

ANALYSIS OF DIGITALIZATION TRENDS IN INDONESIA'S BANKING SECTOR: A COMPARATIVE STUDY OF CONVENTIONAL AND DIGITAL BANKS

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Abstract – Digital transformation has emerged as a key strategic response within Indonesia's banking sector to address rapid advancements in information and communication technology (ICT), evolving customer behaviors, and intensifying competition from digital banks and fintech companies. This study employs a descriptive qualitative approach using secondary data to compare digitalization strategies between conventional banks (Bank Rakyat Indonesia and Bank Central Asia) and digital banks (Bank Jago and SeaBank). The analysis focuses on mobile banking features, the implementation of Artificial Intelligence (AI), and electronic Know Your Customer (e-KYC) practices. The findings indicate that digital banks are generally more agile in adopting advanced technologies and streamlining customer onboarding. Conversely, conventional banks face limitations due to legacy systems and manual verification processes. The study concludes that successful banking digitalization depends on the integration of technological innovation, organizational readiness, and an in-depth understanding of customer needs and preferences. These insights offer practical implications for banking institutions and regulators aiming to strengthen digital transformation frameworks in the Indonesian banking industry.

Keywords: Banking digitalization; Digital bank; Electronic Know Your Customer (e-KYC); Mobile banking; Artificial Intelligence (AI)

I. INTRODUCTION

The advancement of information and communication technology (ICT) has fundamentally reshaped various sectors, including the financial industry. In banking, this progress has sparked a profound transformation in how services are delivered and operations are managed. Digitalization has become a central strategy for Indonesian banks, driven by changing consumer behavior, demands for operational efficiency, and intensified competition from fintech firms and digital-native banks.

This shift marks a move away from traditional banking systems—once reliant on manual processes, physical documents, and in-person transactions—toward fully integrated, automated, and digital platforms. Technologies such as cloud computing, mobile applications, artificial intelligence (AI), and big data analytics are now at the core of delivering faster, more accurate, and customer-friendly financial services.

The digital transformation is closely aligned with the broader changes of the Fourth Industrial Revolution (Industry 4.0), which promotes real-time data integration, process automation, and server-based management. As a result, banks are being pushed to adapt their business models to remain agile and competitive in the evolving financial ecosystem. This transformation is not just a strategic move—it is essential for survival in the digital economy.

According to Tambunan (2022), several private and Regional Development Banks (BPDs) in Indonesia have strategically increased their technological investments to respond to the rise of fintech and capitalize on opportunities in the digital economy. This approach aligns with the framework of Digital Banking 4.0 and adheres to regulatory guidelines such as POJK No. 12/POJK.03/2018 concerning the provision of digital banking services.

Moreover, digitalization has changed not only operational processes but also the way banks interact with customers. While conventional banks are gradually adapting to digital tools, digital banks are emerging as fully online institutions, offering streamlined and highly responsive services.

For instance, major conventional banks like Bank Rakyat Indonesia (BRI) and Bank Central Asia (BCA) have launched robust mobile banking apps and integrated AI-powered chatbots, such as Sabrina and Vira, to provide round-the-clock assistance. On the other hand, digital-native banks like Bank Jago and SeaBank operate entirely through mobile apps, eliminating the need for physical branches altogether.

This paper compares how conventional and digital banks differ in adopting key technologies. In conventional banks, AI is typically used for basic functions like customer service bots, fraud detection, and transaction alerts. Conversely, digital banks use AI more extensively—for customer profiling, product personalization, and real-time credit risk analysis. Likewise, digital banks employ advanced e-KYC systems using facial recognition and OCR to enable instant account opening, whereas traditional banks still rely on manual or semi-digital verification.

This study draws from secondary data, including annual reports from BRI, BCA, Bank Jago, and SeaBank, along with official documents from OJK and Bank Indonesia. Academic literature and direct observation of mobile banking platforms further strengthen the analysis. This comparative approach aims to better understand how both types of banks are responding to digitalization and its implications for service quality and operational efficiency in Indonesia.

