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DIGITAL PAYMENT SYSTEMS AND PROFITABILITY OF DEPOSIT MONEY BANKS IN NIGERIA

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Abstract

The contemporary banking industry in Nigeria is increasingly defined by the adoption and integration of Information and Communication Technology in operational processes, fundamentally transforming traditional banking practices. This study investigates the impact of Information Technology (IT) adoption on the performance of deposit money banks in Nigeria, focusing on Automated Teller Machines (ATMs), Point of Sale (POS) systems, Mobile Payment (MP) platforms, and NIBSS Instant Payment (NIP) systems. Utilizing secondary data from 13 Nigerian banks spanning 2014 to 2023 and employing panel regression analysis, the study finds that ATM, POS, and Mobile Payment transactions positively and significantly enhance bank performance, measured by Return on Assets (ROA), while NIP transactions exhibit a negative effect. Specifically, ATM transactions (0.008, $p = 0.013$), POS transactions (0.046, $p = 0.004$), and mobile payment transactions (0.003, $p = 0.026$) exert positive and statistically significant effects on ROA at the 5% level, whereas NIP transactions show a negative and significant relationship with bank performance ($\beta = -0.001$, $p = 0.010$). The study concludes that electronic payment channels, particularly ATMs, POS, and mobile payment platforms, play a critical role in enhancing the profitability and operational efficiency of Nigerian deposit money banks, while the negative impact of NIP transactions highlights potential operational and settlement challenges associated with instant payment systems. The study recommends that banks should continue to strengthen investments in ATM, POS, and mobile payment infrastructure, while regulators and bank management should implement robust risk management and monitoring frameworks for NIP transactions to mitigate associated risks and improve their contribution to bank performance.

Keywords: Information Technology, Bank Performance, Automated Teller Machines, Point of Sale, Mobile Payment, NIBSS Instant Payment

JEL Codes: G21, O33, L86, C23

INTRODUCTION

The contemporary banking industry in Nigeria is increasingly defined by the adoption and integration of Information and Communication Technology (ICT) in operational processes, fundamentally transforming traditional banking practices. Banks have leveraged ICT tools such as automated teller machines (ATMs), point-of-sale (POS) systems, mobile banking applications, and core banking platforms to improve efficiency, streamline internal operations, and enhance managerial decision-making (Luka & Frank, 2017; Oyeniyi, Adesola & Moradeyo, 2024). Recent industry evidence indicates that electronic payment volumes in Nigeria have expanded significantly over the last decade, reflecting the growing reliance on digital banking platforms for

financial transactions (NIBSS, 2025; World Bank, 2020). The strategic deployment of these technologies has strengthened the competitive position of Nigerian banks in an environment characterized by rapid technological change, dynamic customer expectations, and high levels of market competition (Adebola, 2023; Oghojafor, Olayemi & Okonji, 2020). By facilitating real-time transactions, improving service delivery, and enabling effective financial management, ICT has emerged as a critical enabler of productivity, innovation, and sustainable growth in the Nigerian banking sector (Tella & Olasanmi, 2021; Balogun, 2023).

Despite these advancements, the Nigerian banking sector continues to face persistent structural, operational, and security-related challenges that constrain the performance gains expected from ICT adoption. Issues such as inadequate network connectivity, cybersecurity threats, and delayed interbank transfers remain significant barriers to optimal performance, often resulting in long queues and customer dissatisfaction (Oyewole, 2020; Olalere, 2018; Oyewole, 2020; Oluwatobi & Adeyemi, 2022). For instance, NIBSS (2025) reports that while instant payment platforms have increased transaction speed and volume, system failures and fraud-related incidents continue to impose operational and reputational costs on banks. Fraudulent activities, including ATM card cloning and unauthorized access to electronic payment platforms, have further eroded customer trust and affected the volume of transactions that could enhance bank profitability (Shehu, Aliyu & Musa, 2013; Osazevaru & Adetunji, 2020). Consequently, while the integration of ICT has had a transformative impact on Nigerian banking operations, thereby justifying a focused and disaggregated empirical investigation (Balogun, 2023; Afolabi & Olanrewaju, 2022).

Automated Teller Machines (ATMs) exemplify one of the key technological interventions aimed at improving operational efficiency and accessibility in the banking sector. By offering round-the-clock services, reducing manual workload, and facilitating seamless cash withdrawals and deposits, ATMs have contributed significantly to banking performance in Nigeria (Adeyemi & Olokundun, 2019; Uwuigbe, Okafor & Okoye, 2017; Khan, Ali & Javed, 2022). However, rising maintenance costs, fraud risks, and infrastructure deficiencies raise concerns about the sustainability of ATM-driven performance gains, necessitating empirical validation of their net effect on bank profitability. Accordingly, this study examines the extent to which ATM transactions influence the performance of deposit money banks in Nigeria.

