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The Role of Digital Banking in Enhancing Financial Inclusion

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Abstract

Access to affordable and safe financial services is a key determinant of economic participation and growth. However, some part of the Indonesian population is still unbanked. The financial inclusion index in 2023 was only 75.02%. This gap in financial access creates challenges and opportunities to achieve broader economic goals. Digital banking is present as a transformative solution to expand financial access in more inclusive manner that benefits underserved groups, including rural communities, low-income populations, and MSMEs. This study uses the Systematic Literature Review (SLR) method to examine the role, strategies, innovations, and challenges of digital banking in driving financial inclusion. Case studies from Kenya, India, and Peru show how digital banking has a positive impact on financial inclusion through various innovations such as mobile banking and digital payment platforms. Some of the challenges hindering the realization of digital banking include limited digital infrastructure, low financial and digital literacy, regulatory barriers, cybersecurity risks, and lack of public trust. The research findings highlight the need for collaborative efforts between governments, financial institutions and technology providers to build an inclusive and secure digital financial ecosystem.

Keywords

Digital Banking, Financial Inclusion, MSMEs

1. Introduction

The increasingly widespread use of digital banking has brought about major changes in the financial services landscape, especially in encouraging the creation of inclusive finance. Inclusive finance refers to the ability of individuals and business actors—especially from the lower middle class, rural communities, and vulnerable groups—to access and optimally utilize formal financial services. The availability of affordable and safe financial services is a key factor in encouraging economic participation and growth. However, some of Indonesia's population is still not adequately served by the conventional banking system. Based on the results of the 2024 National Financial Literacy and Inclusion Survey, the financial inclusion index in 2023 was recorded at 75.02%, which means that out of every 100 people aged 15–79 years, only 75 people are included in the formal financial system. Meanwhile, Presidential Regulation Number 114 of 2020 concerning the National Strategy for Financial Inclusion sets a financial inclusion target of 90% by 2024. This means that there is still a fairly large gap between the current financial inclusion index and the set target. This gap in financial access creates challenges and opportunities to achieve broader economic goals. This is where digital banking comes in as a transformative solution to expand financial access in a more inclusive way.

The development of digital banking—through online banking services, mobile banking, and electronic wallets—has revolutionized the way people interact with the financial system. By eliminating geographic boundaries and high costs often associated with traditional banking, digital banking allows more people to open accounts, save, access credit, and make transactions easily (Ahmad, 2025). This technology also drives efficiency by reducing dependence on physical infrastructure, so that financial services can reach remote areas and previously unbanked populations. However, the adoption of digital banking is not without challenges, such as the gap in digital literacy, cybersecurity, and public trust in virtual transactions. For this reason, collaboration between banks, governments, and technology providers is needed to strengthen digital infrastructure, consumer protection regulations, and inclusive training programs (Ibarreta et al., 2025).

With its great potential, digital banking is not only a transaction tool, but also a catalyst for economic equality. Through continuous innovation and a user-centric approach, these services can accelerate the realization of sustainable financial inclusion. Therefore, this study aims to analyze in more depth the role of digital banking in driving financial inclusion, the challenges faced, and identify strategies to optimize its impact across different levels of society. This review focuses on how digital innovations, such as mobile banking, have transformed financial services by making them more accessible to underserved populations. In addressing these issues, this article investigates the contributions of previous scholarly works on this topic and highlights key strategies and innovations that have driven the growth of digital finance. In addition, this review considers the various challenges faced by this digital banking, such as regulatory barriers, security concerns, and the digital divide. Through this analysis, this article contributes to the understanding of how digital banking can be leveraged to drive inclusive economic growth in the context of globalization.

