International Journal of Entrepreneurship and Business Innovation
ISSN: 2689-9493
Volume 9, Issue 2, 2026 (pp. 88-105)
www.abjournals.or

E-CHANNELS AND FINANCIAL PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA

Daniya Adeiza Abdulazeez[1], Dauda Chetubo Kuta[2], Josiah Enojo Omede[3], and Aliyu Abdullahi[4].

[1&2]Department of Entrepreneurship, Federal University of Technology, Minna, Niger State, Nigeria.

Emails: [1]d.abdulazeez@futminna.edu.ng; [2]c.k.dauda@futminna.edu.ng

[3]Access Bank Plc, Minna, Niger State, Nigeria.
Email: jossyernest@gmail.com

[3]Nigeria Revenue Service, Lagos, Nigeria.
Email: adive2002@gmail.com

Cite this article:

Daniya, A. A., Dauda, C. K., Josiah, E. O., Aliyu, A. (2026), E-Channels and Financial Performance of Deposit Money Banks in Nigeria. International Journal of Entrepreneurship and Business Innovation 9(2), 88-105. DOI: 10.52589/IJEBI-FLV95IAR

Manuscript History

Received: 26 Jun 2026

Accepted: 22 Jul 2026

Published: 1 Aug 2026

ABSTRACT: *The Nigerian banking industry has experienced unstable and declining performance over the past two decades due to economic, technological, and regulatory challenges. In response, banks have invested heavily in ICT and E-channels to enhance their competitiveness and overall performance. However, the impact of technology on banks' financial performance remains inconclusive. This study, therefore, examined the effect of banks' e-channels (Automated Teller Machines, Point of Sale terminals, Bank Applications/USSD and Bank Verification Number Enrollment) on the financial performance (Profit After Tax) of deposit money banks in Nigeria. The study adopted a quantitative research design and collected time-series data from 14 sampled deposit money banks over ten years (2015–2024). Data sources included the National Bureau of Statistics (NBS), the Central Bank of Nigeria (CBN) Bulletin and the banks' annual reports. The study is anchored in the Resource-Based Theory (RBT), and both descriptive statistics (mean, standard deviation, minimum, and maximum) and inferential statistics (correlation and regression analysis) were used to analyse the data. The findings revealed that ATM transactions, POS terminals and BVN enrollment had positive and statistically significant effects on the banks' financial performance. However, Bank Application/USSD transactions showed a positive but insignificant effect on performance. The study concludes that e-channels have a significant effect on the performance of deposit money banks in Nigeria. The study recommends that banks should invest in the latest ATMs, expand POS outlets, train staff, and strengthen their internet/network services to improve customer convenience for mobile transactions. At the same time, the Central Bank of Nigeria (CBN) should enforce strict compliance with BVN enrollment to reduce fraud and enhance performance.*

KEYWORDS: Automated teller machines, Bank verification number, bank application/USSD, E-channels, ICT and Point of sale.

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

International Journal of Entrepreneurship and Business Innovation
ISSN: 2689-9493
Volume 9, Issue 2, 2026 (pp. 88-105)

www.abjournals.or

INTRODUCTION

A seamless channeling of financial resources from the surplus sector of the economy to the deficit sector for investment and productive purposes, through financial intermediation, is required for the economic health of financial intermediaries and, by extension, the nation at large. At the heart of financial intermediation are the financial institutions (deposit money banks) that mobilize savings for onward lending to investors to enhance their performance. Generally, performance is a multifaceted concept that encompasses the execution of tasks and the achievement of goals within various contexts. In the business realm, Chandler and Werther (2023) opined that performance is often evaluated through specific metrics that assess how effectively individuals or teams fulfill their roles and responsibilities. This evaluation can be categorized into financial and non-financial dimensions. Financial performance metrics, such as revenue growth and profitability ratios, provide quantifiable insights into an organization's economic health, while non-financial metrics, including customer satisfaction and employee engagement, offer a broader understanding of organizational effectiveness and sustainability (Garnett et al., 2018; Rhodes, 2020). In this study, the profitability (profit after tax) of the banks as a group will be used to assess their financial performance.

The global banking industry faces many challenges shaped by economic, technological, and regulatory dynamics, such as rising interest rates, a sluggish global economy, and geopolitical tensions and supply chain disruptions, which have dampened growth prospects, particularly in developed markets like the U.S. and Europe (McKinsey, 2024; Deloitte, 2024; S&P Global, 2024). Moreover, regulatory pressures and cyber risks further constrained profitability within the banking sector. Emerging markets, meanwhile, are somewhat buffered by younger demographics and stronger consumer demand but remain vulnerable to inflation and geopolitical unrest (Asare & Emmanuel, 2018; McKinsey, 2024).

In Africa, particularly in Nigeria, the banking sector grapples with region-specific challenges alongside global headwinds. African banks, while pivotal to financial inclusion, face structural issues such as limited digital infrastructure and higher non-performing loans, exacerbated by inflation and currency volatility. (S&P Global, 2024; McKinsey, 2024). This practice of banking, before the advent of information and communication technology, was largely carried out manually, requiring the physical presence of all the concerned parties (Agboola, 2021). This makes financial instruments like cheques and tellers often mutilated with a myriad of signatures required to approve a single transaction. As civilization crept in, customers became aware of various financial products, which consequently pushed banks into competition. The desire of banks to remain relevant in a highly competitive environment spurs them to shop for innovative programs and ideas that exceedingly satisfy customers in a bid to capture a larger market share (Sanusi, 2012).

The degree of innovation among banks became intensified at the instance of the advancement in Information and Communication Technology (PWC, 2016). This paradigm shift in technology has made financial institutions develop an array of e-channel digital products and propositions to customers to spur financial performance and remain competitive within the industry. (Oginni et al., 2023). Various financial innovations by the banks occasioned by the revolution in the digital world according to Alhaji and Rosmaini (2018), Asara and Emmanuel (2018), Johannes and Debener (2020), Rhodes (2020), and Mathew and Ibikunle (2022), are rooted in the banks' e-channel proposition through Automated Teller Machines (ATM), Point of Sales Terminal (POS), Bank Verification Number, Bank Mobile Applications and the use

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

of Unstructured Supplementary Service Data (USSD) codes on smart and other phones, e-Wallet/Naira, smart cards (debit and credit cards). This study focuses on Automated Teller Machines (ATM), Mobile Application/USSD, Biometric Verification Number (BVN), and Point of Sale (POS) due to their prominence within the Nigerian banking sector.