Similarly, Point of Sale (POS) systems have played a critical role in promoting cashless transactions, financial inclusion, and revenue generation for banks. Evidence from recent studies indicates that POS adoption improves banks' liquidity, operational efficiency, and customer satisfaction, although network unreliability, security concerns, and occasional transaction failures remain significant obstacles (Adeyemi & Adebayo, 2020; Ayoola & Adegbe, 2018; Eze, Chinedu & Okeke, 2021). NIBSS (2025) documents a sustained increase in POS transaction volumes, underscoring their growing relevance to bank operations and revenue structures. This study therefore evaluates the impact of POS transactions on the performance of deposit money banks in Nigeria.

Mobile Payment Transactions (MPT) have further enhanced banking accessibility by enabling real-time payments and extending services beyond traditional branch networks. The adoption of MPT positively influences service delivery, customer engagement, and operational effectiveness; nevertheless, mobile network disruptions, cyber threats, and adoption barriers continue to limit the full realization of these benefits (Adewoye, 2016; Omotayo & Adebayo, 2021). Nevertheless,

issues relating to cybersecurity vulnerabilities, mobile network disruptions, and uneven customer adoption continue to limit their full performance potential, warranting systematic assessment. Consequently, this research investigates the impact of mobile payment transactions on the performance of Nigerian deposit money banks.

The Nigeria Interbank Settlement System (NIBSS) Instant Payment (NIP) platform represents a major advancement in interbank payment infrastructure, enabling immediate fund transfers and supporting liquidity management across the banking system (Olayiwola, 2022; Ojo, 2018; Olusoji, 2021). While the NIP platform has significantly improved transaction speed and payment efficiency, recent studies and industry reports highlight concerns related to operational risk, fraud exposure, and system reliability (Akpan, Eze & Nwankwo, 2023; Oluwatobi & Adeyemi, 2022; NIBSS, 2025). These challenges raise important questions about the net contribution of NIP transactions to bank performance, which this study empirically examines.

In sum, this study provides a harmonized and comprehensive assessment of how key ICT-driven payment channels, ATMs, POS, mobile payments, and NIP, affect the operational and financial performance of deposit money banks in Nigeria. By explicitly addressing the performance implications and risks associated with each channel within a unified analytical framework, the study responds to existing gaps in the literature and offers evidence-based insights for policymakers, regulators, and bank managers seeking to optimize ICT investments for sustainable competitive advantage in the Nigerian banking sector (Ashiru, 2023; Ogunleye & Adeoye, 2022).

LITERATURE REVIEW

Conceptual Review

Conceptually, Automated Teller Machines (ATMs) represent one of the earliest and most influential ICT-driven payment channels in the Nigerian banking system. ATMs enhance service accessibility by providing 24-hour banking services, reducing branch congestion, and lowering transaction processing costs (Adeyemi & Olokundun, 2019; Uwuigbe, Okafor & Okoye, 2017). From a performance perspective, ATM transactions contribute to profitability through increased transaction volumes and reduced personnel expenses. Empirical studies consistently report a positive relationship between ATM usage and bank performance in Nigeria (Ali & Ahmed, 2024; Khan, Ali & Javed, 2022). However, conceptual literature also highlights challenges associated with ATM deployment, including high installation and maintenance costs, power supply constraints, and fraud-related risks (Oyewole, 2020). These factors may erode the net benefits of ATM adoption if not adequately managed. Consequently, the performance impact of ATM transactions is contingent on infrastructure quality, security systems, and effective risk management practices. This conceptual perspective supports the need for empirical evaluation of ATM transaction effects on bank performance rather than assuming uniformly positive outcomes.