2. Literature Review

The purpose of the literature review is to explore how digital banking innovations have contributed to advancing financial inclusion (Wulandari, 2024). In this section, key studies and theoretical perspectives on digital finance are analyzed to assess the effectiveness of various strategies and technologies. Digital banking represents the technological evolution of traditional banking services, encompassing

mobile banking, online platforms, and API-driven financial solutions. Unlike conventional banking, digital banking operates 24/7 without physical branch limitations, offering enhanced convenience, lower costs, and broader financial access (Prayoga, 2023). The growth of digital banking is increasingly rapid along with the increasing use of smartphones, improvements in internet connectivity, and changes in consumer preferences, especially among the younger generation (Singh & Srivastava, 2020). Financial institutions have implemented digital transformation strategies to stay competitive, with many traditional banks either collaborating with technology-based financial service providers or creating their own digital platforms (Grassi et al., 2022).

Mobile banking apps have become the primary interface between banks and customers, offering functionalities such as balance checks, fund transfers, and bill payments (Ibarreta et al., 2025). Mobile payment systems (m-banking) further enhance convenience by enabling cashless transactions across Indonesia's vast archipelago (Fakhimuddin, 2018). Digital wallet services have significantly driven increased financial inclusion by offering banking alternatives for people who do not yet have access to banking services, especially in rural areas where there are few conventional bank branches. The widespread adoption of QRIS (Quick Response Code Indonesian Standard) as an Indonesian payment standard has further accelerated digital payment usage among Micro, Small, and Medium Enterprises (MSMEs), bridging the financial access gap (Prawitasari et al., 2024).

Open banking frameworks can build financial applications using bank APIs, fostering innovation and competition. This has led to the emergence of neobanks that operate entirely online, offering lower fees and personalized services (Sha, 2024). AI-driven chatbots (e.g., Sabrina by Bank BRI) improve the quality of customer service by providing quick responses to questions asked. Machine learning algorithms also improve fraud detection and credit scoring by analyzing transaction patterns (Bello et al., 2023). Digital banking offers numerous advantages that enhance financial accessibility, efficiency, and customer experience. One of the most important benefits of digital banking is increasing financial inclusion, especially for communities that are not yet or are underserved by banking services, because mobile banking and electronic wallets allow access to financial services without having to rely on the presence of a physical office (Ahmad, 2025). Additionally, digital banking reduces operational costs for financial institutions by minimizing branch infrastructure and paperwork, allowing banks to offer lower fees and better interest rates (Revankar et al., 2023). Enhanced customer convenience is another key advantage, with features such as 24/7 account access, real-time transactions, and AI-driven personalized financial insights improving user satisfaction (Eton et al., 2025). Furthermore, digital banking strengthens security through biometric authentication, blockchain-based fraud prevention, and advanced encryption, reducing risks associated with traditional banking (Garcia, 2021). Lastly, the integration of open banking and APIs fosters innovation, enabling seamless third-party services like budgeting apps and automated investing, which empower consumers with greater financial control (Sha, 2024). Collectively, these benefits demonstrate how digital banking transforms financial ecosystems to be more inclusive, efficient, and user-centric.

Financial inclusion is defined as the ability of all segments of society to access and utilize formal financial services (Demirgüç-Kunt et al., 2022). According to the World Bank, financial inclusion is measured through three main dimensions: access, which refers to the availability of financial services; usage, which relates to the intensity and frequency of financial transactions; and quality, which assesses the adequacy and suitability of financial products for users' needs. In Indonesia, the Financial Services Authority reported that the Financial Inclusion Index increased from 61.70% in 2020 to 75.02% in 2023, largely driven by the expansion of digital

financial services. Financial inclusion also refers to the condition in which individuals and businesses can access financial products and services that are useful, affordable, and aligned with their needs (Garcia, 2021). It remains a critical issue, particularly for ensuring equitable access to financial services across all societal levels, especially for those currently excluded from formal financial systems. Despite the progress made in the adoption of mobile banking and other digital platforms in Indonesia, several challenges persist. These include low levels of financial literacy, disparities in internet infrastructure across regions, and limited public understanding of digital financial services (Rolando, 2024).