In recent years, the banking industry has undergone a significant transformation through the process of digitalization. This phenomenon refers to the shift from traditional banking services—conducted primarily through physical branches—to digital platforms such as mobile banking applications, online banking, and AI-powered chatbots.

Several factors have contributed to this digital shift, including rapid technological advancement, increasing customer expectations for convenience, and competition from fintech startups. Banks are now investing heavily in digital infrastructure to enhance customer experience, streamline operations, and remain competitive in a rapidly evolving market.

For example, major conventional banks in Indonesia like BRI and BCA have developed sophisticated mobile banking platforms and AI-based virtual assistants (e.g., Sabrina and Vira) to offer 24/7 support. Meanwhile, digital-native banks like Bank Jago and SeaBank are leveraging fully app-based services without relying on physical branches.

The digitalization of banking has brought numerous benefits such as improved accessibility, faster transaction processing, and cost efficiency. However, it also raises challenges related to cybersecurity, digital literacy, and regulatory compliance.

In essence, this digital transformation is reshaping how financial services are delivered and consumed, marking a significant shift in the way banks operate and interact with their customers.

II. LITERATURE REVIEW

1. Digital Transformation

Digital transformation is not merely about adopting technology, but rather a strategic process involving a rapid response to global challenges, the development of competitive digital capabilities, and the implementation of new processes that enable companies to lead in their industries. Beyond efficiency, this transformation also carries significant economic implications, as it introduces new paradigms and approaches to economic development (Rochmawati, Hatimatunnisani, & Veranita, 2023).

Digital marketing has now evolved into one of the main pillars shaping the modern digital economy. Based on various definitions, digital marketing can be summarized as a technology-driven market that conducts economic activities through online platforms, propelled by advancements in information and communication technology. These platforms not only foster innovation but also create a more efficient ecosystem for the trade of goods and services through e-commerce mechanisms. In other words, digital technology has facilitated the transformation of how businesses conduct marketing and product distribution in the digital era (Anjani, 2024).

2. Differences Between Conventional and Digital Banks

Conventional banks set interest rates as the price for various types of savings and loans, using a spread-based approach to determine these rates. In contrast, digital banks adopt business models that leverage innovative and secure technology to meet client needs more efficiently and flexibly (Saputra, Tarigan, Prasetyo, & Setiabudi, 2024).

According to Suharbi and Margono (2022), "Digital banks do not require physical branch offices for their operations because everything is conducted through applications, allowing for greater business efficiency and exponential profit growth. Digital banks also do not need many ATMs, as all transactions are conducted online, thus reducing overhead costs."

Azwari, Dewi, and Zuhro (2022) explain that conventional commercial banks are institutions that conduct their business activities through traditional means while offering services in payment traffic.

3. Implementation of Mobile Banking, AI, and e-KYC

According to Sitanggang et al. (2022), mobile banking utilizes the internet as a channel for various banking activities, such as fund transfers, bill payments, and the purchase of financial instruments.

"Artificial Intelligence (AI) is a field within computer science that encompasses the development of systems capable of performing tasks typically requiring human intelligence" (Pournader et al., 2021, as cited in Fadillah et al., 2023).

The principles of KYC (Know Your Customer) consist of identification, verification, and transaction monitoring. Although these principles are regulated, implementation in practice still faces challenges such as data protection and technological readiness (Silalahi, Baidhowi, & Novita, 2025).

III. METHODS

This study employs a descriptive qualitative approach with secondary data as the primary source. Data were collected through document analysis of annual reports from conventional banks (BRI and BCA) and digital banks (Bank Jago and SeaBank), as well as regulatory publications from the Financial Services Authority (OJK) and Bank Indonesia, and academic literature retrieved from databases such as Google Scholar and Scopus.

In addition, non-participant observation was conducted directly on the mobile banking applications of both conventional and digital banks. This observation involved an in-depth exploration of features, performance, ease of use (user experience), and the implementation of technologies such as mobile banking, artificial intelligence (AI), and electronic Know Your Customer (e-KYC). The observation was carried out by accessing each bank's official mobile application via mobile devices to assess the extent to which technological integration has been applied in their digital services.

