how peer-to-peer platforms, or FinTechs, impact banking. An analysis of the circumstances where banks lose loans to FinTechs was done with an emphasis on the effect of disparities in capital structures.

In the survey, each target group representative was asked if they expect FinTechs to continue taking advantage of unleveraged techniques or whether banks' high leverage practices will become the norm. According to the results, the majority of each respondent group expects that FinTech will remain unleveraged and will not adopt banks' leverage practices. Because banks rely on leverage to transfer risk, according to Thakor (2019), there is a moral hazard that demands adequate equity capital; P2P lenders do not face this issue. Moreover, banks have higher operational costs than P2P platforms due to regulatory requirements. Because FinTechs have equity funding and do not invest equity capital, they are able to offer riskier loans than banks, giving them a considerable competitive advantage in this segment. As a result, it is reasonable to expect that FinTechs will not change their capital structure in the near future if there is no upcoming change in regulation.

According to the findings of the question on FinTechs' potential to replace banks in loans, deposits, and capital raising, each group agrees that FinTechs will not replace banks in those areas in the near future. Thakor (2019) argues that FinTech will be able to take some market share from banks but will not replace them in the near future. Moreover, FinTechs are more likely than banks to accept risky borrowers with no collateral, which eventually leads to banks partnering with FinTech, whether by setting up a joint FinTech company, acquiring a FinTech firm, or collaborating with a FinTech.

With the prevailing Covid-19 pandemic, the survey examined which financial service providers have emerged as "winners". According to the survey results, BigTech corporations were considered the most successful participants on average throughout the pandemic, with two-thirds or more of all groups responding respectively. During the pandemic period, banks perceived incumbents and startups within FinTech as the least successful participants, whereas FinTech startups saw banks as the same as well. The other category of respondents saw BigTech companies and established FinTech companies to perform best, while banks and FinTech startups were the worst. According to Fu & Mishra's (2021) findings, traditional incumbents saw growth in their digital

offerings during the initial Covid-19 period, but BigTech, such as Alibaba, Facebook, and Google, and newer FinTech providers eventually outperformed them. Nevertheless, the results of this research partly support Fu & Mishra's (2021) study because, despite BigTech receiving the highest number of votes, FinTech startups and banks were perceived, on average, as the least successful companies during the pandemic.

The final element of the empirical section focuses on FinTech regulation in Finland. Due to the highly regulated nature of the banking industry, where services are partially restricted, banks must constantly search for new financial service offerings in order to compete. Compared with their more heavily regulated counterparts, banks face hurdles to innovation, whereas FinTechs are typically highly agile technology players that operate outside of the traditional bank's regulatory framework. Next, this survey addresses the impact of PSD2 on traditional banks, the effects of the current Finnish legislation on the growth of the FinTech industry, how FinTech should be regulated in Finland, and how the introduction of CBDC would affect financial intermediation processes.

Under PSD2, banks are obligated to open customer data to third parties upon the request of the customer, allowing more market participants, including FinTech firms, to utilize financial services (Premchand & Choudhry, 2018). Therefore, it is regarded as being essential to facilitating the cooperation between banks and FinTechs in the first place and, as such, should be studied. The survey asked respondents whether they perceived traditional banks as being harmed or benefited by PSD2. As indicated by the survey results, most respondents believe PSD2 benefits banks, as evidenced by the fact that 67 % of bank representatives, 55 % of FinTechs, and 86 % of others responded accordingly.

To obtain a complete picture of the thesis topic, especially from the Finnish standpoint, the impact of local legislation should also be considered in the survey. Among the next questions, respondents were asked whether they saw the current legislation as encouraging or not from the standpoint of the FinTech industry's development in Finland. Observing the survey results, it was interesting to see a majority had responded "neutrally." Taking these observations into account, it can be concluded that the FinTech industry in Finland has developed in such a way that local legislation does not necessarily, or at least not significantly, differ from that in other countries. That answer could also suggest respondents were unable to comment, so we cannot draw any definitive conclusions from that question.

Considering innovation is an ongoing process in the financial markets, FinTech's rapid expansion and the creation of innovative financial solutions are predicted to revolutionize the industry in the future. A recent study by Yadav & Brummer (2019) shows how the supervision of financial innovation is constantly constrained by what might be called a policy trilemma. According to their findings, regulators have traditionally succeeded in only two out of three objectives when attempting to regulate FinTech firms: provide clear regulations,

protect market integrity, and encourage financial innovation. As part of the survey, respondents were asked which of the following three options should be prioritized when attempting to regulate FinTech.

