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INFORMATION AND COMMUNICATION TECHNOLOGY ADOPTION AND ACCOUNTING PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA

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Abstract

The pervasive adoption of Information and Communication Technology (ICT) in the Nigerian banking industry has fundamentally transformed accounting practices, service delivery, and financial performance. This study investigates the impact of three primary ICT tools Automated Teller Machines (ATMs), Electronic Banking (E-Banking), and Point of Sale (POS) terminals on accounting and financial performance in the Nigerian banking sector. Anchored in the Technology Acceptance Model (TAM), Contingency Theory, and Innovation Diffusion Theory, the study adopts a cross-sectional field survey design, sampling 100 staff members from ten purposively selected commercial banks. Data was collected via structured, Likert-scale questionnaires and analysed using descriptive statistics, Pearson correlation, and stepwise multiple regression. Findings reveal that all three ICT tools exert statistically significant positive impacts on financial performance. ATM usage shows the strongest influence. All three null hypotheses are rejected. The study concludes that strategic and sustained investment in ICT infrastructure, staff training, and cybersecurity is critical to optimising accounting performance and competitive positioning in the Nigerian banking sector. Recommendations for regulatory authorities, bank management, and future researchers are provided.

Keywords: ICT, Accounting Performance, ATM, E-Banking, POS and Technology Acceptance Model

1. Introduction

The global banking industry is undergoing a profound digital transformation driven by rapid advances in Information and Communication Technology (ICT). In developing economies like Nigeria, this transformation is particularly significant given the dual imperative of financial inclusion and operational efficiency. ICT broadly defined as the convergence of computing, telecommunications, and information management technologies has emerged as the central engine powering modern banking services, reshaping how financial institutions record, process, report, and communicate financial information (Laudon & Laudon, 2021). Prior to the widespread diffusion of ICT into Nigerian banking operations, accountants relied predominantly on manual bookkeeping methods, physical ledgers, and paper based records that were labour intensive, time consuming, and susceptible to human error. Financial statements including statements of financial position, income statements, and cash flow statements were typically prepared at periodic year-ends under significant time pressure. The quality of financial reporting depended heavily on individual competence and the integrity of manual controls, which were inherently fragile (Ezeamama, 2020).

The introduction of ICT fundamentally disrupted this paradigm. Computerised accounting systems now enable real time processing of high volume financial transactions, automated reconciliation, and the

generation of timely, accurate financial reports that support management decision-making (Dandago & Rufai, 2014). Specific ICT tools including Automated Teller Machines (ATMs), Electronic Banking (E-Banking) platforms, and Point of Sale (POS) terminals have not only extended banking services to previously underserved populations but have also become critical instruments in the banks' accounting and financial performance framework (Ahmadirezaei, 2019). Nigeria's banking sector presents a compelling case study for examining the ICT accounting performance nexus. The Central Bank of Nigeria's (CBN) cashless policy, introduced in 2012 and progressively expanded, has accelerated the deployment of ATMs, mobile banking applications, internet banking portals, and POS terminals across the country (Bickersteth, 2019). As of 2023, Nigeria recorded over 21,000 ATMs, more than 2.5 million POS terminals, and a rapidly growing internet and mobile banking subscriber base figures that underscore the sector's significant ICT footprint (CBN, 2023). Despite this progress, empirical evidence on the precise contribution of specific ICT tools to accounting and financial performance in Nigerian banks remains limited, particularly from the perspective of bank staff who manage and interact with these systems daily.

The study investigates the impact of ATM, E-Banking, and POS technologies on accounting and financial performance in selected Nigerian commercial banks. By adopting a primary survey approach and disaggregating the ICT impact across three distinct technology categories, this study aims to provide nuanced, empirical insights that can guide strategic ICT investment, regulatory policy, and academic inquiry.

