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Digital Banking Transformation: Opportunities, Challenges, and Collaboration

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Abstract: The Covid-19 pandemic has become a cause for concern not only in Indonesia but also in various other countries. The Covid-19 pandemic has been the root cause of significant changes in various aspects, especially in the digital field, and has triggered the acceleration of digital banking transformation from a physical economy to a virtual economy. Digital banking transformation in Indonesia presents various opportunities and challenges and supports the creation of collaboration. This study aims to analyze the opportunities, challenges, and collaborations in the digital banking transformation. The research was conducted using a qualitative approach with a focus on literature review and the collection of the latest news and digital banking practices as supporting data. The results of the study show that digital banking transformation opens up great opportunities for banks to improve effectiveness, efficiency, and productivity as well as innovative services by looking at digital opportunities, digital behavior, and digital transactions that are growing. In addition to creating opportunities, digital banking transformation certainly has challenges such as data leaks, strategic risks that can lead to cost waste, rampant cyber attacks, lack of organizational readiness in terms of human resources, data leak risks that still occur, misuse of technology such as AI for malicious purposes, weak supervision of third parties or outsourcing, uneven communication network infrastructure between regions, and a regulatory framework that is still slow to be adapted by industry players. In addition to opportunities and challenges, digital banking transformation supports collaboration between banks and non-bank financial institutions, fintech, and bigtech to create better, more inclusive, and more efficient financial services. The conclusion of this study is that digital banking transformation requires the right strategy, good risk management, and support for collaboration.

Keyword: Digital Banking Transformation, Opportunities, Challenges, Collaboration

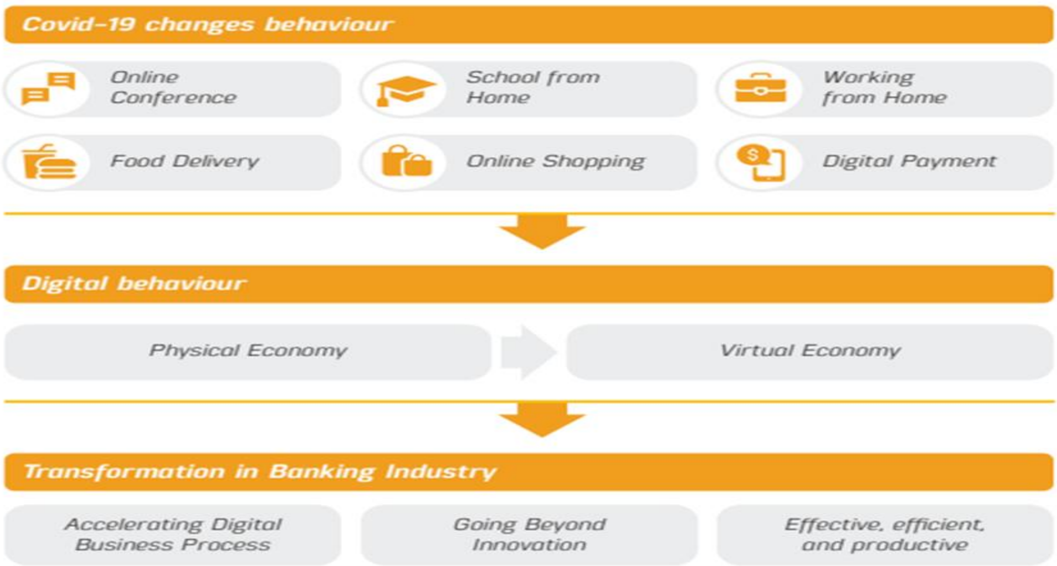
INTRODUCTION

The Covid-19 pandemic has become a worrying situation not only in Indonesia but also in various other countries. The Covid-19 pandemic has been the root cause of significant changes in various aspects, especially in the digital sector. One of the noticeable changes is the development of digital banking in Indonesia. This has become a matter of great concern during the Covid-19 pandemic, as people are conducting more transactions using digital banking rather than going out of their homes, given the still worrying potential for the spread of Covid-19. However, this has become a challenge for banks.

Looking back before Covid-19, the public still viewed digital banking as a system that had many benefits for users of banking products. Interest was driven more by the younger and urban generations. The phase of intense attention began when Covid-19 struck, with the government seriously urging people toWork From Home (WFH) and implementing Large-Scale Social Distancing (PSBB) policies. This triggered a change in people's habits. The simplest example can be seen in communities that often prefer to visit banks in person or use ATMs, as the Covid-19 pandemic slowly subsides and people begin to embrace digital banking. Once the Covid-19 pandemic is over, the development of digital banking will continue to show a stable direction, as seen from the growth of user segmentation, which is no longer limited to young people and urbanites, but also includes the elderly, supported by micro, small, and medium enterprises.

