



Opportunities and Challenges of Fintech (Financial Technology) Development in Indonesia in the Era of Economic Digitalization

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Advances in information and communication technology have opened up significant opportunities while also presenting new challenges across various sectors, including the financial technology (fintech) industry, which is rapidly growing in Indonesia. This growth offers substantial potential for the future development of fintech. Despite its rapid expansion, the industry still faces several challenges, such as technological limitations, societal conditions, and coordination with relevant stakeholders. This study aims to identify the opportunities and challenges within the fintech industry and formulate strategies to address them. Using a literature study method, library data is analyzed and linked with research findings. The results indicate that fintech provides opportunities for communities to develop businesses, offers convenience and innovation, and reduces the risk of fraud. Furthermore, society is increasingly recognizing the significant potential of fintech in supporting the growth of MSMEs in the future.

Keywords: Financial Technology, Economic Digitalization, Opportunities and Challenges

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Introduction

The era of economic digitalization has brought about major transformations in many aspects of life, particularly in the financial sector. One of the most notable innovations in this transformation is the emergence of financial technology (fintech), which offers technology-based financial solutions to facilitate transactions, enhance financial inclusion, and drive economic growth.(Alwi dkk., 2024) In Indonesia, the development of fintech demonstrates tremendous potential, supported by a large population, increasingly widespread internet access, and growing technology adoption. This is reflected in the emergence of numerous startups and companies in the fintech sector, such as Kredivo, Gopay, OVO, Modalku, Cek Aja, and others. These startups typically operate businesses in the fintech sector by leveraging modern software technology, the internet, communication, and computing.(Andriariza & Agustina, 2020)

Fintech is an innovation in financial services aimed at reducing the use of physical money. In other words, the presence of fintech enables the transformation of currency into a more efficient digital form. The term *fintech* refers to the application of technology to provide solutions within the financial sector (Aprianti & Nurfadilah, 2019). Moreover, fintech is described as a dynamic field that connects the financial services industry with the technology sector, where technology-driven startups introduce innovations in financial products and services that were once exclusively offered by conventional financial institutions.

Fintech can be defined as the implementation and utilization of technology to improve the quality of services in the banking and financial sectors. The fintech industry has characteristics that differ from traditional banking. The main difference between the two lies in the driving factors of the industry. In traditional banking, the industry's development is driven by the banking institutions themselves. Conversely, the fintech industry is currently evolving based on the needs of customers or the market within the industry.(Andriariza & Agustina, 2020)

The emergence of fintech has created significant disruption in the financial industry, particularly in the banking sector. The adoption of digital technology has enabled fintech to offer financial services that are more personalized, faster, and more affordable. As a result, competition in this sector has become increasingly intense, forcing traditional financial institutions to adapt quickly or be left behind. This shift reflects a fundamental change in consumer behavior, as they seek more modern financial solutions that align with their lifestyles.(Romadhon & Fitri, 2020)

Compared to traditional banking, fintech is more responsive to the needs of modern society. People today seek financial services that are online, convenient, and equitable. Fintech, with its greater flexibility and transparency, has successfully attracted the interest of many consumers.

Based on AFTECH data from 2020, the fintech ecosystem in Indonesia has recorded significant growth with a continuously increasing number of members.(Muzdalifa dkk., 2018) The digital payment sector, with innovations such as e-money, has become one of the most promising segments. This large market potential indicates vast business opportunities for players in the fintech industry.

However, the development of fintech in Indonesia also faces several challenges. Incomplete regulations, cybersecurity risks, and low financial literacy among the public are issues that need to be addressed. Additionally, competition with traditional financial institutions and the demand to continuously innovate to meet market needs are significant factors affecting the sustainability of fintech in Indonesia.

Thus, a comprehensive strategy is needed to optimize opportunities while addressing challenges in the development of fintech in Indonesia. Collaboration between the government, regulators, industry players, and the public is the key to driving sustainable, secure, and inclusive fintech growth in this era of economic digitalization.

The rapid development of the fintech industry in Indonesia is not without its challenges. Given the dynamic nature of technology, this study aims to identify critical issues in fintech development and formulate relevant policy recommendations to support the sustainable growth of the industry.