Despite substantial and growing investments in ICT infrastructure across the Nigerian banking sector, the degree to which these investments translate into improved accounting performance remains insufficiently documented and empirically contested. The Nigerian banking environment is characterised by a complex interplay of factors including unreliable power supply, limited broadband penetration in rural areas, cybersecurity vulnerabilities, high implementation and maintenance costs, and a persistent shortage of ICT skilled accounting personnel that constrain the full realisation of ICT's potential value (Pype, 2022). These structural challenges manifest in a range of accounting and operational deficiencies: delays in financial reporting, errors in transaction records, difficulties in real-time data reconciliation, and inadequate management information systems. Moreover, the rapid pace of ICT innovation including the emergence of blockchain, artificial intelligence, and mobile financial services raises new questions about the continued relevance and performance impact of established ICT tools such as ATMs, E-Banking platforms, and POS terminals (Thabit et al., 2021).

Prior studies (Madugba et al., 2021; Oladejo & Yinus, 2020; Mohammed et al., 2022) have made important contributions to this field but tend to rely on secondary financial data from bank annual reports and central bank bulletins, which may not capture the granular operational experience of accounting staff or reflect the banks' internal ICT performance dynamics. There is, therefore, a significant gap in the literature for primary survey-based studies that simultaneously examine the impact of multiple ICT tools ATM, E-Banking, and POS on financial performance, as perceived by banking professionals who interact with these systems in their daily work. This study fills that gap.

The overarching objective of this study is to examine the impact of ICT on accounting performance in the Nigerian banking industry. Specifically, the study seeks to:

i. To examine the effect of ATM transactions on the financial performance of selected Nigerian banks.
ii. To investigate the impact of E-Banking transactions on the financial performance of selected Nigerian banks; and
iii. To evaluate the contribution of POS transactions to the financial performance of selected Nigerian banks.

In alignment with the objectives above, this study addresses the following research questions:

i. To what extent do ATM transactions affect the financial performance of selected Nigerian banks?
ii. Does E-Banking have a significant impact on the financial performance of selected Nigerian banks?

iii. To what extent do POS transactions contribute to the financial performance of selected Nigerian banks?

The following null hypotheses are formulated and tested at the 5% level of significance:

H_{01}: ATM transactions do not significantly affect the financial performance of selected Nigerian banks.

H_{02}: E-Banking transactions have no significant impact on the financial performance of selected Nigerian banks.

H_{03}: POS transactions do not significantly contribute to the financial performance of selected Nigerian banks.

2. Literature Review

2.1 Conceptual Review

Information and Communication Technology (ICT) in Banking

ICT is broadly defined as the integration of computing, telecommunications, and information management technologies to collect, store, process, and transmit information (Sajuyigbe & Alabi, 2022). In the banking sector, ICT is operationalised through a suite of products and systems from core banking platforms and data management systems to customer facing technologies such as ATMs, internet banking portals, mobile applications, and POS terminals (Ovia, 2021). The application of ICT in banking has been described by Castells (2001) as the catalyst for a financial revolution in which billions of dollars can be transacted electronically within seconds, breaking the physical and temporal constraints of traditional banking.

The evolution of ICT in Nigerian banking can be traced through several distinct phases: the introduction of computerised banking systems in the 1990s, the deployment of ATMs and internet banking in the 2000s, the proliferation of mobile banking and POS terminals in the 2010s, and the current era of cloud computing, big data analytics, and Fintech integration. Each phase has progressively redefined the banks' operating model and accounting infrastructure (Loonam et al., 2018). The ICT Association of America defines information technology as encompassing the study, design, development, implementation, and management of computer based information systems a definition that captures the full spectrum of technology activities relevant to banking accounting functions (ITAA, 2021).