Before the Covid-19 pandemic, digital banking services were still limited to simple features such as checking balances, transfers, and paying bills. As Covid-19 began to spread, features expanded to include more comprehensive options such as opening accounts online, topping up e-wallets, and using QRIS. The situation became even more complex after the Covid-19 pandemic, with the introduction of features such as digital investment, online loans, and others.

Figure 1. Covid-19 Accelerates Digital Transformation in Banking

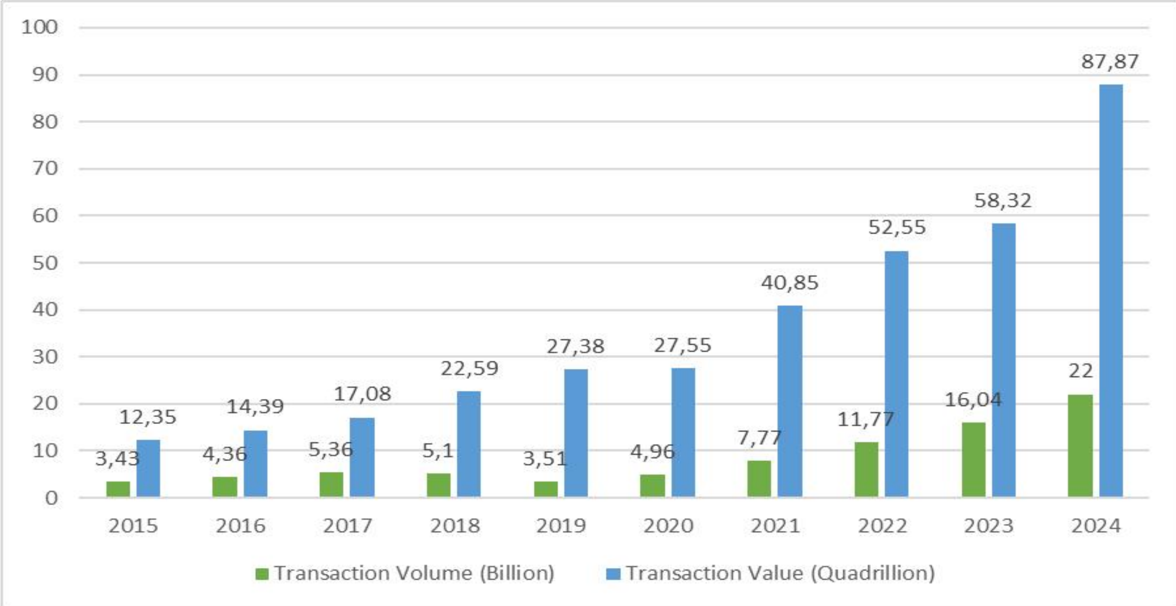


(Otoritas Jasa Keuangan, 2021)

The growing demand for digital banking has created opportunities for banks to improve their services, but it is undeniable that banks face many challenges. One solution to these root problems is collaboration. This situation has prompted banks to immediately undertake digital banking transformation. The Covid-19 pandemic has provided the perfect opportunity to accelerate digital banking transformation in Indonesia. This is a strategic step to deal with the current turmoil and dynamics.

As stated by Heru Kristiyana during his tenure as Chief Executive of Banking Supervision, digital transformation requires banks to immediately change their management and operational patterns. The shift from the traditional bank concept to the future bank concept encourages banks to adjust their business strategies, reorganize their distribution networks, and promote banking transactions through digital channels (mobile apps and the internet), including the use of the latest electronic banking devices, in an effort to improve customer experience (end-to-end digital solutions) (Otoritas Jasa Keuangan, 2021).

Figure 2. Transaction Volume and Value Through Special Banking Channels



(Katadata Media Network, 2025)

The figure above clearly shows that the volume of transactions using digital banking is growing. Before the Covid-19 pandemic, transaction volumes showed growth despite declines in certain years. The need for digital banking is increasing, especially among users of channels such as mobile banking, phone banking, and internet banking. Since Covid-19, the role of digital banking has grown rapidly from year to year and shows a positive trend in terms of transaction volume and transaction value. In 2024, it reached its highest position with a transaction volume of 22 billion and a transaction value of 87.87 quadrillion. This significant growth was due to a massive acceleration in the digital banking transformation

The high growth of digital transactions worldwide, the Covid-19 pandemic that has accelerated digitalization, and changes in consumer patterns towards digitalization have resulted in banks consciously having to immediately accelerate the process of transformation towards digital banking. The transformation of digital banking in Indonesia itself began in 2016, starting first with Bank Tabungan Pensiunan Nasional (BTPN) through Jenius. This was followed by Bank Bukopin and Bank DBS Indonesia in 2018, which launched Wokee and Digi Bank. Then in 2020, Bank UOB created TMRW. To date, various other major banks have begun to develop their digital banking services, such as Bank BCA, Bank Mega, and others (Pusat Kajian Anggaran DPR RI, 2021).