3. Methods

This study employs the Systematic Literature Review (SLR) method to critically examine the role, strategies, innovations, and challenges of digital banking in promoting financial inclusion. The SLR method was selected due to its rigorous, transparent, and replicable nature, allowing for a comprehensive and evidence-based synthesis of various existing studies. Through this method, the study aims to develop an in-depth understanding of how digital banking contributes to financial inclusion, particularly in the context of recent technological advancements and policy developments. The sampling process involved selecting relevant peer-reviewed journal articles, books, conference proceedings, and official institutional reports that specifically discuss the relationship between digital banking and financial inclusion. To ensure quality and relevance, inclusion and exclusion criteria were established. The inclusion criteria required that articles be published between 2015 and 2025, written in English, and focused on digital banking, financial inclusion, or related innovations. Eligible studies included both empirical research (quantitative, qualitative, or mixed methods) and theoretical reviews, including case studies that offer detailed insights. Exclusion criteria ruled out non-English sources, articles that do not directly address the core themes, opinion pieces, non-peer-reviewed publications (unless from reputable institutions like the World Bank or OJK), and sources without full-text availability. Based on a screening of more than 50 articles from databases such as Scopus, Web of Science, Google Scholar, Emerald, and JSTOR, 8 articles were identified as highly relevant for in-depth analysis.

Data collection was conducted through structured keyword searches in the databases, using terms such as “digital banking,” “financial inclusion,” “digital finance,” and “mobile banking.” Articles were selected based on their relevance to the research questions, methodological quality, and contribution to the thematic areas under review. A literature matrix was used to document publication details, methodologies, and key findings to maintain systematic tracking and ensure alignment with the research objectives. The data extraction and analysis process was organized around key thematic categories to capture consistent insights from each article. These categories included: (1) the role of digital banking, focusing on the impact of mobile banking, digital payment platforms, and technologies like blockchain on financial inclusion; (2) innovations in digital banking, such as AI-driven financial services, open banking APIs, and mobile payment technologies like QRIS; and (3) challenges to financial inclusion, including barriers such as limited digital literacy, cybersecurity risks, infrastructural limitations, and regulatory constraints.

The review process began with the formulation of key research questions: (1) What is the role or impact of digital banking on financial inclusion? (2) What strategies and innovations in digital banking contribute to enhancing financial inclusion? and (3) What challenges and barriers are faced in the development of digital banking? Each of the eight selected articles underwent a full-text review and quality assessment, followed by thematic synthesis based on the established categories. The insights from this analysis formed the foundation for the discussion

and conclusion sections of the study. Using the SLR method, this research provides a structured and analytical perspective on the evolving role of digital banking in advancing financial inclusion.

4. Results

This study uses the SLR method to analyze the role of digital banking in financial inclusion. A total of 8 (eight) relevant, recent (2015–2025) research articles with strong methodologies have been selected for analysis. These articles discuss various aspects related to digital banking and its impact on financial inclusion, including the innovation strategies implemented, the challenges faced, and the challenges in developing digital banking in various countries. The articles above discuss digital banking's impact across diverse countries such as Spain, Mexico, India, Peru, and Uganda. The research methods employed include surveys, case studies, and statistical analyses, with a focus on how digital banking fosters greater access to financial services, especially for underserved populations. The main topics covered by the articles focus on financial inclusion through digital banking, the strategies and innovations that enhance inclusion, and the challenges hindering the development of digital banking.

The role of digital banking in driving financial inclusion is evident in various studies. In Spain, digital banking has significantly increased access to financial services, especially in rural areas, although challenges remain due to barriers like internet connectivity and digital literacy (Ibarreta et al., 2025). Similarly, in Mexico, digital banking has enabled greater access to financial services, although the extent of usage depends on gender, age, and regional development, with rural areas facing higher exclusion (Guerra-Leal et al., 2023). In India, digital banking has made significant strides in including underserved populations, especially through mobile banking platforms, but still struggles with issues of digital illiteracy and infrastructure in rural areas (Cnaan et al., 2023; Revankar et al., 2023). Peru's research highlights the positive effects of technological innovation in digital banking, contributing to financial inclusion by providing affordable and accessible banking services (Garcia, 2021). In Uganda, mobile money platforms like Jazzcash have become essential for financial transactions, particularly in rural communities, although limitations related to trust and digital infrastructure remain (Eton et al., 2025).