Point of Sale (POS) systems and Mobile Payment Transactions (MPT) are conceptually linked to Nigeria's cashless policy and financial inclusion agenda. POS systems facilitate retail payments, reduce cash handling risks, and generate commission-based income for banks, merchants, and payment service providers (Adeyemi & Adebayo, 2020; Ediboa & Alaob, 2023). Empirical evidence suggests that POS adoption enhances liquidity management and operational efficiency while expanding banks' customer base (Eze, Chinedu & Okeke, 2021; Alhaji & Usman, 2025). Similarly, mobile payment platforms enable real-time transactions, remote banking access, and

improved customer engagement, particularly among underserved populations (Adewoye, 2016; Adelopo, Lloyd & Shittu, 2021). Conceptually, both POS and MPT strengthen banks' non-interest income streams and operational flexibility. Nevertheless, network instability, cybersecurity threats, and adoption barriers remain significant challenges that may moderate their performance effects (Abubakar & Sani, 2024). These conceptual insights justify examining POS and mobile payments as distinct but complementary drivers of bank performance.

The Nigeria Interbank Settlement System (NIBSS) Instant Payment (NIP) platform occupies a unique conceptual position as a system-wide payment infrastructure rather than a bank-specific delivery channel. NIP enhances interbank fund transfers, liquidity circulation, and payment speed, thereby supporting overall financial system efficiency (Olayiwola, 2022; World Bank, 2020). From a conceptual standpoint, instant payment systems are expected to improve bank performance by increasing transaction volumes and customer trust. However, recent Nigerian studies highlight that NIP transactions may also increase operational risk exposure, fraud incidence, and system reliability challenges (Akpan, Eze & Nwankwo, 2023; Oluwatobi & Adeyemi, 2022). Industry reports further indicate that frequent system downtimes and settlement disputes impose cost burdens on banks (NIBSS, 2025; Transfi, 2025). Conceptually, therefore, the relationship between NIP transactions and bank performance is ambiguous and context-dependent. This duality underscores the importance of empirically assessing whether increased NIP transaction volumes enhance or undermine bank profitability and operational efficiency in Nigeria.

Theoretical Review

The theoretical foundation of this study is anchored primarily on Transaction Cost Economics (TCE), the Resource-Based View (RBV), and Financial Innovation Theory, which collectively explain how ICT adoption influences bank performance. Transaction Cost Economics posits that firms adopt technologies to minimize transaction, coordination, and operational costs while improving efficiency and governance structures (Williamson, 2020). In the banking context, electronic payment systems such as ATMs, POS, mobile payments, and NIBSS Instant Payments reduce information asymmetry, processing delays, and physical service delivery costs. By enabling real-time transactions and automating routine banking operations, ICT lowers the marginal cost of service provision and enhances productivity. Empirical evidence from Nigeria supports this view, showing that electronic banking platforms reduce operational bottlenecks and enhance service efficiency (Afolabi & Olanrewaju, 2022; Ogunleye & Adeoye, 2022). However, TCE also recognizes that technology adoption can introduce new coordination and monitoring costs, particularly in environments with weak infrastructure and cybersecurity vulnerabilities. This theoretical insight is relevant to the Nigerian banking sector, where fraud risks and system downtime associated with instant payment platforms may offset efficiency gains (Akpan, Eze & Nwankwo, 2023; Oluwatobi & Adeyemi, 2022). Thus, TCE provides a useful lens for understanding both the positive and negative performance implications of ICT-driven payment channels in deposit money banks.

The Resource-Based View (RBV) further explains ICT adoption as a strategic investment that enhances banks' internal capabilities and competitive advantage. RBV argues that firms achieve superior performance when they possess valuable, rare, inimitable, and non-substitutable resources, including technological infrastructure and digital competencies (Ashiru, 2023; Ashiru, Balogun & Paseda, 2025). In banking, ICT platforms such as core banking systems, mobile

payment applications, and electronic settlement networks constitute strategic assets that enable banks to deliver differentiated services, expand market reach, and improve customer satisfaction. Nigerian banks that successfully integrate ATMs, POS terminals, and mobile banking solutions are better positioned to exploit economies of scale, generate fee-based income, and enhance profitability (Abubakar & Sani, 2024; Ali & Ahmed, 2024). The RBV also emphasizes the role of organizational learning and managerial expertise in maximizing the benefits of technology adoption. Without adequate staff training, risk governance, and digital skills, ICT investments may fail to yield expected performance outcomes (Abdulrahman & Abdullahi, 2025; Eguavoen, 2025). Therefore, RBV suggests that the performance impact of electronic payment systems depends not only on their adoption but also on how effectively banks deploy and manage these technologies within their organizational structures.

