

Banking Digitalization in the Era of Revolution 5.0: Opportunities and Risks for Financial Inclusion

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ABSTRACT

Banking digitalization in the Revolution 5.0 era plays a key role in accelerating financial inclusion by leveraging digital technology to expand access to financial services for previously underserved communities. Technologies such as mobile banking, fintech, and blockchain have enabled faster, cheaper, and more accessible financial transactions, even by those who live in remote areas or do not have access to traditional banking services. However, challenges related to data security, cyber threats, inequality of access to technology, and low digital literacy are the main obstacles in realizing comprehensive financial inclusion. This study aims to examine the opportunities and risks associated with banking digitalization in the Revolution 5.0 era, as well as suggest strategies to overcome these challenges. Collaboration between the public and private sectors is needed to build a more equitable digital infrastructure, increase digital literacy, and develop regulations that protect the security of user data and transactions. With an inclusive and coordinated approach, banking digitalization is expected to create a more efficient, fair, and sustainable financial system, as well as provide broader economic opportunities for all levels of society.

Keywords: : *Banking, digitalization, financial inclusion*

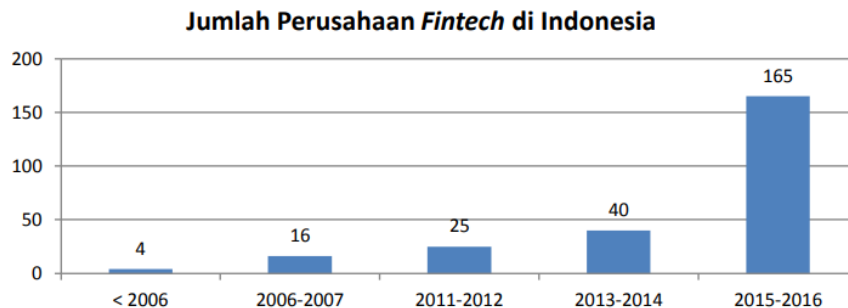
INTRODUCTION

The Revolution 5.0 era introduces profound and comprehensive changes in various sectors, including the financial sector (Ardianto *et al.*, 2024). While the Industrial Revolution 4.0 focuses on automation, digitalization, and connectivity through the internet, the 5.0 Revolution emphasizes more on collaboration between technological sophistication and human values. This approach not only aims to improve efficiency and productivity, but also to create a balance between technology and social well-being (Lubis & Nasution., 2023). In the financial sector, banking digitalization is a tangible manifestation of this transformation, which integrates advanced technologies with social objectives, such as increasing financial inclusion and economic empowerment of the community.

Banking digitalization in the Revolution Era 5.0 has a significant impact on the financial sector with a focus on increasing financial inclusion and community economic empowerment (Alfarizi *et al.*, 2023). Technologies such as mobile banking, digital payment applications, and fintech platforms allow banks to expand access to financial services to people who were previously unreachable by the traditional banking system (Qur'annisa *et al.*, 2024). This encourages increased public participation in the formal financial system, which in turn can improve the economic well-being of individuals and small business groups (Sofiandi *et al.*, 2020). In addition, the emergence of new business models such as digital banks and fintech provides more efficient technology-based financial solutions, changing the dynamics of competition in the banking sector. Digitalization also presents challenges related to the digital divide, where some people have difficulty accessing technology (Sofiandi *et al.*, 2020). Research on the digital divide



is important to ensure that banking technology is accessible to all levels of society, including those living in remote or undereducated areas. The application of advanced technologies such as blockchain and artificial intelligence (AI) in digital banking can increase customer transparency and trust, reduce the risk of abuse, and strengthen the integrity of the banking system (Lestari *et al.*, 2024). Digitalization of banking opens up opportunities to create a more inclusive and sustainable financial system, but still requires attention to existing social challenges.



Based on data from the OJK, fintech companies in Indonesia are divided into several main sectors, namely: financial planning, crowdfunding, lending, aggregators, payments, and other fintech sectors. According to Hadad (2017), the payment sector dominates the fintech ecosystem with a contribution of 42.22%. The loan sector occupies the second position with a proportion of 17.78%, followed by the aggregator sector which contributes 12.59%. Furthermore, the financial planning and crowdfunding sectors each contributed 8.15%, while the other fintech sectors accounted for 11.11% of the total fintech companies in Indonesia. This composition reflects the main focus of fintech in Indonesia on payment solutions, but still opens up opportunities for other sectors to grow.

