

# The Future Prospect of Mobile Banking Technology Enhancement in Indonesia

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## ABSTRACT

*FinTech is a brand-new industry for the banking and finance sectors. Its fundamental concept is to use information-technology-based solutions to improve efficiency in financial markets and banking transactions for consumers, banks, enterprises, and other ecosystem members. FinTech represents a system-level transformation in the financial services industry that has resulted in the creation of new actors and the convergence of capabilities. Electronic financial transfers via online banking and mobile payment have grown in popularity as the Internet and cell phones have evolved. The shift from traditional cash to digital money has blurred the distinction between data and money. In this paper, we reviewed the literature on fintech between 2018 and 2021. We discussed the state of the fintech ecosystem and mobile banking technology at the moment. The research context for this study is the development of financial technology (FinTech). The fintech industry's great potential and expansion in Indonesia must be backed up by a solid legal framework in the shape of Indonesian law and the law should be able to reach and incorporate all forms of fintech services.*

**Keywords:** Literature Review; Fintech; Mobile Banking; Digital; Indonesia

## INTRODUCTION

The introduction of digital technology into financial services, also known as Fintech, has caused great turmoil throughout the financial sector (Basole, 2018). Fintech is the name for financial technology. It is thought that Citicorp originally used the word Fintech in the 1990s. Although the word "Fintech" only surfaced in the 1990s, the idea behind it dates back to 1865, when French banks began using pantereographs to verify customer signatures in their banking operations (Maiti & Ghosh, 2021).

FinTech is currently in the spotlight of regulatory agencies as it rapidly becomes a global phenomenon, led by innovators and closely followed by scholars. FinTech is generally a collective term for innovative technology-enabled financial services and the business models that accompany these services (Mention, 2019). A diverse, non-linear, dynamic, and complex network of agents that interact inside the Fintech ecosystem (FE) offers end users a wide range of financial goods and services (Muthukannan et. al., 2020). Fintech is creating a new paradigm where information technology drives innovation in the financial industry (Lee & Shin, 2017).

Despite strict controls and regulations on the banking industry, technological development is revolutionizing the banking industry. Therefore, in the last decade, banks have begun to move in this direction by investing in financial technology (Ünsal et. al., 2020). The perceived lack of efficiency in the financial services industry has spurred many Fintech startups, and their efforts have generally focused on mediation and automation (Mamonov, 2021).

This rapid technological change has evolved into the Industry 4.0 process (Söylemez, 1970). FinTech lending has grown rapidly in many countries in recent years and is becoming a promising business model for the future as it represents disruptive innovation for today’s financial and banking markets (Arkanuddin et. al., 2021). The economic quarter is one of the digitalization key drivers, at the same time as the economic technology atmosphere acts as an indispensable device in making sure sustainable monetary development .

The Organization of Southeast Asian States’ financial services sector is changing quickly due to the ongoing pace of technology-driven innovation (ASEAN) (Soriano et. al., 2021). New technologies for sending money online offer new opportunities for both businesses and governments (Palmié et.al., 2019). Fintech has undoubtedly democratized financial services and allowed non-traditional companies to enter this space (Sharina & Intan, 2021). Technological advances and digital transformation represent a paradigm shift in the financial industry (Abad-Segura et.al., 2020). The development of digital transformation has clearly triggered the emergence of the FinTech (financial technology) initiative, which is recognized as part of the most important innovation in the financial industry (Suryono et. al., 2020).

In fact, the rise of FinTech has inevitably changed technology, consumer behavior, the role of the ecosystem, and even the industry and the regulations themselves (Gozman et. al., 2018; Wonglimpiyarat, 2017). As Fama (1980) explains, Banks are intermediaries. But the Internet is changing the way financial service providers play their role (Broby, 2018).

The vast majority of Internet users in Southeast Asia are responsible for the development of Fintech companies in FinTech startup areas (Sumarsono et. al., 1970). The promising potential and growth of the Indonesian Fintech industry needs to be supported by a strong legal framework in the form of Indonesian law (Kharisma, 2020). In addition, FinTech’s low awareness caused by the lack of a clear definition leads to other serious potential economic problems (Leong & Sung, 2018).