According to the findings, the answer choice "All lenders (including traditional banks and nonbanks) should be subject to the same regulations" is, on average, the most popular. Bank representatives preferred this option, while FinTech representatives selected the answer that emphasizes FinTech innovation instead of financial stability. As it turns out, the most popular response alternatives were somewhat predictable since banks want regulatory fairness, while FinTech advocates believe that their position as a whole is fair and innovation should remain a priority.

The final question concerns the central bank digital currency, or CBDC, which is the digital equivalent of a country's fiat money. Fernández-Villaverde et al. (2021) evaluated the effects of implementing a CBDC for the financial architecture. They concentrated on the implications of a CBDC on financial intermediation and maturity transformation. The concept of financial intermediation processes may be revolutionized as a result of the introduction of CBDC in the European Union, resulting in a significant decrease in physical money and the central bank's ability to engage in large-scale intermediation for deposits with private financial intermediaries.

In this study, respondents were asked to choose one of several options on how specifically the implementation of CBDC would affect financial intermediation. Approximately 46 % of all respondents selected the answer option "If CBDC is implemented under a set of fundamental principles, bank funding is not necessarily decreased, credit and liquidity provision to the private sector is not lowered, and the risk of a system-wide run from bank deposits to CBDC is minimized", making it the most popular choice. According to the observations of Fernández-Villaverde et al. (2021), the central bank is more stable than the commercial banking sector. It's likely that consumers would absorb this characteristic from the start, and the central bank would emerge as a deposit monopolist, drawing all deposits away from private banks. Therefore, we may conclude that, on average, each respondent group does not contemplate this possibility and instead expects CBDC adoption to have no substantial impact on the commercial banking industry.

7 CONCLUSIONS

This thesis examined what drives banks and FinTechs to collaborate rather than compete with one another and the related legal aspect. Since the advent of FinTech, perceptions of them have changed over the years. It is supported by, for example, the publications of the World Economic Forum, which suggest that traditional banks regarded FinTechs as a threat in 2015. Two years later, in 2017, it was already apparent that this was not the case, and distinctive forms of cooperation with banks were being considered. By 2020, it was discovered that various technological developments, including cooperation between FinTechs and banks, have the potential to reshape the financial sector.

Considering that this thesis focused on the Finnish market, the research questions were analyzed using a local perspective. As a result, Finnish representatives of banks, FinTech companies, and other sectors which are in some way involved in the FinTech industry were elected to participate in the research. Considering FinTech is especially popular in developing countries, where credit to banks is limited or obtaining loans is difficult for an average citizen, it is fascinating to study this topic from Finland's perspective. Due to PSD2's entry into force in early 2018, this topic is particularly relevant given the need for banks to revise their business strategies.

Partnerships are so intriguing due to the contrast between traditional banks and FinTechs in Finland. According to the results of this thesis, collaboration is viewed as a valuable option by both sides, leading to improvements in, for instance, the quality and quantity of bank services and improved operations, as well as the bank's ability to attract new customers. Banking has the reliability of a longstanding infrastructure, credibility with regulators, and a loyal customer base, whereas FinTech companies can innovate, improve their own digital services, and build tailored solutions to niche segments of the market, for example (Hornuf et al., 2021). Since FinTech companies are typically relatively small players in comparison to traditional banks, it is natural for them to be integrated into banks' operations rather than the other way around. Nonetheless, according to Lim et al. (2019), there are serious security and privacy concerns from the users' perspective about the financial transaction records and leakage of their personal information. Correspondingly, it was demonstrated by the results of the survey that, on average, bank representatives believe that cooperating with FinTechs would increase security concerns. This would result in higher compliance costs since banks are historically concerned with security, auditing, and risk management, which are expensive to maintain.

As showcased by the results, it is evident that collaboration between the traditional banking industry and FinTech ventures continues to gain traction. Despite the fact that the FinTech industry is several years old, it continues to develop at a rapid pace, creating new business possibilities and forms of cooperation.

FinTechs and bank representatives alike recognize that collaboration is required for both to reach their full potential despite the immaturity of the FinTech industry. Although the paper does not give exhaustive results or precise guidelines on how collaboration between FinTechs and banks will reshape financial services in the future, it illustrates several aspects of the collaboration between the two parties.