Literature Review

The development of financial technology (*fintech*) in Indonesia is closely linked to the rapid advancement of information and communication technology, which has driven the transformation toward a digital economy. Fintech is defined as the use of technology to improve the quality of banking and financial services, while also introducing product innovations that were previously provided only by traditional financial institutions (Andriariza & Agustina, 2020). This growth is supported by the increasingly widespread internet penetration, rapid technology adoption, and a large population (Alwi et al., 2024).

Fintech plays an important role in promoting financial inclusion, especially for communities that remain unbanked by conventional banking services. Through services such as digital payments, peer-to-peer lending, online investments, and financial planning, fintech expands access to financial services even in remote areas (Muzdalifa et al., 2018; Hiyanti et al., 2020). These innovations enhance efficiency in financial business processes, accelerate transactions, and offer more personalized services (Romadhon & Fitri, 2020).

However, the development of fintech in Indonesia also faces various challenges. The digital infrastructure gap in 3T (*frontier, outermost, and underdeveloped*) regions is a significant barrier to the equitable distribution of services (Chrismastianto, 2017, as cited in Andriariza & Agustina, 2020). In addition, the low level of digital financial literacy among the public hinders the optimal use of fintech services (Purwanto et al., 2022). From a regulatory perspective, the Financial Services Authority (OJK) has adopted principle-based regulations to balance innovation with consumer protection (Rahadiyan, 2022; Wibowo, 2016).

Data security and consumer protection are critical issues in the fintech ecosystem. Challenges such as user identity verification through *electronic Know Your Customer* (e-KYC) still require improvements, including collaboration with agencies such as Dukcapil to minimize verification errors (Sitompul, 2018; Ulya, 2022). Moreover, the existence of illegal fintechs that are not registered with OJK poses risks of fraud and misuse of digital services (Subagyo, 2019).

Collaboration between regulators, industry players, and the public is essential to achieving inclusive, secure, and sustainable fintech development. With the right policies, improved financial literacy, and strengthened digital infrastructure, fintech has the potential to become a major driver of Indonesia's digital economic transformation (Ningsih, 2020; Harahap et al., 2017).

Research Methods

This study utilizes a literature review to explore the challenges in developing financial technology in Indonesia during the digitalization era. The study's methodology focuses on a literature review of the rapid development of financial technology currently taking place in Indonesia during the digitalization era.

Findings from previous research indicate the importance of developing financial technology platforms tailored to regional or local scales. This can be achieved through collaboration among various stakeholders to develop pilot projects for financial technology in specific areas, thereby highlighting local wisdom values. In this regard, the Ministry of Communication and Information Technology (Kominfo) can play a role as a facilitator for financial technology innovations that align with regional economic development. These innovations should not only be based on artificial intelligence but also strengthened by the application of contextual intelligence, which takes into account the unique diversity of Indonesian society. (Andriariza & Agustina, 2020)

Furthermore, from the previous research, it was also explained that the parties in the Fintech business consist of Fintech business operators or producers and Fintech users or consumers. The relationship between the parties in the Fintech business occurs because of an electronic agreement, which is an agreement made with electronic media. An electronic agreement contains the rights and obligations of the parties in the Fintech business. Fintech operators are responsible for safeguarding the confidentiality,

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integrity, and availability of personal, transactional, and financial data they handle, starting from the moment the data is collected until it is ultimately deleted.(Sari, 2018)

In other literature, it was also conveyed that the form of regulation that can be applied in Indonesia to answer the challenges of fintech development and decentralization of the financial system is the drafting of fintech laws. Fintech laws should be drafted using a principles-based approach. The goal is that this law can follow and predict the development of Fintech, ensure legal certainty and protection, and ensure the sustainability of innovation and economic growth. This principle-based regulation as implemented in the UK is in line with the regulatory reform of the financial services sector. At a philosophical level, the drafting of fintech laws is expected to realize three legal goals, namely justice, usefulness, and legal certainty.(Rahadiyan, 2022)

Furthermore, previous studies have indicated that financial management practices can now be supported through the use of fintech. For instance, microfinancing-based fintech can be utilized to secure funds for business development and income growth. To obtain loans, fintech services offering peer-to-peer (P2P) lending can be employed, while fintech platforms specializing in market comparison and investment can be used for financial planning and investment purposes.(Purwanto dkk., 2022)

