FINANCIAL TECHNOLOGY AND PEFRORMANCE OF COMMERCIAL BANKS IN NIGERIA

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Abstract

This study has investigated the impact of financial technology on the commercial banks performance in Nigeria between 2015 and 2024. An ex-post facto research design was adopted. The study employed descriptive statistics, correlation analysis, Variance Inflation Factor (VIF), pooled Ordinary Least Squares (OLS), Fixed Effects, Random Effects, and Hausman Specification Test for data analysis. The findings revealed that Automated Teller Machine (ATM) transactions had a positive and statistically significant effect on both Return on Assets and Return on Equity. Point of Sale (POS) transactions also exerted a positive influence on bank performance. Internet Banking (IB) exhibited a negative effect on Return on Assets and an insignificant effect on Return on Equity. The study therefore recommended that commercial banks should continue to invest in efficient digital banking channels, particularly ATM and POS technologies.

1.1 Introduction

The global banking industry has undergone significant transformation over the last decade, largely driven by advancements in financial technology (FinTech). FinTech innovations such as mobile banking, digital payments, automated lending systems, blockchain applications and artificial intelligence based risk management tools have fundamentally reshaped traditional banking operations (Le & Nguyen, 2026). These technological advancements have enhanced operational efficiency, reduced transaction costs, improved customer experience, and created new revenue models for commercial banks (Yang, Xiuping, & Zhang, 2021).

In emerging economies such as Nigeria, FinTech development has accelerated rapidly due to increased mobile penetration, internet access, and regulatory reforms initiated by the Central Bank of Nigeria (Ezechukwu, 2021). Nigeria has emerged as one of Africa's leading FinTech hubs, with significant growth in digital payments, agency banking, and electronic transaction platforms (Alaba et al., 2025). Between 2015 and 2024, electronic payment transactions in Nigeria expanded substantially, reflecting deeper digital financial integration within the banking system (Soetan & Mogaji, 2024). Commercial banks are

increasingly using FinTech strategies to boost customer engagement, improve business and customer service, and remain competitive (Nguyen, 2025).

The Return on Assets (ROA), Return on Equity (ROE), and Net Interest Margin (NIM) metrics, which show the efficiency and overall health of commercial banks' finances, are typically used to assess bank performance. Over time, a number of factors, including governance concerns, digital transformation, and regulatory actions, have either increased or decreased the profitability of Nigeria's commercial banks. Therefore, it is now essential to understand how understanding FinTech adoption and bank performance interact.

The Nigerian financial industry is heavily dependent on technology, and the newest financial technologies (FinTech) have been introduced to increase customer base, profitability, and operational efficiency.In order to increase interventions, customer base, and industry profitability, the financial sector is a huge fan of technology, particularly mobile banking, Internet banking systems, and automated teller machines (ATMs). ROH* is a crucial indicator of how the technologies affect commercial banks' financial performance metrics, such as profitability and return on assets, according to the empirical data that is currently available. However, the extent, direction, and consistency of these effects are still unknown, particularly with regard to Nigeria (Nasta et al., 2026).

Empirical research on the adoption of FinTech has produced conflicting results. While some studies show a positive relationship between FinTech and bank performance in terms of improved service delivery and operational efficiency, other studies find conflicting results regarding the relationship between digital banking channels and bank performance. These discrepancies raise concerns about how different FinTech products, such as ATMs, POS systems, online banking, and mobile banking, affect conventional performance metrics and whether these effects can be sustained (Nasta et al., 2026).

FinTech is becoming more important in today's banking industry, but its actual effect on commercial banks' performance has not been thoroughly examined. The majority of the literature that is currently available concentrates on FinTech without taking into account how it might affect or mitigate the financial effects of digital innovation. Furthermore, the lack of integrative knowledge about these relationships was demonstrated by the inconsistent nature of many empirical studies.

