FINANCIAL TECHNOLOGY IN THE FINNISH BANKING SECTOR AND ITS IMPACT ON STAKEHOLDERS IN THE WAKE OF COVID-19

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Abstract

Financial Technology (FinTech, hereafter) has integrated with the banking sector. Despite its fast growth, FinTech is a relatively new and under-explored phenomenon in the academic and corporate spheres. The current study aims to explore, first, the role and relevance of FinTech in the commercial banking sector in Finland; and second, the changing dynamics of stakeholders of the banking industry in the light of FinTech. The above objectives have been studied in the wake of the COVID-19 pandemic. The primary data has been collected through semi-structured interviews. A significant impact of FinTech has been observed in the following aspects of the banking sector: customers, strategy, risk management, investors, operations, competitiveness, and future growth. FinTech adoption has been contributed by the growth in the IT sector and innovations in the field of firm financing including crowdsourcing and peer-to-peer financing. Changing customers' demands and behaviour have also facilitated FinTech adoption (Lee & Teo, 2015). Banks have been integrating FinTech into insurance services and this feature has become more profound ever since banks increased their cooperation with international insurance companies (Paschen, Wilson, & Ferreira, 2020). Similarly, there has been a significant increase in collaboration between banks and FinTech start-ups. Nonetheless, the unpredictable factors, such as the ongoing COVID-19, can influence the future innovation and adoption of FinTech.

Keywords: Financial Technology (FinTech), Digitalization, Banking Sector, COVID-19, Finnish Banking Sector

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1. INTRODUCTION

Technological developments have influenced modern-day businesses in several ways including business ideas, planning, strategy, operations, innovation, and performance, to name a few. However, technology does not reach out to the financial sector in a similar vein as it does in the case of the non-financial sector. Such difference regarding the impact is because the financial sector is highly regulated, and it entails substantial personal and business sensitivities. As a result of

such sensitivities, the financial sector always attracts relatively more vigil, disclosures, and scepticism from regulators, customers, investors, and other stakeholders before adopting any new technology (Borio, Vale, & von Peter, 2010). After the global economic crisis of 2007, the financial sector has been inundated by a series of new developments and technological development is one of the most significant of all (Nicoletti, 2017). The current paper receives its motivation from the ongoing discourse whether FinTech will supplement the banking sector concerning the performance of the latter including efficiency and expansion or it will even supplant the traditional banking institutions. Furthermore, the discourse underlines whether traditional banking institutions will successfully adopt technological innovations, redefine their performance measures, and continue to exist and thrive or whether these institutions will be devoured by the ongoing technology wave. Similarly, the current discourse underpins whether the rise of Fintech in the banking sector is compatible to face any potential shocks including the ongoing COVID-19 pandemic and any similar shocks or disruptions in the time to come which can affect social, psychological, economic, business, political equations globally.

FinTech, on the one hand, has necessitated banks and other financial institutions to keep pace with the technological advancements and, on the other hand, it has motivated them to ingrain and upscale user-centric approach in their business models. FinTech has played an instrumental role in transforming even the traditional operations of banks including payments, borrowing, transfers, lending, and investing (Chishti & Barberis, 2016). Noticeably, the commercial banks not only apply their home-grown financial technologies into their operations but also utilize the services of specialized FinTech companies to enhance their efficiency, service quality, and overall competitiveness (Navaretti, Calzolari, Mansilla-Fernandez, & Pozzolo, 2018). Therefore, another dimension of business-to-business (B2B) integration has been created.

According to the PwC (2017) report, up to 77% of financial institutions are expected to intensify their internal efforts to innovate with the purpose to enhance security and reflect their commitment to the adoption of FinTech. It is also argued that in the long run, due to the lack of digital strategy, many banks may experience a decline in their performance (Gray & Rumpe, 2015; Grym, Koskinen, & Manninen, 2018). Similarly, due to the distinct nature of their balance sheet, it is difficult to apply traditional accounting indicators-based performance measures to evaluate the performance of banks (Bouheni, Ammi, & Levy, 2016). Amidst the ongoing wave of FinTech, the need to redefine the performance measurement system of banks has gained even more momentum.

The selection of Finnish banks in the current study has been motivated by several factors. First, Finland is one of the most digital societies in Europe and the world. Second, the Finnish businesses substantially invest in the digitalization of their operations and the Finnish banks are no exception to it (Grym et al., 2018). Third, Finnish banks seem to be the first ones to capture the change in the competitive landscape in the financial sector due to the inundation of technology in it (FinTech Landscape, https://www.helsinkifintech.fi/fintech-landscape/). Hardie, Gee, and Hannestad (2018) find that the percentage of the revenues of Nordic banks including those of Finland perceived to be at risk due to the FinTech interference in the next five years has soared 12 points to 38% in 2018, which is 7% more than among European banking peers. Furthermore, the number of FinTech companies in Finland is significantly increasing.