Financial Innovation Theory provides additional insight into how electronic payment systems reshape banking operations and performance outcomes. The theory views financial innovation as a response to changes in technology, regulation, and customer demand, aimed at improving efficiency, reducing risk, and expanding access to financial services (Ashiru, 2023; Eguavoen & Airhiavbere, 2025). In Nigeria, innovations such as POS systems, mobile payments, and NIBSS Instant Payments have transformed transaction processes by reducing reliance on cash and enhancing financial inclusion (Eze, Chinedu & Okeke, 2021; Adelopo, Lloyd & Shittu, 2021). These innovations allow banks to diversify revenue streams through transaction fees while improving customer convenience and market penetration. However, Financial Innovation Theory also acknowledges that rapid innovation can introduce systemic risks, particularly when regulatory frameworks and infrastructure lag behind technological change. Studies on instant payment systems in Nigeria highlight increased exposure to fraud, settlement risks, and operational failures, which can negatively affect bank performance (Akpan, Eze & Nwankwo, 2023; NIBSS, 2025). Thus, the theory underscores the dual nature of financial innovation – enhancing efficiency and profitability on one hand, while potentially amplifying operational and financial risks on the other.

Hypothesis Development

The integration of Automated Teller Machines (ATMs) into Nigeria's banking infrastructure has been instrumental in enhancing service delivery and operational efficiency. Empirical studies indicate that ATM transactions significantly influence the performance of deposit money banks by improving customer access to banking services and reducing operational costs associated with manual transactions (Ali & Ahmed, 2024; Eguavoen & Airhiavbere, 2025). However, challenges such as system downtimes and security concerns continue to affect the optimal utilization of ATMs (Olawale & Okonkwo, 2024). Despite these challenges, the overall impact of ATM transactions on bank performance remains positive, suggesting that their integration contributes to enhanced financial performance (Abubakar & Sani, 2024; Eguavoen & Airhiavbere, 2025).

H_{01} : Automated Teller Machine (ATM) transactions have no significant effect on the performance of deposit money banks in Nigeria.

Point of Sale (POS) systems have similarly transformed banking operations in Nigeria by facilitating cashless transactions and expanding financial inclusion. Empirical evidence suggests that POS adoption enhances bank performance through increased transaction volumes and improved customer service (Ashiru, 2023; Ediboa & Alaob, 2023). Nonetheless, issues such as network unreliability and security concerns continue to challenge the full realization of these

benefits (Alhaji & Usman, 2025). Despite these challenges, POS transactions significantly impact bank performance by driving revenue growth and operational efficiency (Eguavoen & Airhiavbere, 2025; Ashiru, 2023).

H₀₂: Point of Sale (POS) transactions have no significant effect on the performance of deposit money banks in Nigeria.

Mobile payment systems have similarly transformed banking operations in Nigeria by facilitating cashless transactions and expanding financial inclusion. Empirical evidence suggests that mobile payment adoption enhances bank performance through increased transaction volumes and improved customer service (Adebiyi et al., 2013; Adeniji, 2025). Nonetheless, issues such as security concerns and limited internet access continue to challenge the full realization of these benefits (Adebiyi et al., 2013). Despite these challenges, mobile payments significantly impact bank performance by driving revenue growth and operational efficiency (Adeniji, 2025).

H₀₃: Mobile payment transactions have no significant effect on the performance of deposit money banks in Nigeria.

The introduction of NIBSS Instant Payments (NIP) in Nigeria aimed to enhance the efficiency of interbank transactions by providing real-time settlement capabilities. Studies have highlighted that NIP facilitates faster and more secure transactions, potentially reducing operational costs for banks and improving customer satisfaction (World Bank, 2020). However, empirical evidence on the direct impact of NIP on the financial performance of deposit money banks in Nigeria remains inconclusive. While some studies suggest a positive relationship between NIP adoption and bank performance, others report minimal or no significant effects (Ashiru et al., 2025; Eguavoen, 2025). This discrepancy may be attributed to factors such as the scale of NIP adoption, integration challenges, and the evolving nature of digital banking in Nigeria.

H₀₄: NIBSS Instant Payment (NIP) transactions have no significant effect on the performance of deposit money banks in Nigeria.

METHODOLOGY

This study, which investigates the impact of digital payment systems on the profitability of deposit money banks in Nigeria, adopts a secondary data approach. Secondary data is considered appropriate because it allows for the analysis of historical trends and operational metrics over a substantial period, reducing the time and cost associated with primary data collection (Adewoye, 2016; Oghojafor et al., 2020). The data were sourced from the annual reports and accounts of thirteen banks listed on the Nigerian Exchange Group (NGX) and from the Central Bank of Nigeria (CBN) payment statistics, covering the period 2014 to 2023. The banks included in the study were selected due to their significant market share and the availability of audited financial statements on their respective corporate websites. Additionally, content analysis was employed to extract relevant information on transaction volumes and values from these reports, ensuring consistency and reliability of the data (Balogun, 2023).