Therefore, the study's main concern was the absence of empirical integration that looks at how financial technology adoption affects Nigerian commercial banks' performance. This study sought to close this gap by providing more information about how digital innovation affects bank performance. Therefore, the purpose of this study was to investigate how financial technology affects Nigerian commercial banks' performance.

2.0 Literature Review

Technology Acceptance Model (TAM)

One of the fundamental models that explains how people and organizations adopt and use new technologies is the Technology Acceptance Model (TAM), which was created by Fred Davis in 1989. The model makes the assumption that users' attitudes toward a technology will be influenced by its perceived utility and ease of use, which will then have an impact on the technology's behavioral intention and actual use. The degree to which a person feels that utilizing a system will improve their performance is known as perceived ease of use, and the degree to which a person feels that a system requires no effort

is known as perceived usefulness. As time goes on, additional concepts like social influence, enabling circumstances, and trust are added to technology acceptance models, particularly in the context of digital and financial technology (Alalwan et al., 2020).

Financial technology (FinTech) and the technology acceptance model play a significant role in understanding how customers and bank employees accept innovations in the context of mobile business, investing, online payment systems, and automated teller machines (ATM). However, Nigeria is undergoing a transition to digital banking, so the adoption of FinTech solutions is essential to determining their efficacy there. FinTech adoption is strongly influenced by perceived usefulness (faster transactions, convenience, cost savings), while perceived ease of use increases user satisfaction and the probability of continued adoption (Edo et al., 2023).

Adoption of internet-enabled finance technology increases system efficiency, lowers transaction costs, and enhances customer satisfaction, all of which improve the company's financial performance (Fashoto, 2023). However, some external factors, such as low digital literacy, cyber security concerns, and low Internet bandwidth, can negatively impact perceived ease of use and adoption in developing nations like Nigeria.

Diffusion of Innovation Theory

Everett Rogers' "Diffusion of Innovation Theory" (2003) describes and explains how new concepts and technologies spread, or develop, over time in a social system. Diffusion, according to Rogers, is the process through which an innovation spreads over time among members of a social system through particular channels. Diffusion process theory application is a multinational approach with roots in numerous fields. Human-computer interaction and modern design have also been influenced by this concept. According to the theory, adoption is influenced by five key characteristics: relative advantage, compatibility, complexity, trialability, and observability.

Compatibility is the degree to which the innovation is compatible with existing practices or values, and relative advantage is the advantage the innovation has over existing practices or values. Trialability is the ability to test the innovation, observability is the ability to recognize its advantages, and complexity is the difficulty of using it. FinTech innovations have spread throughout the banking industry, revolutionizing banking operations. Financial intermediation and the reach of financial services have greatly benefited from mobile money, digital lending platforms, and electronic payment systems. Because FinTech is an effective and economical process, its spread improves financial inclusion and organizational performance (Bongomin et al., 2020; Abbasi et al., 2021).

Empirical Review

Based on research in this area, Agbeche et al. (2024) conducted a systematic review of financial technology and corporate performance in Nigeria between 2021 and 2022. The findings demonstrated that FinTech is a technology that can improve a company's performance because it can increase financial inclusion, reduce transaction costs, and speed up the delivery of financial services to the business. The study made clear how crucial it is for financial institutions and tech firms to collaborate in order to improve service and organizational efficiency.

The digital transformation of the banking industry has a positive impact on the profitability of the banks, and operational solutions like automated lending, digital payment systems, etc. achieve high performance, according to Zuo et al. (2020) analysis of how technological innovation

affects banking operations. Ahamed (2021) examined the factors that influence bank profitability in developing nations and discovered that the adoption of digital finance improves financial inclusion and transaction volumes. The benefits of FinTech for boosting customer share and supporting revenue diversification were also mentioned in the study.

Regarding FinTech disruption in the banking industry, Arnoud et al. (2021) discovered that FinTech innovations boost the industry's efficiency and level of competition. Additionally, they stated that if traditional banks are not managed effectively, their profitability may be negatively impacted by increased competition from FinTech firms, which are also growing in size. Adoption of FinTech improves financial performance, boosts bank efficiency, and reduces operating costs, according to Baker et al. (2022). However, it also showed that since FinTech increases operational and cyber security risks, its beneficial effects depend on appropriate risk management infrastructures.