Based on the figure, it shows the growth of the number of fintech companies in Indonesia over time, with a significant increase in the 2015-2016 period, where the number of companies jumped from 40 to 165. This growth reflects the transformation of the digital financial ecosystem influenced by increasing technology adoption, wide internet penetration, and the need for more inclusive financial services. Prior to this period, fintech development was relatively slow, with only 4 companies before 2006 and a moderate increase to 40 companies in 2013-2014. The surge in 2015-2016 signaled a huge momentum in the fintech industry, driven by technological innovation and the development of supporting regulations. This phenomenon contributes to increased financial inclusion, although it raises new challenges in terms of risk supervision and management.

In the Era of Revolution 5.0, banking digitalization is not only limited to efforts to improve operational efficiency and service speed, but also serves as a tool for social innovation that can overcome major challenges in the economic field, such as inequality of access to financial services (Asmiati *et al.*, 2023). In many countries, especially in underdeveloped or marginalized areas, many individuals do not have access to traditional banking services. This is caused by various factors, ranging from lack of physical infrastructure, limited financial literacy, to high cost factors (Febrianto *et al.*, 2024). However, with digitalization, banking services can now be accessed through mobile devices, which allows individuals in remote areas to open accounts, make transactions, apply for loans, and even invest, without the need to go to a physical bank branch (Luthfiassa'diyah *et al.*, 2023). Digital banking platforms such as mobile banking and e-wallets, as well as the utilization of technologies such as blockchain and artificial intelligence, allow banks to provide more accessible and affordable services. In addition, the use of technology can help reduce operational costs, so that the cost of banking

services can also be lowered, which in turn can increase financial inclusion (Putri *et al.*, 2024).

One of the main aspects of banking digitalization in the Revolution Era 5.0 is the increase in financial inclusion. Financial inclusion is not only about giving access to basic banking services such as savings or loans, but also involves empowering people to be more active in managing their finances (Rifa'i, 2017). For example, with access to more affordable microloans, individuals or small business groups can grow their businesses, while with access to insurance, they can protect themselves from unexpected financial risks (Holle & Mniel, 2023). In addition, technology also allows the creation of financial products that are more in line with the needs of the community (Nazwirman, 2018). For example, a technology-based lending platform (peer-to-peer lending) that allows individuals or small businesses to get loans directly from financiers without going through traditional financial institutions. Thus, access to financing is no longer limited to those who have good collateral or credit history, but is more open to those who were previously unreachable by the conventional banking system.

In addition to increasing financial inclusion, banking digitalization can also improve transparency and trust in the financial system (Gunarso *et al.*, 2024). The use of technology such as blockchain allows for the recording of transactions in a decentralized and immutable manner, thereby reducing the potential for abuse or fraud (Hasan *et al.*, 2024). This technology can eliminate the need for a third party in the transaction process, which is often a source of cost and potential for opacity. That way, customers can have greater confidence in the integrity of the banking system. The use of artificial intelligence (AI) in data analysis allows banks to process customer information faster and more accurately. This not only improves the speed of service, but can also improve accuracy in risk assessment and credit decision-making (Ramdhani *et al.*, 2024). Using more complete and detailed data, banks can offer products that are more suitable for customer profiles, while reducing the risk of loan failure (Hsieh, 2024).

The role of technology brings many advantages, in the Era of Revolution 5.0, it is important to maintain the human element in the interaction between banks and customers. The banking sector is not only tasked with providing financial services, but must also pay attention to social aspects, such as empathy, fairness, and protection for vulnerable customers (Herzog, 2019). Therefore, although automation and artificial intelligence can speed up processes and improve efficiency, personal interaction and empathetic-based services must still be maintained, especially for customers who require special attention (Yoon & Lee, 2021). This can be realized in the form of responsive and solution-oriented customer service, as well as bank policies that are transparent and in favor of the interests of customers, not solely on the achievement of profits. On the other hand, the sustainability and empowerment of banking technology must always be based on the principles of inclusivity and fairness.

Banking digitalization in the Era of Revolution 5.0 will continue to develop in line with technological advances and social changes that occur in society (Ngamal & Perajaka, 2022). In addition to providing wider access to financial services, digitalization will also encourage the creation of new business models in banking, such as digital banks and fintech-based financial services, which will further reduce dependence on conventional banks and open up more opportunities for innovation in the financial system. Technological developments such as artificial intelligence, big data, and blockchain will allow banks to better understand customer behavior and needs, as well as offer more personalized and relevant products (Aidha *et al.*, 2024). In the long term, banking digitalization in the Revolution 5.0 Era will create a more efficient, transparent, and

inclusive financial system, and can contribute greatly to building a more sustainable and equitable economy. Thus, banking digitalization in the 5.0 Revolution Era is not just a technological change, but also a paradigm shift in the way we view the role of the financial sector in society (Basuki & Husein., 2018). The banking sector will increasingly focus on creating social value, empowering people's economies, and reducing socio-economic gaps, as well as creating a more inclusive and equitable financial ecosystem for all levels of society.