The digital banking transformation in Indonesia is supported by key regulations such as:

1. Financial Services Authority Regulations (POJK) Number 21 of 2023 concerning Digital Services by Commercial Banks, which regulates the scope and requirements of digital services, governance, information technology utilization, electronic signatures, and customer and personal data protection (Otoritas Jasa Keuangan, 2023).
2. Financial Services Authority Circular Letter (SEOJK) Number 24/SEOJK. 03/2023 concerning the Assessment of the Digital Maturity Level of Commercial Banks provides guidance for banks to evaluate their digital readiness (Otoritas Jasa Keuangan, 2023b).
3. Blueprint for Digital Banking Transformation, which can be used as a basis for supporting the acceleration of digital transformation in banking (Otoritas Jasa Keuangan, 2021).

The existence of digital banking transformation is certainly something that can be studied more deeply because digital banking transformation can create opportunities that can have a major impact on banking in terms of service efficiency, expansion of financial access, and can also help increase the competitiveness of the national banking industry. However, in practice, these opportunities will inevitably create challenges that cannot be ignored, ranging from data security, infrastructure readiness, and the need for the public to understand digital literacy. Therefore, digital transformation cannot be carried out in isolation, but requires good collaboration between banks, regulators, fintech companies, and the public as users. This synergy is expected to create an inclusive, secure, and sustainable digital financial ecosystem for future economic growth..

METHOD

The research was conducted using a qualitative approach with a focus on literature study. The data sources obtained were from the Blueprint for Digital Banking Transformation, OJK Regulations (POJK and SEOJK), related scientific journals, and supporting industry reports. In addition, the researchers also collected data sourced from the latest information through news and digital banking practices in Indonesia as supporting data.

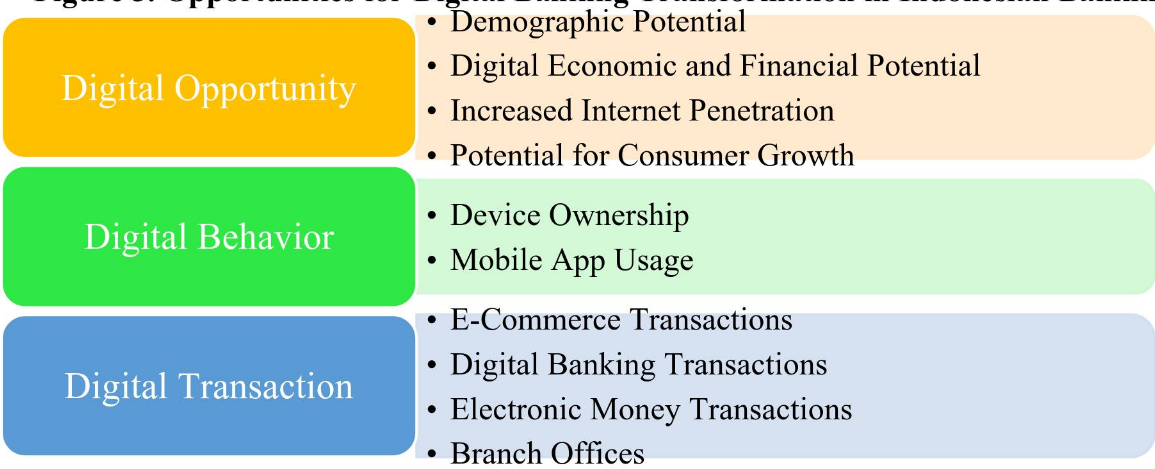
The analysis was conducted thematically, grouping the findings into categories of opportunities, challenges, and collaboration. The research did not use data processing tools, but rather presented narratives and interpretations of the findings to provide a comprehensive overview and understanding of digital banking transformation.