According to Tkachyk et al. (2025), the use of digital banking platforms, mobile apps, and electronic payment solutions has significantly improved commercial banks' customer engagement and transaction efficiency. Profitability and market competitiveness have increased as a result of these improvements. According to Aloulou et al. (2024), financial inclusion promotes economic participation through fintech, which also enhances the financial sector's performance. However, the study made clear that the benefits of fintech can be more fully realized with strong institutional, governance, and regulatory frameworks.

The relationship between fintech, financial governance, and financial performance was also examined by Pengfei et al. (2021), who found that financial governance tends to moderate the relationships between fintech and improvements in financial performance. The findings show that banks with strong governance are better positioned to leverage fintech innovations.

In a similar vein, Peter et al. (2025) stressed that while utilizing fintech can also benefit financial inclusion and bank efficiency, having strong governance frameworks in place will be beneficial in addressing the risks associated with digital transformation. According to the study, governance and fintech both affect how well businesses perform financially.

Additionally, the research showed that utilizing FinTech without appropriate governance can put banks at risk for cyber security, operations, and regulation (Thakor, 2022).

3.0 Methodology

An ex post facto research design was employed in this investigation. The design was judged suitable because it allows for the examination of the relationships between the variables without requiring any manipulation of the current variables. The historical circumstances of the data determine the resort's constitution; institutional features of the government are not "altered after the fact" or manipulated. The purpose of the study was to simultaneously analyze time series from various years between 2015 and 2024 in a panel data matrix, as well as cross section profiles from various nations.

Based on secondary data from reputable and authoritative sources, the study was observational and covered the years 2015–2024, which included ten years of significant technological advancements in Nigeria's banking sector. The annual report and financial statements of the randomly chosen listed commercial banks in Nigeria provided the majority of this data. The five Systemically Important Banks (SIBs) in Nigeria—Guaranty

Trust Bank, United Bank for Africa, Zenith Bank, Access Bank, and First Bank—were the exclusive focus of this study due to their substantial asset bases, wide customer bases, and significant market shares, as well as their crucial roles in preserving the stability of the country's financial system.

The study employed static panel data regression analysis, specifically pooled OLS, fixed effects, and random effects models, to examine the relationship between financial technology, corporate governance, and bank performance. The Hausman specification test is then used to determine the most appropriate estimator for inference. Panel data analysis is appropriate because it combines both cross-sectional (different banks) and time-series (multiple years) data, providing more robust and reliable results. Descriptive statistics such as mean, standard deviation, and correlation analysis will be used to summarize and examine the characteristics of the data.

Model specification

The model of this study incorporated financial technology variables such as Automated Teller Machine transactions, Point of Sale transactions, and Internet Banking transactions in order to examine the combined effect of financial technology on performance of commercial banks in Nigeria. The model for this study is stated as:

$ROA = f(ATM, POS, IB)$ ..... (3.1)

$ROE = f(ATM, POS, IB)$ .....(3.2)

The model is expressed econometrically as:

$ROA_{it} = \beta0+\beta1ATM_{it} + \beta2POS_{it} + \beta3IB_{it} +U_{it}$ …….(3.3)

$ROE_{it} = \beta0+\beta1ATM_{it} + \beta2POS_{it} + \beta3IB_{it}+ \beta4 BS_{it} +U_{it}$……...(3.4)

Where:

ROA_{it} = Return on Assets at time t

ROE_{it} = Return on Equity at time t
ATM_{it} = Automated Teller Machine Transactions at time t
POS_{it} = Point of Sale Transactions at time t
IB_{it} = Internet Banking Transactions at time t
$\beta0$ = Constant
$\beta0+\beta1$ = Parameters to be estimated
U_t = Stochastic Error Term

DATA PRESENTATION AND ANALYSIS

Descriptive Statistics

Table 4.1 presents the descriptive statistics for all variables used in the study. The dataset comprises 50 observations covering five Systemically Important Banks over 2015-2024.

