International Journal of Economics and Development Policy (IJEDP)
Vol. 8 No. 2, December, 2025
Print - ISSN: 2651-5644
Online - ISSN: 2811-2288

Impact of Digital Finance on Operational Risk Among Deposit Money Banks (DMBS) In Nigeria

[1] Nuruddeen Abubakar, [2]Shuaibu H. Oricha, [3]Adam A. Sulaiman, & [4]Yusuf I. Usman

[1]Department of Business Administration, North Eastern University, Gombe State – Nigeria
[2]Department of Accounting and Finance, North Eastern University, Gombe State – Nigeria
[3]Department of Economics, North Eastern University, Gombe State – Nigeria
[4](PhD. Candidate) Department of Economics, Federal University of Kashere, Gombe State – Nigeria

Corresponding Author's E – mail: nuruddeen.abubakar@neu.edu.ng

Abstract

This paper examines the impact of digital finance on operational risk in Deposit Money Banks (DMBs) in Nigeria. Using a qualitative, literature-based approach, it reviews studies, regulatory reports from the Central Bank of Nigeria (CBN) and the Nigeria Deposit Insurance Corporation (NDIC), and industry publications from 2015 to 2025. Anchored on the Technology Acceptance Model (TAM), the study investigates two core dimensions of digital finance: access to digital-banking platforms and the usage of digital-financial services. Findings indicate that although increased access to and active use of mobile banking, internet banking, USSD, and POS channels enhance convenience, efficiency, and financial inclusion, they simultaneously introduce new operational risks such as fraud, system failures, human errors, and cyber threats. The paper proposes a conceptual framework and recommends stronger access-security mechanisms and improved user education to mitigate these risks. Overall, the study emphasizes the need for Nigerian banks to balance the benefits of digital finance with effective operational-risk management, providing a basis for future research and practical strategies for safer digital banking
.

Keywords: Access; Deposit Money Banks; Digital Finance; Operational Risk; Usage
JEL Classification:

1.0 Introduction

Operational risk has become one of the most critical risk categories confronting modern banking institutions, particularly in an era characterised by rapid digital transformation. According to the Basel Committee on Banking Supervision (BCBS), operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people, systems, or from external events, including legal risk but excluding strategic and reputational risk (BCBS, 2011). Unlike credit and market risks, operational risk is embedded in everyday banking activities and has intensified with increased reliance on technology-driven service delivery.

The expansion of digital finance has fundamentally reshaped banking operations globally. Digital finance refers to the provision of financial services through digital channels such as mobile banking, internet banking, automated payment systems, and electronic funds transfer platforms. The World Bank (2020) notes that digital finance improves efficiency, reduces transaction costs, and enhances financial inclusion by extending financial services to underserved populations. However, the same technologies also introduce new operational vulnerabilities, including cybersecurity threats, system failures, process automation errors, and third-party technology risks.

Global banking regulators have acknowledged the dual nature of digitalisation. The BCBS (2018) emphasises that while digital innovations enhance operational efficiency, they simultaneously increase banks' exposure to operational risk due to greater system complexity, heightened interconnectivity, and dependence on digital infrastructure. Consequently, operational resilience and robust risk-management frameworks have become central regulatory priorities.

In Nigeria, Deposit Money Banks (DMBs) have rapidly expanded their digital-finance offerings in response to regulatory reforms, fintech competition, and increasing demand for cashless transactions. The Central Bank of Nigeria (CBN) has actively promoted digital financial services through initiatives such as the Cashless Policy, the National Financial Inclusion Strategy, and the Payments System Vision 2025, all aimed at improving efficiency and expanding access to financial services. Despite these gains, reports from the Nigeria Deposit Insurance Corporation (NDIC) consistently identify fraud, information-technology failures, and process breakdowns as major contributors to operational losses in the Nigerian banking sector (NDIC, various years).