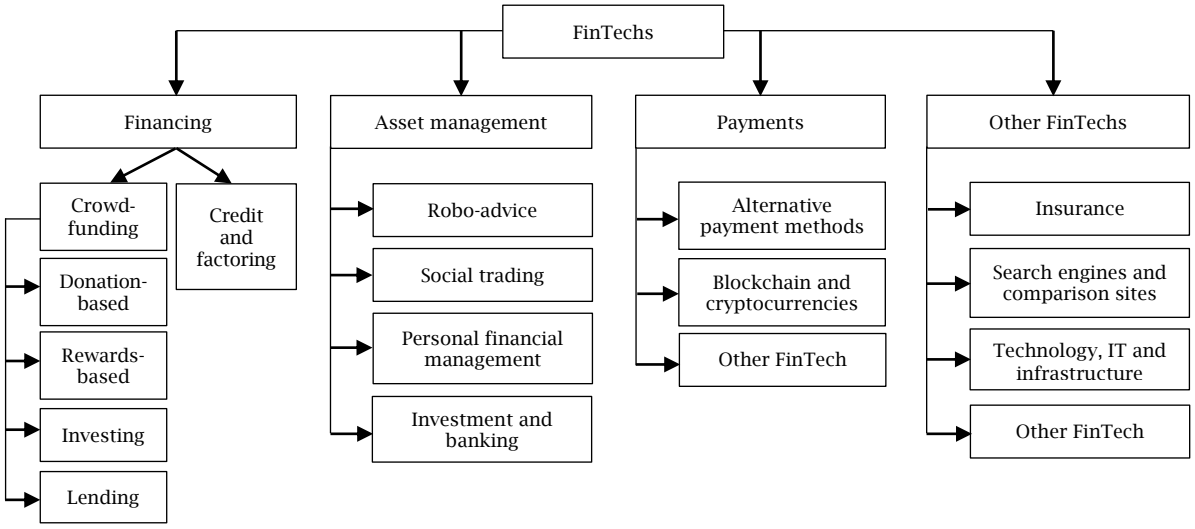
The current study addresses the following research objectives-first, to study the role and relevance of FinTech in the commercial banking sector; and second, to study the changing dynamics of stakeholders of the banking industry in the light of FinTech. The above objectives have also been studied in the light of COVID-19 since this pandemic has affected the entire world as no other event has in recent history. The primary data has been collected through semi-structured interviews.

Section 2 highlights the literature review, whereas, Section 3 addresses various aspects of the research design including data, and research methods. Section 4 presents the results and discussion, whereas Section 5 underlines the main conclusions of the study.

2. LITERATURE REVIEW

Vasiljeva and Lukanova (2016) state that "FinTech is an industry-oriented toward arranging financial services for private individuals and industries with the aim of providing customer-oriented solutions in the most efficient way and at the lowest cost possible, ensuring this via innovation and technology" (p. 25). Lee and Teo (2015) define FinTech as "innovative financial services or products delivered via technology" (p. 2). FinTech services include "technologies for banking and corporate finance, capital markets, financial data analytics, payments, and personal financial management" (Wesley-James, Ingram, Kallstrand, & Teigland, 2015, p. 12). Some of the definitions include e-commerce and cybersecurity as distinct components of the FinTech environment.

Figure 1. Elements of the FinTech industry



Note: Adapted from Dorfleitner, Hornuf, Schmitt, and Weber (2016).

Dorfleitner et al. (2016), in Figure 1 above, decompose the FinTech environment into four main categories: financing, asset management, payments, and other FinTechs. Each of these four categories encompasses unique sets of technology. Vasiljeva and Lukanova (2016) underscore the FinTech environment as service-oriented, data-oriented, and process-oriented. Service-oriented activities refer to the development of technologies related to services traditionally provided by financial institutions, e.g., fund transfers or card payments, lending and investment, peer-to-peer lending, crowdfunding, or foreign exchange. Data-oriented activities include solutions and technologies devoted to collecting, processing, and analyzing information. Process-oriented activities include cost caps and processes that are aimed at increasing efficiency and process automation, which have started to develop after the financial crisis of 2007 when the banking industry all over the world was forced to re-define its operating models (Borio et al., 2010).

In the banking industry, FinTech primarily focuses on the advancement of banking services and products, which contribute to the enhancement of customer satisfaction. The key priorities of the customers of commercial banks are convenience, personalization, accessibility, user-friendliness, transparency, safety, speed, and affordability (PwC, 2016b). Modern-day customers expect their banking service providers to integrate with their daily life. Moreover, their demands also include easy access to their financial partner, which means the existence of a convenient interface that carries all the necessary features ranging from the handy design of online and mobile banking apps to the digitalization of documentation (PwC, 2016a). The customers want real-time advice based on the nature of transactions, market situation, enhanced security, and protection of their personal data including responsible data sharing (Chishti & Barberis, 2016), among other things.

Within the banking industry, the competitive edge is created by the delivery of superior services that meet the needs and expectations of both individual and corporate customers. The creation and maintenance of good customer relationships largely depend on banks' ability to make quality service available to their customers. A high level of product quality leads to a high level of customer satisfaction and therefore results in the increased customer loyalty (Ennew, Waite, & Waite, 2017). Since the 1970s, it has been a challenge for the banks to adapt themselves to the growing customers' demand and successfully implementing innovative technology in large organizations based on information technology. FinTech has an outstanding potential to transform banking businesses and meet the unprecedentedly growing demands of modern-day customers successfully (FinTech Landscape, https://www.helsinkifintech.fi/fintech-landscape/).

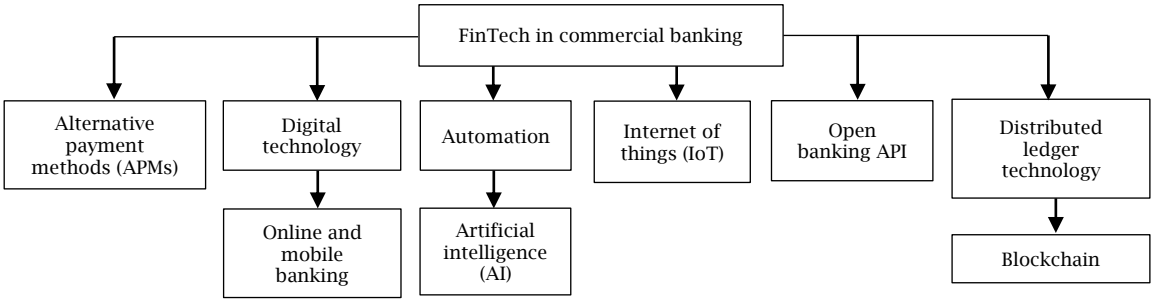
The successful partnerships and co-operation between banks and FinTech companies, especially the start-ups, have the potential to result in a win-win situation for both parties by capitalizing on each other's strengths. Since FinTech development is still at the infant stage, therefore, on the one hand, banking institutions can play an important role by providing financial resources to FinTech firms, especially the start-ups, to operate efficiently and acquire infrastructure capabilities, which in turn can motivate FinTech firms to upscale and improve their products, services, and business strategies. On the other hand, banks are important clients of products and services of FinTech firms; therefore, the success of FinTech firms can be beneficial to the banks. The collaboration with FinTech firms can help banks to reduce their structural costs, enable enhanced regulatory compliance, and improve service quality. According to FinTech Survey 2016, as many as 42% of banks have established their allied partnerships with FinTech companies and created venture funds to finance such partnerships (PwC, 2016c).