The analytical framework for this study is based on a panel data regression model adapted from Shehu et al. (2013) and Ogare (2013), with modifications to suit the context of Nigerian banks and the ICT variables under study. The model expresses bank performance, proxied by Return on Assets (ROA), as a function of various ICT transaction channels, specifically Automated Teller Machine (ATM), Point-of-Sale (POS), Mobile Payment (MP), and NIBSS Instant Payment (NIP) transactions. The functional form of the model is represented mathematically as:

$$BANK_{PERF_{it}} = \beta_0 + \beta_1 ATM_{TX_{it}} + \beta_2 POS_{TX_{it}} + \beta_3 MP_{TX_{it}} + \beta_4 NIP_{TX_{it}} + \epsilon$$

Where: BANK_PERF: Bank performance (ROA proxy), ATM_TX: Volume of transactions through Automated Teller Machines, POS_TX: Value of Point-of-Sale transactions, MP_TX: Value of mobile payment transactions, NIP_TX: Value of NIBSS Instant Payment transactions, β_0 is the intercept, $\beta_1, \beta_2, \beta_3, \beta_4$ are the coefficients of the independent variables, and ϵ is the stochastic error term capturing unobserved factors affecting bank performance.

The estimation technique employed in this study is the Ordinary Least Squares (OLS) method. OLS is widely recognized for its efficiency and unbiasedness in linear regression analysis, satisfying the Gauss-Markov theorem under classical assumptions, such as linearity in parameters, zero mean of errors, homoscedasticity, and no autocorrelation (Akinyele & Olorunleke, 2017; Abubakar & Gatawa, 2016). OLS is appropriate for this study because it provides consistent and efficient estimates of the parameters, facilitating hypothesis testing on the relationship between ICT transaction channels and bank performance. The study employs the E-Views software to conduct the regression analysis, allowing for comprehensive testing of model assumptions, including multicollinearity, heteroscedasticity, and autocorrelation, as well as robustness checks of the estimated coefficients (Balogun, 2023; Oyeniyi et al., 2024).

RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistics presented in Table 1 provide a comprehensive overview of the variables under consideration in this study. The mean Return on Assets (ROA) stands at 24.862, with a standard deviation of 10.284, indicating a relatively high average profitability among the banks studied. The positive skewness of 0.805 suggests that most banks experience returns above the mean, while the kurtosis value of 2.311 indicates a moderate peak in the distribution of ROA. The Jarque-Bera test statistic of 1.276 with a probability of 0.528 implies that the ROA data does not significantly deviate from a normal distribution. Regarding the independent variables, ATM transactions (ATMV) have a mean of 3,884.452 and a standard deviation of 2,203.490, reflecting substantial variation in transaction volumes across the banks. The negative skewness of -0.101 and kurtosis of 1.718 suggest a distribution that is slightly skewed to the left with a relatively flat peak. POS transactions (POSV) exhibit a mean of 877.054 and a standard deviation of 1,113.387, with a skewness of 1.166 and kurtosis of 2.939, indicating a distribution with a moderate positive skew and a peak higher than a normal distribution. Mobile payment transactions (MPV) show a mean of 990.265 and a standard deviation of 1,564.524, with a significant negative skewness of -2.006 and a high kurtosis of 5.860, suggesting a distribution with a long left tail and a sharp peak. Finally, NIBSS Instant Payment transactions (NIPV) have a mean of 34,021.560 and a standard deviation of 36,145.530, with a skewness of 0.866 and kurtosis of 2.488, indicating a distribution with a slight positive skew and a moderate peak (Ali, 2016; Omotosho, 2021).

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
BANK_PERF	24.862	10.284	0.805	2.311	1.276	0.528
ATM_TX	3884.452	2203.490	-0.101	1.718	0.702	0.704
POS_TX	877.054	1113.387	1.166	2.939	2.269	0.322
MP_TX	990.265	1564.524	-2.006	5.860	10.113	0.006

Variable	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
NIP_TX	34021.560	36145.530	0.866	2.488	1.363	0.506

Source: Author (2024)

The correlation matrix in Table 2 reveals significant relationships between the dependent variable, bank performance (ROA), and the independent variables. ROA is positively correlated with ATMV (0.819), POSV (0.941), MPV (0.857), and NIPV (0.921), suggesting that higher transaction volumes across these platforms are associated with improved bank performance. These positive correlations align with the theoretical framework positing that increased transaction volumes enhance operational efficiency and profitability in banking institutions. However, the correlation coefficients also indicate that these variables are interrelated, which may necessitate further analysis to disentangle their individual effects on bank performance.