Although digital finance offers opportunities to strengthen internal controls through automation, real-time monitoring, and data analytics, its effectiveness in reducing operational risk depends largely on how accessible digital platforms are and how frequently and securely they are used. Despite the growing importance of this issue, studies that explicitly examine the relationship between digital-finance access, usage, and operational risk in Nigerian DMBs remain limited.

Against this backdrop, this study examines the impact of digital finance on operational risk among Deposit Money Banks in Nigeria, focusing on two key dimensions: access to digital-finance platforms and usage of digital-financial services. By synthesising existing academic and regulatory literature, the study contributes to the understanding of how digital-finance adoption shapes operational-risk exposure in an emerging-economy context.

1.2 Research Questions

This study seeks to address the following research questions:

1. How does access to digital-finance platforms—such as mobile banking, internet banking, and digital payment systems— Affects operational risk management in Nigerian Deposit Money Banks?
2. To what extent does the usage of digital-finance services—measured through the frequency of digital transactions, online payments, and mobile-wallet adoption—affect operational risk levels in Nigerian Deposit Money Banks?

2.0 Literature Review

2.0.1 Concept of Operational Risk

Operations refer to the routine activities, processes, and functions an organization undertakes to achieve its objectives. In the banking sector, operations include transaction processing, account management, customer service, compliance activities, and internal control mechanisms. Effective operational processes ensure seamless workflows, reduce errors, optimize resources, and uphold service quality. Conversely, poorly managed operations can lead to inefficiencies, financial losses, and reputational damage. Thus, operations constitute the structured execution of tasks that drive organizational performance, risk mitigation, and service delivery.

Risk, in general terms, is the possibility that an event or action may lead to loss, harm, or an undesired outcome. In business and banking, risk emerges from uncertainty surrounding internal processes, human behavior, system performance, or external conditions such as economic fluctuations and environmental disruptions. Effective risk management is therefore essential for maintaining operational efficiency, safeguarding financial performance, and preserving institutional credibility.

Operational risk specifically refers to the potential for loss arising from inadequate or failed internal processes, human errors, system breakdowns, or external events. According to the Basel Committee on Banking Supervision, operational risk encompasses losses linked to failures of processes, people, and systems, as well as legal risks, but excludes strategic and reputational risk. This definition is supported by various authorities, including the Risk Management Association and the World Bank, which emphasize that operational risk can stem from human mistakes, fraud, technology malfunctions, process inefficiencies, or unexpected external shocks such as natural disasters and cyberattacks. In essence, operational risk captures the diverse disruptions that can impair an organization's normal functioning and lead to financial, legal, or reputational consequences.

2.0.2 Concept of Digital Finance

Finance refers to the management of money, investments, and other financial resources, focusing on how individuals, firms, and governments acquire, allocate, and utilize funds while balancing risks and returns. It encompasses financial planning, investment decision-making, fundraising, and the control of financial resources to achieve objectives such as wealth maximization, business growth, and macroeconomic stability. Broadly, finance is classified into personal finance—which focuses on individual budgeting and investment decisions; corporate finance—which centers on business funding and value maximization; and public finance—which deals with government revenue, expenditure, and debt management.

Digital finance represents the integration of finance and technology to deliver financial services through digital channels. It includes mobile banking, internet banking, digital wallets, and electronic payment platforms that allow users to conduct financial transactions without physical bank branches. Digital finance enhances financial inclusion by reducing transaction costs, expanding access to underserved populations, and increasing the efficiency, transparency, and security of financial services. It creates a more inclusive and technologically driven financial ecosystem that supports innovation and economic participation.