RESULT AND DISCUSSION

I. Opportunities for Digital Banking Transformation in Indonesia

Since its inception, digital banking in Indonesia has certainly provided significant benefits in all aspects, even though its development has accelerated significantly during the Covid-19 pandemic. The transformation of digital banking has created opportunities that must be seized by looking at the needs of a society that is increasingly digital and supporting Industry 4.0 with continuous innovation and technological development. Banks cannot simply stand by and watch this happen, but must instead use the transformation of digital banking as a way to seize promising opportunities. The era of digital banking 4.0 will provide national banks with even more innovative opportunities to serve their customers. These innovations are necessary to keep up with the rapid growth of competition and financial technology (fintech) (Haryono et al., 2023).

Figure 3. Opportunities for Digital Banking Transformation in Indonesian Banking



(Otoritas Jasa Keuangan, 2021)

The driving factors in supporting digital banking transformation include digital opportunity, digital behavior, and digital transactions. These factors create a wide range of opportunities.

1. **Digital Opportunity**
   Digital opportunities are opportunities generated by advances in digital technology, which can facilitate all forms of activity through digital utilization and create far greater business progress. Companies that are able to utilize technology effectively and efficiently will be able to develop new business models, create new jobs, and expand market segmentation (Nur'aini, 2023). Digital opportunities in digital banking transformation involve four aspects, including demographic potential, economic and digital financial potential, increased internet penetration, and potential consumer growth. Indonesia's demographic potential strongly supports the digital banking transformation. Indonesia's population is currently dominated by people of productive age, who have busy lifestyles and diverse occupations. The demographic composition in Indonesia is dominated by Millennials and Gen Z, who are digitally savvy and capable of driving digital acceptance in Indonesia. The Central Statistics Agency noted that in 2020, Millennials and Generation Z contributed 145.4 million people to the productive age group, or 53.8% of the population. This group has a habit of shopping online and making payments or transactions using digital platforms. This will be further strengthened by the entry of Generation Alpha, who will enter their productive age in 2025 (Bank Indonesia, 2024). The banking sector sees Indonesia's demographic potential as a step in the right direction for digital banking transformation, where a large and adaptable population supports the adoption of new technologies (Bank MSA, 2024).
   The potential for digital economy and finance in Indonesia is enormous, which can drive the transformation of digital banking through increased financial inclusion, more efficient operational costs, a more diverse and better customer experience, and the development of innovative products and services. One example of a significant change is the increasing demand for digital banking services that can meet the need for convenience and efficiency. Modern society is increasingly relying on technological devices, especially smartphones, to manage daily activities, including banking. The ease of conducting transactions via handheld devices encourages banks to innovate so they can provide services that are more responsive to the dynamic needs of customers (Khoir, 2025). In 2023, the financial inclusion ratio reached 88.7% with 30.2 million QRIS MSME merchants. In this case, banking digitalization continues to increase, banks and fintech are increasingly interlinked, and the number of merchants and users continues to skyrocket (Bank Indonesia, 2024). Stable economic growth and the development of the fintech ecosystem support the transformation of digital banking (Bank MSA, 2024). Increased internet penetration is the foundation of digital banking transformation, as it allows people to access financial services 24/7, improves operational efficiency, promotes widespread financial inclusion, and creates digital banking features such as personalized services and fast and secure transactions. Stable, high-quality internet will support data security and better inter-platform connectivity. The number of internet users in Indonesia, according to a survey conducted by APJII in 2025, is 229 million, a significant increase compared to 221 million in 2024, or a growth of 8 million, with an internet penetration rate in Indonesia in 2025 of 80.66%, a growth of 1.16% compared to 2024 (APJII, 2025). The increase in internet penetration, which continues to grow positively every year, presents an opportunity for banks to

transform into digital banks. The potential increase in consumers or customers provides an opportunity for banks to transform into digital banking, with the increasing number of smartphone users and widespread internet access providing banks with the opportunity to reach more consumers. Moreover, the public's need for financial services has encouraged financial service providers, especially banks, to transform themselves in providing services and added value in the digital realm (Pusat Kajian Anggaran DPR RI, 2021). Customers today need speed and convenience in conducting banking activities. This presents an opportunity for banks to continue to increase their customer base. Increased internet penetration is a key foundation for digital banking transformation because it enables 24/7 access to financial services, improves operational efficiency, expands financial inclusion, and drives innovation in digital banking features such as personalized services and faster, more secure transactions. Stable, high-quality internet also supports data security and cross-platform collaboration, which are the backbone of modern banking.