One of the top priorities of FinTech companies is to provide customer-oriented solutions, therefore, they have the potential to influence the furtherance of banks' strategy into customers' direction and thus making it easy for customers to access services, both in-person and online.

The most applied technologies within the commercial banking sector include digital technology, electronic banking, alternative payment methods, distributed ledger technology (DLT), blockchain and cryptocurrencies, artificial intelligence (AI) and machine learning (ML), Internet of things (IoT), and open banking application programming interface (APIs), among others.

A more visible and coherent classification of financial technologies are provided in Figure 2 below.

Figure 2. FinTech in commercial banking



Source: Compiled by the authors.

Alternative payment methods

Alternative payment methods (APMs) refer to cashless payment methods. These include payments made using a credit or debit card, loyalty program points, bank transfers, direct debits, e-wallets, mobile, local card schemes, pre-pay, post-pay, e-invoices, or cryptocurrencies. In some cases, such as credit or debit card usage, banks serve as financial intermediaries, whereas in other cases, such as payments via e-wallet or in cryptocurrencies, there is no need for a third party between payer and receiver. The transactions are usually conducted in real-time. APMs offer customers a more streamlined, user-friendly, and cost-effective experience, making the payment execution better, faster, and cheaper (Dorfleitner et al., 2016).

The emergence of the APMs is affecting the behavior of consumers because the payment mechanism has been shifting from physical locations to digital channels (Canaday, 2017). According to Capgemini and BNP Paribas (2018), global non-cash transaction volumes increased to 10.1% in 2016 reaching 482.6 billion and are estimated to increase at a compound annual growth rate of 12.7% and 21.6% globally and in emerging markets, respectively, during 2016-2021. These statistics signify the need for rapid technological development and its rapid adoption by traditional banking organizations (Canaday, 2017).

Some traditional financial institutions have found a solution to be part of the digital revolution in collaborating with FinTech firms to continue to remain efficient in the existing payments ecosystem. Such collaborations represent more opportunities for the banks at lower costs and minimum risks of disruption. Initiatives like PayPal, Faster Payment Service, and Popmoney are examples of successful collaborations between FinTech firms and banks, which are created to facilitate instant and faster payments, and improve the customer experience (Canaday, 2017).

However, such collaborations and experiments with FinTech products and services require careful and attentive management, monitoring, and control to maintain safety, trust, and efficiency with respect to responsible innovation research and development, risk-aware approach, and third-party risk management practices. Cybersecurity is a key condition for partnerships because the sensitive data sharing within the distributed network has posed new questions abound transparency of global payments, ownership of data and their usage dynamics, and legal obligations.

Digital technology

Digital technology is an umbrella term for computer-based products and solutions and refers to all categories of electronic equipment and applications that use information in the form of numeric code, which is usually comprising of binary characters – 0 and 1. The rapid growth of innovations, shorter product life cycles, ever-changing customer needs, and growing internationalization of businesses, have made customer service performance crucial for the survival of business organizations (Paschen et al., 2020). Similarly, in the commercial banking sector, digitalization has improved banks' capability of reaching potential customers and helped them to improve their services.

In the modern world, the biggest channel of reaching customers is online and mobile banking (Forest & Rose, 2015). Online banking refers to any banking transaction that can be managed through the Internet, generally via a bank's website under a private profile, using a desktop or laptop computer; while mobile banking allows a user to carry out nearly the same activities using a mobile app on a smartphone or tablet, instead of using a desktop computer. As a rule, the transactions which can be performed through the Internet or mobile banking include services traditionally offered at local branches. These financial transactions include paying bills or transferring money from one account to another, viewing account balances, viewing, or printing statements, viewing images of invoices, and applying for loans or credit cards (Dorfleitner et al., 2017).

The main advantages of digital banking include low fees, freedom from time and place restrictions (Karjaluoto, Mattila, & Pento, 2002), user-friendliness, service speed delivery, convenience, and compatibility with lifestyle (Black, Lockett, Ennew, Winklhofer, & McKechnie, 2002). However, the complexity of digitalized services, perceived financial cost of a product or service (Black et al., 2002), ignorance of electronic services (Sathye, 1999), and a security risk (Laukkanen, 2007) have

been limiting the scope and potential of the digitalized services usage.

Mobile banking is considered more competitive than other forms of electronic banking. The high intensity of mobile phone usage has played an instrumental role in expanding the advantages of mobile banking over other types of electronic banking (Turowski & Pousttchi, 2004).

As online and mobile banking provides an outstanding convenience to customers, allowing them to manage their finances and conduct business operations from outside the physical banking facilities, it is, nowadays, one of the biggest technological advances influencing the current banking industry. Electronic banking has the potential to considerably reduce costs through replacing a high-cost channel (for example, bank clerks) with a low-cost channel (for example, a central webserver) for several types of transactions of retail banks. Electronic banking is considered the most successful business-to-customer (B2C) application in electronic commerce (Turowski & Pousttchi, 2004).

Automation

Automation is defined as the conversion of a work process, procedure, or equipment to the automatic operation or control. Automation does not simply transfer human functions to machines, but also involves a deep reorganization of the work process, redefining both the human and the machine functions (Kao, 2016).