2.0.3 Concept of Access

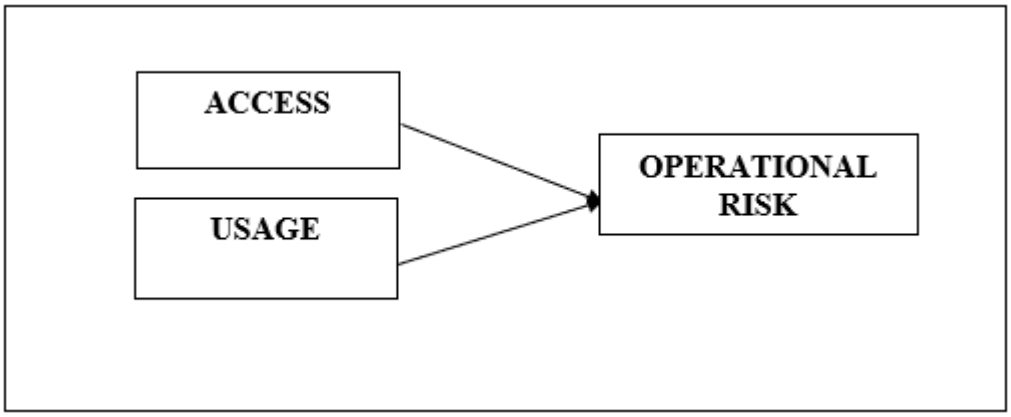
Access in digital finance refers to the degree to which individuals or businesses can reach and utilize digital-financial services. It highlights the availability, affordability, and usability of digital tools such as mobile banking, internet banking, and electronic payment platforms. Access is a central component of financial inclusion, as it determines whether users can conveniently and securely conduct financial activities—including payments, fund transfers, savings, and credit transactions—through digital channels. High access reduces dependence on cash-based systems, broadens financial participation, and promotes economic efficiency.

2.0.4 Concept of Usage

Usage in digital finance refers to the extent and frequency with which individuals or businesses actively engage with digital-financial services. Whereas access focuses on availability, usage reflects actual adoption and behavioral reliance on digital tools. It involves measuring how often users conduct digital transactions, make online payments, use mobile wallets, or

participate in fintech-enabled activities. Usage is a critical indicator of digital-finance effectiveness, as it demonstrates user trust, comfort, and integration of digital services into everyday financial practices. High usage signifies not only the availability but also the meaningful adoption of digital finance, contributing to enhanced financial inclusion, convenience, and operational efficiency.

2.0.5 Conceptual Framework



Conceptual Model

2.1 Empirical Review

2.1.1 Access and Operational Risk

Recent empirical studies have explored how access to and usage of digital-financial services influence operational risk within financial institutions.

Uddin et al. (2023) investigated whether digital transformation affects operational risk exposure by analyzing panel data from 264 banks across 43 countries. The study found that greater digitalization increases operational risk due to heightened vulnerabilities in technological systems, internal processes, and human operations. The authors emphasized the need for strengthened operational-risk management frameworks as banks broaden access to digital channels. Their findings demonstrate that although digital access enhances efficiency and customer convenience, it simultaneously magnifies exposure to operational failures, underscoring the importance of robust risk-control mechanisms.

Li (2024) examined how digital finance affects corporate operational risk through the channels of Research and Development investment and financing constraints. Using empirical data from Chinese firms, the study showed that digital finance improves operational-risk management by easing financing bottlenecks and supporting innovation-driven processes. Li concluded that effective integration of digital finance enhances firms' resilience and capacity to minimize operational losses. The study highlights the critical role that access to digital-financial services plays in reinforcing operational-risk controls at the corporate level.

Mansour (2024) assessed the effect of digital finance on commercial banks' risk-taking behavior using panel data from 160 Chinese banks between 2013 and 2022. The findings revealed that broader access to and deeper usage of digital-financial services reduce banks' risk-taking activities. Digital tools were shown to streamline operational procedures, enhance monitoring, and strengthen internal control systems. The study concludes that access to digital-

finance platforms not only supports efficient banking operations but also mitigates operational and other forms of risk, reinforcing institutional stability.