2. **Digital Behavior**

   Digital behavior refers to activities or actions carried out by individuals in the digital world. Digital behavior is also known as digital conduct, whereby individuals can carry out all their activities through digital technology. Digital behavior greatly encourages digital banking transformation, as reflected in four digital opportunities, such as device ownership and mobile application usage. Device ownership in February 2025 reached 99.5% for smartphones or mobile phones, 56.2% for laptops or computers, 18.1% for smartwatches, and 16.7% for tablet devices. High device ownership drives the growth of internet access and the use of digital media across all levels of society (Goodstats, 2025). Device ownership greatly supports access to digital banking services. With device ownership, all segments of society, regardless of time constraints, can access all digital services easily and quickly. The use of mobile apps in Indonesia is relatively high due to the increasing ownership of devices, especially smartphones, and widespread internet coverage, which allows internet users to continuously access digital services through their devices. In the transformation of digital banking, the use of mobile apps, especially banking apps, has become an opportunity for banks to provide efficient, convenient, and fast services to their customers. The frequency of digital banking usage has surged by 158% between 2018 and 2023, indicating that Indonesians are not just trying out digital services. They are using them regularly. Most users in Indonesia use banking apps for installment payments, shopping invoice/bill payments, utility payments, e-wallet top-ups, phone balance/data package purchases, and money transfers (Market Research Indonesia, 2025).

3. **Digital Transactions**

   Digital transactions are transactions carried out from start to finish without the need for cash, using devices such as mobile phones, laptops, or tablets. These transactions involve one or more parties, including various forms of payment. For example, Fintech offers payment processes through digital means (GoCardless, 2021). The growth of digital transactions, which continues to expand and show positive signs, has prompted banks to undergo digital transformation in order to support consumer needs and attitudes that are shifting towards digital solutions. Digital transactions open up opportunities such as e-commerce transactions, digital banking transactions, electronic money transactions, and branch offices (Otoritas Jasa Keuangan, 2021).

   a. **E-Commerce Transactions**

E-commerce transactions have become an unavoidable necessity for the people of Indonesia. From 2019 to 2024, e-commerce transactions have continued to experience a positive trend, indicating that the need for e-commerce purchases is increasing and becoming a habit for various segments of society. In 2019, e-commerce transactions amounted to IDR 205.5 trillion, increasing in 2020 to IDR 266.3 trillion, surging during the COVID-19 pandemic to IDR 401.1 trillion, and increasing again in 2022 to IDR 476.3 trillion. Then, there was a slight decline in 2023 to IDR 453.75 trillion due to various factors, such as post-pandemic economic recovery, changes in import policies, and increasingly fierce competition in this industry. However, in 2024, there was an improvement with an increase to IDR 487.01 trillion (Kontan.co.id, 2025). The growth of e-commerce transactions presents an opportunity for banks to transform into digital banks in order to provide payment systems that support consumers' needs in conducting e-commerce transactions.

b. Digital Banking Transactions

Digital banking transactions in Indonesia continue to experience good progress, as seen in the value of digital banking transactions in the first quarter reaching IDR 15,818.5 trillion, a growth of 16.15% from the previous year, and in July 2025 reaching 4.4 billion transactions with a growth of 45.30% on an annual basis (CNN Indonesia, 2024). The growth of digital banking indicates that consumers need digital banking to be able to conduct transactions more easily and quickly. The need for digital banking further confirms that a comprehensive digital banking transformation is urgently needed by every bank.

c. Electronic Money Transactions

Electronic money is defined as a means of payment in electronic form where the monetary value is stored in a specific electronic medium. Users must first deposit their money with the issuer and store it in an electronic medium before using it for transactions. Electronic money transactions are now commonplace and widespread. The use of electronic money as an innovative and practical means of payment is expected to facilitate the smooth payment of mass, fast, and micro economic activities, thereby helping to facilitate transactions on toll roads, in transportation such as trains and other public transportation, or transactions at minimarkets, food courts, or parking lots (Bank Indonesia, 2020). According to Bank Indonesia (BI) data, throughout 2024 there were 21.67 billion electronic money transactions in the country, an increase of 6.19% from the previous year (year-on- year/yoy). The value of electronic money transactions throughout 2024 reached Rp. 2.5 quadrillion. This value increased by Rp. 644.01 trillion or grew by 34.62% (Katadata Media Network, 2025a). Banks that undergo digital transformation can help the public maximize electronic money transactions, as this can streamline costs, reach a wider market, maintain security, and increase public preference.