Automated Teller Machines (ATMs)

ATMs represent one of the earliest and most widely deployed ICT innovations in Nigerian banking. An ATM is an electronic device that allows bank customers to perform a range of financial transactions including cash withdrawals, deposits, balance enquiries, fund transfers, and bill payments without requiring direct interaction with bank tellers (Madugba et al., 2021). The accounting significance of ATMs is multifaceted: they generate automated transaction records that feed directly into banks' core accounting systems, reduce cash handling risks and associated errors, and provide real time data that supports treasury management and financial reporting. From a financial performance perspective, ATMs contribute to income generation through transaction charges, reduce branch operating costs by deflecting routine transactions, and improve customer retention through enhanced service convenience (Bickersteth, 2019). Research by Madugba et al. (2021) confirms that ATM usage has a significant positive association with Earnings Per Share (EPS) and Return on Assets (ROA) in Nigerian deposit money banks, underscoring its direct contribution to financial outcomes.

Electronic Banking (E-Banking)

E-Banking refers to the delivery of banking products and services to customers through electronic channels, including the internet, mobile devices, and other digital platforms (Oladejo & Yinus, 2020). E-Banking encompasses internet banking, mobile banking, electronic funds transfers (EFT), and real-time gross settlement (RTGS) systems. For accounting purposes, E-Banking generates rich, real-time digital audit trails, automates reconciliation processes, and enables the generation of timely management reports that support strategic decision-making.The adoption of E-Banking has been shown to significantly improve the timeliness and quality of financial reporting in Nigerian deposit money banks (Oladejo & Yinus, 2020). It reduces the cost-per-

transaction compared to branch-based transactions, expands the bank's revenue base through service charges and digital product offerings, and improves operational efficiency by automating manual accounting processes. However, E-Banking adoption also introduces cybersecurity challenges, requires significant upfront investment in technology infrastructure, and demands high levels of digital literacy among both staff and customers (Pype, 2022).

Point of Sale (POS) Systems

POS terminals are electronic devices deployed at merchant locations to facilitate cashless payment transactions using debit or credit cards. In the context of Nigerian banking, POS terminals have been a primary instrument of the CBN's cashless policy, enabling customers to make purchases and merchants to receive payments without physical cash exchange. For banks, POS systems generate transaction fees and commissions, contribute to float income, and provide data on customer spending patterns that inform financial planning and accounting analytics (Mohammed et al., 2022). The accounting implications of POS systems include automated record generation for each transaction, which reduces manual entry errors and streamlines bank reconciliation processes. Mohammed et al. (2022), using ARDL co-integration analysis, demonstrated that POS transactions have a significant positive effect on the Return on Assets (ROA) of Nigerian commercial banks over the period 2007–2020, confirming the financial performance contribution of POS adoption.

Accounting Performance

Accounting performance encompasses the quality, accuracy, timeliness, and completeness of financial reporting, as well as the overall efficiency and effectiveness of accounting processes within an organisation (Harash, 2015). It is assessed through both financial metrics including earnings, return on assets, return on equity, and net interest margin and non-financial metrics such as reporting timeliness, audit quality, and compliance with regulatory standards (Tarawneh, 2016). In the banking context, accounting performance is tightly linked to the integrity of the information systems that underpin financial reporting, making ICT adoption a critical determinant of accounting quality. Accounting Information Systems (AIS) are the formal mechanisms through which banks collect, process, store, and communicate financial data. The quality of AIS and by extension, accounting performance is fundamentally shaped by the technological infrastructure supporting it (Dandago & Rufai, 2014; Fagbemi & Olaoye, 2016). ICT-enabled AIS have been shown to significantly improve accounting performance by automating error-prone manual tasks, enabling real-time data access, reducing processing times, and supporting more sophisticated financial analytics (Hla & Teru, 2015).

2.2 Theoretical Framework

Technology Acceptance Model (TAM)