Al-Hammadi et al. (2024) analyzed the impact of financial technologies on operational risk management in Islamic banks in the United Arab Emirates. Survey results indicated that fintech adoption enhances monitoring, compliance, and process efficiency. The authors found that accessible digital tools significantly improve operational-risk controls and shape users' perceptions of risk by enhancing the reliability and effectiveness of banking processes. The study underscores the importance of accessible and dependable fintech platforms in reducing operational vulnerabilities.

Widjanarko et al. (2025) conducted a global literature review on operational-risk management in digital banks. The review identified major operational challenges associated with reliance on digital channels, including system failures, cybersecurity threats, and regulatory compliance issues. The authors concluded that robust technological infrastructure, strong compliance systems, and comprehensive operational-risk frameworks are essential for mitigating these challenges. Overall, their findings reveal that increased access to digital banking improves convenience and efficiency but also introduces new operational risks that require proactive management.

Collectively, empirical evidence suggests that while access to digital-financial services expands convenience, inclusion, and operational efficiency, it concurrently heightens exposure to fraud, system breakdowns, and process failures. This underscores the need for effective risk-management practices, strong technological infrastructure, and sound regulatory oversight.

A growing body of empirical research has also examined how the extent and frequency of digital-finance usage affect operational-risk outcomes in financial institutions. Saputra et al. (2025) investigated the relationship between digital-banking usage, perceived risk, customer expectations, and satisfaction by surveying users of mobile and online banking platforms. The findings showed that frequent usage significantly shapes customers' perceptions of operational risk, particularly regarding system downtime and fraud. The authors concluded that banks must ensure the reliability and security of digital platforms to manage operational risks effectively and maintain customer confidence. The study demonstrates that higher usage levels are closely associated with heightened perceptions of operational risk, highlighting the need for strong technological safeguards alongside increased adoption.

Ali et al. (2021) examined the influence of perceived benefits, perceived risk, and user trust on the intention to adopt Islamic fintech using a survey of 321 respondents. The study found that both perceived benefit and perceived risk significantly influence user attitudes, with perceived benefits positively affecting trust and perceived risk negatively affecting trust. Additionally, trust was shown to have a strong and significant impact on the intention to adopt Islamic fintech services. These findings suggest that users' willingness to frequently engage with digital-financial platforms—and thus their usage patterns—is shaped by their trust in the platform's operational reliability and security.

2.2 Theoretical Review

The Technology Acceptance Model (TAM) provides a foundational framework for understanding why individuals adopt and use digital-banking platforms. Developed by Fred Davis in 1986, TAM builds on earlier theories of decision-making and technology adoption, emphasizing two key constructs: perceived usefulness (the extent to which a technology enhances performance) and perceived ease of use (the degree to which a technology is free of

effort). Because of its simplicity and explanatory power, TAM has become one of the most widely applied models in studies of digital-finance adoption, particularly in the banking sector.

The model effectively explains the drivers behind the acceptance of digital tools such as mobile banking, internet banking, and USSD-based transactions. By demonstrating how user perceptions shape behavioral intention and actual system usage, TAM helps researchers understand why some individuals embrace digital-financial services while others hesitate.

However, TAM has been criticized for its narrow focus. The model does not fully account for important contextual factors such as trust, security and privacy concerns, cultural influences, perceived risk, or fear of fraud—issues that strongly affect digital-finance adoption in developing economies such as Nigeria. These limitations suggest that TAM may not capture the full range of determinants influencing digital-finance behavior and technology acceptance in high-risk environments.

Despite these critiques, TAM remains relevant to this study because it provides a structured way to examine how customers and bank employees interact with digital-finance systems. User acceptance directly influences operational risk: low perceived ease of use may lead to errors and system misuse, while low perceived usefulness or trust may discourage proper utilization of secure digital channels. Similarly, inadequate user understanding or confidence can increase vulnerabilities to cyber threats, fraud, and process failures. Therefore, TAM offers a useful theoretical lens for analyzing how access to and usage of digital-finance platforms shape operational-risk outcomes in Nigerian Deposit Money Banks.