The collected data were then analyzed using comparative and thematic analysis to identify the differences in digitalization approaches between conventional and digital banks, as well as to evaluate the effectiveness, innovation, and efficiency offered by each banking model.

IV. RESULTS AND DISCUSSION

1. Mobile Banking

According to the Financial Services Authority (OJK) Regulation No. 12/POJK.03/2018, banks are allowed to offer digital banking services as an extension of electronic banking, including transaction authorization through mobile banking applications integrated with technologies such as voice recognition. This enables customers to operate applications via voice commands on smart devices. Based on a review of mobile banking applications from selected banks, several key differences were identified:

a. Account Opening

SeaBank and Bank Jago provide a fully digital account opening process. Users simply upload their ID card (KTP) and perform facial verification (selfie) directly through the app, eliminating the need to visit a branch. BRI, through BRImo, has implemented e-KYC features, although additional verification involving customer service agents is sometimes required, especially for new customers. BCA, with its two main applications (BCA mobile and myBCA), still requires video calls or branch visits for account opening, making the process semi-digital.

b. Budgeting Features

Among the four banks, only Bank Jago offers structured budgeting features through its “Pockets” system. This allows users to allocate funds for specific purposes such as shopping, bills, or savings. SeaBank, BRI, and BCA do not yet offer automated budgeting tools, requiring users to manually manage fund allocation.

c. Investment Features

Bank Jago is directly integrated with Bibit, a mutual fund platform, enabling seamless investment without leaving the app. BRI (via BRImo) and BCA (via myBCA) also provide investment services such as mutual fund purchases or wealth management products, but these are typically limited to existing customers with certain account balances. SeaBank currently does not offer investment features in its app.

d. Savings Interest Rates

SeaBank offers the highest interest rate, up to approximately 6% per annum, with no minimum balance required. This is a key attraction for users seeking high-yield savings accounts. Bank Jago provides interest rates up to 4% annually, especially when funds are kept in specific savings pockets. BRI and BCA offer lower rates, typically between 0.5% and 2% per annum, depending on the account type and balance.

e. Integration with E-Commerce or Ecosystem Apps

SeaBank has full integration with Shopee, allowing users to top up ShopeePay, make payments, and receive cashback directly through the app. Bank Jago is well-connected with the Gojek ecosystem (GoPay) and Bibit, enhancing users' ability to manage daily finances and investments. BRI and BCA lack specific integration with major e-commerce platforms but support payments via QRIS and virtual accounts.

f. Cardless Cash Withdrawal

BRI (BRImo) and BCA (myBCA) offer cardless ATM withdrawals, where users can generate a code or QR code from the app to access cash. SeaBank and Bank Jago, as digital-only banks, do not offer this feature due to the absence of their own ATM networks.

g. QRIS Payment Feature

All four applications—SeaBank, Bank Jago, BRImo, and myBCA—support QRIS payments, enabling users to make transactions at various merchants by scanning QR codes.

Based on the feature analysis of these mobile banking applications, each bank appears to adopt a digitalization strategy aligned with its business model and market segmentation. Digital banks such as SeaBank and Bank Jago focus on accessibility and service efficiency, offering fully digital account onboarding, integration with digital ecosystems (Shopee, Gojek, Bibit), and competitive interest rates. Conversely, conventional banks like BRI and BCA have adopted a gradual digital transition through apps like BRImo and myBCA but still face integration challenges, particularly in e-KYC and account opening, which remain partially manual.

Key success factors for digital transformation in the banking sector include the ability to integrate technologies such as e-KYC, AI, and APIs; strong connectivity with external digital ecosystems; and clear service segmentation—illustrated by budgeting tools in Bank Jago or direct investment features within apps. However, conventional banks face challenges such as legacy system limitations, rigid organizational structures, and reliance on manual verification processes. On the other hand, digital banks like SeaBank and Bank Jago face infrastructure challenges, such as the lack of cardless withdrawal features due to the absence of physical ATM networks.

These strategic differences and limitations indicate that successful digital transformation is not solely determined by the adoption of technology but also by a bank's ability to align technology with

customer needs, build digital trust, and deliver a seamless and consistent service experience. Therefore, the most effective digitalization strategies are those that combine technological efficiency with a deep understanding of customer behavior and preferences.