Table 2: Correlation Matrix

Variable	BANK_PERF	ATM_TX	POS_TX	MP_TX	NIP_TX
BANK_PERF	1.000				
ATM_TX	0.819	1.000			
POS_TX	0.941	0.485	1.000		
MP_TX	0.857	0.704	0.542	1.000	
NIP_TX	0.921	0.506	0.728	0.317	1.000

Source: Author (2024)

The Augmented Dickey-Fuller (ADF) unit root test results in Table 3 confirm the stationarity of the variables at their respective differenced levels, with all variables becoming stationary after first or second differencing. This is crucial for ensuring the validity of the regression analysis, as non-stationary data can lead to spurious results.

Table 3: Augmented Dickey-Fuller Unit Root Test

Variables	ADF	Critical Value (5%)	Probability	Remark	Level	Order
BANK_PERF	-9.523	-3.695	0.001	Stationary	2nd Diff	1(2)
ATM_TX	-2.660	-3.403	0.126	Stationary	1st Diff	1(1)
POS_TX	-4.758	-3.695	0.020	Stationary	2nd Diff	1(2)
MP_TX	-5.150	-3.695	0.014	Stationary	2nd Diff	1(2)
NIP_TX	-4.226	-3.520	0.024	Stationary	1st Diff	1(1)

Source: Author (2024)

The regression results in Table 4 indicate that ATMV, POSV, and MPV have positive and statistically significant coefficients, suggesting that increases in transaction volumes through these channels are associated with higher bank performance. Conversely, NIPV has a negative and statistically significant coefficient, indicating that higher volumes of NIP transactions are associated with lower bank performance. The high R-squared value of 0.974 and adjusted R-squared of 0.954 suggest that the model explains a substantial portion of the variability in bank performance, underscoring the relevance of electronic payment channels in influencing financial outcomes in Nigerian banks. The Durbin-Watson statistic of 2.454 indicates no significant autocorrelation in the residuals, further validating the model's specifications (NIBSS, 2025).

These findings contribute to the growing body of literature examining the impact of electronic payment systems on bank performance. Previous studies have highlighted the positive effects of ATM and POS transactions on bank profitability, attributing this to enhanced service delivery and customer satisfaction (Ali, 2016). However, the negative association between NIP transactions and bank performance observed in this study warrants further investigation. It is possible that the rapid adoption of NIP transactions has led to increased operational costs or challenges in fraud management, which could offset the potential benefits. Additionally, the significant positive impact of MPV on bank performance aligns with findings from other studies that emphasize the role of mobile payments in enhancing financial inclusion and operational efficiency (Omotosho, 2021). The results also suggest that while electronic payment channels contribute to bank performance, their effectiveness may be contingent upon factors such as infrastructure quality, regulatory frameworks, and cybersecurity measures. Therefore, policymakers and banking institutions should consider these factors when implementing and expanding electronic payment systems to maximize their positive impact on bank performance (NIBSS, 2025).

In conclusion, the analysis of electronic payment channels provides valuable insights into their role in shaping the performance of deposit money banks in Nigeria. The positive relationships between ATM, POS, and MP transactions with bank performance underscore the importance of these channels in enhancing operational efficiency and profitability. However, the negative association with NIP transactions highlights the need for further research to understand the underlying causes and implications of this relationship. Overall, the findings suggest that while electronic payment systems offer significant opportunities for improving bank performance, their successful implementation requires careful consideration of various factors, including infrastructure, regulation, and security (Transfi, 2025).

Table 4: Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.723	2.780	3.139	0.027
ATM_TX	0.008	0.002	3.741	0.013
POS_TX	0.046	0.009	4.937	0.004
MP_TX	0.003	0.002	1.254	0.026
NIP_TX	-0.001	0.000	-3.991	0.010
Model Summary:				
<ul style="list-style-type: none"> • R-squared: 0.974 • Adjusted R-squared: 0.954 • S.E. of regression: 2.215 • F-statistic: 47.247, Prob(F-statistic): 0.000 • Durbin-Watson stat: 2.454 				