McKinsey Global Institute (2017) predicts that half of the manual work activities, executed today, can be automated by the time-period 2035 to 2075 with the average annual productivity growth between 0.8% to 1.4%, ceteris paribus. For businesses in general automation has several benefits leading to improvements in performance by reducing errors, high quality and speed, labor cost reductions, decreased downtime, enhanced safety, minimized variability, waste reduction, and improved customer satisfaction. Automation also has the potential to achieve outcomes that go beyond human capabilities.

In finance specifically, automation has been redefining the functions of the traditional finance department in business organizations. Cloud-based platforms do business reporting, planning, forecasting, and analytics significantly with significant efficiency. Moreover, self-service dashboards have been allowing different units/departments within a business organization to access the necessary data instantly with minimum consumption of time and resources of the finance department.

Artificial intelligence (AI) is an important aspect of automation and it is comprised of adaptive and/or autonomous machines, particularly computer systems, which simulate the human intelligence processes, such as learning (the acquisition of information and rules for using the information), reasoning (using rules to reach approximate or definite conclusions) and self-correction (Russell & Norvig, 2010). AI is important also because it automates repetitive learning and discoveries through the data. It can implement frequent, high-volume, computerized tasks consistently, and without fatigue. However, these types of automation still require a human inquiry to set up the system and ask the right questions. AI can also improve existing products by adding intelligence to them. In most cases, AI is not sold as an individual application but is added to the products which are already in use. The applications of AI vary from security intelligence to investment analysis. AI is integrated into different activities and in industries, such as medicine, logistics, education, and human resource management. Global AI business value is estimated at $3.9 trillion by 2022 (Paschen et al., 2020).

In the banking industry, AI can contribute immensely to the product development area through qualitative and quantitative data analysis (Li, Spigt, & Swinkels, 2017). Furthermore, AI can be used both in the front and middle offices. In the front office, financial data and accounting activities can be combined with the help of the software agents that can provide support to the finance personnel. In the middle office, AI will be beneficial in real-time, oversight, risk management, and know your customer (KYC) systems. AI can also be applied used in ascertaining credit risk and insurance underwriting risk and selecting investments based on alternative data combined with human judgment (Paschen et al., 2020).

Internet of things

The Internet of things (IoT) represents a network comprised of physical objects, which gather and share electronic information. This network includes a wide range of smart devices, which often use internet protocol (IP) that identifies computers over the World Wide Web and allows them to intercommunicate. The main idea behind the IoT is to have devices that self-report in real-time to improve efficiency and bring important information to the surface more quickly than a system, which depends on human intervention. The IoT can bring value to the banking organizations in the form of innovation of business operations, retaining the customer base, and increasing customer loyalty. The IoT helps the banking sector specifically to provide rewards, easy-to-access services to both credit and debit card customers. Based on IoT, banks can alter the number of Automated Teller Machines (ATMs) installations depending on the usage volumes in specific areas. The IoT also allows banks to bring on-demand services and increase their accessibility to customers by providing kiosks at convenient and easy-to-access locations.

Furthermore, IoT enables banks to access customer data and thus, identify their customers' business needs, value chain, and gain customer insights. Customer information also helps banks in providing value-added services, financial assistance, and customized products to ensure a win-win situation for both parties. Moreover, banks can extract a complete view of customer finances in real-time because customers' smart devices are interconnected and used for accessing data. This information allows banks to anticipate customer needs through the collected data, offering them solutions and advice on sound and smart financial decisions. IoT can also help banks to predict fraud in debit or credit card transactions, confidentiality approving or declining the transaction accordingly, when a customer swipes his/her card, by verifying account holders' device location and the transaction

location. Furthermore, IoT enables banks to track raw materials and inventory stocks via sensor devices installed at the borrowing company's warehouse. This tracked data can help banks to deduct the account balance of the borrowing company towards the payment of the loan instalments. Therefore, banks can reduce the overhead costs of tracking and prevent the borrowing company from indulging in fraudulent practices. The IoT features help the banking industry to develop their marketing strategy and offer more tailored solutions, as it enables access to the necessary information about customers' buying behavior, current business condition, and their individual needs. Furthermore, IoT makes banking services proactive, as it allows them to predict and handle any additional risk arising out of upcoming product changes or service faults pretty much easily (Russell & Norvig, 2010).

Open banking API

Application programming interface (API) is a code that allows two software programs to communicate with each other, defining the correct way for a developer to write a program that requests services from an operating system (OS) or other applications (Russell & Norvig, 2010). To put it simply, an API is a way for two computer applications to talk to each other over a network using a common language that they both understand. Open APIs are a critical component in boosting the speed of innovation because payment companies can publish APIs to expose source code and allow the online ecosystem of developers and FinTech companies externally to enhance products and services or create net new ones (Canaday, 2017).

Internal use of API integrates diverse systems and allows for the exchange of data across different departments of a firm by performing API calls or sending queries to an API server. It provides internal teams with better collaboration and allows them to access information when and how they need it, thus helping to interconnect services and business processes across the organization, improving employee productivity, and creating better omnichannel experiences for customers. External APIs can also be used to expose business assets such as information, a service, or a product to external audiences, hence, reaching beyond the boundaries of the firm, providing further integration with company partners, and allowing third parties to consume organizational data and lead to cross-selling and upselling opportunities down the line (Zachariadis & Ozcan, 2016).

API facilitates open banking by allowing third-party developers to build applications and services around financial institutions with the enhanced financial transparency options for account holders, and the use of opensource technology. Open banking aims at giving consumers better and more personalized information for making sound financial decisions. APIs enable the availability of banking in real-time, providing consumers with improved ways to conduct transactions, save, and invest their money. APIs also allow lenders to look at historical transactional data to determine a borrower's risk level; therefore, loan terms can be customized. Open banking has been redefining the global financial landscape in several ways, specifically by helping financial services firms improve their service offerings, increase overall customer engagement, and raise revenue from new channels (Zachariadis & Ozcan, 2016).