2. Artificial Intelligence (AI)

The Financial Services Authority (OJK) has issued the **AI Governance Framework for Indonesian Banking** in response to challenges in AI adoption, including the issue of human resource readiness, reflecting OJK's support for accelerating digital transformation in the banking sector. Indonesian banking faces new challenges in terms of increased capacity, network reliability and security alongside the growth of digital transactions, as well as the rise of cybercrime and digital fraud, which require banks to strengthen digital security through the application of the latest technologies, including Artificial Intelligence.

The implementation of AI technology in BRI's chatbot Sabrina began with a strong foundation of deep understanding of Indonesian customer needs. BRI built Sabrina with a technology architecture capable of understanding the complexity of the Indonesian language, including various regional dialects and slang commonly used by the public. The natural language processing technology developed specifically for the Indonesian context became a major advantage that differentiates Sabrina from its competitors. The integrated machine learning system allows Sabrina to continue learning and increasing response accuracy based on each interaction with customers. This technological foundation was developed with long-term commitment not merely as an experimental project—thereby resulting in high stability and reliability.

BRI's Sabrina excels in multi-platform implementation, allowing customers to access services through familiar communication channels. Integration with applications such as WhatsApp and Facebook Messenger shows accurate understanding of Indonesian digital behavior, where these two platforms dominate. The scalable cloud-based architecture allows Sabrina to handle a very large volume of conversations without performance degradation. Seamless integration with BRI's core banking system enables Sabrina to provide real-time information on balance, transaction history, and other banking services. Its ability to process more than 15 million conversations per year shows the robustness of the technological infrastructure supporting Sabrina's operations.

Comparison of Sabrina's performance with digital-bank chatbots shows consistent advantages across various performance metrics. Sabrina achieved a customer satisfaction score of 4.5 out of 5.0, significantly higher than Bank Jago (4.2) and SeaBank (4.1). Sabrina's response accuracy rate reached 94% for standard questions, surpassing the digital banking industry average of around 89–91%. The conversation resolution rate reached 85%, indicating effectiveness in solving customer issues without human intervention. The first-contact resolution rate reached 78%, far above the industry average of 65%. Support for multilingual functionality, including 15 local Indonesian languages, provides significant competitive advantages in Indonesia's diverse market.

Sabrina's success did not happen overnight but resulted from a six-year sustainable development strategy. BRI implemented an adaptive learning development methodology in which each customer interaction becomes learning data to improve the system's capabilities. The consistent iteration process allows Sabrina to continue growing and adapting to changing customer needs and technology trends. Ongoing investment in research and development ensures that Sabrina remains at the forefront of AI innovation in banking. An experienced development team committed to quality has been a key factor in maintaining high performance standards for Sabrina.

One of Sabrina's key success factors is in-depth understanding of Indonesia's cultural and social context. BRI built Sabrina with consideration for Indonesian communication styles, which tend to be

more personal and informal. Sabrina's ability to understand the nuances of the Indonesian language—including the use of slang and local expressions—creates a more natural and comfortable experience for users. Adapting to Indonesian norms of politeness and communication ethics makes interactions with Sabrina feel more familiar and acceptable. Understanding Indonesia's cultural diversity is also reflected in comprehensive multilingual support.

Sabrina does not stand alone but is integrated into BRI's broader digital ecosystem. Integration with mobile banking, internet banking, and other digital services creates a seamless omnichannel experience for customers. Sabrina's ability to facilitate various banking transactions directly via chat interface enhances customer value and convenience. Synergy with other BRI products and services enables Sabrina to provide relevant and personalized recommendations. This integrated ecosystem creates network effects that strengthen Sabrina's competitive position compared to digital-bank chatbots that often operate in isolation.

Sabrina's success reflects BRI's long-term commitment to digital transformation and technological innovation. The strategic vision to become a leading digital bank drives ongoing investment in AI and chatbot technology development. Full support from BRI's top management ensures that the Sabrina project receives sufficient resources and high priority. A development strategy that is measured and consistent allows BRI to build a solid and sustainable foundation. Commitment to quality and ongoing innovation has been a distinguishing factor that enables Sabrina to outperform competitors that often rush their digital product launches.