By altering the conversation, Fintech and mobile banking are assisting in the fight against prejudice in the delivery of financial services. With no barriers in place, Fintech offers more open dialogue and direct communication between financial service providers and their clients. The capacity to make financial transactions, open accounts digitally, and store devices aids in democratizing finance and preventing prejudice. This gives individuals control over their financial future and unquestionably enhances their financial well-being. FinTech promotes the improvement of the economic industry. Specifically, it is going to be simpler to gather and examine information withinside the economic marketplace to lessen records asymmetry (Li & Xu, 2022). BI as a central bank acts as a regulatory agency and 19/12 / PBI / 2017 (“PBI 19/12”) on the implementation of Bank Indonesia Regulation No. Fintech. It aims to synchronize, align and integrate FinTech implementations with other published guidelines such as domestic payment gateways and payment service processing. (Tan et. al., 2019).

FinTech is not a new theory or concept. Rather, it is the stage where new forms of technology continue to foam as they revolutionize the world (Razzaque & Hamdan, 1970). FinTech affects financial stability. It also includes risks to credit, liquidity, concentration, investment, macro-finance and other financial stability, especially those related to professional shadow banking and financial transaction integrity (Doszhan et. al., 2020).

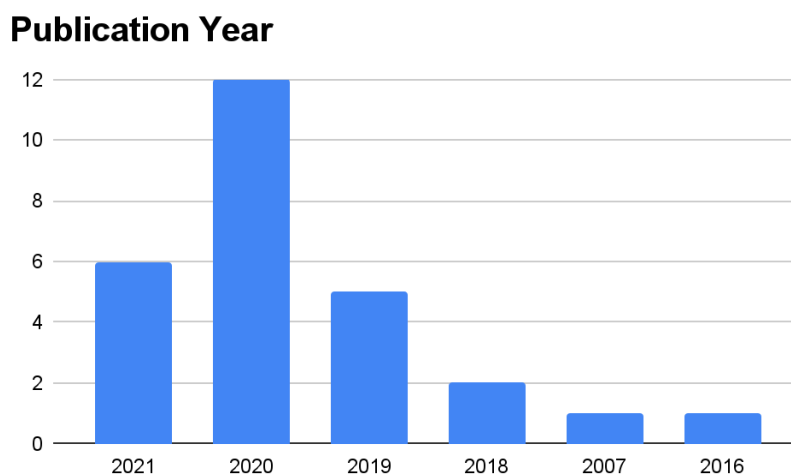


Figure 1. Distribution of Selected Studies over the Years

In this research, 28 primary studies that discussed the Fintech ecosystem are included. To demonstrate how interest in the Fintech ecosystem has evolved over time, the distribution across the years is given. A short overview of the distribution studies over the years is shown in **Figure 1**. More studies have been published since 2018, indicating that more contemporary and relevant studies are included.

## METHODS

We used a systematic literature review process to compile and present the data in this research. In order to respond to previously established research questions, a systematic literature review, or SLR, is a literature review approach that identifies, evaluates, and interprets all data on a study issue (Kitchenham & Charters, 2007). By following several stages and protocols, the SLR method is designed to be carried out systematically to avoid bias and subjective understanding of the researchers. We looked for papers on Fintech and the ecosystem in the Google Scholar database. In our search, we used the terms “Fintech”, “Fintech ecosystem”, and “financial technology ecosystem”. We also used a book to assist us in writing this assignment. We used international resources. Finally, we used 27 papers and one book that were relevant to Fintech and its ecosystem that were published between 2018 and 2021, and some from 2007 and 2016.

**Table I.** Journal Publications and Distribution of Selected Studies

Journal's Name	Count
Business horizons	1
IEEE Internet of Things Journal	1
Information & Management, 57(8), 103385	1
Research-Technology Management, 62(4), 59-63	1
Service Science, 10(4), 379-396	1
International Symposium on Networks, Computers and Communications (ISNCC) (pp. 1-5)	1
AIS eLibrary	1
Handbook of Research on Strategic Fit and Design in Business Ecosystems (pp. 332-353)	1
Studies of Applied Economics, 39(12).	2
SSRN's eLibrary	1
The RegTech Book	1
Technological Forecasting and Social Change, 151, 119779	1
Business and Economic Research, 11(3), 106-131	1
Mathematics, 8(6), 951	2
Cogent Business & Management, 7(1), 1725309	1
Financial Innovation, 7(1), 1-19	3
Financial technology and disruptive innovation in ASEAN (pp. 119-129)	1
International Journal of Innovation, Management and Technology, 9(2), 74-78	1
International Journal of Law and Management	1
1st Aceh Global Conference (AGC 2018) (pp. 364-373)	1
EBSE Technical Report	2
E3S Web of Conferences	1
Big Data & Society	1