The strategies and innovations in digital banking that contribute to increasing financial inclusion include mobile banking, online banking, and digital wallets. These innovations have enabled individuals in rural and underserved areas to access banking services without the need for visiting the physical bank branches (Garcia, 2021; Eton et al., 2025). In India, government initiatives such as the Jan Dhan Yojna (PMJDY) have played a crucial role in promoting digital banking to the unbanked population, with digital platforms providing more accessible and lower-cost services (Revankar et al., 2023). Mobile money services have also played a transformative role, as seen in Uganda and India, where mobile platforms have empowered small business owners and marginalized groups to participate in the financial system (Cnaan et al., 2023; Eton et al., 2025).

However, several challenges and obstacles continue to impede the full development of digital banking. In Mexico and India, gender disparities, with women being more excluded from digital banking services than men, highlight one of the key barriers to financial inclusion (Guerra-Leal et al., 2023; Cnaan et al., 2023). Geographical barriers in rural and remote areas, where internet access and digital literacy are limited, further restrict access to digital banking services (Revankar et al., 2023). Security concerns, including fraud and digital theft, remain significant challenges, particularly in Peru, where digital fraud has reduced users' confidence in mobile banking platforms (Garcia, 2021). Additionally, despite the use of electronic

money via mobile devices has become widespread, the lack of financial literacy and trust in digital platforms remains a major barrier to financial inclusion in Uganda (Eton et al., 2025). These findings indicate that while digital banking offers significant opportunities to bridge the financial inclusion gap, challenges related to infrastructure, literacy, gender, and security must be considered so that all levels of society can feel the benefits of these innovations.

5. Discussion

Digital banking has a fundamental role in expanding access to formal finance for groups of people previously underserved by traditional banking systems. Digital platforms such as m-banking, internet banking, and electronic wallets enable individuals in remote areas and low-income communities to open accounts, access credit, and conduct financial transactions without visiting a bank branch office (Abdillah et al., 2024). In developing countries such as India, Peru, and Uganda, digital banking has enabled micro-entrepreneurs and rural communities to access financial services more easily and cheaply. As Ahmad (2025) research shows, mobile money initiatives such as JazzCash and Easypaisa in Pakistan and PMJDY in India have succeeded in reaching previously unbanked populations.

Various technological innovations have significantly enhanced the role of digital banking in promoting financial inclusion. Notable innovations include mobile wallets and QRIS, which are widely adopted by Micro, Small, and Medium Enterprises (MSMEs) in Indonesia to facilitate non-cash transactions. Additionally, neobanks and open API technologies have enabled the provision of low-cost financial services and more personalized banking experience through system integration. Artificial Intelligence (AI) and chatbots also play a vital role, particularly in improving customer service and fraud detection systems, as demonstrated by Bank BRI's use of the chatbot "Sabrina." These technological advancements also accelerate access to microfinance services, such as small loans and digital savings accounts, offering solutions for individuals who lack formal credit histories.

Despite these benefits, digital banking still faces several major challenges that may hinder the advancement of financial inclusion. Limited digital infrastructure remains a significant issue, particularly in remote areas where internet connectivity is unstable and digital devices are expensive. Low financial and digital literacy also persists, especially among elderly and low-income populations who may struggle to navigate digital platforms. Furthermore, concerns around data security, digital fraud, and the general lack of trust in digital services present substantial obstacles to adoption (Revankar et al., 2023). Gender and demographic disparities further complicate the landscape, with women and rural residents lagging men and urban communities in adopting digital banking solutions.