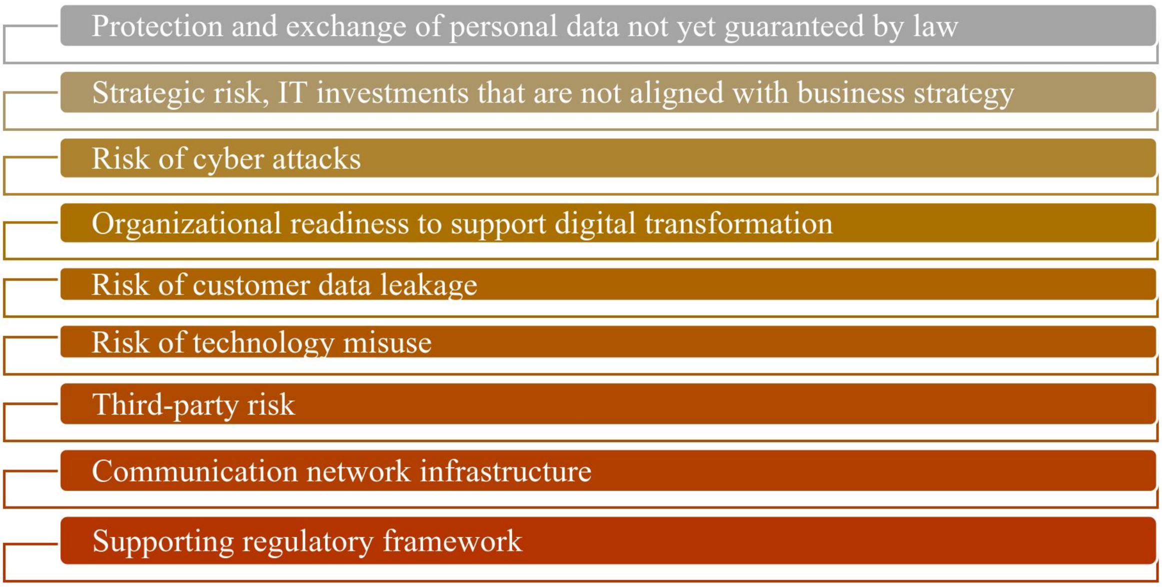
d. Branch Offices

The need for digital transformation in the banking sector is becoming increasingly urgent and must be addressed immediately due to the emergence of fintech and other purely digital banks, which operate without branch offices but offer a different experience in line with changing consumer preferences. The days of queuing and waiting at physical branches are over. Now, customers demand convenience and efficiency in managing their finances quickly and easily. From online payments to credit applications and bill payments, banking customers expect a comprehensive range of banking services that can meet a variety of financial needs without having to visit a branch office.

II. The Challenges of Digital Banking Transformation in Indonesia

Digital banking transformation not only provides opportunities, but also challenges. Banks that successfully face challenges in the digital era will become strong banks that are able to survive technological advances and intense competition in the future. Banks can choose to face challenges by boldly transforming towards digital banking or remain banks with old and traditional systems.

Figure 4. The Challenges of Digital Banking Transformation



(Otoritas Jasa Keuangan, 2021)

In the Banking Digital Transformation Blueprint issued by the Financial Services Authority in 2021, there are several challenges to banking digital transformation, including:

1. **Protection and exchange of personal data not yet guaranteed by law**

   With the development of technology, the security of personal data or customer data has become a priority. The digital transformation of banking focuses on digitalization, where technology is the main tool for banking. In order to gain public trust in banking and to meet the digital needs of customers, banks must have a strong security system. Currently, the regulation governing the protection of personal data and the sector is Law Number 27 of 2022 concerning Personal Data Protection, which came into effect on October 17, 2024 (Hukumonline.com, 2024). In practice, adequate technical regulations are still needed. In addition, the Financial Services Authority (OJK) also issued Financial Services Authority Circular Letter (SEOJK) Number 14/SEOJK. 07/2014 regarding the Confidentiality and Security of Consumer Data and/or Personal Information, Financial Services Authority Regulation of the Republic of Indonesia Number 22 of 2023 concerning Consumer and Community Protection in the Financial Services Sector, which regulates how customer data transfers can be carried out with a written agreement, and there is a new regulation related to Financial Services Authority Regulation Number 44 of 2024 concerning Bank Secrecy (POJK 44/2024) which came into effect on December 27, 2024 (Otoritas Jasa Keuangan, 2025). Although there are already laws and financial regulations in place, technically their implementation in the field is still imperfect, and the PDP supervisory agency has not yet been fully established as an independent authority with full functions.