ATM provides a platform through which customers can deposit and withdraw their money as well as generate both debit and credit cards, without having to do that over the counter in the banking hall. This provides a lot of flexibility such that customers can have access to their funds anytime without recourse to the bank. Also, the POS terminals provide quasi-banking services in various communities and streets, with all POS machines linked to the conventional deposit money banks. BVN, which is also a financial digital innovation by the Central Bank of Nigeria, deals with the use of digital codes that link accounts to their owners such that financial transactions are centrally monitored and regulated. There are several other categories of individuals that transact business across the world and make payments or receive money using USSD and mobile bank applications. The deployment of technology in the ways by banks has significantly affected their operations, customer relations, market share, and profitability, being the hallmark of all Bostandzic and Weiss, 2020; Meshack et al., 2020. This suggests that a bank is said to perform well if it earns more than it has invested, and vice versa, by exploiting the digital space.

From the preceding submissions, a relationship exists between the banks' e-channel exploitation and their financial performance. That is, banks that are more digitally innovative in deploying e-channel offerings, all things being equal, tend to perform better and more stable than banks with a lackadaisical mindset towards digital innovation. This obviously shows a high correlation between the use of technology in bank transactions and stability. Studies that examined the relationship between banks ICT enhanced transactions and banks' performance and stability are predominantly foreign. Such studies include (Alhaji & Rosmaini, 2018; Josiah & Nancy, 2022; Bahram et al., 2013; Asare and Emmanuel, 2018; Meshack et al., 2020; Mahboub, 2018). However, there are a few Nigerian studies in this regard that are also documented. They are (Opusunju et al., 2021; Robert et al., 2020; Mathew and Ibikunle, 2022; Oginni et al., 2023). It was observed from the literature that there is a paucity of Nigerian studies that examine the subject matter of this study. The very few Nigerian studies that made contributions to the debate on the subject did not use specific e-channel components, used selected banks, and used primary data (opinion-based), which this study considers inappropriate in examining the nexus between e-channels and banks' financial performance. It is based on the foregoing background, therefore, that this study seeks to assess the effect of digital innovation on the financial performance of deposit money banks in Nigeria.

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

International Journal of Entrepreneurship and Business Innovation
ISSN: 2689-9493
Volume 9, Issue 2, 2026 (pp. 88-105)

www.abjournals.or

LITERATURE REVIEW

This section reviews relevant literature within the domain of digital innovation/bank e-channels Vis a Vis performance with a view to having insight into the conceptual, empirical, and theoretical exposition about the study.

Concept of Performance

Performance refers to the degree of achievement an entity attains through effective product or service delivery, where operating costs are minimized while revenue and stability are maximized (Alhaji & Rosmaini, 2018). To achieve high performance and remain stable, firms focus on improving service or product quality so that earnings can adequately cover investment costs (Jaen, 2017). In essence, performance is the rate of progress toward set goals, whether operational or financial. Performance is a multifaceted concept encompassing task execution and goal achievement. In business, it is often evaluated through specific metrics that measure how effectively individuals or teams fulfill their roles (Chandler & Werther, 2023). Generally, performance is classified into two broad dimensions: financial and non-financial. Non-financial performance is qualitative and focuses on indicators such as employee engagement, customer satisfaction, and sustainability initiatives that create long-term value (Cameron et al., 2019). High customer satisfaction reflects service quality and loyalty, which ultimately drive revenue, while employee engagement enhances productivity and retention. Financial performance, on the other hand, provides quantitative insights into an organization's economic health, guiding decision-making for investors and stakeholders (Tangen, 2021). Traditional financial metrics such as profitability, revenue growth, and return on investment (ROI) remain central to performance evaluation (Kaplan & Norton, 2020). Profitability measures like profit after tax, net income, and gross profit margins indicate an organization's ability to generate earnings and reflect its competitiveness. In this study, profit after tax is adopted as it offers a comprehensive basis for assessing the net earning potential of banks' e-channels.

Digital innovation/e-channels in banks

Digital innovation, also known as e-channels, involves the application of new technologies to create or enhance products, services, and business models (Tapscott & Tapscott, 2020). Globally, digital solutions such as mobile banking, artificial intelligence, and blockchain have transformed financial transactions by reducing costs and expanding access to banking services, especially in underserved areas (Arner et al., 2020; World Bank, 2022). In Nigeria, the adoption of e-channels has mirrored global trends while addressing local challenges. The Central Bank of Nigeria's cashless policy and Bank Verification Number (BVN) have improved transactional efficiency, reduced fraud, and promoted financial inclusion (Ehimare & Ogaga, 2021). USSD codes enable rural customers to conduct banking transactions without smartphones or the internet. This study examines four dimensions of digital innovation: Automated Teller Machines (ATMs), Point of Sale (POS) terminals, Bank Verification Number (BVN) enrollment, and mobile bank applications/USSD to determine their effect on the financial performance of deposit money banks in Nigeria.

i. Automated Teller Machines (ATMs)

Traditional banking involved face-to-face counter transactions requiring multiple approvals, resulting in time wastage for customers. The advent of Automated Teller Machines (ATMs)

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

marked a pioneering digital innovation, transforming banks into global entities (Jaen, 2017). ATMs are autonomous electronic devices enabling transactions without bank personnel, with the first ATM unveiled in September 1969 at Chemical Bank, New York (Jegede, 2014). In Nigeria, ATMs were introduced in 1989, with the first installation at Société Generale Bank in 1990 under the trade name 'Cash Point 24' (Jegede, 2014). The 2004 bank consolidation reform accelerated ATM deployment across branches and public places (Hussein and Richard, 2017). CBN (2023) reported that ATM transaction value rose from ₦1.98 trillion in 2012 to ₦21.2 trillion in 2023, with ATMs per 100,000 adults increasing from 2.3 to 16.1 by 2021. ATMs support diverse services and generate revenue through service charges, representing the first generation of digital innovation in banking (Sajjad & Azadeh, 2021).

ii. Point of sale terminal (POS)