Table 4.1: Descriptive Statistics of Variables

Variable	Obs.	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
ROA	50	2.8238	0.7780	1.22	4.66	0.1092	-0.4989
ROE	50	16.9876	4.4148	7.64	25.75	-0.1581	-0.3691
ATM	50	3029.08	2094.59	708.14	7337.67	0.4763	-1.2546
POS	50	7143.90	11474.88	69.84	41309.00	1.7931	2.1297
IB	50	90035.99	112544.40	13.49	399749.10	1.1260	0.4287

Source: Author's Computation, 2026

Table 4.1 presents the descriptive statistics for all variables used in the study. The dataset consisted of 50 observations drawn from five Systemically Important Banks in Nigeria over the period 2015–2024. The statistics provided information on the central tendency, dispersion, and distributional characteristics of the variables.

The average Return on Assets (ROA) was 2.82%, with a standard deviation of 0.78, indicating relatively low variation in the ability of the sampled banks to generate profits from their assets. The minimum and maximum values of 1.22% and 4.66%, respectively, suggest moderate fluctuations in asset profitability across the study period. Similarly, Return on Equity (ROE) recorded a mean value of 16.99% with a standard deviation of 4.41, implying that shareholders earned an average return of approximately 17%, although with greater variability compared to ROA.

Regarding the digital banking variables, Automated Teller Machine (ATM) transactions had an average value of ₦3,029.08 billion with considerable variation (standard deviation = ₦2,094.59 billion), reflecting differences in transaction volumes across years. Point of Sale (POS) transactions exhibited a mean value of ₦7,143.90 billion and a relatively large standard deviation of ₦11,474.88 billion, indicating substantial growth and variability in electronic payment usage during the study period. Internet Banking (IB) transactions recorded the highest average value of ₦90,035.99 billion with a standard deviation of ₦112,544.40 billion, suggesting significant expansion in the adoption of internet-based financial services, particularly in recent years.

With the exception of POS and IB, which had positive skewness, the skewness values indicated that most of the variables were more or less symmetric. This suggests that digital banking channels have experienced positive skewness, or higher values. Additionally, the distribution of the majority of the variables was relatively normal, as evidenced by the relatively low kurtosis of the distribution of these variables, with the exception of POS transactions, which displayed a relatively higher measure of kurtosis, suggesting that a larger percentage of scores were concentrated around the mean with some extreme scores. In general, the descriptive statistics indicated that the sampled banks have strong growth in digital banking and are moderately profitable.

Correlation Analysis

Correlation analysis was used to examine the type and degree of relationship between the different study measures. The correlation matrix between the various financial performance variables—Return on Assets (ROA) and Return on Equity (ROE)—and the electronic banking variables—Automated Teller Machine (ATM), Point of Sale (POS), and Internet Banking (IB)—is shown in Table 4.2. The analysis can be used to determine the degree of association between them as well as whether they range in the same direction (positive relationship) or in opposite directions (negative relationship). Before beginning a more thorough econometric analysis, this provides a first look at the relationships between various variables.

Table 4.2: Correlation Matrix of Study Variables

	ATM	POS	IB	BS	BI	AC
ATM	1.0000	0.6636	0.6403	0.0337	0.5194	0.1948
POS		1.0000	0.7347	-0.1093	0.5080	0.2398
IB			1.0000	-0.0205	0.5195	0.2658

Source: Author's Computation, 2026

The strengths and directions of the relationships between the variables are shown in the Pearson correlation matrix (Table 4.2). The correlation coefficients range from negative to positive; positive values suggest a positive correlation or a direct relationship, while negative values suggest a negative correlation or a reverse relationship.

With a correlation coefficient of 0.7454, the findings demonstrated a strong positive relationship between Return on Equity (ROE) and Return on Assets (ROA). This suggests that banks in the sample generally report higher asset profitability with higher returns to shareholders.