Research on the impact of digitalization on the banking sector and financial inclusion still leaves gaps that need to be explored more deeply, especially related to the long-term social and economic impacts of banking digitalization in the 5.0 Revolution Era. Most of the existing studies focus more on technical aspects, such as the adoption of mobile banking or fintech technology, without delving into how these technologies affect the socio-economic well-being of people, especially marginalized groups. The application of technologies such as blockchain and artificial intelligence (AI) in digital banking has also not been sufficiently explored regarding its impact on customer trust and transparency of the banking system. The digital divide that still exists, especially in areas with limited internet access or low digital literacy, has also not received adequate attention (Ferdiansyah & Mariya., 2024). Therefore, further research is needed to explore the socio-economic impact of digitalization, deepen understanding of the application of advanced technology in banking, and develop inclusive strategies that can reach the most marginalized communities.

METHODS

This study uses a qualitative and descriptive approach to analyze the opportunities and risks of banking digitalization in increasing financial inclusion in the Revolution 5.0 era. This approach was chosen in order to gain a deep understanding of the phenomena that occur, taking into account the various technological, social, and economic aspects related to financial inclusion. Data was collected through two main sources, namely literature studies and in-depth interviews. Literature studies include journals, articles, industry reports, and relevant policy documents on banking digitalization and financial inclusion. Meanwhile, interviews were conducted with practitioners and experts in the fields of digital banking, fintech, and public policy, using purposive sampling techniques to select informants who have relevant knowledge or experience. The data obtained from these two sources are then analyzed thematically to identify and group the main themes regarding the opportunities, challenges, and impact of banking digitalization on financial inclusion. The analysis process consists of several stages, namely data categorization, data coding, and data interpretation, which aims to describe how banking digitalization can support financial inclusion and the challenges faced in its implementation. To ensure the validity and reliability of the research results, the source triangulation technique will be used by comparing findings from literature studies and interviews. Conclusions and recommendations based on the results of data analysis will be focused on developing policies that support financial inclusion and digital transaction security, as well as collaboration between the public and private sectors to create an inclusive and sustainable banking ecosystem

RESULTS AND DISCUSSION

Banking digitalization in the era of Revolution 5.0 provides a great opportunity to expand financial inclusion, especially in developing countries (Gabor & Broks., 2020). Technologies such as banking apps, e-wallets, and internet-based services have facilitated people's access to financial services (Nnaomah *et al.*, 2024). The reduction in

operational costs generated by the digitization process enables banking institutions to provide financial products at more affordable prices (Jameaba., 2020). In addition, the application of artificial intelligence (AI) enables personalized services that improve the quality of customer experience. The benefits of digitalization have not been evenly distributed due to the digital divide. Many remote areas still have limited access to internet infrastructure and technological devices, so people in these areas face barriers in accessing digital services. This situation has the potential to worsen financial exclusion for already marginalized groups. Improving access to digital infrastructure through government and private sector investment is urgent for banking digitization to be fully beneficial (Cosma & Rimo., 2023).

Another risk that needs to be anticipated is the threat to data security and privacy. Cyber attacks, theft of personal data, and information leaks pose a serious threat to public trust in digital banking services (Thakur., 2024). The implementation of sophisticated security technologies, such as data encryption and multifactor authentication, needs to be implemented by banking institutions to protect customer data (Tsai & Su., 2021). In addition, the implementation of strict regulations related to personal data protection is an important step in preventing data misuse. The low level of digital financial literacy among the public is also a significant challenge. Many people do not have an adequate understanding of digital financial services, putting them at risk of misuse or becoming victims of fraud. Financial literacy education programs involving the government, financial institutions, and fintech must be systematically designed to ensure that people can utilize digital services safely and effectively. Banking transformation in the era of Revolution 5.0 brings great potential to create a more inclusive and sustainable financial system (Tsindeiani *et al.*, 2022). Harmonious collaboration between the government, regulators, financial institutions, and financial technology companies is key to overcoming these challenges. With a well-planned and sustainable strategy, banking digitalization can be the foundation for fairer and more equitable economic growth across all levels of society.