Point of Sale (POS) terminals have revolutionized cashless transactions in Nigeria, especially in urban and semi-urban areas. They enable retailers and small businesses to process payments, reducing cash dependency and promoting financial inclusion. The Central Bank of Nigeria's (CBN) cashless policy has significantly driven POS adoption, thereby enhancing payment efficiency (Ehimare & Ogaga, 2021). Technological advancements, following ATMs, led to the proliferation of POS systems, providing quasi-banking services to SMEs in urban and remote areas (Alhaji and Rosmaini, 2018). POS devices, installed in supermarkets, filling stations and restaurants, allow instant fund transfers from buyers' to sellers' accounts (Adewumi & Adetokunbo, 2021). In Nigeria, POS was introduced in 2013 under the cashless policy. Major banks and fintechs like Opay, Palmpay and Monipoint actively register POS agents. According to NBS (2023), there were 986,252 registered POS units. In 2020, over 655 million POS transactions worth ₦5.7 trillion were processed, rising to ₦6.43 trillion in 2021. POS has improved financial access in rural areas and boosted bank profits through increased transaction volumes.

iii. Bank verification number (BVN)

The Bank Verification Number (BVN) is a key digital innovation introduced by the Central Bank of Nigeria (CBN) to provide a unified and secure means of identifying customers across all banks, thereby reducing identity theft and fraudulent transactions (Eze et al., 2022). Launched in 2014 by the CBN in collaboration with the Nigeria Inter-Bank Settlement System (NIBSS), the BVN uses biometric data (fingerprints and facial recognition) as a unique identifier (Polaris Bank, 2024). The initiative strengthens Know Your Customer (KYC) processes, links all accounts belonging to an individual, minimizes unauthorized access, and reduces both loan defaults and fraud (Nwachukwu et al., 2022). According to Seun and Feyijuwa (2021) and Sajjad and Azadeh (2021), BVN makes the manipulation of banking processes difficult and has significantly reduced cases of multiple loan defaults and identity fraud. With 51.7 million and 54.7 million enrollees in 2021 and 2022, respectively, BVN has improved banking stability and overall performance by curbing unfair practices (CBN, 2019; Robert et al., 2020).

iv. Mobile application/USSD

Mobile banking applications and the BVN initiative have redefined Nigeria's digital banking landscape by enabling customers to perform various transactions such as fund transfers, utility payments and account management from both smartphones and non-smartphones (Hauwa et

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

al., 2017). This enhances convenience and supports rural customers with limited access to traditional banking. The introduction of mobile phones in 2002 transformed financial services, leading to innovations like USSD and mobile applications, thereby curbing the inconveniences associated with customers having to visit ATMs and POS terminals (Meshack et al., 2020). Mobile-driven services forced banks to either embrace the technology or risk losing customers (Opeyemi et al., 2017). Also, USSD offers basic banking functions via short codes without internet, making it ideal for rural and low-smartphone areas that operate on GSM networks for real-time services with a maximum daily transfer of 100,000 naira (Adetola & Lawal, 2022). Together, bank apps and USSD have revolutionized banking delivery, enhancing accessibility, efficiency and financial inclusion. With respect to USSD, each bank has its unique codes for carrying out transactions

Conceptual Framework

The foregoing conceptual review of this study has demonstrated that digital innovation measured through ATMs, POS, BVN, and bank application/USSD can drive the financial performance (profit after tax) of the banks. It is therefore clear from the conceptual review that a relationship exists between digital innovation and the financial performance of the deposit money banks in Nigeria, such that banks that aggressively deploy innovative technologies to enhance their transactions are expected to maximize profit and remain competitive within the industry, all things being equal. The pattern of relationship between the dependent and independent variables as used in this study is shown in Figure 2.1.

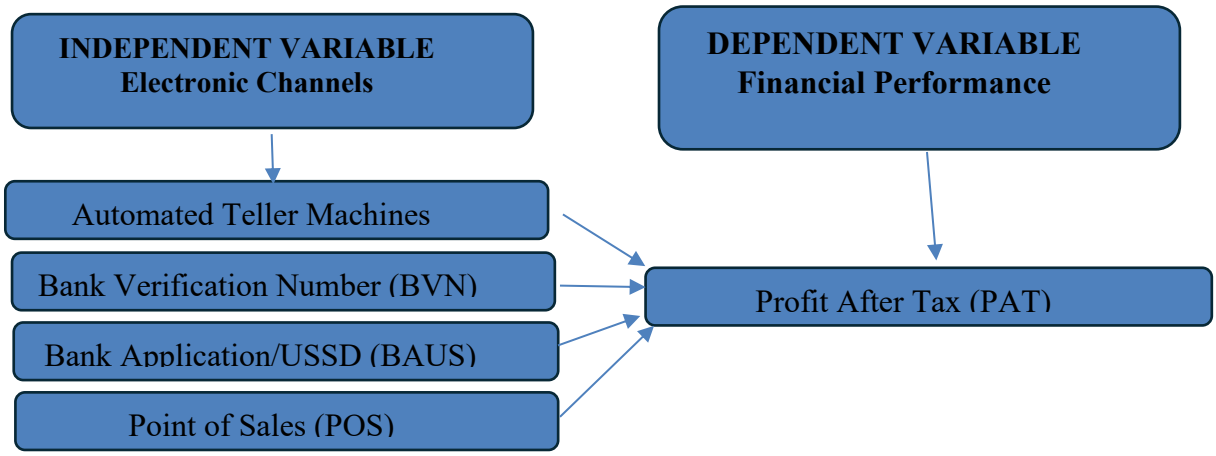

Figure 2.1 Developed by the Authors, 2026 .

Empirical Review

Given the revelation from the conceptual review, it is clear that digital innovation has the capacity to drive the performance of deposit money banks. Studies that examined the effect of ICT, e-channels, and digital innovation on the performance of banks are reviewed below.