Distributed ledger technology

Distributed ledger technology (DLT) is identified as an asset database that can be allocated across a network of multiple sites, geographies, or institutions. The technology allows all participants within a network to have identical copies of the ledger. Any unauthorized changes to the ledger are rejected in all copies within minutes or even seconds. The maintenance of security and accuracy of the assets stored in the ledger is organized cryptographically using *keys* and *signatures* to control the authority of participants within the shared ledger. The right to update the entries by one, some, or all the participants, is affirmed in the rules agreed by the network (Wattenhofer, 2019).

DLT has the potential to disrupt the financial industry including its roles, operations, and infrastructures by transforming payment, clearing, and settlement (PCS) processes. DLT can reduce or even eliminate operational and financial inefficiencies, or other frictions, that exist in the current methods of storing, recording, and transferring digital assets throughout financial markets, improve end-to-end settlement speed, data auditability, resilience, and cost-efficiency, and to help foster a more efficient and safe payments system.

Due to a high degree of transparency, as each party in the transaction has a copy of the ledger, it is easier to verify every record as DLT is seen to facilitate regulatory reporting and fraud prevention of the businesses. Additionally, the DLT can enhance data security, and eliminate the need for the large legacy IT systems located within a single institution traditionally used for the storage of the information. IT systems may be vulnerable to cyber-attack and the data is often out of sync, out of date or simply inaccurate. DLT, on the contrary, is significantly less vulnerable to cyberattacks, because, instead of the single database, there are multiple shared copies, all of which to needed be attacked simultaneously for a cyber-attack to be successful. The DLT also allows the participants in the network to immediately spot a change to one part of the ledger, making it resistant to any unauthorized change or malicious tampering.

The blockchain is a type of DLT represented by a distributed database of records, or public ledger of all transactions or digital events that have been executed and shared among participating parties (Sathya & Jena, 2020). This database maintains a constantly growing list of data records and consists of sequentially connected blocks storing information. The transaction information is collectively recorded, verified, and stored by all network participants so that they can secure the reliability of transaction records without receiving notifications from a *trusted third party* (TTP) such as a central bank or an administrative agency (Yoo, 2017). Each transaction in the public ledger is verified through the consensus of majority participants in the system and the information, once entered, can never be deleted. Thus, the blockchain contains a certain and verifiable record of every single transaction (Sathya & Jena, 2020). Updates of all the ledgers are maintained by each member each time a new transaction occurs.

The blockchain establishes a system of distributed consensus in the digital online world, assuring participating entities that a digital event happened continues to remain as an irrefutable record in a public ledger. This technique encourages the development of a democratic open and scalable digital economy from a centralized one. Blockchain technology has tremendous opportunities, and the revolution in this sphere has just begun (Sathya & Jena, 2020). Currently, blockchain technology is being used by many firms to secure document transfer and to reduce settlement costs.

Large banks are now increasingly integrating blockchain in their operations. They have started to conduct tests of decentralized asset technology and implement blockchain in business processes. Banks are also continuing to invest in a variety of projects and start-ups, which are developing blockchain-based solutions (PwC, 2016c). Blockchain reduces the number of financial intermediaries while increasing security, resulting in cost reduction.

3. RESEARCH METHODOLOGY AND DATA

In the current study, the interpretivism research approach has been applied. The rationale for choosing this research approach is that the current study neither tests any hypotheses nor makes any statistical generalizations based thereon, and the findings of the study can be interpreted theoretically or contextually (Länsiluoto & Järvenpää, 2010). Since it was not possible to explore the research objectives of the current study by analyzing firm-level quantitative data, therefore, the findings of the current study can be used to form hypotheses, which can be tested by analyzing quantitative data with the help of econometric models in the future studies.

The qualitative data has been obtained through semi-structured interviews. As many as six semi-structured interviews of middle and top-level executives have been conducted between April-August 2020. The respondents included a middle-level executive of the Nordea Bank and the Handelsbanken, each (labeled as *R1* and *R2*), two CEOs of FinTech start-ups (labeled as *R3* and *R4*), and two COOs/CEOs of FinTech consultancy firms (labeled as *R5* and *R6*). Both respondents representing Nordea Bank and the Handelsbanken, amongst the leading Nordic banks, are working in the field of business development and corporate banking. Both FinTech start-ups have been established in the year 2017. One FinTech consultancy firm has been established in 2019, whereas the other one in 2016. All respondents are based in Finland-four in the Helsinki capital region and two in Jyväskylä (Central Finland).

Both researchers have participated in all the interviews. As many two interviews have been recorded face-to-face and the remaining four via Skype/Zoom, and all interviews have been conducted in English though the native language of all the respondents is Finnish. The duration of each interview has taken in the time range of 50 to 80 minutes. The semi-structured interviews focused on the background of FinTech in the Finnish banking sector, the role and relevance of FinTech in the Finnish banking sector, and the impact of FinTech on the performance of Finnish banks including stakeholders. Although the interview questions were neither explicitly nor exclusively designed about COVID-19, however, the respondents were requested to answer the questions (whenever applicable) in the context of COVID-19.

Two techniques of triangulation have been applied to increase the credibility of the information gathered from the respondents during the interviews and conclusions drawn based thereon (Länsiluoto & Järvenpää, 2010). First, although the interviews have been conducted in English nonetheless some follow-up questions have been asked in Finnish too. Second, along with the principal questions, some additional questions regarding the firm/industry/specific determinants have also been asked to the respondents.

4. RESEARCH RESULTS

The current section presents the findings of the article.

4.1. Background of FinTech in the Finnish banking sector

Regarding the beginning of the phase of FinTech adoption in Finland, some respondents hold the view that FinTech dates to the late 1970s and the beginning of the 1980s. However, these *baby steps* were in the form of very basic improvements in the functioning of banks and customer experience.