According to the selected primary studies, the most important Fintech journals are displayed in **Table I**. Note that the conference proceedings are not included in this graph. We can see that Financial Innovation had 3 references, Studies of Applied Economics, EBSE Technical Report and Mathematics had two references, rather than the other with just one reference.

## RESULT AND DISCUSSION

### Countries Samples

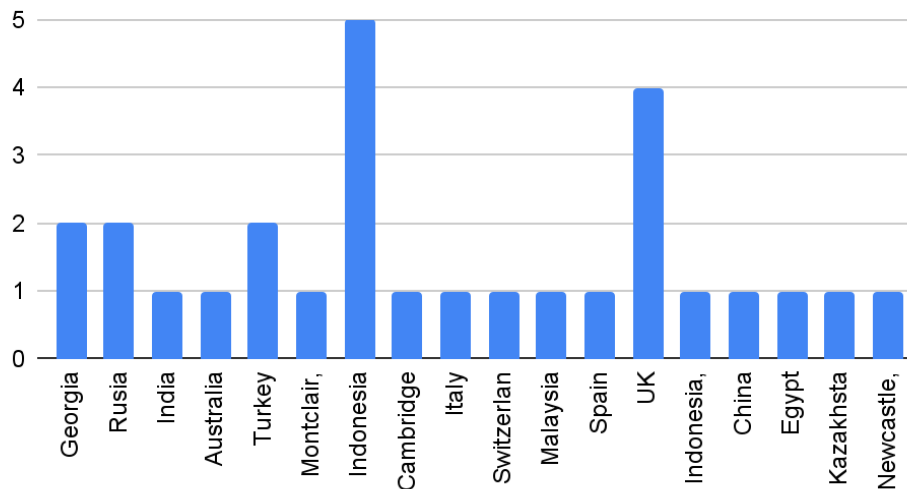


Figure 2. Number of publications of Selected Studies - Countries samples

As seen in **Figure 2**. We focused on Indonesia's papers (5 studies) because our research is mainly in Indonesia. But we also have lots of papers from various countries such as Georgia (2 studies), Turkey (2 studies), UK (4 studies), and so on, in which we will extract the data and create a model of antecedents, decision & manifestation, and outcome that are displayed in **Figure 3**.