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

International Journal of Entrepreneurship and Business Innovation
ISSN: 2689-9493
Volume 9, Issue 2, 2026 (pp. 88-105)

www.abjournals.or

i. Automated Teller Machines and Performance of Deposit Money Banks

Opusunju *et al.* (2021) conducted an empirical investigation into the influence of Automated Teller Machines (ATMs) on the operational performance of deposit money banks in Nigeria over a span of seven years (2012 – 2018). The research employed an ex-post facto research design utilizing secondary data sourced from the statistical bulletin of the Central Bank of Nigeria (CBN). In the data analysis phase, the study implemented regression techniques after conducting preliminary estimation tests (specifically, autocorrelation and unit root tests). The findings from the study revealed that there exists a positive but insignificant relationship between ATMs and the performance of deposit money banks in Nigeria. Also, Hussein and Richard (2017) assessed the impact of Automated Teller Machine utilization on the performance metrics of 28 commercial bank branches situated in Nakuru County, Kenya. The research adopted a correlational-cross-sectional design. Primary data were acquired through the distribution of structured questionnaires. To ascertain the effect of ATM usage and transaction volumes on performance, both correlation and regression analyses were executed. The study concluded that ATMs exert a significant positive impact on the operational performance of the banks under scrutiny. This agrees with Ranasinghe and Kosala (2017) on the influence of ATM service quality on the performance of 30 banks within the Sri Lankan state banking sector, with performance measured through customer satisfaction indices. Data were collected via questionnaires and analyzed using Regression, ANOVA, and T-tests. The study documented a significant positive effect of ATM services on the performance of the banks. Conversely, Charles (2016), who assessed the effect of ATMs on bank performance utilizing a performance measurement approach with a sample of 353 respondents. The study concluded that ATMs lack significant efficacy in attracting customers to transition between banking institutions. Consequently, ATMs exhibit an insignificant impact on the performance of banks. This suggests that while a rise in ATM transactions correlated with an enhancement in the banks' profitability, the magnitude of this increase was minimal or inconsequential.

ii. Points of Sale and Performance of Deposit Money Banks

The effect of POS on the stability of banks, which represents one of the objectives of this study, is also well documented in extant literature. For instance, Hauwa et al. (2017) conducted an empirical investigation into the influence of mobile banking on the financial performance of 22 commercial banks in Nigeria, selected randomly. In this study, both Point of Sale (POS) and Unstructured Supplementary Service Data (USSD) transactions were employed as proxies for mobile banking, while profitability metrics served as indicators of financial performance. The research utilized primary data sourced from questionnaires administered to relevant stakeholders. Analytical methods for the data employed descriptive statistics, including graphical representations and charts. The findings of the study indicated that mobile banking via POS significantly enhances the performance of the banks under examination. Similarly, Syed (2018) examined the effect of Information and Communication Technology (ICT) investments, particularly the utilization of POS systems, on the performance of five commercial banks in Bangladesh listed on the Dhaka Stock Exchange (DSE). This study relied on secondary data extracted from bank reports and employed a quantitative and longitudinal research design. The correlation and regression analysis yielded a positive and significant relationship between investments in IT-related transactions and the performance of the banking institutions.

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

International Journal of Entrepreneurship and Business Innovation
ISSN: 2689-9493
Volume 9, Issue 2, 2026 (pp. 88-105)

www.abjournals.or

In contrast, Mahboub (2018) examined the impact of ICT investments on the financial performance of 50 selected Lebanese commercial banks over eight years (2009-2016), using secondary data obtained from the banks' annual accounts and reports. The variables of interest included Automated Teller Machines (ATMs), mobile banking (USSD/Application and POS terminals), with performance assessed through the CAMEL rating system as the dependent variable. The analysis, conducted via multivariate regressions, revealed an insignificant effect of POS systems on the banks' performance. Johnson (2018) reported similar findings in a study examining the effects of digital delivery channels on the profitability and cost efficiency of banks in Ghana. From the foregoing review, there is a consensus that POS has a positive effect on the performance of banks. Most of the studies reported a significant increase in performance as a result of the deployment of POS terminals, while very few studies found the positive effect to be insignificant.

iii. Bank Verification Number and Performance of Deposit Money Banks

Also, Ekinci (2021) assessed the impact of digitalization on the financial sector performance in Turkey. The study utilized a quantitative approach and collected secondary data from the banks covering 2010-2016. Bank verification identity number was used to depict one of the measures of digitalization. Data Envelopment Analysis (DEA) was used to calculate technical efficiency, and a truncated regression model was used to estimate the effect of digitalization. The study found that digitalization positively impacted the financial performance of the banks as it enhanced the technical efficiency scores of banks. Moreover, Uwambajimana and Mpakaniye (2024) studied the effect of ICT Innovation on the performance of Rwandan microfinance banks. A descriptive research design was employed with data from staff and customers of AB Bank Rwanda Plc (2018-2021). Pearson correlation was used to assess the relationship between ICT innovations (internet banking, customer identification number, and financial performance. The study revealed that ICT innovations showed a strong positive correlation (R=0.987) with bank performance (profitability, sustainability, and efficiency). The argument supporting the improved banking performance as a result of the introduction of the Bank Verification Number (BVN) is grounded in the observation of a reduced frequency of loan defaults, which had previously plagued the banking sector and severely compromised its performance due to the rampant abuse of lending privileges extended to customers.

iv. Bank Application/ USSD and Performance of Deposit Money Banks

Josiah and Nancy (2022) undertook an evaluation of the correlation between electronic banking practices and the performance outcomes of the Kenyan banking sector. Specifically, profitability was measured by Return on Assets (ROA), levels of investment in Automated Teller Machines (ATMs), and the utilization of mobile banking channels such as USSD and mobile applications. The research was meticulously crafted based on secondary data that were extracted from the financial reports of various banks as well as from the official documentation provided by the Central Bank of Kenya. Employing a combination of descriptive and inferential statistical techniques for data analysis, the study yielded compelling revelations that indicated a robust and statistically significant impact of e-banking proxies used in the study on the return on assets within the Kenyan banking industry. This finding suggests that a significant positive correlation exists between the adoption of e-banking services and the overall performance levels of the banks under investigation. Also, Oginni et al. (2023) examined the impact of the electronic banking system on the performance of banks in Nigeria using panel data that are composed of the annual audited financial reports and accounts of the 8 selected

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

banks for a period of 11 years (2000-2010). The result of the pooled OLS regressions indicated that e-banking contributes positively to the performance of the banks. This finding aligns with Ibrahim (2023) on the role of technological innovations in the development of the Indian banking sector, where mobile banking reduced transaction costs on the part of the customers and improved both customer satisfaction and banks' financial performance.