R5: "So, within the banking sector, IT systems are very old, like from the 1980s in Finland… are the oldest at the moment. And even before that ICT was used to some degree".

R4: "The late of 1970s, I remember the Finish banks then introduced what we now know as the bank card, so that was quite early, but of course we didn't have the word FinTech yet and it was all in a bank card and they also introduced the tellers where you control money at the same time. But, of course, those were the first steps, towards FinTech or what we now know as FinTech, and of course, now it seems very little, but it was the first time…".

One of the respondents highlights the recession of the 1990s' forced the banks to seek new measures of survival amidst the significant restructuring of the banking sector in Finland and other Nordic countries.

R3: "I think very meaningful for the banking sector was the big recession in the 1990s because it forced the banks to seek new measures on how to survive in the market. Because in the 1990s many of the banks didn't survive and they disappeared, or they were merged into other banks. And that was one of the biggest financial crises that we have ever seen in Nordic countries. And Finland was the one who was suffering the most. But I think those happenings in history have been very important".

The next stage of FinTech adoption in Finland started with effect from the year 2008-2009. A phase of small-sized start-ups appearing in large numbers in the field of financial services was witnessed first time, albeit only a few could succeed due to financial, technical, and regulatory constraints. However, some respondents are holding unanimously that the FinTech start-ups already made their mark in the financial sector by 2015. Several interesting developments included venture

capital investments, and European Payment Service Directive (PSD2). In particular, the PSD2 aims 1) to contribute to a more integrated and efficient European payments market; 2) to expand the level the playing field for payment service providers by involving new players; 3) to make payments safer and more secure; and 4) to improve protection for European consumers and businesses (European Central Bank, 2018).

Two important contributors to FinTech adoption, which have been mentioned by several respondents during the interviews, are the substantial growth in the IT sector in general and innovations in the field of financing including crowdsourcing, and peer-to-peer financing in the banking sector (European Commission, 2019). Nonetheless, the unpredictable and unforeseeable factors, such as the ongoing COVID-19 pandemic, can influence the future innovation and adoption of FinTech.

R6: "Whenever there something new is coming in the field of IT, then, of course, there will also be something new coming in the field of FinTech. Since the beginning of the COVID-19 pandemic, not only the application of IT services has increased many times but innovation in the same field has also intensified. I see no reason why the FinTech innovation and its application will not reach the new heights".

R1: "FinTech wave is not merely confined to a technical breakthrough... the non-traditional form of financing has been supporting many new FinTech start-ups. The non-traditional financing. However, an important challenge is whether FinTech start-ups will be able to get non-traditional financing in the current phase of COVID-19".

Undoubtedly, changing customers' demands and behaviors have also facilitated FinTech adoption. Banks have been recognizing these changes and at the same time trying to integrate financial services to serve their customers so that these services are not only delivered efficiently but also carry the element of resilience and adaptability without undermining the confidence of banking services users. Since the traditional lending arrangements are not in favor of smaller organizations, particularly start-ups, working in the field of FinTech, therefore, banks must invent new forms of lending arrangements to provide impetus to innovation.

R2: "… bank believes that to serve the customers efficiently it requires to give a facelift to its operations including continuous assessment of customer, offering new and innovative solutions not only during the normal times but also during the exceptional circumstances".

For example, Danske Bank reports that it has already accelerated its digital innovation pace in 2019 due to both increasing customer expectations and the launch of open banking. In 2018, the bank has seen further adoption of the digital channels, with more than four million digital logins per month and a rise of the number of digital transactions year-on-year by 35% (Danske Bank, 2019). Similarly, Nordea employs digital innovation to deliver products and services that go beyond traditional banking in the light of rapidly changing customer behaviors and demand patterns (Nordea Bank, 2019).

4.2. Role and relevance FinTech in the Finnish banking sector

Most of the respondents emphasize the need to use AI in mobile applications to improve customers' daily banking experience and robots to enhance the efficiency of customer services. *R2* underlines the successful usage of robo-advising tools being used by banks. Similarly, *R1* highlights the increasing application of the same in wealth management and insurance services.

R2: "What is also important is mobile payments. And I think most banks actually have a clear strategy to apply AI in the case of mobile payments. It is something like mobile is the new bank branch. This is a very important development, though the speed of that process is relatively slow".

Indeed, some of the banks have already been integrating FinTech into insurance services and this feature has become more profound ever since banks increased their cooperation with the international insurance companies (Danske Bank, 2019). Similarly, Nordea has a digital strategy, which has resulted in a significant number of new digital offerings to their customers. From 2016 to 2018 Nordea has invested more than 200 million euros in digital solutions, as their customers are expecting smart tools and easy digital ways of handling their everyday banking. Nordea has expanded its digital payment offering by adding Google Pay, a mobile payment solution for Android phones. Furthermore, Nordea strives to improve customer experience through different initiatives including a simplification project to enable end-to-end digital solutions for customers and future development by integrating over 400 systems into one core payment platform, a customer and counterparty master solution, a common data warehouse (Nordea Bank, 2019).

R5 underlines the scope of FinTech application in payment and payment-related services in retail and corporate sectors including financial planning services and payment services to retail clients and PSD2, use the access to clients' accounts to connect business administration and accounting activities to FinTech start-ups.

R5: "And, I would say the payments and related services are the most important ones and the most extensive at the moment. And there you can see two true fields of activities: the one in the retail sector, where you have services provided like financial planning services and payment services provided to retail clients. And then, of course, the corporate sector. It has a lot of potentials. So, there you can use the opportunities provided by PSD2, where the incumbent banks should provide interfaces and allow other service providers to access clients' accounts if clients allowed them to do that. And corporate clients could use that extensively since they have these business administration and accounting activities and connecting those with payment services is where we have huge opportunities. And several start-ups providing services in that segment as well".