3.0 Methodology

This study adopts a qualitative, literature-based research design to examine how digital finance influences operational risk in Deposit Money Banks (DMBs) in Nigeria. Rather than generating primary data, the study synthesizes existing knowledge from a wide range of secondary sources, including peer-reviewed journal articles, reports from the Central Bank of Nigeria (CBN) and the Nigeria Deposit Insurance Corporation (NDIC), industry publications, and global regulatory documents. Literature published between 2015 and 2025 was systematically reviewed using relevant keywords related to digital finance, fintech adoption, banking risks, and operational-risk management.

The Technology Acceptance Model (TAM) provides the theoretical foundation for this review, offering a lens through which to understand how users accept and engage with digital-banking technologies. Guided by this framework, the study employed thematic analysis to identify, interpret, and integrate recurring themes within the literature. Particular attention was given to digital-finance platforms such as mobile banking, internet banking, USSD services, and POS channels, and how their adoption contributes to or mitigates operational risks—including fraud, system failures, human errors, and cyber threats.

Insights from the reviewed literature were synthesized to develop a conceptual framework that outlines the mechanisms through which digital-finance access and usage influence operational risk in Nigerian DMBs. This framework also provides a foundation for future empirical studies seeking to validate these relationships.

As the study relies exclusively on secondary data, ethical considerations centered on the accurate representation of existing research, proper citation of all sources, and adherence to academic integrity throughout the review process.

4.0 Findings

The literature review reveals that digital finance influences operational risk in Nigerian Deposit Money Banks (DMBs) through two primary pathways: digital access and digital usage. Expanded access to digital channels—such as mobile banking, online banking, USSD services, and POS terminals—has improved service convenience and deepened financial inclusion. However, this growth also broadens the risk landscape by increasing exposure to fraud, unauthorized transactions, system vulnerabilities, and other security threats.

Similarly, patterns of usage by both customers and bank personnel significantly shape operational-risk outcomes. Proper and secure use of digital platforms can reduce operational disruptions, but frequent misuse—such as erroneous transactions, bypassing of authentication procedures, or failure to adhere to established controls—can exacerbate vulnerabilities. Thus, the evidence suggests that while digital finance enhances efficiency and service delivery, it simultaneously introduces new operational challenges that require proactive mitigation.

5.0 Conclusion

Digital finance has become a transformative force in Nigeria's banking sector, offering substantial gains in efficiency, accessibility, and customer experience. Nevertheless, these advancements are accompanied by heightened operational risks, including fraud, cyberattacks, system breakdowns, and human error. To maximize the benefits of digital finance while minimizing its associated risks, DMBs must strengthen their security infrastructure, invest in continuous user and staff education, and implement robust governance and risk-management frameworks. Effective alignment of technology, people, and processes remains essential for ensuring safe and sustainable digital-finance operations in Nigeria.

5.1 Recommendations

Based on the findings of this study, the following recommendations are proposed to strengthen operational-risk management within Nigerian Deposit Money Banks in the context of expanding digital finance:

1. **Strengthen Access Security Measures**: Banks should enhance the security architecture of all digital platforms by implementing multi-factor authentication, regular system audits, and continuous monitoring. Investing in advanced cybersecurity tools—such as intrusion detection systems, biometric verification, and encrypted communication channels—will help prevent unauthorized access, reduce fraud exposure, and safeguard sensitive customer data.
2. **Promote Safe and Responsible Digital Usage**: Both customers and bank personnel should receive continuous education on proper use of digital-banking channels. Awareness programmes should emphasize secure login practices, password hygiene, transaction verification, and the importance of adhering to authentication protocols. Improved digital literacy and compliance will help minimize user-related errors, reduce vulnerability to social-engineering attacks, and enhance overall operational resilience.