### Antecedent

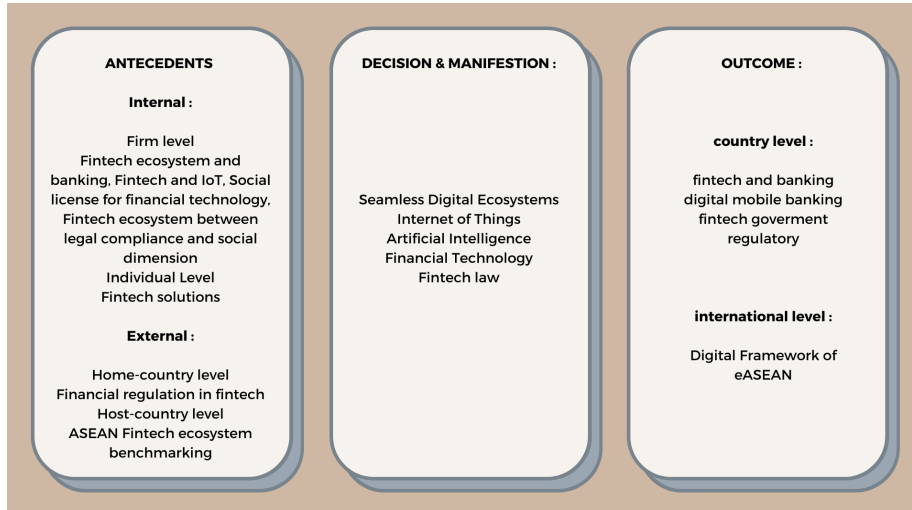


Figure 3. Antecedents, Decision & Manifestation and Outcome

The antecedents discussed will be grouped into internal and external which have the firm-level and individual-level for internal and home and host country-level for external. From the internal antecedents of firm-level, some papers mentioned and discussed the importance of *the Fintech ecosystem and banking* on mobile banking technology. Fintech ecosystem as an instrument of sustainable digital financial infrastructure to ensure the effective provision of services in the financial market, which will increase the availability of financial services and promote competition in the financial sector (Vovchenko et. al., 2019) and needed Fintech API gateway for business needs and technical challenges (Ünsal et. al, 2020). It will also impact the nature of banking as digital banking will be structurally different from the banks as seen to date by implementing a system like open banking (Broby, 2021). Linked to the Fintech ecosystem, there is evidence that talk about the importance of *Fintech ecosystem and IoT* in identifying the issues to sustainable energy, digital payments and security and their effect on mobile banking technology (Maiti & Ghosh, 2021). Also, according to one paper there is an effect on the *social*

*license for financial technology* on securing and maintaining public support for uses of people's data (Aitken et al., 2020).

(Gaudino, 2019) finds that the *Fintech ecosystem between legal compliance and social dimension* should act within the boundaries that are already set forth by the applicable legislative framework and in line with the ethical and social dimension which will help mobile banking technology (Gaudino, 2019).

Walking to individual-level antecedents, one paper talks about how the *Fintech solutions* are related to the payment for their customers that allow customers to experience a seamless e-payment process where it should focus on improving the process of traceability, convenience, efficiency and security which positive for the mobile banking technology (Leong & Sung, 2018).

Going to the external home-country level antecedents, mobile banking technology also needs to have a harmony with the *financial regulation in Fintech* as for the strategy to strengthen consumer protection and to accelerate the growth of the digital economy in Indonesia (Kharisma, 2020). Next is host-country level antecedents, a study talks about the *ASEAN FinTech Ecosystem Benchmarking* examines the distinct Fintech business models that have arised, main business strategies grabbed to market, types of customers served, and the principal technology innovations being implemented (Soriano et. al., 2019).

### **Decisions and Manifestations**

Emerging *seamless digital ecosystems* technologies have the potential to disrupt many well-established businesses, including banking and finance, healthcare, insurance, tourism, and transportation. The research context for this study is the development of *financial technology* (FinTech). Banking, payment, commerce, financial investment, and even money have all been reshaped by FinTech. This FinTech ecosystem of incumbent and entrepreneurial players has benefited from technical breakthroughs in online payments, bitcoin, and artificial intelligence, allowing for the implementation of disruptive technologies. The banking and financial industries now have a brand-new industry called Fintech. Its core idea is to leverage information technology-based solutions to increase the efficiency of financial markets and banking transactions for customers, banks, businesses, and other ecosystem participants. New financial sector developments have resulted in new financial services products that have the potential to transform the way financial services firms and customers move, borrow, and manage their wealth and assets. FinTech is a system-level revolution of the financial services sector that has given rise to new entities and brought capacities closer together. As a result, FinTech presents a useful research framework for studying disruptive innovation ecosystems. FinTech firms work in a variety of industries, disrupting and innovating traditional financial goods and services. While Bitcoin and other cryptocurrencies continue to get a lot of interest from investors and the media, other FinTech fields like robo-advisors, InsurTech, and retail banking have gotten a lot more attention in recent years.

With the development of the Internet and mobile devices, the use of electronic financial transactions through online banking and mobile payment has increased. The shift from traditional cash to digital money has blurred the distinction between data and money. Software programs may now be used to pay for things like taxi fees and restaurant expenses (apps). Consumers now have access to a wider range of payment options than ever before. Emerging Internet-based money transfer technologies provide new options for both enterprises and governments. Businesses may access a bigger number of customers, particularly those in underserved market groups, thanks to new low-cost, open-source technology like blockchain. Businesses might also concentrate on the financial services industry's shortcomings in terms of supplying services that aren't available under the current infrastructure. Digital payments, money transfers, and loans are among them. New technologies also make international digital trade more convenient and generate a new and ever-growing mobile workforce. The emergence of a FinTech ecosystem is a key aspect in spurring the type of technology innovation that allows for more efficient financial markets and systems (Strategy, 2015). A well-developed FinTech ecosystem can also attract more talent and inspire more company ideas, resulting in increased prospects in a number of industries, such as wealth management, electronic payments, trading platforms, insurance, and regulations.