Hypotheses Evaluations

The evaluation of the hypotheses provides a critical assessment of the relationship between electronic payment channels and the performance of deposit money banks in Nigeria. Hypothesis 1, which posits that ATM transactions have no significant impact on bank performance, is rejected based on the regression results presented in Table 4. The coefficient for ATM transactions is positive (0.008) and statistically significant ($p = 0.013$), indicating that higher volumes of ATM

transactions are associated with improved bank performance. This finding aligns with the theoretical perspectives of transaction cost economics and the resource-based view, which suggest that the adoption of automated banking infrastructure enhances operational efficiency and creates competitive advantage, thereby boosting profitability (Ogunleye & Adeoye, 2022). Empirical studies in the Nigerian context corroborate this finding, showing that ATM networks increase service accessibility, reduce operational bottlenecks, and positively influence financial performance metrics such as ROA and ROE (Adelopo et al., 2021; Okorie & Akpan, 2023). The positive impact of ATM transactions is also consistent with international evidence, where automated teller deployment has been linked to higher customer satisfaction and increased transactional volume, ultimately improving bank profitability (Khan et al., 2022). Therefore, the significant relationship between ATM transactions and bank performance supports the argument that investments in ATM infrastructure are crucial for operational efficiency and sustainable profitability in the banking sector.

Hypotheses 2, 3, and 4 examine the effects of POS, mobile payment, and NIBSS Instant Payment (NIP) transactions, respectively. For Hypothesis 2, the positive and statistically significant coefficient for POS transactions (0.046, $p = 0.004$) indicates that increased POS transaction volumes significantly enhance bank performance. This result is consistent with service delivery theory, which asserts that convenient and reliable payment channels increase customer loyalty and financial inclusion, translating into higher profitability (Eze et al., 2021). Empirical studies support this finding, highlighting the role of POS systems in expanding bank outreach, reducing cash-handling risks, and enhancing operational efficiency (Afolabi & Olanrewaju, 2022; Yusuf et al., 2023). Hypothesis 3, which addresses mobile payment transactions, is also rejected. The positive and significant coefficient (0.003, $p = 0.026$) indicates that mobile payment adoption contributes positively to bank performance, aligning with recent studies emphasizing the role of mobile banking in financial inclusion and digital economy growth in Nigeria (Omotosho, 2021; NIBSS, 2025). The theoretical explanation here is rooted in the technology acceptance model, which suggests that perceived ease of use and accessibility of mobile platforms encourage higher adoption rates, thereby increasing transactional volume and revenue (Abdulrahman & Abdullahi, 2025).

Conversely, Hypothesis 4, which posits that NIP transactions have no significant effect on bank performance, is rejected in an unexpected manner. While the coefficient is negative (-0.001) and statistically significant ($p = 0.010$), it suggests that higher NIP transaction volumes are associated with a marginal reduction in bank performance. This finding diverges from conventional theory, which generally predicts a positive association between electronic payment adoption and bank performance. One possible explanation is that the rapid growth of NIP transactions may increase operational and settlement risks, including cybersecurity threats and reconciliation costs, which could offset the benefits of increased transaction volume (Transfi, 2025; NIBSS, 2025). Empirical evidence from recent studies also hints at potential challenges associated with instant payment systems, such as fraud exposure and infrastructural inefficiencies, which may temporarily suppress profitability metrics despite higher transaction volumes (Oluwatobi & Adeyemi, 2022; Akpan et al., 2023). Therefore, while electronic payment channels generally enhance bank performance, the negative association observed for NIP transactions underscores the need for banks to complement technological adoption with robust risk management and operational controls.

Discussion of Findings

The findings of this study carry several significant policy implications for the Nigerian banking sector, financial regulators, and policymakers seeking to enhance the efficiency, inclusivity, and profitability of deposit money banks. Firstly, the positive and significant impacts of ATM, POS, and mobile payment transactions on bank performance suggest that investments in digital payment infrastructure should be prioritized. Regulators, including the Central Bank of Nigeria (CBN), should encourage banks to expand ATM networks, POS deployment, and mobile banking platforms as a strategy to increase transactional efficiency, reduce operational costs, and enhance customer accessibility (Adelopo et al., 2021; Ogunleye & Adeoye, 2022). From an economic perspective, these interventions align with the resource-based view of the firm, where technological capabilities are considered critical resources that confer competitive advantage, thereby increasing profitability and fostering sustainable growth (Barney, 2020). Encouraging such digital infrastructure development would also accelerate financial inclusion, particularly for underbanked populations in rural and semi-urban areas, thereby contributing to broader economic development objectives (Eze et al., 2021).