The implementation of Sabrina has acted as a catalyst for broader digital transformation at BRI, changing how the bank operates and interacts with customers. Sabrina not only automates customer service but also transforms the customer engagement model from reactive to proactive. Analytics derived from Sabrina interactions provide valuable insights into customer behavior, preferences, and needs, which are then used for product development and marketing strategy. Organizational cultural transformation within BRI has also been significant, with increased acceptance and enthusiasm for digital innovation as a result of Sabrina's success. Operational efficiencies generated allow BRI to allocate human resources from routine tasks to more strategic activities.

The development strategy for Sabrina, which can serve as a benchmark, is a phased and sustainable approach that starts from basic functions to more complex features. BRI began with a simple chatbot capable of handling common queries, then gradually added advanced features such as banking transactions and predictive analytics. This approach enables continuous learning and adjustment without disrupting bank operations. The iterative development model reduces the risk of major failures and allows more measured investment. Other conventional banks can adopt a similar strategy by starting with a limited pilot project before full expansion. Ongoing learning at each development stage becomes key to sustainable AI implementation success.

BRI's investment model in Sabrina development demonstrates the importance of adequate and sustained resource allocation. BRI not only invests in technology but also in human resources and supporting infrastructure development. A balanced investment strategy between technology, talent, and infrastructure is key to successful AI implementation. Other conventional banks can adopt this model by allocating specific budgets for digital transformation covering all aspects of AI development. Long-term commitment to AI technology investment is a decisive factor for success that cannot be ignored. A measured but consistent investment approach enables the building of a strong foundation for AI development.

The best practices from BRI that can be adopted are customer-centric approaches focused on localization in the Indonesian context. Sabrina was developed considering the behavior, preferences, and specific needs of Indonesian users. Localization strategies encompassing language, culture, and social norms are key differentiators that set Sabrina apart from competitors. Other conventional banks

can apply similar principles by conducting in-depth research on their customers' characteristics before developing AI. An approach that does not merely replicate foreign technology, but adapts to local contexts, is a success factor. Customer involvement in AI development and testing is also important to ensure its relevance and acceptance.

BRI's talent development model in the Sabrina project can serve as a reference for other conventional banks. BRI built an internal team with expertise in AI and machine learning, while also collaborating with experienced technology partners. A capability development strategy that combines internal and external learning enables effective knowledge transfer. Other conventional banks can adopt a similar approach by investing in employee training and recruiting tech talent. A culture of continuous learning and openness to innovation are key factors in AI capability development. Collaboration with universities and research institutes can also enrich talent development in AI.

BRI's best practices in AI governance and risk management can serve as a model for other conventional banks. BRI developed a comprehensive framework to manage risks associated with AI implementation, including operational, reputational, and regulatory risks. A continuous monitoring and evaluation system ensures that AI performance remains optimal and meets established standards[6]. Other conventional banks can adopt similar frameworks, tailored to their organizational characteristics. Transparency in AI algorithms and decisions is important to build trust with customers and regulators. Regular audit and review processes ensure that AI systems remain accurate and reliable.

Sabrina was built on a scalable cloud-based architecture using adaptive machine-learning systems that continuously evolve based on each customer interaction. Natural language processing technology developed specifically for the Indonesian context is a primary advantage, allowing for nuanced understanding of Indonesian communication styles. Seamless integration with BRI's core banking systems enables Sabrina to deliver real-time transactional services with high accuracy.

The integration model of Sabrina with BRI's legacy systems can serve as a reference for other conventional banks facing similar challenges. BRI successfully integrated modern AI technology with existing banking systems without disrupting daily operations. A phased and planned integration strategy enabled smooth migration from legacy systems to a more modern architecture. Other conventional banks can adopt a similar approach by conducting in-depth assessments of their systems before designing an integration strategy. The use of adequate bridging technology and APIs is key to successful legacy-to-AI system integration. Thorough planning and testing ensure that integration does not disrupt customer services.