2. **Strategic risk, IT investments that are not aligned with business strategy.**

   Digital banking transformation requires a balance between technology investment and digital business. However, given that technology investment in the current era is costly, it is necessary to align investment with business strategy. Otherwise, system duplication will not be able to be integrated, maintenance and operational costs will increase, and adoption will fail due to a lack of readiness and unrealistic expectations. To support this digitalization, banks certainly need to allocate large amounts of capital expenditure for the provision of information technology infrastructure (CNBC Indonesia, 2021). Many technology investments fail due to poor governance, lack of strategic alignment, weak oversight, duplication, and cultural gaps. For example, BPD encountered problems when adopting a new digital core banking system, which resulted in high costs and delayed implementation.

3. **Risk of cyber attacks**

   Cyber attacks are an unavoidable risk given the rapid and rapid advancement of technology. The potential for cyber attacks will certainly pose a major threat if not addressed. As stated by the Financial Services Authority, the potential for cyber attacks is increasing and growing along with the rise of digitalization in the banking sector. Attacks carried out by hackers are certainly aimed at obtaining large profits, such as stealing sensitive data and breaking into customer accounts. For this reason, the banking industry needs to strengthen the security of all its information technology infrastructure against all potential cyber threats (Tempo, 2025a). For example, Bank Syariah Indonesia (BSI) was hit by a cyberattack. This caused the bank's system to malfunction and banking services to be inaccessible to customers for several days. In 2021, Bank Jatim and BRI Life (an insurance company owned by BRI) were hacked, and customers' personal data was allegedly leaked online. Even in early 2022, Bank Indonesia also suffered a ransomware attack (Pusat Analisis Keparlemenan Badan Keahlian Setjen DPR RI, 2023).

4. **Organizational readiness to support digital transformation**

   Digital transformation is not only about technological sophistication, but also requires human resources who are ready and able to adapt. Organizations need resource support and an understanding of developments in digital banking in order to overcome challenges (BRI api, 2023). An organizational culture that is still hesitant and fearful often becomes an obstacle to digital transformation. When banks still lack innovation, are hesitant to change, and digital leadership is not yet widespread, it will be difficult to compete in a digital environment. Large banks such as BCA, BRI, Mandiri, and BSI have a strong digital leadership vision, but many other banks still lack a strong digital leadership vision.

5. **Risk of customer data leakage**

   Customer data leaks often occur due to hacking or hackers with serious intentions and objectives. Customer data leaks pose a risk of losing customer trust in banking because they can cause significant losses if they occur and cannot be resolved. Data leaks are caused by cyber attacks such as phishing, malware, and internal weaknesses. The case of customer data leaks at PT Bank Syariah Indonesia Tbk (BSI) that occurred on May 8, 2023. These cyber attacks still occur frequently and threaten the security of Bank Syariah customer data. The impact is that Bank Syariah faces difficulties in digital services such as ATM machines, BSI Mobile, and other services at branch offices that are difficult to access (Rizal & Ardhian, 2023). Not only that, Indonesia has also made its mark as one of the 10 countries with the highest data leakage rates in the world (csirt.or.id, 2024). Indonesia recorded more than 350 million cyber attacks, causing losses of at least US$1 million or around Rp 15.9 billion (Tempo, 2025b).

6. Risk of technology misuse

In addition to bringing convenience, the digital banking transformation also opens up opportunities for irresponsible parties to misuse technology with the intention of causing harm. Common forms of technology misuse include fraud, data theft, and system manipulation. An example of this is the use of AI for criminal acts. As a result, several major banks are currently working to strengthen their systems and educate their customers to be more cautious. The OJK emphasizes the importance of public education and ongoing digital literacy campaigns. Criminals today have the ability to manipulate documents, and if banks do not have the necessary technology in place, criminals will certainly slip through as bank customers(Kompas, 2025).

7. Third-party risk

In digital transformation, banks often work with various parties to support their services, which of course poses additional risks for banks, such as in the case of cooperation between banks and fintech companies, technology vendors, cloud service providers, or other parties. Therefore, the security and compliance of banks also depend on the systems of third parties. Therefore, in this regard, the OJK has strengthened regulations with POJK No. 11 of 2022 concerning the Implementation of Information Technology by Commercial Banks. Strict regulations and supervision will help banks detect these risks early on (Harahap, 2025).

8. Communication network infrastructure

Digital banking transformation will not be successful without adequate communication network infrastructure, as digital banking services can only be accessed if communication network infrastructure is available. In 2024, internet usage will increase to 72.8%, with growth occurring in all regions, both urban and rural. This data reflects the increasing access to and adoption of digital technology across various segments of society. However, challenges remain, particularly in terms of the digital infrastructure gap between urban and rural areas, as well as low digital literacy among some segments of society (Badan Pusat Statistik, 2025). Some areas that still have low internet penetration include Maluku, Papua, remote villages, small islands, and rural areas.