1. Opportunities for Financial Inclusion Through Banking Digitalization

Digitalization is a key driving force in the transformation of the financial industry, introducing new ways of delivering more inclusive and efficient banking services. Banks and financial institutions are increasingly relying on technology-based platforms to expand their service coverage. By using technology, they can access a variety of financial products and services that were previously difficult for people to reach, including those living in remote areas. Services such as digital payments, money transfers, microloans, and financial management are now readily available through digital devices, which reduces dependence on the physical presence of bank branches and limited operational hours (Bihari, 2011; Baptista & Oliveira, 2016). Digital banking has made a major contribution to financial inclusion by providing wider access for the public. Digital platforms allow users to make transactions anytime and anywhere, which is especially useful for those who live in regions far from access to bank branches or who do not have time to visit physical banks. In this way, digital banking not only overcomes geographical barriers, but also provides convenience and flexibility in personal financial management. These services allow users to carry out financial activities such as bill payments and money transfers instantly and more efficiently (Zhou, 2012).

Digitalization allows innovation in financial products that are more in line with people's needs (Niemand *et al.*, 2021). Microloans, app-based investments, and a variety of other fintech solutions open access for individuals and small businesses to obtain funds that were previously difficult to obtain through traditional banking channels. With the advent of technology, financial institutions can offer products that are more in line with

the characteristics and capabilities of users, such as low-interest loans for low-income people or business capital for small and medium enterprises (Kumar, 2013; Jain, 2019). This supports the economic empowerment of the community which was previously unreachable by the formal financial system. The flexibility provided by digital banking also has a major impact on socio-economic empowerment. People who are underserved by conventional banks can now access financial services that can improve their quality of life. For example, digital payment applications provide easier access for individuals to make transactions without time or distance barriers. This helps solve the problems faced by people in areas that do not have adequate bank branches and financial infrastructure, thus giving them the opportunity to participate in broader economic activities (Zhou, 2012).

The challenge that needs to be faced along with digitalization is the importance of protecting personal data and transaction security. As more transactions and financial data move into the digital world, threats to security are also increasing, such as online fraud and data leaks. Therefore, it is important for regulators and service providers to ensure that policies that protect consumers are strictly implemented, while ensuring that digital transactions are conducted securely. Advanced encryption technology and supportive regulations will ensure that users can benefit from digitalization without worrying about adverse security issues (Claessens et al., 2018). Thus, digital banking has the potential to have a greater positive impact in achieving broader and sustainable financial inclusion. Banking digitalization has great potential to democratize access to financial services, especially in developing countries (Susanti., 2020). Smart phones and internet access allow people to access banking services without having to physically come to the bank. Mobile money programs such as M-Pesa in Kenya and OVO in Indonesia are successful examples of how financial services can be practically accessed by previously underserved communities. This technology not only makes financial transactions easier, but also introduces more inclusive and affordable financial products, such as micro-credit, savings, and technology-based insurance designed to reach people who are difficult to reach by conventional financial institutions. Digitalization opens up opportunities to connect a wider market and introduce technology-driven business models that allow banks and financial service providers to lower their operational costs (Adha., 2020). With lower fees, banks can offer financial products at more affordable prices, allowing consumers to access services that were previously difficult to reach. It also encourages healthier competition in the financial sector, accelerates innovation, and improves service quality. The products offered can be tailored to the needs of diverse communities, giving them the opportunity to improve their economic conditions more easily and more safely.

2. Security and Trust in Digital Systems

Security is a very important factor in banking digitalization. Public's trust in digital systems depends on how well their personal data protection is maintained. Insecurity in data management can reduce people's interest in using digital banking services, which can hinder the achievement of financial inclusion. Therefore, it is important for banks to continue to invest in advanced security technologies, such as data encryption, biometric authentication, and multi-factor authentication, to protect users from cyber threats. In addition, strict regulations regarding personal data protection are urgently needed to create a secure digital banking ecosystem. The role of governments and regulators is crucial to ensure that adequate security standards are implemented by digital financial service providers to maintain public trust in the system (Glaessner *et al.*, 2022).

3. Inequality of Access to Technology and Digital Literacy

Inequality in access to technology remains a significant challenge in banking digitalization (Jameaba, 2020). Some areas in developing countries still face limitations in terms of internet connectivity and the deployment of adequate technological devices. This condition hinders most people in remote areas from taking advantage of the opportunities offered by digital banking. To address this problem, collaboration between the government, the private sector, and educational institutions is needed to improve digital infrastructure in underserved areas. Digital literacy training programs are also very important so that people can take advantage of digital banking services effectively and safely (Kaur *et al.*, 2021). This education not only teaches the use of devices and applications, but also educates the public about the importance of personal data protection and ways to maintain security in digital transactions.