The FinTech industry's development in Finland is neither hindered nor encouraged by the existing regulatory framework. This is supported by the survey results, where the majority of respondents viewed the legislation as neutral for the FinTech industry's development. Considering that the financial activities of FinTechs fall outside the strict regulatory perimeter and, therefore, may be risky for the broader financial system, the respondents were also asked how FinTech firms should be regulated. As Yadav & Brummer (2019) point out, clear regulations, protecting market integrity, and encouraging financial innovation should be considered when developing FinTech regulations; however, only two of these goals are typically achieved. According to the survey results, the statement "All lenders (including banks and nonbanks) should be subject to the same regulations." received the most votes. Hence, we can assume that, at least to a certain extent, the respondents, especially the bankers, believe FinTechs should adhere to the same rules that banks do. Nevertheless, representatives of FinTechs observed a notable observation: nearly 40 % of them emphasized innovation over ensuring the general economy's stability. A survey also revealed that PSD2 regulation is generally viewed as an opportunity for banks that may contribute to the development of the FinTech industry. It can be concluded that the parties hold different views and preferences on existing legislation and its impact on the FinTech industry development in Finland.

Based on the data, it becomes clear that collaboration between traditional banks and FinTechs is necessary to reap the full benefits of innovation. Banks and FinTechs both provide similar financial services to some extent, but their business models are drastically different, making them uniquely suited to work together. To build a digital future for the financial services industry, long-term partnerships that integrate FinTech innovations with the support and trust of banks are a natural way to adapt to the rapidly evolving customer needs.

Considering FinTech is often used in developing countries where the average citizen may have trouble obtaining credit, it would be fascinating further to explore the bank and FinTech collaboration aspects in Finland. Specifically, what core activities of the banks would be emphasized when forming some form of collaboration and how it will be implemented considering the existing regulatory framework. Furthermore, as artificial intelligence is increasingly being integrated into the functions of various companies, future research could explore how it could benefit specific business areas of financial service providers, such as lending or asset management.

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APPENDIX 1: QUESTIONNAIRE

Master Thesis Questionnaire

 Mandatory questions are marked with a star (*)

Thank you for taking the time to participate in this survey! The response time is approximately **5-10 minutes**.

All responses will be treated with confidentiality.

Jyväskylä University School of Business and Economics
Master's Degree Programme in Banking and International Finance
Thesis: The Future of Banking: Strategic Alliances Between FinTechs and Banks

The purpose of this interview is to examine the factors that influence traditional banks' and FinTech companies' willingness to collaborate rather than compete with one another. A few regulation-related questions will be presented to acquire a broader perspective on the development of the FinTech industry in Finland. There are 18 questions in this survey, all of which are based on scientific literature (bibliography provided at the end of the survey).

Contact details of the researcher

Aleksandr Fofanov
MSc in Banking and International Finance Student
aleksandr.a.fofanov@student.jyu.fi

Juha-Pekka Junttila
Master's Thesis Supervisor
Professor
juha-pekka.j-p.junttila@jyu.fi

1. Before responding to the survey, please read the Research Notification and Privacy Policy form (in Finnish) using the link below. *

I Agree to Privacy Policy.

<https://link.webropolsurveys.com/S/EB0F9D347C1F7285>

BACKGROUND QUESTIONS

2. Gender *

Female

Male

Prefer Not to Answer

3. Age *

- 18-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65 or older

4. What is the highest degree you have completed? *

- Less than a high school diploma
- High school degree or equivalent
- Bachelor's degree
- Master's degree
- Doctorate degree
- Other (please specify) _____

5. You are... *

- a bank representative
- a FinTech representative
- Other (please specify) _____

THEME QUESTIONS

The process of converting information into a digital format, in which the information is arranged into bits, is known as digitalization. It is critical to data processing, storage, and transmission as it allows all sorts of information in all forms to be transferred with the same efficiency. Since financial products are almost completely dependent on information, the banking sector has been rapidly evolving in its adaptation to the digital world.

6. For the future, traditional banks' ability to adapt to digitalization is...*

- a vital condition
- very important
- important
- not relevant
- harmful

The use of digital technology in financial services is defined as financial technology or also known as FinTech. FinTech incorporates new financial solutions enabled by IT (information technology) and is frequently referred to as start-up firms that supply those solutions. FinTech companies provide different kinds of services, including financing, mobile payments, wealth management, loans, crowdsourcing, capital markets, and insurance.