The primary theoretical foundation of this study is the Technology Acceptance Model (TAM), developed by Davis (1989) and grounded in the Theory of Reasoned Action (TRA). TAM posits that the adoption and sustained use of technology in organisations is determined by two key psychological constructs: Perceived Usefulness (PU) defined as the extent to which a user believes a particular technology will enhance their job performance and Perceived Ease of Use (PEOU) defined as the degree to which a user believes that using the technology requires minimal cognitive effort. These constructs shape users' attitudes toward the technology, which in turn influence their intention to use it and their actual usage behaviour (Davis, 1989). In the context of Nigerian banking, ATM provides a robust framework for understanding why bank staff adopt ICT tools such as ATMs, E-Banking platforms, and POS terminals, and how this adoption translates into accounting performance outcomes. When bank staff perceive ATMs, E-Banking systems, and POS terminals as useful tools that enhance their financial reporting and transaction processing capabilities (high PU) and find these systems intuitive and easy to navigate (high PEOU), they are more likely to fully utilise these tools thereby maximising their contribution to financial performance. Legris et al. (2013) confirmed TAM's validity in multiple ICT adoption contexts, while also noting that social and organisational factors such as peer influence, training quality, and management support complement PU and PEOU in driving sustained adoption. This study extends TAM's application to the specific performance outcomes of ICT tools in Nigerian banking accounting.

Contingency Theory

Contingency Theory, originally developed in organisational management literature and applied to accounting research by scholars including Gordon and Miller (1976), posits that there is no universally optimal accounting system design; rather, the most effective system is the one best aligned with the specific contextual factors environmental, organisational, and technological facing an organisation (Dandago & Rufai, 2014). In the banking context, this theory implies that the impact of ICT tools on accounting performance will vary based on factors such as bank size, ICT infrastructure quality, staff competency, management philosophy, and the regulatory environment.

Contingency Theory supports this study's recognition that different ICT tools (ATM, E-Banking, POS) may exert different magnitudes of impact on financial performance, depending on the specific operational context of each bank. It also provides a rationale for the mixed responses observed in the descriptive analysis, where some staff expressed uncertainty or disagreement about the effectiveness of certain ICT tools reflecting contingent differences in implementation quality, training, and organisational support across the sampled banks.

Innovation Diffusion Theory

Rogers' (1983) Innovation Diffusion Theory (IDT) offers a third theoretical perspective, focusing on the process through which new technologies are adopted and spread within and across organisations over time. IDT identifies five characteristics of innovations that influence adoption rates: relative advantage (the degree to which the innovation is perceived as superior to the idea it supersedes), compatibility (consistency with existing values, experiences, and needs), complexity (the degree of difficulty in understanding and using the innovation), trialability (the extent to which the innovation can be experimented with on a limited basis), and observability (the degree to which results of the innovation are visible to others). Technologies with high relative advantage, high compatibility, low complexity, high trialability, and high observability tend to diffuse more rapidly. In the Nigerian banking context, ATMs, E-Banking, and POS systems each exhibit varying profiles across these IDT characteristics. ATMs have a long adoption history and high observability, making them widely accepted even among risk-averse bank staff. E-Banking platforms have high relative advantage in terms of speed and cost efficiency but may face complexity barriers in low-digital-literacy environments. POS systems, while increasingly familiar, may encounter challenges of compatibility with existing merchant and customer practices. IDT thus enriches the study's understanding of why adoption rates and performance impacts differ across the three ICT tools examined.

2.3 Empirical Review of Related Studies

A growing body of empirical literature examines the relationship between ICT adoption and banking or accounting performance across diverse contexts. The following review synthesises the most relevant findings, organised by ICT tool and geographic context.

In the Nigerian context, Madugba et al. (2021) investigated the effect of electronic banking on the financial performance of deposit money banks in Nigeria using secondary data from the CBN Statistical Bulletin. Employing descriptive statistics and a multicollinearity test, their findings revealed that ATM has a significant positive association with Earnings Per Share (EPS) and Return on Assets (ROA), while POS and NEFT significantly affect ROA, and web banking has an insignificant impact. These results provide direct empirical support for this study's hypotheses regarding ATM and POS.

Mohammed, Ibrahim, and Muritala (2022) examined the impact of POS payment systems on the performance of Nigerian commercial banks using the ARDL bounds co-integration approach over the period Q1 2007 to Q4 2020. Their findings confirmed that POS transactions exert a significant positive effect on bank ROA, reinforcing the present study's hypothesis regarding POS. The authors recommended that banks further invest in POS infrastructure to sustain this performance advantage.