This study also acknowledges several limitations identified in existing literature. First, many previous studies are geographically limited, focusing on specific cities or regions such as Lira City in Uganda or Rupnagar in India which may limit the generalizability of their findings to broader national or global contexts (Cnaan et al., 2023). Second, methodological differences between the reviewed studies arising from the use of the Systematic Literature Review (SLR) approach result in a diverse range of data quality and research designs. Lastly, much of the existing research focuses predominantly on basic financial services such as transfers and savings, with limited attention given to more complex financial products like digital investments or microinsurance, which are also important components of inclusive finance.

Innovations in digital banking have significantly strengthened their contribution to financial inclusion, particularly through the development and adoption of various technologies. Among the most notable innovations are mobile wallets and the Quick Response Code Indonesian Standard (QRIS), which are widely used by Micro, Small, and Medium Enterprises (MSMEs) in Indonesia to facilitate non-cash transactions

efficiently. Neobanks and the use of Open Application Programming Interfaces (APIs) have also emerged as key innovations, enabling the delivery of low-cost, easily accessible financial services and more personalized customer experiences through digital integration. Additionally, Artificial Intelligence (AI) and chatbot technologies are increasingly being adopted to enhance customer service and fraud detection. For instance, Bank BRI has implemented the AI-powered chatbot “Sabrina” to improve its service capabilities. These innovations not only improve convenience and security but also expand access to microfinance services such as small loans and digital savings accounts—especially for individuals who lack formal credit histories.

Despite these advances, digital banking still faces several significant challenges that hinder its potential to fully expand financial inclusion. Limited digital infrastructure remains a key obstacle, particularly in remote areas where internet connectivity is weak and the cost of digital devices is prohibitive. Low levels of financial and digital literacy further exacerbate the issue, as elderly populations and low-income communities often lack the skills needed to navigate digital financial services. Security concerns, including fears of digital fraud and data breaches, also affect public trust in digital platforms and discourage broader adoption (Revankar et al., 2023). Additionally, there are persistent gender and demographic disparities, with women and rural residents generally lagging men and urban populations in adopting digital banking services.

Several limitations were also identified in previous research. Many studies are geographically constrained, focusing only on specific cities or regions—such as Lira City in Uganda or Rupnagar in India—which limits the generalizability of their findings across broader populations (Cnaan et al., 2023). Moreover, the use of a Systematic Literature Review (SLR) approach means that the reviewed studies vary in their methodological rigor and research design, which may affect the consistency of the conclusions. Finally, much of the existing literature tends to emphasize basic financial services such as fund transfers and savings, with limited attention given to more complex financial products like digital investments or microinsurance that could further enhance financial inclusion.

6. Conclusion

This comprehensive literature review underscores the pivotal role of digital banking in enhancing financial inclusion, particularly in developing countries. Through innovations such as mobile banking, blockchain technology, and app-based financial platforms, financial services have become more accessible to marginalized communities, including those living in remote areas, low-income groups and MSMEs. These innovations have successfully reduced transaction costs, accelerated service delivery, and improved the efficiency and convenience of accessing financial products.

However, despite their immense potential, the utilization of digital banking still faces several significant challenges. Digital infrastructure barriers, such as limited internet access, the affordability of digital devices, and low financial and digital literacy, pose major hurdles in reaching vulnerable groups. Additionally, concerns over data security, fraud risks, and a lack of public trust in digital services are serious obstacles that need to be addressed. Other important challenges include regulatory frameworks that do not fully support the optimal development of financial technology and gender gaps that continue to affect women's access to digital financial services.

Therefore, to build an inclusive, safe, and sustainable digital financial ecosystem, a collaboration is needed between governments, financial institutions, technology providers and civil society organizations to build equitable digital infrastructure, strengthen adaptive and responsive regulations, and provide education and literacy

programs that reach all segments of society. Further research is also needed to explore innovative strategies and the potential of new technologies to accelerate financial inclusion in the future. With integrated and sustainable measures, digital banking can be a primary catalyst in enhancing financial inclusion.

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