As the smartphone industry has increased, online banking has become more popular (Hussain et al., 2019). An estimated 46% of consumers use only digital channels such as mobile phones, PCs, and tablets for banking services, which represents a huge increase from 27% in 2012. Young people are the primary users of mobile banking with 82% of smartphone owners aged between 18 and 24 years using mobile banking (PwC, 2017). New digital-only banks have emerged as a result of the advancement of new technologies and smartphones, which offer only online services through a variety of digital applications. The new generation of FinTech banks can function without the need for offices or infrastructure, lowering brick-and-mortar costs dramatically. FinTech



digital-only banks can offer reduced rates and fees to clients, as well as innovative services, because they are not tied to physical facilities and can take advantage of emerging technologies. Banking platforms may provide more user-centric services to fulfill the demands of individual clients by leveraging FinTech and technology. Clients of digital-only banks can access financial services at any time of day or night, eliminating the need to visit a branch during business hours (Palmié et.al., 2019).

While online and mobile banking has become more popular among digital customers, they also have higher expectations for online services. They want digital services that are simple to use, with quick approval and smooth processes. Digital-only banks have the advantage of devoting all of their resources to supporting technology in order to improve their clients' digital experiences and satisfy this new demand. Digital-only banks have a lot of room to grow in the coming years. They do, however, confront the task of establishing a consumer base from the ground up. Most customers are still hesitant to transfer funds from traditional banks to new start-up banks. This difficulty has put digital-only institutions at a distinct disadvantage over traditional banks. However, if and when these digital-only banks win public confidence and favor, their position may improve, and their influence on the way financial services are delivered could grow significantly.

*Internet of Things* is one of the considerations as the development of the technology already has a high expectation from the customer. It is known that customers are looking for more convenience and frictionless experience especially with the transaction payments. Due to the change of the customer's taste toward digital payments, today IoT has a lot of demand. There are some of the companies that already do the IoT in Fintech by doing streamline and invisible payments. Those companies are creating some of the service lines called Walmart Scan and Go, Amazon Go, and so on. IoT based payments expand the acceptance network of payments and make it possible to pay it any time and from anywhere (Maiti & Ghosh, 2021).

IoT has been used by the bank since a long time ago, there are lots of benefits using IoT for banking and some benefits are how the bank can know and analyze how many customers use the ATM, with that volume they can decide to increase the quantity of the ATM or reduce it. IoT also helps banks to identify the needs of the customers from customers data and the data also helps to gain customer insights. IoT also can be used to the mobile banking technology in Indonesia as it is effective for the citizens of Indonesia because there are a lot of citizens in Indonesia and there are tons of transactions that are using mobile banking as the platform. With the IoT, mobile banking transactions will be a seamless e-transaction process because it can be from anywhere and used at any time.

*Artificial intelligence* is transforming the ecosystem at this point. The intelligence that machines can exhibit is referred to as artificial intelligence. Artificial intelligence in the finance industry refers to tools that can read and comprehend tasks before acting to complete them. Significant automation and efficiency improvements are made possible by artificial intelligence, which are particularly evident in investing platforms and portfolio management. There are no longer many once-unique and high-value banking services and products. New kinds of customer demand emerge as consumers become more smart and adapt to artificial intelligence.

Indonesia's Fintech industry is ranked 47th in the world. In 2019, the country's digital economy was valued at US\$40 billion, or IDR586 trillion, and e-commerce was valued at US \$20.9 billion, or IDR308 trillion. The growing number of Fintech companies indicates the industry's rapid expansion. The value of Fintech lending transactions demonstrates the industry's enormous potential. Online loan transactions were IDR81.50 trillion in December 2019, an increase of 259.56% from the previous year. Bad debt amounted to IDR13.6 trillion, an increase of 169.48 percent.