BRI's collaboration strategy with various technology partners in developing Sabrina can serve as a model for other conventional banks. BRI did not develop all technology internally but partnered with specialized tech firms. A mutually beneficial partnership model allows access to advanced technology without building all capabilities from scratch. Other conventional banks can adopt a similar strategy by identifying the right partners according to their needs and capabilities. Effective partnership management and ongoing knowledge transfer are key to collaboration success. Balancing internal and external development allows optimal resource use and accelerated innovation.

BRI's performance measurement and evaluation model for Sabrina can serve as a reference for other conventional banks. BRI developed comprehensive metrics to measure various aspects of AI performance, from technical accuracy to business impact. A holistic evaluation approach enables identification of areas needing improvement and opportunities for further development. Other conventional banks can adopt similar evaluation frameworks, adjusting metrics relevant to their business objectives. Transparency in performance reporting and learning from each evaluation are keys to continuous improvement. Structured feedback processes from customers and employees are also important to ensure that AI remains relevant and effective in meeting user needs.

BCA's AI assistant **Vira** adopts a philosophy of platform diversification and universal accessibility. Vira is available on multiple platforms including LINE, Facebook Messenger, WhatsApp, Kaskus Chat, and Google Assistant, reflecting understanding that users have diverse platform preferences. The GestureCam innovation, developed for people with disabilities, signifies a commitment to digital inclusivity. This strategy shows that BCA prioritizes wide reach and universal accessibility in AI implementation.

Vira uses AI technology focused on ease of access and service distribution across various platforms. Its architecture, supporting integration with multiple communication platforms, demonstrates high technological flexibility. Registration integrated with BCA's ATMs indicates understanding of customer touchpoints. GestureCam innovation, using advanced computer vision technology, accommodates the needs of users with disabilities.

The development of Generative AI technology has revolutionized various industries, including banking. Banks in Indonesia, both conventional and digital, have begun to integrate Generative AI to improve customer experience and business efficiency. Bank Jago, as one of the leading digital banks in Indonesia, collaborates with Google Cloud in utilizing Vertex AI Model Garden to build AI-based solutions. Bank Jago implements generative AI applications using Google's foundational AI models accessed through Vertex AI Model Garden, including risk management assistant, market intelligence assistant, and contact center performance coach.

Vertex AI Model Garden provides access to Google's foundational AI models (such as Gemini, Imagen, and PaLM) that can be used for various business cases, ranging from automated customer service to financial data analysis.

SeaBank Indonesia, as part of the Sea Limited ecosystem, leverages AI with an approach integrated into the Shopee e-commerce platform. By the third quarter of 2024, SeaBank's performance was highly impressive, successfully recording a net profit of IDR 291.53 billion as of September 2024, growing 31.97 percent year-on-year.

Banks use artificial intelligence (AI) and machine learning for credit scoring and fraud detection, ensuring the provision of efficient and secure services. The implementation of this AI is an integral part of the bank's strategy to deliver superior services to customers.

The use of AI and cyber security at SeaBank Indonesia already supports digital banking business, which has been recognized through the TOP Digital Awards 2024. This shows SeaBank's commitment in integrating AI technology as the foundation of its digital banking operations.

SeaBank uses AI-driven customer insights to offer financial solutions tailored to customer needs. According to SeaBank's 2024 annual report, AI is used for cross-platform data analytics to analyze transaction data across platforms within the Sea ecosystem to provide comprehensive financial insights, automated credit scoring that analyzes customers' digital transaction data and online behavior, and personalized product recommendation through AI-driven recommendation engines tailored to customers' shopping preferences and digital lifestyle.

The collaboration between the bank and Sea's e-commerce platform, Shopee, has been a key to success. The integration of AI enables the analysis of e-commerce transaction data to provide more personalized and relevant banking services aligned with customer needs.

3. Electronic Know Your Customer (e-KYC)

The Electronic Know Your Customer (e-KYC) feature is one of the key elements in digital customer onboarding. At SeaBank, the e-KYC process is fully digital and automated. Users only need to upload

a photo of their ID card and perform facial verification (selfie) directly through the app. Face recognition and OCR (optical character recognition) technologies are used to read identity data and match it in real time, allowing account opening to be completed in less than 10 minutes without the need for interaction with staff or a branch visit. A similar approach is also implemented by Bank Jago, which offers a fast and practical e-KYC process. Users only need to upload their ID and a selfie, and the system will automatically verify without requiring additional validation. This process is very user-friendly and supports the ease of independent account opening at any time.