Theoretical Framework

This study is underpinned by the resource-based theory. The choice of the RBT stems from its postulation. Resource-Based Theory (RBT), which was introduced by Barney in 1986 and popularized in 1991, holds that a firm's competitive advantage and performance are achieved through the size of its resource acquisition (Kozlenkova et al., 2018). In this regard, Information and communication technology/e-channels represent resources acquired and deployed into the process and operations of the banks, all in a bid to have a competitive advantage. Going by the position of the RBT, the more resources (e-channels) the banks deploy, the better their process of service delivery, performance, and market share. In aligning the variables of the study with the theory, RBT holds that a firm's competitive advantage lies in its ability to utilize resources that are valuable, rare, inimitable, and organized (VRIO framework). The resources found in the e-channels in banking services fulfill these resource criteria of the theory by streamlining operational efficiency, reducing transaction costs, and improving customer satisfaction. For instance, ATMs and POS terminals extend banking services beyond traditional branches, enhancing service accessibility and reducing dependency on human labour. Also, BVN, as a secure identification system, mitigates fraud and enhances trust, while banking applications provide 24/7 convenience, increasing customer engagement and retention. These technologies function as strategic assets that improve productivity and allow banks to differentiate their services, ultimately driving better financial performance.

METHODOLOGY

This section explains various methods used in carrying out and achieving the objectives of this study. This covers research design, sample and sampling, sources and methods of data collection, method of data analysis, and model specification. This study employed a quantitative approach using a correlational research design. The choice of correlational research design is due to the nature of the study that requires past documented information about the variables under investigation to establish the effect of the digital innovation on the financial performance of the deposit money banks in Nigeria.

The population and sample size of the study consists of all the fourteen (14) deposit money banks that are listed on the Nigeria stock exchange as at December 2025 using census approach for the sampling due to the relatively small and manageable size of the population coupled with the availability of the needed data to establish the effect of e-channels on the financial performance of the listed deposit money banks in Nigeria. Considering the nature of the study and research design, data for the study were sourced from secondary sources, which were quantitatively extracted from the annual reports of the banks and the National Bureau of Statistics (NBS) for the period of the study (2015-2024). Data type on the items collected covers the amount of yearly transactions by all the banks through the ATM, POS, USSD/Bank Application, and annual BVN enrollment. Also, the total annual profits after tax of the banks,

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

which are the dependent variable, were retrieved from the banks' annual reports for the period under study.

Given the research design as well as the nature of the data used in this study, both descriptive and inferential statistics were used to analyze the data. The descriptive statistics were used to describe the characteristics of the variables. This covers the use of the mean to ascertain the average values of the variables, while the standard deviation was used to ascertain the spread and the dispersion of the variable among the banks. Also, correlation analysis was used to establish the relationship among the variables and to check for the existence or otherwise of multicollinearity, which, according to Gujarati (2013), is fixed at 0.8. The existence or otherwise of multi-collinearity was also ascertained through the Variance Inflation Factor (VIF) with a maximum threshold of 10 to establish multi-collinearity (Gujarati, 2013). The study also conducted a Dickey-Fuller unit root test to ascertain the stationarity or otherwise of the time series data. Finally, the study employed Prais-Winsten regression to establish the effect of digital innovation on the financial performance of deposit money banks in Nigeria. This Prais-Winsten regression was used because it preserves the first observation, corrects serial correlation in the residual, provides estimation efficiency, and accuracy Prais and Winsten, 1954).

This study adapts the model of Opusunju et al. (2021) on the effect of Automated Teller Machines (ATMs) on the operational performance of deposit money banks in Nigeria. This adaptation is as a result of the similarity that the study shared with this study. Their model is stated as follows:

$BP = \beta_0 + \beta ATM + \beta_2 ebserv + e$

Where:

BP = Bank performance

β_0 = Constant parameter

ATM = ATM usability

ebserv = e-banking services

e = Error term

The above model was further modified to incorporate all the variables used in this study, as shown thus. Since financial performance (FP) is the dependent variable measured through profitability, while Automated Teller Machine (ATM), Bank Verification Number (BVN), Point of Sales Terminal (POS), Bank Application/USSD codes (BAUS) were used as proxies for digital innovation, the resultant model is as follows:

$P_t = \beta_0 + \beta_1 ATM_t + \beta_2 POS_t + \beta_3 BVN_t + \beta_4 BAUS_t + e_t$

Where: P_{it} = Profit of banks at time t

β_0 = Constant parameters

ATM_t = Automated Teller Machine transactions of banks at time t

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

International Journal of Entrepreneurship and Business Innovation
ISSN: 2689-9493
Volume 9, Issue 2, 2026 (pp. 88-105)

www.abjournals.or

POS_t = Point of Sale transactions of banks at time t

BVN_t = Bank Verification Number enrollment of banks at time t

$BAUS_t$=Bank Application transaction/ Unstructured Supplementary System Data transactions of banks at time t

B_1 - β_4 = Coefficients to be estimated for banks at time t

e_t = Error term at time t

RESULTS AND DISCUSSION

The results of the study are presented and discussed. In this chapter.

Summary Statistics of the Variables

The result of the summary statistics of the variables is shown in Table 4.1.

Table 4.1 Summary Statistics of the Variables

Variables	Mean	Std. Dev	Minimum	Maximum
PAT	189.65	81.04	81.9	323.3
BAUD	77.26	72.49	14.3	223.8
ATM	14.94	8.98	5.7	32.6
POS	32.97	40.04	1.5	110
BVN	6.25	1.82	3.2	8.9

Source: Author's computation using *'Stata'* (2026)

To ease the description of the variables, all the values that are in trillion naira (ATM, POS, BAUS and PAT) were scaled by 1 trillion, while the value for BVN enrollment, which is in millions, was scaled by 1 million. Table 4.1 revealed that the maximum and minimum profit after tax (PAT) of the deposit money banks during the years investigated are 323.3 (2024) and 81.9 (2015) trillion naira, respectively. The mean value for PAT, with a standard deviation of 81.04, indicates that the banks maintained fairly reasonable profit after tax, with a significant variation among the banks with regard to the PAT. The result also disclosed that the maximum amount of transactions through the USSD and bank application during the period was 223.8 trillion (2024) and a minimum of 14.3 trillion (2015) naira, respectively. On average, 77.26 trillion naira has been transacted through USSD and bank applications. Automated Teller Machine (ATM) shows that an average of 14.94 trillion naira was transacted through the ATM, and the transactions did not substantially vary across the years investigated, considering the standard deviation of 8.98. Also, the maximum and minimum amounts transacted through the ATM during the period are 32.6 (2021) and 5.7 (2015) trillion naira, respectively. Also, the average transaction value through the Point of Sale terminals (POS) was 32.7 trillion naira, with a standard deviation of 40.04, implying substantial variation across the years investigated. Also, the maximum and minimum amounts transacted through the POS during the period are 32.6 (2024) and 1.5 trillion (2015) naira, respectively. Finally, Bank Verification Number

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

(BVN) has a maximum and minimum values of 8.9 (2019) and 3.2 (2015), respectively. The average BVN enrollment stands at 6.25 with a standard deviation of 8.98, signifying low dispersion across the years investigated.