Danske Bank has launched the financial platform *District*, which is created for its corporate clients meant to enable customers to handle their day-to-day finances and financial decision-making (Danske Bank, 2019). Similarly, Nordea has also initiated various similar services for its corporate clients. Nordea has been bringing easy banking

services from the bank and partners to corporate clients through a mix of physical and digital channels. The bank provides transaction banking through trade finance, cash management, mobile & e-commerce & co-innovation, and driving open banking, and blockchain/DLT initiatives across all platforms in the bank (Nordea Bank, 2019).

R1: "But, of course, in the internal services we are adopting more of these robots to cut these unnecessary routes in the internal processes, like, to make everything quicker in the time to answer the consumers regarding various services".

In general, banks are moving towards automation of all processes in the financial sector. To support delivering customer-centric products and services Nordea has established group-wide unified architecture services. This ensures optimal use of technology, and that the values of data strategy, security, risk and compliance, and other functions are efficiently realized and, therefore, allowing faster and better decision making (Nordea Bank, 2019).

There has been a significant increase in collaboration between banks and FinTech start-ups. For instance, Danske Bank has launched a dedicated FinTech co-creation space, the Catalyst Belfast FinTech Hub. To complement this, *thehub.io*, an online portal to help the start-up businesses to connect with investors, peers, and potential recruits across Europe, has been established. These collaborations aim to provide technical, advisory services, market access, and financial resources to FinTech start-ups. The Hub also provides access to Danske Bank Growth, a network of advisors specializing in start-ups. There are more than 3,000 registered companies in Finland, Sweden and Norway registered with the Hub (Danske Bank, 2019).

4.3. The impact of FinTech on the performance of Finnish banks

FinTech has the capability to influence the performance of banks that further influences various stakeholders of banks in multiple ways.

Customers

FinTech can influence the relationship of customers with their banks. The respondents' score ranges between three to five to the question of FinTech impact on customer experience on the scale from zero to five (zero implies no impact and five implies the highest impact). Three respondents assign the short-term, and long-term impact of FinTech on customers at three and five, respectively. This finding implies that the changes regarding customers' experiences have not stopped in the short term and the commercial banking industry is expected to undergo even greater transformations in the future.

R2: "And the user experience has transformed in recent years and will transform also in the future…".

The first impact of FinTech on banks' customers is the simplification and acceleration of financial services. Customers are also feeling a sense of *self-reliance* since they do most of the operations by themselves. Moreover, due to mobile and online banking, the need to visit the physical bank's office is significantly eliminated. Additionally, nowadays customers can access their bank at any time and thus keep track of their everyday finances effectively.

R1: "I think from the customers' point of view it will be shown as that the services and to use our service at some products will be easier and faster since everything is going more and more online and via apps, so the customers can feel that they can do everything by themselves. In the current COVID-19 situation, the need to visit the bank branches has further declined and FinTech has been playing an important role in this respect".

R2: "The first one is that it has huge potential, so the customer experience will change. It is digital, it is making financial services much more effective from the customer point of view since you don't have to go to the branch office to take care of your financial services. You can access your finance… your accounts and your bank through your mobile phone or online whenever you want to. So, it is a 24/7 banking service at your use… whenever you are doing any transaction, the financial services can be present there immediately. That is very good for all kinds… Let's say, all kinds of activities. When you do your grocery shopping, to the other end where you are buying a house, for instance. You have all the financial services present there. That's a huge change. And that's very positive".

Handelsbanken has already experienced a positive impact of FinTech on customers. The digital advisory tool of Handelsbanken has facilitated a significant increase in the mutual fund savings and this increase illustrates how the bank invests in technology to improve efficiency, creating time for the bank to provide better customer service and do more business. Handelsbanken is continuing to enhance this tool, preparing to launch it in other markets including FinTech applications to harnessing AI to review financial advice and digitalizing the mortgage loan process (Handelsbanken, 2019).

Investors

The respondents evaluated the impact of FinTech on the investors to be very considerable. Three respondents assign the score of four out of five, while the other three assign the score of three. FinTech is an important tool to increase the stability and profitability of firms, which is in accordance with the utility function of investors.

R4: "I think, of course, for them, it is, in my opinion, it is their priority also that company remain financially viable so that more companies keep coming. The traditional banks have to increase their financial competitiveness. And, of course, it is the investors' priority to invest their money in the companies that will survive in the competition, meet financial benchmarks, and face the unexpected events like COVID-19, successfully".

R3: "The traditional business has changed totally because the whole nature of the business and money pouring in the company has changed. The old business does not really exist... the margin business does not really exist anymore. But, I think investors might be interested in the possibilities that FinTech is creating for the business because I have seen some estimations that actually it would be possible for the banking sector to earn substantial revenue by next year if they were able to adapt their strategies and take advantage of all the new FinTech developments".

Furthermore, it appears from the replies of the above respondents that automation has enhanced banks' profitability, and owing to their

enhanced financial resources the banks experience a lower risk of bankruptcy. FinTech has created a new business ecosystem in which banks have the potential to cut their costs, enhance their revenue thanks to new business opportunities, and manage their risks more efficiently than before. Overall, FinTech in the Finnish banks has created a highly favorable atmosphere for investors.

Operations

The respondents unanimously assigned the highest value to the impact of FinTech on the banks' operations on a scale from zero to five. FinTech has revolutionized the banks' operations in several ways.

R1: "Well, of course, it changes from the traditional banks' operations in a huge matter if we look in time back like 10 years, 20 years, because, like I mentioned before that maybe their traditional offices, there is no use for them anymore, or maybe a couple of offices are needed, but because everything is changing more and more to the online, I think that the operations will have to shift their main point to this FinTech and everything. And the traditional way of working will have to have some changes also like in the internal operations and what is seen as the customer service".