In contrast to these two digital banks, BRI, through the BRImo app, already provides an e-KYC feature, but it is not yet fully automated. Although users can register and upload documents digitally, in some cases especially for new customers-additional verification by bank staff is still required, either online or directly at a branch. This indicates that the e-KYC system in BRImo remains semi-digital, as the process is not yet fully autonomous. Meanwhile, BCA through the myBCA app also has not fully implemented automated e-KYC. Customers are still required to verify via video call or visit a branch office after filling in their data and uploading documents. Thus, the account opening process in myBCA is still considered a manual-digital hybrid, requiring additional time and steps compared to digital banks.

Overall, SeaBank and Bank Jago excel in implementing e-KYC because they offer a fast, efficient, and fully digital onboarding process. Conversely, BRImo and myBCA still need to refine their e-KYC systems to provide an equivalent experience in terms of speed, convenience, and service efficiency.

The implementation of the electronic Know Your Customer (e-KYC) feature is a key indicator in measuring the maturity level of bank digitalization, particularly in the digital customer onboarding process. The digitalization strategies adopted by digital banks such as SeaBank and Bank Jago focus on service efficiency by presenting a fully automated e-KYC process using facial recognition and OCR technology. This approach enables account opening to be performed quickly, independently, and without staff interaction, thus offering a competitive advantage in attracting customers who prioritize convenience and speed. On the other hand, conventional banks like BRI and BCA still apply semi-digital e-KYC systems, where the verification process still involves manual validation, either through direct staff interaction or video calls. These limitations indicate that legacy systems and complex bureaucratic structures remain major challenges for conventional banks in optimizing their digital services.

Key factors influencing the success of e-KYC digitalization include the adoption of biometric technology, the capacity of digital infrastructure, and the flexibility of the bank's internal business processes. Banks that can provide responsive, integrated, and easily accessible systems for customers tend to be more successful in implementing effective e-KYC. Conversely, obstacles such as reliance on manual procedures, concerns about data security, and internal resistance to technological change are major barriers to successful digitalization—especially in banks that are not yet fully prepared technically and organizationally. Therefore, the success of digital transformation in e-KYC does not solely depend on the technology itself, but also on the institution's commitment to aligning business processes, internal policies, and human resources to support fast, secure, and customer-centric services in the digital era.

V. CONCLUSION

This study reveals that the digitalization of Indonesia's banking sector is progressing, although with different approaches between conventional and digital banks. Digital banks such as SeaBank and Bank Jago prioritize service efficiency, easy access, and strong integration with digital ecosystems. Their advantages lie in fully automated e-KYC implementation, integrated investment features, and competitive interest rates.

Digital transformation in the banking sector has become essential due to advances in information and communication technology, as well as growing customer expectations for fast, easy, and efficient financial services. Analysis of mobile banking applications from BRI, BCA, Bank Jago, and SeaBank shows that each bank applies different digital strategies, tailored to their business models, technological readiness, and market segments.

Digital banks like Bank Jago and SeaBank lead in service efficiency, digital account opening, ecosystem integration (Shopee, Gojek, Bibit), and higher savings interest rates. In contrast, conventional banks such as BRI and BCA still rely on manual verification processes, which limits flexibility in onboarding and account opening.

Key factors for successful banking digitalization include technology integration (e-KYC, AI, APIs), user-oriented features like budgeting and investment tools, and connections to external digital platforms. However, challenges remain: conventional banks face legacy systems and resistance to change, while digital banks are limited by physical infrastructure such as ATMs and cash services.

Therefore, successful digital transformation is not only about adopting advanced technology, but also about understanding customer behavior, adapting service strategies, and building a holistic, inclusive digital ecosystem. Collaboration between technological innovation, organizational readiness, and regulatory support will be crucial for ensuring the long-term sustainability and competitiveness of banks in the digital economy era.

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