Correlation and VIF Result

The correlation result of the variables is presented in Table 4.2

Table 4.2. Correlation matrix

	PAT	USSD	ATM	POS	BVN	VIF
PAT	1.000					
BAUD	0.265	1.000				1.28
ATM	0.535	0.174	1.000			1.81
POS	0.666	0.454	0.119	1.000		1.33
BVN	0.388	0.003	0.633	0.119	1.000	1.79
					Mean VIF	1.55

Source: Computed using *'Stata'* (2026)

Table 4.2. revealed that each variable has a perfect and positive correlation (1.000) with itself. The result also revealed that all the variables (PAT, BAUD, ATM, POS, and BVN) are positively correlated with one another (See Appendix 2). This suggests that the variables are positively correlated moved in the same incremental direction. The correlated results show a moderate to weak correlation among the variables, which indicates high complementary tendencies of the variables. The highest correlation of 0.66, which is between POS and PAT, is below 0.8, which confirms the absence of multicollinearity (Daniya et al., 2024). The absence of multicollinearity was further confirmed through the result of the Variance Inflation Factor (VIF) with a mean value of 1.55, which is less than the threshold of 10 as suggested by (Gujarati, 2013).

Regression Results of the Variables

The regression results on the effect of e-channels and the performance of deposit money banks in Nigeria are presented in Table 4.3

Table 4.3 Regression Result

Variables	Coef.	P-value
ATM	1.125***	0.009
BAUD	0.037	0.851
POS	1.422***	0.000
BVN	5.328***	0.004
R^2	0.863	
F-stat	61.77	
P-val.	0.000	

Source: Generated through *'Stata'* (2026). Note: *** denotes significance at 1%.

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

International Journal of Entrepreneurship and Business Innovation
ISSN: 2689-9493
Volume 9, Issue 2, 2026 (pp. 88-105)

www.abjournals.or

From Table 4.3, the R^2 is 0.863 for the model. This indicates that 86% of the change in the financial performance of deposit money banks in Nigeria during the period investigated was attributable to the components of the independent variables: digital innovation (ATM transactions, USSD/Bank Application, POS, and BVN enrollment). The F-statistic of 61.77 with a p-value of 0,000 indicates the joint significance of the explanatory/independent variables on the dependent variable. This signifies the fitness of the model. Also, the Dickey-Fuller unit root test result revealed the absence of a unit root ($p<0.05$) in the data, which confirms the stationarity of the data.

Discussion

The results of the regression are hereby discussed in line with the objectives of the study.

i. Automated Teller Machines and Performance of DMB

The regression result in Table 4.3 shows that ATM has a positive coefficient of 1.125 and a P-value of 0.009. This shows that the naira value of the transactions through the ATM has a significant positive effect on the financial performance (PAT) of the deposit money banks. The result suggests that every increase in ATM transactions resulted in a 123% increase in the profit after tax of the banks. This could be due to low ATM maintenance costs and widespread adoption of Automated Teller Machines (ATMs), which significantly reduce the cost of in-branch transactions and manual cash handling. Also, ATMs provide 24/7 service access, leading to higher transaction volumes and increased convenience for customers. This efficiency translates into reduced staffing and operational expenses, while ATM service charges generate additional non-interest income. All the mentioned plausible reasons strengthen the overall revenue streams and improve profitability after tax, and by extension, the financial performance of the deposit money banks. This finding is in agreement with those of Johnson (2018) and Omar and Theuri (2023).

ii. Point of Sales and Performance of DMB

From the regression result, POS has a positive and significant effect on the financial performance of the deposit money banks (coefficient = 0.422 and P-value = 0.000). The result indicates that every increase in the value of transactions through the POS translates into a 42% increase in the profit after tax of the banks. A plausible reason for this finding could be that the large proportion of profit made by the POS terminal operators went to the banks (commission). Also, the expansion of Point-of-Sale (POS) terminals boosts banks' profit after tax by driving growth in electronic payment transactions. Each POS transaction attracts fees and commissions that contribute to non-interest income, while the reduced reliance on cash lowers cash-management costs for banks. The wider distribution of POS devices increases customer engagement and transaction frequency, enhancing liquidity flows and strengthening banks' earning capacity. These benefits collectively improve profitability and, by extension, the overall financial performance of the banks. This finding aligns with the conclusions of Mahboub (2018) and Johnson (2018).

iii. Bank Verification Number Enrollment and Performance of DMB

The regression result in Table 4.3 reveals that BVN enrollment has a positive coefficient of 5.328 and a P-value of 0.004. This implies that an increase in the number of BVN enrollments significantly improved the financial performance of the banks. This finding could be ascribed

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

International Journal of Entrepreneurship and Business Innovation
ISSN: 2689-9493
Volume 9, Issue 2, 2026 (pp. 88-105)

www.abjournals.or

to the reduced malpractices and fraud, as well as increased monitoring of accounts by the CBN. Minimizing fraudulent transactions and identity risks through the BVN, banks save costs associated with fraud losses and litigation. BVN enrolment also enhances customer data quality, enabling better credit profiling and targeted product offerings that improve loan performance and revenue generation. The resulting operational efficiency and reduced credit risk associated with BVN enrollment may have contributed to higher net profitability and improved the banks' financial performance. This finding is supported by Robert *et al.* (2020) and Uwambajimana and Mpakaniye (2024).

iv. USSD/Bank Application and Performance of DMB

The regression analysis in Table 4.3 shows that the value of transactions via USSD and bank applications (BAUD) has a positive but insignificant effect on the financial performance of deposit money banks in Nigeria (coefficient = 0.037, p-value = 0.851). This indicates that a unit increase in BAUD value leads to approximately a 4% rise in bank profitability; however, the relationship is statistically insignificant. The insignificant impact can be attributed to high operational and regulatory costs, including heavy investments in technology infrastructure, cybersecurity, system maintenance, telecom partnerships, and compliance requirements. Additionally, low service fees due to intense competition and customer price sensitivity further limit revenue margins. As a result, the net contribution of BAUD to banks' profit after tax remains modest. This finding contradicts the conclusions of Oginni et al. (2023) and Ibrahim (2023).