The Fintech business, despite its enormous potential, is fraught with severe risks. Threats to the industry include illegal Fintech firms, system flaws, false information, transaction errors, data security problems, the application of Know Your Customer (KYC) principles, exorbitant interest rates, exoneration clauses, and the handling of customer complaints, to name just a few. According to the Investment Alert Task Force, there are 69 unlawful pawnbrokers, 472 illegal investment firms, and 2.018 illegal peer-to-peer lending businesses (Kharisma, 2020).

Unreliable Fintech players do not seem to be deterred from breaking the law by the lack of a clear *Fintech Law*. Illegal Fintech activities, as a result, result in insufficient legal protection for vulnerable parties. If these issues are not promptly and effectively resolved, they may have a negative effect on consumer protection, financial stability, and the expansion of the Fintech sector. Indonesia urgently needs a solid legal framework in the form of Law due to the serious issues surrounding Fintech and the lack of comprehensive regulation for the sector as a whole. Current regulations, such the Bank of Indonesia Regulation (PBI) and the Indonesia Financial Services

Authority Regulation (POJK), primarily regulate the technical aspects of the sector and as a result have little sway in the law. In addition to offering legal protection for the Fintech company, Fintech law functions as legal mitigation for significant participants, preventing a number of potential risks. The progress of the digital economy, consumer protection, and financial stability can all be helped by Fintech laws (Kharisma, 2020).

From a sociological standpoint, the establishment of law means that it is intended to meet the needs of the people and resolve developing challenges in society. Fintech regulation is the solution to dealing with global technological changes and the financial services business. A robust and comprehensive legislative framework is required to support the Fintech industry's rapid expansion and enormous potential in Indonesia. The Law on Fintech will provide legal certainty for the industry as a whole and serve as the basis for consumer, investor, and actor protection laws, as well as filling a legal gap given that Indonesia has the sixteenth largest economy and the fourth largest population in the world after China, the United States, and India (Kharisma, 2020).

The staggering amount of illicit Fintech practices that result in insufficient legal protection demonstrates that the lack of a Fintech Law fosters a high rate of lawbreaking within the industry. Because they are unable to contain criminal provisions, the present regulations in POJK and PBI have a low legal standing.

The Fintech Law will serve as a risk reduction tool in the digital economy ecosystem. Infrastructure, financial literacy, monitoring, consumer protection, permits, and oversight are all necessary components of the ecosystem. It gives the government, relevant authorities, private firms, and individuals legal protection in the conduct and oversight of Fintech, resulting in a more stable financial system and faster growth of the digital economy (Arner et al., 2018). The Fintech Law must also govern the measures required to strengthen involved authorities, particularly in terms of preventing systemic risk and managing a financial crisis in order to achieve a continuous and sustainable national economy.

According to Article 5 of the eASEAN Framework Agreement, Member States must adopt a regulatory and legal framework for digital payment that creates consumer confidence. Framework contracts show the importance of ePayments and the regulatory measures that support them. Helps ensure a consistent approach across the region. At the national level, regulators in most Southeast Asian countries strive to encourage the use of ePayments in both public and private activities. The significant increase in QR payments in the region fully underscores this development (Soriano et. al., 2021).

## **Outcome**

A recent development in the banking and finance industries is the convergence of Fintech and banking. Its core idea is to leverage information technology-based solutions to increase the efficiency of financial markets and banking transactions for customers, banks, businesses, and other ecosystem participants. FinTech is a system-level revolution of the financial services sector that has given rise to new entities and brought capacities closer together. As the Internet and cell phones have developed, electronic financial transactions through online banking and mobile payment have become more and more common. The line separating data and money has become more hazy as traditional cash has given way to digital money.

New digital-only banks have emerged as a result of the advancement of new technologies and smartphones, which offer only online services through a variety of digital applications. The expense of brick-and-mortar locations is drastically reduced by the new generation of FinTech institutions, which may operate without the requirement for infrastructure or offices. Due to their independence from physical facilities and ability to utilize cutting-edge technologies, FinTech digital-only banks are able to provide customers with lower rates and fees as well as cutting-edge services. By utilizing FinTech and technology, banking platforms may offer more user-centric services to satisfy the needs of specific clientele. Customers of digital-only banks don't need to visit a branch during business hours because they can get financial services at any time of day or night (Palmié et.al., 2019) .