R2: " …when the automation will continue and like ICT-based processes in the future and it will imply that we are getting rid of the physical world thinking when it comes to processing banking services... I think there we will see huge changes if we can think differently. The process is how our clients will be served in the future and that impact will be huge, especially due to the current COVID-19 situation".

Nonetheless, contrary to the above finding, some banks, such as Handelsbanken, want to continue with their personal contact with their customers despite the increasing digitalization of the banking services (Handelsbanken, 2019). To sum up the respondents' views, it can be stated that the ever-rising pace of digitalization includes increasing automation of payments, especially cross-border payments, lending services through AI, and cloud-based data.

Competitiveness

All the respondents have assigned a score of five on the scale of 0-5 with respect to the impact of FinTech on banks' competitiveness. More and more enterprises are entering the FinTech industry, which has increased the competition level among FinTech enterprises leading to the enhanced impetus to banks to adopt FinTech services of high quality and at a competitive price. However, it has also been put forward by *R2, R3,* and *R6* that rising competition is expected to benefit only the big banks with respect to automation and digitalization. It is further disclosed by the above respondents that the banking industry is expected to experience layering, implying that some banks, for example, will specialize in customer service and mobile banking, and others will specialize in loan processing and so on. It has been further stated that rising competition can push the FinTech industry towards an oligopolistic market structure and therefore, the larger large technology companies like Facebook, Apple, and Alibaba can emerge as dominant players. The unexpected events, such as the COVID-19 pandemic, has created new business opportunities in the banking sector, however, these opportunities are not going to be capitalized by all the banks evenly. On the one hand, there will be many banking organizations, which will flourish amidst such disruptions; nonetheless, there will be others that will not be able to withstand the new market and business dynamics.

R2: "Because of the payment service directive it opened the competition, and now more and more companies are coming to this field, so the traditional banks need to keep up, it's like one of the main things, because, as you said, the customers' behavior has changed so much that you have to keep up with the changing behaviors".

R6: "Basically, if you are in the banking sector, it is very hard to get new clients unless you get them from somebody else. And if you look at banks' strategies, different banks have different strategies, but they are more or less the same. If you compare traditional banks, there might be some differences between those that are ahead in FinTech and those that are a little bit behind... But they must change their strategies. I think the competitors come from outside the banking sector and this sector must start collaborating among themselves to face competition because the competitors come from somewhere else. They come from these payment branches of companies and they may even come from companies who have access to customer data like Amazon or Google or some of these huge companies who own a tremendous amount of customer data. Events such as COVID-19 can add new dimensions to the competitiveness of the financial institutions".

Nordea strives to retain its competitive advantage through the business partner concept, digital innovation, utilization, and integration of existing solutions. The bank continuously improves existing solutions as well as continuously innovate new processes and products to stay on top in the market. Nordea has identified six capabilities to continue to hold the top position in the Finnish banking sector: customer experience, analytics, IT management, partnerships, risk management, and people management. The bank believes that these capabilities will support its strategic business priorities and ensure that the bank will stay competitive in the future too (Nordea Bank, 2019).

5. CONCLUSION

The purpose of this study has been to study the following research objectives-first, to study the role and relevance of FinTech in the commercial banking sector in Finland; and second, to study the changing dynamics of stakeholders of the banking industry in the light of FinTech. The above objectives have also been studied in the light of the COVID-19 pandemic. The primary data has been collected through semi-structured interviews.

The study shows that FinTech has an impact on all the main stakeholders and activities in the bank. More impact of FinTech has been on the following aspects of the banking sector: customers, investors, operations, competitiveness, and future growth. The respondents' opinions and data indicate that the FinTech's impact on banks' strategy, risk management, operations, and investors.

FinTech adoption has been contributed by the growth in the IT sector in general and innovations in the field of financing including crowdsourcing, and peer-to-peer financing has also

been considered to be the triggers of change in the banking sector. Nonetheless, unpredictable factors, such as the ongoing COVID-19, can influence future innovation as well as the adoption of FinTech.

Without any doubt, changing customers' demands and behaviors have also facilitated FinTech adoption. Banks have recognized these changes and they are trying to integrate financial services to serve their customers so that these services are not only delivered efficiently but also carry the element of resilience and adaptability without undermining the confidence of the users of banking services. Indeed, some of the banks have already been integrating FinTech into insurance services and this feature has become more profound ever since banks increased their cooperation with the international insurance companies. This factor is even more relevant amidst the current COVID-19 situation. Similarly, there has been a significant increase in collaboration between banks and FinTech start-ups. The premise of the collaboration between banks and FinTech start-ups is very interesting since the latter plays an instrumental role in developing FinTech processes and products that the former can implement and offer to their customers; on the other hand, the former provides much needed financial resources needed to expand the business activities of the latter.

However, the process of FinTech is not free from limitations. Although, FinTech is growing very fast and this growth is even irreversible, nonetheless, critics argue that the benefits of FinTech may not be capitalized evenly by all the financial institutions and other stakeholders and resultantly financial sector can be dominated by a few players, who may not be even having well-established and proven track record in the financial sector. Therefore, a potential limitation associated with the ongoing FinTech growth process is the emergence of oligopolistic trends in the financial markets. Furthermore, critics fear that non-banking players can dominate the financial sector, and this situation may lead to severe regulatory and business crises. Another limitation is based on the argument that FinTech revolution can experience investors' scepticism due to risk and uncertainties associated with the innovations and their commercial successes. Similarly, the unpredictable factors, such as the ongoing COVID-19, can influence the future innovation and adoption of FinTech.

Despite its fast growth, FinTech is a relatively new and under-explored phenomenon, both in the academic and corporate spheres. There is a need to have more empirical research in the field of the financial and non-financial sectors and different institutional settings such as Anglo-Saxon, and emerging economies. Similarly, the findings of the current study can be used to build hypotheses, which can be tested by analyzing firm-level quantitative data with the help of econometric models in future studies.

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