ATM has a positive correlation with ROA (r = 0.2993) and ROE (r = 0.5036) for the FinTech variables, indicating that better financial performance is correlated with increased ATM service usage. Similarly, while Point of Sale (POS) transactions have a positive correlation with ROA (r = 0.1934) and ROE (r = 0.5360), Internet Banking (IB) transactions also have a positive correlation with ROA (r = 0.1699) and ROE (r = 0.5238). This indicates that the growth of Nigeria's Systemically Important Banks (SIBs) in their digital banking operations is correlated with their profitability.

All of the FinTech indicators are highly correlated with one another. Out of all the transaction types, ATM transactions are most strongly correlated with POS transactions (r = 0.6636) and Internet banking transactions (r = 0.6403), while the relationship between POS transactions and Internet banking transactions is the strongest (r = 0.7347). The strong correlation suggests that the expansion of one digital banking channel is correlated with the expansion of other channels.

Overall, the variables related to FinTech use are positively correlated with bank performance variables, according to the results of the correlation analysis. Furthermore, the FinTech study's variables have a strong correlation with one another, but the coefficients are less than 0.95, suggesting that multicollinearity is not likely to be a serious problem.

Multicollinearity Test (VIF)

The variance inflation factor (VIF) test was used to determine whether the independent variables included in the study were multicollinear. Strong correlations between two or more explanatory variables can result in multicollinearity, a phenomenon that may affect the accuracy and dependability of regression estimates. The tolerance values (1/VIF) indicate how well the variables are linearly independent, and the VIF values in Table 4.4 were used to extrapolate the degree of linear correlation between the independent variables. VIF values below the regional limit indicate that the variables are generally suitable for regression and that there is no high level of What is Regressed on that causes severe multicollinearity.

Table 4.3: Multicollinearity Test (VIF)

Variable	VIF	1/VIF
ATM	1.84	0.5435
POS	1.66	0.6024
IB	1.96	0.5102

Source: Author's Computation, 2026

To determine whether multicollinearity existed between the explanatory variables, the Variance Inflation Factor (VIF) and tolerance tests were run. The results are shown in Table 4.3. A Variance Inflation Factor (VIF) test and a tolerance test were used to determine whether or not the explanatory variables are collinear; the results are displayed in Table 4.3. According to the findings, the maximum value for Internet Banking (IB) is 1.96, and all VIF values are less than 10, which is an acceptable value. This indicates that the explanatory variables do not exhibit excessive correlation.

The tolerance values, which ranged from 0.5102 to 0.8929 and were all higher than the necessary minimum of 0.10, supported this. The results showed that none of the variables is a close approximation of a linear combination of the other variables and that these variables add distinct pieces of information to the regression model.

The significance of these findings is that multicollinearity will barely have an impact on the obtained regression coefficients for the estimated regression. As a result, the explanatory variables—Automated Teller Machine (ATM), Point of Sale (POS), and Internet Banking (IB)—follow the multicollinearity assumption and can be tested using regression. As a result, none of the regression explanatory variables in the study needed to be removed or altered.

Panel Regression Results – ROA

The Pooled Ordinary Least Squares (Pooled OLS) model, Fixed Effects (FE) model, and Random Effects (RE) model are three types of panel estimation models/techniques that were used in the study to assess how Automated Teller Machines (ATM), Point of Sale (POS), and Internet Banking (IB) affected the financial performance of services provided by particular banks. The direction, magnitude, and degree of significance of the variation in explanatory variables to account for variations in ROA are shown in table 4.4.