The benefit of digital-only banks is that they can devote all of their resources to supporting technology, enhancing the digital experiences of their clients and meeting this new demand. In the upcoming years, digital-only banks have a lot of room to expand. Artificial intelligence and the internet of things are terms used to describe systems that can read and comprehend tasks before acting to do them. The Internet of things gives customers timely insights and personalized experiences, and it can expand the range of services beyond banking from digital mobile banking by offering financial incentives for non-banking activities like staying in shape by running for goals that have already been established. Doing this will strengthen the relationship between customers and banks. Significant automation and efficiency improvements are made possible by artificial intelligence, which are particularly evident in investing platforms and portfolio management.

Article 5 of the eASEAN Framework Agreement, which is the digital *framework of eASEAN*, states that Indonesia's growing Fintech sector needs a strong legal foundation in the form of Indonesian legislation, where Indonesia should adopt a regulatory and legal framework for digital payment that includes mobile banking framework. Indonesia is still working on passing a Fintech-specific law. Only the technical aspects of the business are governed by the Bank of Indonesia Regulations (PBI) and the Indonesia Financial Services Authority Regulations (POJK), which limits their legal authority. Due to their limited regulatory power, neither the Bank of Indonesia (BI) nor the Indonesia Financial Services Jurisdiction (OJK) may add punitive clauses in their regulations. Consumer protection laws are therefore ineffective. 2,018 instances of illegal peer-to-peer lending, 472 instances of illegal investment companies, and 69 instances of illegal pawnbrokers were uncovered by the Investment Alert Task Force. The total amount of online loan transactions in December 2019 was IDR81.50 trillion, representing a 259.56% increase over the previous year. Meanwhile, bad debt totaled IDR13.6 trillion, a rise of 169.48 percent. These factors demonstrate how critical Fintech legislation is in Indonesia.

Indonesia's *Fintech Government* requires a legal framework that establishes cooperation amongst essential entities in order to prevent and manage crises resulting from liquidity and solvability difficulties that Fintech companies frequently face. In conclusion, the formation of Fintech Law in Indonesia is supported by a strong social foundation. The establishment of a Fintech Law is a step in the right direction in responding to the development of the digital economy, which necessitates a comprehensive legal framework as well as strategies for consumer protection, the prevention of illegal practices, and the mitigation of systemic risk in the digital financial services industry.

The *regulatory* framework outlined in the Law of Fintech should aim to build and preserve financial system stability, consumer protection, and digital economy acceleration. The law should be able to reach and incorporate all forms of Fintech services, such as peer-to-peer lending, digital payments, e-money, equity crowdfunding, market aggregators, and other Fintech services available in Indonesia.

## CONCLUSION

In this paper, Between 2018 and 2021, we reviewed Fintech-related publications. We discussed the state of the Fintech ecosystem and mobile banking technology at the moment. The research context for this study is the development of financial technology (FinTech). Banking, payment, commerce, financial investment, and even money have all been reshaped by FinTech. The ecosystem of the digital economy will benefit from the risk-reduction capabilities of the Fintech Legislation. Infrastructure, financial literacy, monitoring, consumer protection, permits, and oversight are all necessary components of the ecosystem. It gives the government, relevant authorities, private firms, and individuals legal protection in the conduct and oversight of Fintech, resulting in a more stable financial system and faster growth of the digital economy. The enormous potential of the Fintech sector in Indonesia must be supported by a strong legal framework in the form of Indonesian law, and the legislation must be able to encompass all varieties of Fintech services.

For the purpose of establishing The Future Prospect of Mobile Banking Technology Improvement in Indonesia, research has been conducted, further research is still needed, both in terms of development and depth. As a result, the recommendations for more research are as follows: its scope is still limited to the depth of Fintech and how it benefits the development of Indonesian banks. Therefore, research is still open by taking samples from companies/banks that have used and developed Fintech in their business processes. Further research needs to be done to find out what kind of framework is needed for the problems faced in implementing Fintech into the company's business processes.



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