Other literature also mentions that regulations regarding financial technology (fintech) are currently being reviewed by the Financial Services Authority (OJK). OJK ensures that it will oversee fintech businesses with a set of strict regulations issued at the end of 2016. One aspect that will be clearly regulated is the determination of the minimum capital requirements for the fintech industry. One of the reasons for establishing such regulations is that the regulator needs to formulate strategic policies to mitigate fintech-related risks and provide protection to the public.(Wibowo, 2016)

In this context, this literature study provides a comprehensive overview of the rapid development of fintech in Indonesia. By understanding the challenges and opportunities that exist, this study aims to identify ways in which fintech can be applied more effectively to improve operational efficiency in the fintech industry.

Results and Discussion

A. Fintech Development Opportunities in Indonesia

Referring to several sources in the form of online daily news documents about fintech, previous research journals on fintech in Indonesia can be concluded that there are three opportunities for fintech development in Indonesia.

Opportunity (1) The Financial Services Authority (OJK) offers fintech operators the chance to formally register their businesses with the agency. Opportunity to (2) Ease of technology for investment and donation activities. Opportunity (3) The creation of opportunities for the introduction of technological advancements into Indonesia.(Hiyanti dkk., 2020)

The first opportunity discusses By providing official registration opportunities, OJK encourages increasing the credibility of the fintech industry. This is expected to provide a sense of security for the public in choosing and using fintech services.

The second opportunity, namely technological innovation, has opened up new opportunities in investment and donations. However, the digital divide in rural areas is a major obstacle to fintech adoption. The low level of public education related to fintech is a significant challenge. To overcome this, synergy is needed between fintech actors, the government, and OJK in organizing intensive education programs, such as workshops and direct visits to villages.

Third, with such a rapid pace of technological development, the fintech industry is faced with the risk of disruption by new innovations. To maintain competitiveness, fintech players need to consistently present added value and innovations that are relevant to the changing needs of the market.(Hiyanti dkk., 2020)

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The development of fintech in Indonesia has huge opportunities in line with the rapid development of digital technology and economic transformation that occurs in various sectors. With a population of more than 270 million people, Indonesia is a potential market for technology-based financial service innovation. This potential is further strengthened by the increasing penetration of the internet and the use of smartphones that allow people, even in remote areas, to access financial services more easily and quickly.

Fintech offers a variety of solutions that can answer the challenges of financial inclusion in Indonesia. Until now, there are still most people who do not have access to conventional banking services. With fintech, people can enjoy financial services, such as digital payments, online loans, investments, and financial planning, without having to depend on the physical existence of banking institutions.(Hiyanti dkk., 2020) This not only expands the reach of financial services but also supports government programs in increasing national financial inclusion.

In addition, the fintech sector in Indonesia continues to grow with various innovations that meet the needs of modern society. The presence of platforms such as Gopay, OVO, Kredivo, and Modalku shows the success of fintech in creating financial solutions that are relevant to daily needs. Innovations such as QR Code-based payment systems, peer-to-peer lending (P2P lending), and digital investments are proof that fintech is able to provide efficient, transparent, and flexible services.

The support of the government and regulators, such as the Financial Services Authority (OJK) and Bank Indonesia, is also an important factor in opening up opportunities for fintech development in Indonesia. Policies that encourage innovation, such as regulations related to digital payment systems and P2P lending, create an ecosystem that is conducive to the growth of this industry.(Ningsih, 2020) In addition, partnerships between fintech players and traditional financial institutions show the potential for collaboration that can provide benefits for both parties, as well as accelerate the adoption of financial technology in society.

However, to make the most of this opportunity, there are a few things to keep in mind. Regulations that support innovation but still protect consumers, increasing financial and digital literacy, and strengthening technological infrastructure are key elements. In addition, industry players also need to continue to innovate in order to be able to compete in an increasingly dynamic and competitive market.

With the right strategy and collaboration between the government, industry players, and the community, fintech has great potential to become the main pillar of digital economic transformation in Indonesia. Not only does it help drive economic growth, but fintech can also create significant social impacts, especially in reducing the gap in access to financial services across different levels of society. This makes fintech a strategic sector to support Indonesia's vision to become one of the largest digital economic powers in Southeast Asia.