9. Supporting regulatory framework

Digital banking transformation requires a synchronized and adaptive regulatory framework between supervisory institutions such as the OJK, Bank Indonesia, and Kominfo. The government also needs to review and accommodate the rapid development of digital services (BRI api, 2023). In practice, uniformity, speed, adaptability, and optimal collaboration among regulators are still needed.

III. Collaboration on Digital Banking Transformation in Indonesia

Technological developments have shaped a new digital ecosystem, with banks becoming one of the players in this ecosystem. Collaboration between banks and other players in the digital ecosystem, such as banking institutions, non-bank financial institutions, non-financial institutions (e.g., financial technology or fintech companies) and big tech companies, can provide opportunities for banks to acquire new customers, leverage their partners' innovations, and gain access to data in the process of developing their products and services. Collaboration between banks and other institutions can take the form of a sharing platform (super-app), or cooperation between banks and other institutions in the form of infrastructure sharing within a banking business group or cooperation in the distribution of services and products (Otoritas Jasa Keuangan, 2021).

Banks as super-app providers will make things easier for customers, because banks are no longer just places to store money or make transactions. Banks also offer and provide other daily or financial needs through a single digital application, such as tickets, auto services, beauty services, bill payment, parcel delivery, home maintenance, video streaming, laundry, mobile data, repair services, pharmacy services, groceries, food delivery, payments, ride hailing, banking, and massage.

Banks also form partnerships with financial and non-financial institutions, which are divided into service sharing and product and service distribution. One form of service sharing that can be carried out is infrastructure sharing. In addition, another form of partnership is in the distribution and offering of products with the aim of expanding consumer access to the Bank's products, including banks with limited business activities (Otoritas Jasa Keuangan, 2021).

Some examples of collaborations currently taking place:

1. **Collaboration between banks, fintech companies, and digital ecosystems**
   Bank Jago collaborates with GoTo (Gojek and Tokopedia), allowing Gojek app users to open a Bank Jago account directly through the Gojek app. BCA Digital (blu) collaborates with Bibit and Pluang in micro investments and mutual funds. Bank BRI, LinkAja, and PNM Mekaar are collaborating to empower digital MSMEs through the BRI Micro Digital Ecosystem. This demonstrates the cooperation between banks in the digital ecosystem.
2. **Collaboration between banks and regulators**
   Implementation of the National Open API Payment Standard (SNAP). Collaboration between regulators and banks in creating transaction security.
3. **Collaboration between banks**
   The existence of the BPDNet 2.0 Consortium, which involves 26 regional development banks (BPD) throughout Indonesia, Asbanda, and the Financial Services Authority (OJK) as the steering body. Collaboration to develop an integrated core banking system, cloud sharing, and shared digital services so that BPDs can compete with large banks. This is part of service sharing for banking business groups.
4. **Collaboration between banks and the government**
   Integration of QRIS and Digital Payment for taxes and levies. Collaboration is carried out so that tax payments can be made through QRIS and mobile banking. This collaboration supports digital culture and capability.
5. **Collaboration between banks and start-ups and technology**
   BCA Digital with Traveloka/ BRI Ventures with Modalku. The collaboration involves integrating the lifestyle ecosystem and digital financing. This collaboration supports cross-industry collaboration.
6. **Collaboration in digital education and literacy**
   OJK and banks, together with the digination and cybersecurity awareness programs,

educate the public to understand financial literacy, digital security, and digital banking transformation.

CONCLUSION

The conclusion of the research that has been conducted is:

1. Digital banking transformation opens up great opportunities for banks to improve effectiveness, efficiency, and productivity as well as innovative services by looking at digital opportunities, digital behavior, and digital transactions that are growing.
2. In addition to creating opportunities, digital banking transformation certainly has challenges such as data leaks, strategic risks that can lead to cost waste, rampant cyber attacks, lack of organizational readiness in terms of human resources, data leak risks that still occur, misuse of technology such as AI for malicious purposes, weak supervision of third parties or outsourcing, uneven communication network infrastructure between regions, and a regulatory framework that is still slow to be adapted by industry players.
3. In addition to opportunities and challenges, digital banking transformation supports collaboration between banks and non-bank financial institutions, fintech, and big tech to create better, more inclusive, and more efficient financial services. The conclusion of this study is that banking digital transformation requires the right strategy, good risk management, and support for collaboration.

The recommendations that can be given in this study are digital banking transformation requires the right strategy, good risk management, and support for collaboration.

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