Table 4.4: Panel Regression Results - Dependent Variable: ROA

Variable	Pooled OLS	Fixed Effects	Random Effects
Constant	5.3798***	3.2983***	5.3798***
	(1.1385)	(0.6442)	(1.6602)
ATM	0.0003***	0.0004***	0.0003**
	(0.0001)	(0.0001)	(0.0001)

POS	0.0000*	0.0001**	0.0000
	(0.0000)	(0.0000)	(0.0000)
IB	-0.0000***	-0.0000***	-0.0000*
	(0.0000)	(0.0000)	(0.0000)
R-squared	0.5203	0.3763	0.5203
F-statistic	7.7722***		
Observations	50	50	50

Source: Author's Computation, 2026

Table 4.4 displays the results of the pool OLS, panel Fixed Effects, and panel Random Effects models using return on assets (ROA) as the financial performance metric. Information and finance technology indicators and company characteristics are examples of explanatory variables. Overall, the pooled OLS model explains about 52.03% of the variations in ROA, according to the coefficient of determination ($R^2 = 0.5203$). At 1%, this F-statistic, which is approximately 7.7722, is statistically significant. This suggests that the profitability of the sampled banks is significantly impacted by the set of explanatory variables.

The Automated Teller Machine (ATM) transactions have a positive impact on ROA, according to the results. While all estimation techniques yield positive results, only the second technique mentioned above produced a statistically significant positive result. The pooled OLS model's ATM coefficient is positive and significant at the 1% level, indicating that a bank's asset profitability increases with the number of ATM transactions it conducts. This finding suggests that ATM services are used to maximize and support revenue generation.

The outcome demonstrates a positive relationship between ROA and Point of Sale (POS) transactions. The Fixed Effects model has a coefficient significance of 5%, while the pooled OLS model has a coefficient significance of 10%. Because more people have access to electronic payment services and, as a result, there are more transactions, banks gain from POS transactions in terms of increased profitability.

On the other hand, Internet Banking (IB) transactions have a statistically significant negative relationship with ROA. The coefficient is significant at 10% under the Random Effects (RE) model and at 1% under the pooled OLS and Fixed Effects (FE) models. The high cost of maintaining digital infrastructure, IT security regulations, and the need to incorporate data on NigeriaInter-BankPayment (NIP) transactions—which can result in higher operating costs and short-term losses—are probably the main causes of the detrimental effects.

In summary, the regression results indicate that ATM and POS transactions positively influence banks' profitability, whereas Internet Banking transactions exert a negative effect.

Panel Regression Results – ROE

The analysis employed three estimation techniques, namely Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects, and Random Effects models, to examine the relationship between Automated Teller Machine (ATM), Point of Sale (POS), Internet Banking and ROE. The regression results shown in Table 4.5 provide insight into the

magnitude, direction, and statistical significance of the explanatory variables in influencing the financial performance of the selected banks.

Table 4.5: Panel Regression Results - Dependent Variable: ROE

Variable	Pooled OLS	Fixed Effects	Random Effects
Constant	18.189***	4.5233***	18.189*
	(6.5810)	(1.1040)	(9.2384)
ATM	0.0008**	0.0012***	0.0008
	(0.0004)	(0.0004)	(0.0005)
POS	0.0002	0.0003*	0.0002
	(0.0002)	(0.0002)	(0.0002)
IB	-0.0000	-0.0000	-0.0000
R-squared	0.5387	0.5360	0.5387
F-statistic	8.3684***		
Observations	50	50	50

Source: Author's Computation, 2026

Table 4.5 presents the results of the pooled Ordinary Least Squares (OLS), Fixed Effects, and Random Effects panel regression models using Return on Equity (ROE) as the dependent variable. The results shed light on how corporate governance practices and FinTech adoption affect the returns received by shareholders of the Nigerian banks that were sampled. Given that the pooled OLS model explains roughly 53.87% of the variation observed in the ROE and the Fixed Effects model explains roughly 53.60% of the variation observed in the ROE, this indicates that the explanatory variables can explain the variations in ROE to a good degree. Furthermore, at the 1% level, the f-Statistic value of 8.3684 is statistically significant, indicating that the explanatory variables collectively significantly affect return on equity.