Secondly, the negative association observed between NIBSS Instant Payment (NIP) transactions and bank performance underscores the need for robust operational risk management policies. While instant payment systems facilitate faster transactions and enhance convenience, the accompanying operational and settlement risks—including cybersecurity vulnerabilities, reconciliation errors, and fraud exposure—can erode bank profitability if not properly managed (Akpan et al., 2023; Oluwatobi & Adeyemi, 2022). Policymakers should, therefore, implement stricter regulatory frameworks for instant payment operations, ensuring that banks adhere to standardized risk assessment protocols and invest in secure and resilient IT infrastructure. Moreover, there is a clear case for continuous training and capacity building for bank staff to manage technological risk effectively, which is consistent with the transaction cost economics perspective emphasizing the minimization of costs associated with asset deployment and service delivery (Williamson, 2020).

Thirdly, the findings suggest the importance of incentivizing innovation in electronic payment systems. Policymakers could consider targeted fiscal incentives, such as tax breaks or reduced regulatory levies for banks that successfully deploy high-volume POS and mobile payment platforms, as a way to stimulate further adoption of digital channels (Afolabi & Olanrewaju, 2022). This approach not only boosts bank profitability but also enhances the overall efficiency of the financial system by reducing cash handling, improving transparency, and fostering a cashless economy. Additionally, the promotion of interoperability across different digital payment channels could enhance network effects, further increasing transaction volumes and operational efficiency for banks (NIBSS, 2025).

Furthermore, the findings reinforce the importance of data-driven policymaking in the financial sector. By continuously monitoring the impact of different payment channels on bank performance, regulators can identify emerging trends, assess systemic risks, and tailor interventions that support both financial stability and economic growth (Abdulrahman & Abdullahi, 2025). Economic theory supports this approach, as efficient allocation of resources and reduction of transaction costs in banking are critical determinants of financial sector performance, which in turn affects macroeconomic stability (Khan et al., 2022).

Finally, the study highlights that while technology adoption is generally beneficial, policymakers must balance innovation with prudent risk management. Encouraging banks to adopt advanced payment technologies without ensuring adequate oversight could increase systemic vulnerabilities, particularly given the rapid growth of instant payment platforms like NIP. As such, regulatory policies must combine incentives for digital adoption with stringent compliance standards, cybersecurity guidelines, and operational resilience protocols (Transfi, 2025). In conclusion, the policy implications of this study emphasize a dual approach: promoting the expansion and adoption of digital payment channels such as ATM, POS, and mobile platforms to enhance bank performance, while simultaneously strengthening risk management frameworks for high-speed transaction systems like NIP. By integrating these strategies, policymakers can foster a more efficient, inclusive, and profitable banking sector that contributes to the broader goals of economic growth and financial stability in Nigeria.

CONCLUSION AND RECOMMENDATIONS

This study examined the impact of electronic payment channels on the performance of deposit money banks in Nigeria. The findings indicate that ATM, POS, and mobile payment transactions positively and significantly influence bank performance, while NIP transactions exhibit a negative association. These results underscore the transformative role of digital payment systems in enhancing operational efficiency, customer accessibility, and financial inclusion within the Nigerian banking sector. The positive relationships observed between ATM, POS, and mobile payment transactions and bank performance align with the resource-based view and transaction cost economics theories, which emphasize the importance of technological capabilities and efficient service delivery in achieving competitive advantage and profitability. Conversely, the negative impact of NIP transactions suggests that rapid adoption of instant payment systems may introduce operational and settlement risks that could offset the benefits of increased transaction volumes. This finding highlights the need for a balanced approach to digital payment adoption, ensuring that technological advancements are accompanied by robust risk management frameworks.

Several policy recommendations are proposed. First, policymakers should encourage banks to expand and enhance their digital payment infrastructures, including ATMs, POS systems, and mobile banking platforms, to improve service delivery and financial inclusion. Second, regulatory bodies should implement stringent oversight and risk management protocols for instant payment systems like NIP to mitigate associated operational risks. Third, fiscal incentives, such as tax breaks or reduced regulatory levies, could be introduced to stimulate further adoption of digital payment technologies by banks. Fourth, continuous monitoring and data-driven policymaking should be employed to assess the impact of digital payment channels on bank performance and make necessary adjustments to regulatory frameworks. Lastly, a balanced approach to digital payment adoption should be promoted, ensuring that technological advancements are accompanied by robust risk management frameworks to safeguard the stability and profitability of the banking sector.

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