B. Challenges of Fintech Development in Indonesia

Industry participants, particularly producers of fintech platforms in the financial sector, will have to overcome obstacles in the process of developing digital technology-based product innovation. At least six obstacles need to be overcome. (1) Fintech platforms enable individuals who are part of the unbanked population to start using financial services. However, there are other segments of the unbanked population that work in microagricultural fields and reside in rural regions that have not been adequately served by fintech and other financial service providers. In order for these community groups to employ their products, fintech operators can design them.(Andriariza & Agustina, 2020)

Challenge (2) Despite the fact that locality is crucial given Indonesia's status as an archipelagic nation with diverse cultures, the fintech platform now in use is still generic and ignores community values. Regarding the security level of the system that the organizer created, challenge (3) still need a lot of work. One of these has to do with the Know Your Customer (KYC) procedure.

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Challenge (4) Every developer or organizer of a fintech application has a unique QR code that is given to retailers. If a merchant partners with multiple fintechs, there may be a large number of QR codes that the merchant must show. Problem (5) In the age of the digital economy, financial services are open to opportunistic misuse that results in criminal activity. Problem (6): A lot of insurance companies still refuse to work with fintech lenders.(Andriariza & Agustina, 2020)

The presence of fintech platforms has provided access to financial services to people who were previously unbanked. Wimboh Santoso, Chairman of the OJK Board of Commissioners, stated that the growth of financial technology in Indonesia is progressing rapidly, extending its reach even to remote regions. Data shows that the number of P2P Lending service customers in Indonesia has experienced significant growth, reaching more than 5 million people in January 2019.

Innovation in digital products within the fintech industry, which is oriented towards customer needs, has brought a significant positive impact. Financial business processes have become more efficient and user-friendly. In addition, the development of fintech also contributes greatly to the growth of the e-commerce sector, empowering MSMEs, and encouraging The emergence of new business entrepreneurs in Indonesia.

Although fintech has succeeded in reaching most unbanked communities, there are still segments of society, especially small farmers in rural areas, who have not been optimally served.(Ningsih, 2020) Therefore, fintech industry players need to continue to innovate and develop products to meet the specific needs of these community groups.

Indonesia's cultural diversity and geographical conditions are a challenge in the development of the fintech industry. Although the existing fintech platforms already have good innovations, they have not fully accommodated local values. Therefore, it is necessary to develop more comprehensive policies to create fintech platforms that are not only oriented to a large scale, but also able to meet the specific needs of the community at the local level.

According to Chrismastianto's (2017) research, the number of Indonesians using financial technology services does not correspond to the country's total number of internet users.(Andriariza & Agustina, 2020) Due to the country's archipelagic location and ongoing restrictions on the fair distribution of internet infrastructure, there are currently very few people in Indonesia using financial technology services. Currently, there is insufficient infrastructure for residents of 3T (Frontier, Outermost, and Remote) locations to access financial technology services (Chrismastianto, 2017).

The more Indonesia's fintech sector grows, the more prospects there are for more digital application-based financial service providers to emerge. Given the growing number of financial products available for both funding financial services and payment instruments, this is undoubtedly a difficulty in and of itself.

The degree of security of the systems developed by the operators is one of the issues that the players in the fintech sector are currently facing. Additionally, there is a clause in financial services implementation known as "know your customer," which requires the offender or application developer to identify their clientele. This is one of the methods used to confirm users' identities so that programmers can validate them.(Ulya, 2022) This KYC procedure is typically conducted in-person in traditional financial services, where the customer fills out forms, ensures that their documents are complete, and conducts analysis to confirm the consumer. Naturally, this KYC procedure must be mediated by electronic media on technology-based fintech platforms, or what is currently known as electronic know your customer (e-KYC). This e-KYC procedure is conducted via the media rather than in person. Typically, clients are requested to submit selfies and documents like e-KTP so that their identities can be verified..