7. Should banks and FinTech companies, in your opinion, collaborate rather than compete? *

- Yes
- No

8. Banks prefer the following form of partnership with FinTech companies: *

- Acquiring a FinTech firm
- Collaborating with a FinTech firm
- Establishing a new, joint FinTech firm
- None of the above

9. How would collaboration with FinTech affect bank's... *

	Significantly higher compared with operating independently	Slightly higher compared with operating independently	No effect	Slightly lower compared with operating independently	Significantly lower compared with operating independently
Service offerings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

	Significantly higher compared with operating independently	Slightly higher compared with operating independently	No effect	Slightly lower compared with operating independently	Significantly lower compared with operating independently
Quality of services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ability to attract customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Prices for customers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Security risks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Efficiency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Technology level	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Leverage, often known as gearing, is a fundamental concept in finance. The leverage ratio is the percentage of a company's assets that are funded by debts rather than equity. Banks are highly leveraged entities that facilitate leverage for others, and it is a key aspect of their business model. However, since FinTechs are entirely equity-financed, no equity capital is invested by the FinTech itself; rather, investors are equity holders in loans.

10. Will FinTech platforms continue to be unleveraged, or will banks' high-leverage practices become the norm? *

- FinTech platforms will remain unleveraged
- FinTech platforms will adopt banks' high-leverage practices

11. Will FinTech replace traditional banking in credits, deposits, and capital raising? *

- Yes
- No

12. What types of providers emerged as "winners" during Covid-19? *

- Traditional incumbents (banks): founding date prior to 2000
- BigTech companies: Alibaba/Ant Financial Group, Tencent, Samsung, Facebook, Google, Baidu, Mercado Libre, Square, Rakuten, PayPal
- Fintech incumbents: non-BigTech and founding date between 2000 and 2015

FinTech startups: non-BigTech and founding date from after 2015 to present-day

13. What technology do you believe will have the greatest impact on the financial services industry in five years' time? *

- Blockchain
- Payments
- Asset management
- Deposits
- Financing / Lending
- None of these
- Other (please specify) _____

Bank supervisory authorities are concerned about the fast expansion of bank-like services supplied by FinTech firms. There have also been legal challenges and concerns raised about FinTech's impact on consumer privacy and the potential for FinTech to disrupt overall financial stability. This change is accelerated by the recent implementation of open banking and the Payments Services Directive 2 (PSD2) regulation. Specific kinds of third parties (FinTechs) are permitted to access bank account data under PSD2 to deliver payment-related services. In other words, PSD2 permits other parties to access a customer's bank account data with the customer's consent. Because FinTech firms are exempt from standard bank regulation, they can provide financial services at lower costs than traditional banks.

14. Does PSD2 threaten or benefit the banking industry? *

- Banks benefit from PSD2
- Banks are under threat from PSD2

15. Finland's current regulatory environment affects the FinTech industry growth... *

- Positively
- Neutrally
- Negatively

Regulators seek to provide clear rules, protect market integrity, and promote FinTech innovation when

attempting to start regulating FinTech firms. However, they are likely to achieve just two of the three objectives.

16. How should FinTech firms be regulated (in Finland and the euro area)? *

- All lenders (including traditional banks and nonbanks) should be subject to the same regulations.
- Regulators should prioritize market safety, financial stability, and clear and transparent regulations. However, such policies may have a negative impact on FinTech innovation.
- Regulators should prioritize promoting FinTech innovation and providing regulation clarity, resulting in a simple and low-intensity regulatory framework. However, such policies would not ensure the financial system's safety, soundness, and stability.
- Regulators should promote innovation and market integrity, which would likely require the imposition of more complicated, less transparent regulations that are challenging to comprehend.

Digital network and IT advancements have created a demand for digital transactions, which have the ability to radically change financial intermediation processes. Central banks have been debating whether and how they should adjust. Many central banks are considering creating central bank digital currency (CBDC) which is a new sort of money that extends digital access to central bank reserves to the general public rather than only commercial banks. Central bank digital currency enables the central bank to participate in large-scale intermediation by competing for deposits with private financial intermediaries like banks. CBDCs, in other words, give consumers the opportunity to open bank accounts directly with the central bank.

17. How would establishing a CBDC, and hence the opening of central bank facilities to the general public, affect financial intermediation? *

- CBDC would structurally disintermediate the banking system.
- During times of financial crisis, CBDC would facilitate runs out of bank deposits into central bank money (i.e. not structural, but cyclical disintermediation).
- If CBDC is implemented under a set of fundamental principles, bank funding is not necessarily decreased, credit and liquidity provision to the private sector is not lowered, and the risk of a system-wide run from bank deposits to CBDC is minimized.
- The implementation of CBDC would not affect the financial intermediation.
- Banks would no longer compete for retail or commercial cash depositors if the central bank essentially became the exclusive intermediary for financial transactions.
- Security problems would arise as central banks increased control over the money supply and acquired knowledge into how people spend their money.

**18. Please share any additional comments you have regarding the topic.
(Optional)**

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