CONCLUSION AND RECOMMENDATIONS

This study examined the effect of e-channels on the financial performance of deposit money banks in Nigeria. The research was motivated by the inconsistent and sometimes declining profitability of banks, which necessitated renewed strategies to enhance competitiveness. In response, banks adopted various digital innovations and electronic channels to improve performance. The study investigated the effect of various e-channel proxies (volume of transactions through ATM, POS, BAUS, and BVN enrollment) on banks' financial performance, measured by profit after tax. Data were sourced from the National Bureau of Statistics, CBN Bulletins, and banks' annual reports. The regression results revealed that digital innovation has a positive and significant effect on financial performance. Specifically, ATM transactions (coefficient = 1.125, p-value = 0.009), POS transactions (coefficient = 0.422, p-value = 0.000), and BVN enrollment (coefficient = 5.328, p-value = 0.004) showed significant positive effects. BAUD, however, has an insignificant effect. Overall, the study concludes that digital innovation and e-channels substantially contribute to improved financial performance of deposit money banks in Nigeria.

Following the findings and conclusion of this study, the following recommendations have been put forward.

i. Considering the significant positive effect of ATM of the financial performance, the banks should strive to acquire the latest ATM, fully and always loaded with cash, with an alternative power supply to increase effectiveness, efficiency, and sustain the 24 hours service delivery through the ATM. This will take away from the banks all rickety

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

ATMs with high maintenance costs, ineffective performance, and ATM downtime due to power outages. This will no doubt continue to improve the financial performance of the banks.

ii. Given the significant effect of POS, the Central Bank of Nigeria should strengthen the existing policy guidelines on POS registration to place the bank at the center of POS transactions, and banks should strive to ensure continued registration and establishment of POS outlets (quasi-banks) in strategic business areas to generate more revenue through commission and improve the banks' after-tax profit and their overall financial performance.

iii. The CBN should continue to ensure strict compliance with BVN enrollment for both existing and new bank account holders. This will help to curb fraud and unscrupulous practices within the financial system. To achieve this, BVN should be automated such that customers can generate their BVN online through the coordination of CBN and banks' staff to ensure real-time BVN generation. This will save customers' time and resources as they ordinarily would have to make their way to the bank to have the BVN generated.

iv. Due to the insignificant effect of banks' USSD/Application, it is recommended that the banks strengthen their network service (internet) such that customers find it easy and convenient to transact from their mobile phones. The banks should also rejig their e-channel platforms through a mechanism that automatically handles all issues relating to errors in transactions without the need for the customers to visit the banks.

REFERENCES

Adetola, F. A., & Lawal, T. S. (2022). Mobile banking adoption and its impact on financial inclusion in Nigeria. *African Journal of FinTech*, *5*(2), 102–119.

Adewumi, T., & Adetokunbo, F. (2021). POS adoption and its impact on small businesses in Nigeria. *Economic Insights Review*, *9*(1), 76–89.

Agboola, A. A. (2021). Information and Communication Technology (ICT) in banking operations in Nigeria – An Evaluation of Recent Experiences. *African Journal of Public Administration and Management*, 17(1), 31-45.

Alhaji, A. & Rosmaini, B. (2018). The Impact of Information and Communication Technology on Bank Performance and Customers' Service Delivery in the Banking Industry. *International Journal of Latest Trends in Financial and Economic Sciences* 2(8), 80–90.

Arner, D. W., Barberis, J., & Buckley, R. P. (2020). The evolution of fintech: A new post-crisis paradigm? *Georgetown Journal of International Law*, *47*(4), 1271–1319.

Asare, Y. & Emmanuel, B. (2018). Impact of IT-Technological Innovation on the Productivity of Banks and Employees. Cogent Business and Management 5, 23–32.

Bahram, M., Zeinab, V. & Hussein, M. (2013). The Effect of Using Electronic Banking on the Profitability of Banks. Interdisciplinary Journal of Contemporary Research in Business 4(5), 1299–1318.

Barney, J.B., Ketchen, D.J. & Wright, M. (2011). The Future of Resource-Based Theory: Revitalization or Decline? Journal of Management 37, 1299–1315.

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

Bostandzic, D. & Weiss, F. (2020). Financial Technology and Local Lending. Working Paper.
Cameron, K. S., Quinn, R. E., Degraff, J., & Thakor, A. V. (2019). *Competing values leadership: Creating value in organizations*. Edward Elgar Publishing.
CBN (2023). E-Payment Statistics. Available at https//:www.cbn.gov.ng
CBN (2019). Payment System: Bank Verification Number (BVN). https//:www.cbn.gov.ng
Chandler, D., & Werther, W. B. (2023). *Strategic corporate social responsibility: Stakeholders, globalization, and sustainable value creation* (3rd ed.). SAGE Publications.
Charles, M. (2016). Impact of ATM Banking Performance on Customer Satisfaction with the Bank in Malawi. International Journal of Business and Economics Research 3(5), 1–9.
Daniya, A. A., Tajudeen, L. Kabiru, S & Mohammed, Y. I. (2024). Corporate attributes and value of listed manufacturing fir Revised ms in Nigeria: A Comparative Analysis. *Fudma Journal of Accounting and Finance Research,* 2(1), 31-45.
Deloitte Insights. (2024). *2024 banking industry outlook.* Deloitte. https://www2.deloitte.com/insights/2024-banking-industry-outlook
Ehimare, O. A., & Ogaga, T. (2021). ICT in banking transactions: Enhancing financial inclusion in Nigeria. *African Journal of Banking and Finance*, *8*(3), 45–63.
Ekinci, R. (2021). The impact of digitalization on financial sector performance. *Journal of Financial Ecosystem and Strategy,* 3(7) (109–127). Springer. https://doi.org/10.1007/978- 981-33-6811-8_6
Eze, E. C., Okoye, P. V. C., & Nwite, C. S. (2022). Biometric technologies in Nigerian banking: A critical evaluation of BVN. *Journal of Banking Innovations*, *14*(2), 120–135.
Garnett, S., Latch, P., Lindenmayer, D., & Woinarski, J. (Eds.). (2018). *Recovering threatened species: A book of hope*. CSIRO Publishing.
Gujarati, D.N., (2013). Basic Econometrics, 5th African edition. ed. McGraw-Hill, USA.
Hauwa, D., Shazida, J. & Abdul-Hakim, R. (2017). The Effect of Mobile Banking on the Performance of Commercial Banks in Nigeria. *International Research Journal of Management, IT & Social Sciences*, 3(2), 71–76.
Hussein, M.A. & Richard, B.N. (2017). Effect of Automated Teller Machines Usage on Operational Performance of Commercial Banks in Nakuru County, Kenya. International Journal of Economics, Finance and Management Sciences 5(2), 162–167.
Ibrahim, A. (2023). The Challenges and Customer Perception of E-banking in Nigeria: A Descriptive Survey Research Approach. *Journal of Management and Business,* 2(1), 55-57.
Jaen, B.H., (2017). Impact of Mobile Banking on Financial Performance of Unguka Microfinance Bank Ltd, Rwanda. *Global Journal of Management and Business Research*: C Finance XVII, 45–55.
Jegede, C.A., (2014). Effects of Automated Teller Machines on the Performance of Nigerian Banks. American Journal of Applied Mathematics and Statistics 2(6), 40–46.
Johannes, K. & Debener, J., (2020). The Effect of Digital Transformation on Bank Performance. Working Paper.
Johnson, A. (2018). Effect of Digital Delivery Channels on the Financial Performance of Banks. *International Journal of Financial Innovation in Banking* 2(2), 48–59.
Josiah, A. & Nancy, K. (2022). The Relationship between Electronic Banking and Financial Performance among Commercial Banks in Kenya. *Journal of Finance and Investment Analysis* 1(4), 99–118.