The results demonstrated that ROE is positively impacted by the banking institution's use of the Automated Teller Machine (ATM) for all three estimation methods. Specifically, this coefficient is statistically significant under two different models: the Fixed Effects model (at level 1%) and the OLS model (at level 5%). Higher ATM transaction volumes are positively correlated with shareholders' return, according to this finding, which may enhance the effectiveness and convenience of banking services for customers.

ROE is also positively impacted by profit of sale (POS), a measure of the profit made from the sale of goods and services. However, the Fixed Effects model's coefficient is only statistically significant at the 10% level, indicating that POS transactions have a negligible effect on shareholders' returns. However, the positive sign shows that as electronic payment methods proliferate, there is a greater chance of profitability because of the increased transactions and customer convenience.

None of the variables have statistical significance for Internet Banking (IB), and the coefficients derived from the different estimation methods exhibit negative signs. This indicates that during the study period, Internet banking activities had no discernible net impact on ROI. The insignificant correlation may be caused by the low cost of maintaining digital infrastructure and the time it takes for the advantages of online banking investments to translate into higher returns for shareholders.

Hausman Specification Test

Table 4.6: Hausman Specification Test Results

Test	ROA Model	ROE Model
Chi-square	-4.3008	3.1336
DF	6	6
P-value	1.0000	0.7919
Preferred	Random Effects	Random Effects

Source: Author's Computation, 2026

Random Effects is preferred for both models ($p > 0.05$).

Table 4.6 presents the results of the Hausman specification test, which was conducted to determine the appropriate panel estimation technique between Fixed Effects and Random Effects models. The decision rule is based on the probability value; where a p-value greater than 0.05 indicates that the Random Effects model is appropriate, while a p-value less than 0.05 suggests that the Fixed Effects model is preferred.

For the Return on Assets (ROA) model, the Chi-square statistic is -4.3008 with a p-value of 1.0000. Similarly, for the Return on Equity (ROE) model, the Chi-square statistic is 3.1336 with a p-value of 0.7919. Since both p-values are greater than the 5% significance level, the null hypothesis of no systematic difference between the coefficients of the Fixed and Random Effects models cannot be rejected.

Consequently, the Random Effects model is considered the most appropriate and efficient estimator for both the ROA and ROE models. This suggests that the unobserved individual effects are not correlated with the explanatory variables in the model, thereby justifying the use of the Random Effects estimation technique for interpretation and inference.

Diagnostic Tests

Table 4.7: Diagnostic Test Results

Test	ROA Model	ROE Model
Jarque-Bera	1.2915 (p=0.524)	1.3181 (p=0.517)
Breusch-Pagan	5.2841 (p=0.508)	6.9522 (p=0.325)
Durbin-Watson	1.9490	2.1790

Source: Author's Computation, 2026

All diagnostics are satisfactory: normal residuals, no heteroskedasticity, no autocorrelation.

Tables 4.7 display the findings of the diagnostic tests used to evaluate the bank strength and validity of the regression models. The tests include the Durbin Watson test for

autocorrelation, the Breusch-Pagan test for heteroskedasticity, and the Jarque-Bera test for normality.

The ROA and ROE models have Jarque-Bera statistics of 1.2915 (p = 0.524) and 1.3181 (p = 0.517), respectively. Since every p-value is greater than 0.05, it appears that the residuals' normality assumption is still valid. This implies that the errors are normally distributed, which satisfies one of the key presumptions of classical linear regression (normal distribution of errors).

The Breusch-Pagan test results show that the model specifications are sufficient for both the ROA and ROE models, with p-values greater than 0.05. Additionally, these values exceed the 5% significance level, suggesting negligible evidence of heteroskedasticity in the models. This suggests that the errors are homoscedastic (equal variance) since the variance of the errors is constant across observations.

Additionally, the ROA and ROE models' Durbin-Watson statistics are 1.9490 and 2.1790, respectively. These values, which are roughly 2 for both models, show that there is no significant issue with first order autocorrelation of the residuals.