REFERENCES

Adewumi, O., Melikam, W., & Ige, O. T. (2023). Adoption of financial technology and performance of deposit money banks in Nigeria. Futurity Economics & Law, 6(2).

Ali, M., Raza, S. A., Khamis, B., Puah, C. H., & Amin, H. (2021). How perceived risk, benefit and trust determine user fintech adoption: A new dimension for Islamic finance. Journal of Islamic Accounting and Business Research, 12(4), 403–420.

Basel Committee on Banking Supervision. (2011). Operational risk – Supervisory guidelines for the Advanced Measurement Approaches. Bank for International Settlements.

Basel Committee on Banking Supervision. (2018). Sound practices: Implications of fintech developments for banks and bank supervisors. Bank for International Settlements.

Basel Committee on Banking Supervision. (2021). Principles for operational resilience. Bank for International Settlements.

Central Bank of Nigeria. (2020). National financial inclusion strategy (revised). Central Bank of Nigeria.

Central Bank of Nigeria. (2021). Payments system vision 2025. Central Bank of Nigeria.

Central Bank of Nigeria. (2023). Financial stability report. Central Bank of Nigeria.

Enebeli-Uzor, S., & Mukhtar, A. (2024). Monetary policy, digitalisation and banking industry performance in Nigeria. Journal of Scientific Research and Reports, 30(6), 459–468.

Ikenna, M. (2024). Operational risks faced by financial institutions in the digital age: A case of Nigeria. International Journal of Modern Research Methodology.

John, S. A., Shonubi, J. A., Azuikpe, P. F., & Ologun, V. O. (2025). Adoption of AI-driven fraud detection systems in the Nigerian banking sector: Cost, compliance and competency considerations.

Lee, L. (2024). Enhancing financial inclusion and regulatory challenges: A critical analysis of digital banks and alternative lenders. Journal of Financial Innovation.

Nigeria Deposit Insurance Corporation. (2021). Annual report and statement of accounts. NDIC.

Nigeria Deposit Insurance Corporation. (2022). Annual report and statement of accounts. NDIC.

Nigeria Deposit Insurance Corporation. (2023). Annual report and statement of accounts. NDIC.

Nnonyelu, P. C., & Onwuzuligbo, L. T. (2025). Digital disruption and operational performance of commercial banks in Anambra State, Nigeria. Journal of the Management Sciences, 61(9), 404–421.

Nweke, G. I., Nweke, O. C., & Mocha, S. C. (2025). Innovation risk management in the Nigerian banking sector: An assessment of regulatory frameworks. Journal of Humanities, Arts and Social Science, 9(6), 1066–1077.

Obayagbona, J., & Osagiende, M. (2023). Risk management and performance of the Nigerian banking industry. Journal of Business Studies and Management Review, 6(2), 118–127.

Onyegiri, P. K., Ibenta, S. N., & Okaro, C. S. (2024). Risk management and financial performance of deposit money banks in Nigeria. African Banking & Finance Review Journal, 9(9), 114–129.

Onuegbu, O. C., Agbamu, B. O., Anyakoha, B. U., & Anunike, O. W. (2025). Communication, awareness and acceptance of digital banking amidst cash crunch in Southeast and South-South Nigeria.

Osagu, M. I., & Ehiedu, V. C. (2025). Impact of financial technology growth risks on the performance of banks in Nigeria. International Journal of Academic Management Science Research, 9(6), 146–159.

Wan, Q., & Cui, J. (2024). Dynamic evolutionary game analysis of how fintech in banking mitigates risks in agricultural supply chain finance. Journal of Financial Innovation.

World Bank. (2019). Financial consumer protection and digital finance. World Bank Group.

World Bank. (2020). Digital financial services. World Bank Group.

Zhang, X., et al. (2025). Gauging the impact of digital finance on financial stability in the presence of multiple unknown structural breaks: Evidence from developing economies. Economies, 13(7), Article 187.