One piece of literature claims that if collaboration is done with the Dukcapil Office about the verification of e-KTP data, the e-KYC process will actually be speedier. There is still a chance of human mistake in the process because the human-based approach of verifying and validating e-KYC data is being utilized today.(Sitompul, 2018)

The technology of QR codes presents another difficulty. Every developer or organizer of a fintech application has a unique QR code that is given to retailers. If a merchant partners with multiple fintechs,

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there may be a large number of QR codes that the merchant must show. Bank Indonesia will standardize QR codes in this respect. in order for transactions via different finance platforms to require only one QR code in the future.(Hanifah dkk., 2021)

Fintech platforms that offer financing financial services will also become more prevalent, in addition to operators of different payment instruments. The OJK discovered that there were roughly 144 illicit fintech platforms in 2019, after the Ministry of Communication and Information shut down 385 of them in 2018. Due to the prevalence of foreign fintechs and the low cost of Chinese fintech technology, there are a lot of illegal fintechs that are not registered with the OJK. This has led to the spread of illicit fintechs all over the place. This demonstrates how the growth of the financial industry, particularly in the area of financing services, in the age of the digital economy creates potential for misuse that result in criminal activity in the digital realm.(Subagiyo, 2019)

Particularly given a number of issues with funding fintech providers, including a lack of information to determine potential borrowers' eligibility and a dearth of public awareness of fintech loans.(Harahap dkk., 2017) This has resulted in a number of complaints about legal issues pertaining to fintech peer-to-peer lending in Indonesia, including the occurrence of a frightening and terror-filled collection process, unclear interest schemes, and rules pertaining to fines and provisions (administrative fees) that are initially opaque, both for fintech that are registered with the OJK and those that are not.

In order to foresee this, financial literacy in the age of the digital economy must also be prioritized and made a public concern. Furthermore, because Fintech Lending applies the prudential principle, many insurance parties still do not want to work with it. This is in contrast to bank funding, which actually requires insurance for its clients.

Conclusions and Practical Implication

Conclusion

The growth of fintech in Indonesia during this era of economic digitalization shows great potential to support economic growth and financial inclusion. This is evident from the growing number of fintech startups, ease of access to financial services, and the potential for technology-based innovation for the community. However, this development also presents significant challenges.

The challenges faced by the development of fintech in Indonesia include people in remote places who still have difficulty accessing fintech, fintech that currently exists is still general, not to mention the values of locality that exist in the community, there needs to be a lot of improvement related regarding the security level of the system developed by the organizers, QR codes that merchants need to display a lot, Financing services in the digital economy era create opportunities for misuse that result in cybercrimes, and finally, many insurance companies remain reluctant to collaborate with fintech lenders.

By overcoming these challenges, fintech in Indonesia has a great opportunity to become a key driver of digital economic transformation, support the growth of MSMEs, and increase financial inclusion at all levels of society.

Practical Implication

The results of this study provide several practical implications for policymakers, regulators, industry players, and the public in supporting the sustainable development of the fintech industry in Indonesia.

1. Policy Regulation and Formulation

Regulators need to design and strengthen regulations that are adaptive to technological advancements while ensuring consumer protection. In addition, strict supervision of illegal fintech operations is necessary to minimize the risks of fraud and misuse of digital financial services.

2. Digital Infrastructure Development

The digital divide in *frontier, outermost, and underdeveloped* (3T) regions must be addressed to ensure equitable access to fintech services. This can be achieved through collaboration between the government and the private sector to expand internet coverage and enhance technological infrastructure.

3. Enhancing Financial Literacy

Public digital financial literacy should be improved through various educational programs, training, and campaigns that encourage understanding of fintech services, risk management, and sound financial decision-making.

4. Strengthening Data Security and e-KYC Processes

Fintech providers should develop more reliable cybersecurity systems and improve *electronic Know Your Customer* (e-KYC) processes to ensure that user identity verification is carried out quickly, accurately, and efficiently.

5. Promoting Collaboration and Innovation

Partnerships between fintech companies and traditional financial institutions should be strengthened to expand service reach and drive product innovation that meets local needs. Integrating local values and approaches relevant to community conditions is also essential to increase fintech adoption across different regions.

By implementing these measures, fintech in Indonesia has the potential to accelerate economic growth, enhance financial inclusion, and build public trust in digital financial services, leading to a sustainable and equitable digital economy.

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