4. Recommendations to Maximize the Benefits of Banking Digitalization

Digitalization of banking can create true financial inclusion, banks need to develop products and services that are accessible to all levels of society, including those who are less educated or live in remote areas (Kanungo & Gupta, 2021). These products must be arranged to be user-friendly, easily accessible, and in accordance with the diverse financial conditions of the community. The development of digital infrastructure should be a top priority by expanding the internet network and providing more affordable devices for the public (Ashmore *et al.*, 2017). Efforts to improve digital literacy through training programs also need to be expanded, so that people can take advantage of digital banking services in an effective and safe way.

Regulations that support innovation, while protecting the interests of consumers, must also be a priority (Nottingham & Cardozo, 2019). Governments can introduce policies that encourage digital financial service providers to invest in infrastructure and technology, while ensuring the protection of personal data and the security of users. With clear and supportive regulations, as well as collaboration between the public and private sectors, banking digitalization can reach its full potential in increasing financial inclusion, which will ultimately support sustainable economic growth and improve people's well-being. Banking digitalization in the era of Revolution 5.0 has brought major changes in the way people access financial services (Gomber *et al.*, 2018). The use of technologies such as artificial intelligence (AI), blockchain, and big data analytics makes banking services more efficient, flexible, and inclusive. Mobile banking applications, digital wallets, and banking agents have managed to reach people who previously did not have access to the formal financial system, especially in remote areas (Pazarbasioglu *et al.*, 2020). This technology also allows the provision of more personalized services, such as microcredit offerings based on risk data analysis, thereby encouraging economic growth, especially for small and medium enterprises (SMEs).

The great opportunity in banking digitalization is not only related to ease of access, but also product and service innovation. Customer data analysis helps banks provide financial solutions that fit individual needs, such as automated savings or risk-based investments. Financial education through digital platforms is an important tool to increase people's financial literacy, so that they are able to manage their finances more wisely (Sudarmanto *et al.*, 2024). The security of transactions is also improved through the use of blockchain technology and encryption systems, which protect user data from the threat of fraud or hacking. Risks arising from banking digitalization need to be considered so as not to hinder financial inclusion. The digital divide is one of the main challenges, as not all people have access to technological devices or adequate internet connectivity. Cybersecurity threats, such as data hacking and online fraud, can reduce public trust in digital banking services. In addition, regulations that have not fully

followed technological developments create legal loopholes that have the potential to be abused by certain parties.

Certain groups of society, such as the elderly or those who are less digitally skilled, are at risk of being marginalized in the modern banking ecosystem (Murinde *et al.*, 2022). The high dependence on technology also poses a great risk when there is a technical glitch or cyberattack. A hybrid approach that combines digital and physical services is a solution to ensure that all groups of people can be well served. The government and the private sector also need to work together in building equitable digital infrastructure and providing digital literacy education for the public (Jaeger *et al.*, 2022). Collaboration between the government, the private sector, and the public is the main key to optimizing banking digitalization opportunities while minimizing risks. Adaptive regulation, technology development, and improved cybersecurity are important elements in realizing wider financial inclusion in the era of the 5.0 Revolution. Banking digital transformation must be a tool to create an inclusive, safe, and sustainable financial system for all groups.

CONCLUSION

Banking digitalization in the Revolution 5.0 era provides a huge opportunity to accelerate financial inclusion by increasing access to financial services for previously marginalized communities, such as the unbanked and underbanked, especially through digital technologies such as mobile banking, fintech, and blockchain. These technologies allow people to access financial services more easily, quickly, and cheaply without having to visit a physical bank branch, which is a significant solution for hard-to-reach areas. The main challenge faced in the digitalization process is the increasing threat to the security of personal data and financial transactions, which can reduce public trust in the digital banking system. In addition, the inequality of access to technological infrastructure in remote areas and the low level of digital literacy are also major obstacles to ensure that digitalization can effectively penetrate all levels of society. To ensure that the benefits of digitalization can be widely felt, close collaboration between the public and private sectors is needed, especially in the development of equitable digital infrastructure, increasing digital literacy among the public, and strong regulations to protect user data and transactions. With a coordinated and inclusive approach, banking digitalization will not only improve the efficiency of the financial system, but also create a fairer, more transparent, and sustainable financial system, as well as open up economic opportunities for all groups in the Revolution 5.0 era.

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