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

Kaplan, R. S., & Norton, D. P. (2020). *The balanced scorecard: Translating strategy into action*. Harvard Business Review Press.

Kozlenkova, I. V., Samaha, S. A., & Palmatier, R. W. (2018). Resource-based theory in marketing. *Journal of the Academy of Marketing Science*, 46(1), 1-21.

Mahboub, R. (2018). The impact of information and communication technology investment on the performance of Lebanese banks. *European Research Studies Journal* 3(1), 27–33.

Mathew, K.L. & Ibikunle, F. (2022). ICT and Bank performance. International Journal of Advanced Computer Sciences and Operations 1(3), 145–149.

McKinsey & Company. (2024). Global banking annual review. https://www.mckinsey.com/industries/financial-services/our-insights/global-banking-annual-review-2024

Meshack, A., Mercy, A. & Charles, M. (2020). Information and Communication Technology Investment and Bank Financial Performance in Nigeria. International Journal of Finance and Accounting 9(5), 1–10.

NBS, (2023). Registered PoS Units in the Nation. Available at https//:www.nbs.gov.ng

Nwachukwu, K.K. & Longsen, L., Dare, (2022). Bank Verification Number Enrollments and Incidences of Bank Fraud in Nigeria. Nigeria Journal of Business Administration 9(4), 44–65.

Oginni, S., Mohammed, A., El-Maude, J. & Arikpo, I. (2023). E-banking and bank performance: Evidence from Nigeria. *International Journal of Scientific Engineering and Technology* 3(2), 766–771.

Opeyemi, F., Andile, M. & Ogunde, A. (2017). Development of an Online Bank Verification Number System Using Linear Congruential Algorithm. *Information Technology Journal*, 1(6), 62–70.

Opusunju, M., Akyuz, M. & Aku, S.A., (2021). Automated Teller Machine and Performance of Deposit Money Banks in Nigeria. International Journal of Disciplines Economics & Administrative Sciences Studies 3(7), 456–461.

Polaris Bank (2024). Bank Verification Number - Retail Insight into BVN enrollment procedures for diaspora customers and integration features, retrieved from https//www.polarisbanklimited.com

Prais, S. J. & Winsten, C. B. (1954). Trend estimators and serial correlation. Cowles Commission discussion paper

PWC (2016). Financial Services Technology 2020 and Beyond: Embracing Disruption.

Ranasinghe, A. & Kosala, C. (2017). The Impact of Automated Teller Machines (ATMS) Service on Customer Satisfaction: A Study Based on State Banks in Sri Lanka. *SAARJ Journal on Banking & Insurance Research,* 7(6), 64–70.

Rhodes, C. (2020). *Disturbing business ethics: Emmanuel Levinas and the politics of organization*. Routledge.

Robert, A.N., Benedette, N., Ogbonnaya, O., Emmanuel, N., Ngozi, F., Hyginus, E., Oladele, R. & Kanu, C. (2020). Effect of Bank Verification Number on Fraud Management of Selected Commercial Banks in Ebonyi State, Nigeria. *International Journal of Engineering Research and Technology,* 1(3), 165–177.

Sajjad, S. & Azadeh, K., (2021). Automated Teller Machine Performance Evaluation using Data *Envelopment Analysis Approach. International Journal of Services and Operations Management.* X, 1–8.

Sanusi, L. S. (2012). Banking Reform and its Impact on the Nigerian Economy. *Lecture Delivered at the University of Warwick's Economic Summit*.

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR

S&P Global. (2024). *Global banks outlook 2024*. S&P Global Ratings. Retrieved from https://www.spglobal.com

Seun, T. & Feyijuwa, A., (2021). Regulation of USSD Services in Nigeria– Charges on Financial Transactions. *International Journal of Economics, Finance and Management Sciences* 2(5), 34–42.

Syed, M. (2018). Impact of Information Technology Investment on Bank Performance: A Study on Dhaka Stock Exchange (DSE) Listed Banks of Bangladesh. *Journal of Information Engineering and Applications* 6(8), 8–16.

Tapscott, D., & Tapscott, A. (2020). *Blockchain revolution: How the technology behind bitcoin is changing money, business, and the world*. Portfolio.

Uwambajimana, F., & Mpakaniye, J. P. (2024). Effect of ICT innovation on microfinance performance in Rwanda: A case study of AB Bank Rwanda Plc (2018–2021). *The Strategic Journal of Business & Change Management, 11*(1), 12–36. https://doi.org/10.61426/sjbcm.v11i1.2836

World Bank. (2022). Digital financial inclusion in Sub-Saharan Africa. *World Bank*

Article DOI: 10.52589/IJEBI-FLV95IAR
DOI URL: https://doi.org/10.52589/IJEBI-FLV95IAR