Overall, the results of the diagnostic tests indicate that the estimated models satisfy the crucial assumptions of the classical regression analysis model and are statistically well-specified.As a result, the study's regression results are more valid and reliable.

Discussion of Findings

The outcome showed that ATM transactions significantly and favorably affect ROA and ROE. This implies that the more ATMs there are, the more profitable the banks will be because there will be more banks available for clients to bank and serve, and the banks will be able to provide more effective services. It supports Davis's (1989) Technology Acceptance Model (TAM), which holds that employing beneficial technologies improves organizational performance. This result supports the findings of Udell (2020) and Ozili (2020), Thakor (2022), and Khan (2026), who discovered that digital banking technologies improve financial performance, transaction numbers, customer satisfaction, and bank efficiency. The use of ATMs clearly demonstrates that Nigerian banks continue to benefit greatly from ATM technologies in the self-service banking sector, despite an increase in other digital packages.

The study also found that the volume of transactions at the Point of Sale (POS), which has a substantial correlation with banks' performance, has a positive impact. The positive correlation implies that as POS terminal usage rose, so did transaction volumes, fee-based revenue generation, and the integration of financial services into people's daily lives, thereby boosting financial inclusion. This finding is consistent with Rogers' (2003) Diffusion of Innovation Theory, which holds that innovations with relative advantages gain broader acceptance and are likely to have positive organizational effects. This result is in line with those of Agbeche et al. (2024), Ozili (2020), and Khara et al. (2021), who found that fintech innovations have positive financial performance, enhance financial service delivery, and support financial inclusion measures. The findings also reflect the recent increase in transactions for the nation's expanding number of agents and transactions that take place without cash payments (POS) and agent banking among Nigerians.

However, the findings indicated that Internet Banking (IB) has a negatively correlated relationship with ROA and a negligible correlation with ROE. This suggests that even though internet banking has become extremely popular, its short-term contribution to profitability is still minimal. The need for

large capital expenditures for digital infrastructure, cyber security systems, software upgrades, and maintenance can be used to explain the detrimental effects on the news sector. According to the Technology Acceptance Model, technology performance is positively impacted by technology acceptance, but in the current situation, the benefits of online banking may take longer to materialize without the drawbacks of the expenses associated with adopting and using the technology. This result partially supports the claim made by Boot and Thakor (2025) that, if technology advancements are not used effectively, they can increase competition and force established banks to reduce their profit margins. According to Thakor (2022), the use of FinTech carries risks related to operations and cyber security, which could jeopardize profitability if appropriate risk management procedures are not in place. Because the expenses are still higher than the immediate financial gains, the conclusion suggests that Internet banking investments in Nigeria are probably in the cost-benefit transition phase.

5.0 Conclusion and Recommendations

The study discovered that corporate governance practices and the adoption of financial technology both have an impact on Nigerian commercial banks' performance, albeit in different ways and to different degrees. While the use of ATMs and point-of-sale systems had a positive impact on bank profitability, this was not the case for Internet banking, most likely due to measurement issues brought on by the inclusion of NIBSS Instant Payment (NIP) data in Internet banking or high infrastructure costs.

The findings demonstrated the necessity of a comprehensive management approach while concurrently implementing FinTech innovations in banks. Banks that successfully execute digital transformation will be able to reap greater financial rewards. Banks that successfully align their plans would be able to do better during digital transformation adjustments. In order to increase customer access, reach, satisfaction, and transaction income, commercial banking institutions should continue investing in computerized infrastructure, such as automated teller machines (ATM), point-of-sale (POS) terminals, and agent networks. The Central Bank of Nigeria (CBN) should keep promoting policies that strengthen the regulatory framework of electronic banking, encourage the adoption of financial technologies, and speed up the reporting of digital banking data so that it is accurate, consistent, and comparable. With a thoughtful investment in infrastructure, such as internet connectivity and electricity, all policy and government planners should support the long-term growth of the banking industry and promote digital financial inclusion by facilitating access to, development of, and use of FinTech services.

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