Oladejo and Yinus (2020) evaluated electronic accounting practices in Nigerian deposit money banks, combining primary questionnaire data with secondary data from bank annual reports for the period 2010–2017. Their study concluded that e-accounting practices including computerised transaction processing, digital ledger management, and electronic reporting significantly improved the

timeliness of report generation and the quality of financial reporting. This aligns with this study's focus on E-Banking's impact on accounting performance.

Pype (2022) examined the impact of computerised accounting information systems at United Bank for Africa, using a survey research design. While confirming efficiency gains from ICT adoption, the study also identified internet connectivity, cybercrime risks, maintenance costs, and skilled manpower shortages as significant barriers challenges that are also reflected in the present study's descriptive findings.

Internationally, Thottoli (2022) explored ICT training's mediating effect on the relationship between ICT confidence, ICT challenges, and performance among sole proprietary audit firms in India. Using Smart PLS and SPSS with data from 165 auditors, the study confirmed that ICT training significantly enhances the performance impact of ICT adoption a finding with direct implications for this study's recommendation on staff training. Elsaadani (2020) similarly emphasised the critical importance of ICT skills development for accounting professionals in Egypt, finding that fresh graduates lacked the ICT competencies demanded by the profession. Hong et al. (2018), studying BIM adoption in Australian construction organisations, found that staff capability and organisational support are key determinants of technology adoption success a finding consistent with TAM and Contingency Theory.

Thabit et al. (2021), examining green ICT adoption in Iraqi organisations, found that cost, government legislation, and organisational culture significantly moderate ICT's impact on performance underscoring the contextual sensitivity of the ICT performance relationship and supporting this study's Contingency Theory framework.

The empirical review reveals that while existing studies have examined the relationship between ICT and banking or accounting performance in Nigeria, several gaps remain. First, most Nigerian-focused studies rely on secondary data from financial statements and central bank reports (Madugba et al., 2021; Mohammed et al., 2022), which may not capture the perspectives of accounting staff who interact daily with ICT systems. Second, few studies simultaneously examine the disaggregated impact of three distinct ICT tools ATM, E-Banking, and POS within a single regression framework, making it difficult to compare their relative contributions to financial performance. Third, studies anchored in multiple complementary theories (TAM, Contingency Theory, and IDT) that triangulate the ICT performance relationship from different theoretical perspectives are rare in the Nigerian banking literature.

3. Methodology

This study adopts a quantitative, cross-sectional field survey research design. The quantitative approach is appropriate because the study seeks to establish the magnitude and statistical significance of relationships between ICT tools (ATM, E-Banking, POS) and financial performance objectives that are best served through numerical measurement and statistical analysis (Creswell & Creswell, 2018). A cross-sectional design was chosen because it facilitates the efficient collection of data from multiple respondents at a single point in time, enabling broad-based comparisons across different banks and staff categories. This design is consistent with established practice in ICT adoption and banking performance research (Thottoli, 2022; Madugba et al., 2021). The population of this study comprises the staff of all 21 commercial banks listed on the Nigerian Stock Exchange. Ten (10) banks were purposively selected based on their prominence, market capitalisation, ICT infrastructure depth, and geographic reach, ensuring representation of all the banks. The selected banks are: First Bank Plc, United Bank for Africa (UBA), Guaranty Trust Bank (GT Bank), Stanbic IBTC Bank, First City Monument Bank (FCMB), Eco Bank Nigeria, Fidelity Bank, Zenith Bank, Access Bank, and Union Bank.

Using a purposive sampling technique, ten (10) staff members were drawn from each selected bank, targeting personnel in accounting, audit, information technology, and financial management roles, as these departments have the most direct and informed engagement with ICT tools and their financial performance implications. This yielded a total sample size of 100 respondents. While a larger sample would enhance statistical power, the targeted sampling approach ensures that all respondents possess the domain expertise required to meaningfully assess the study's constructs. A response rate of 100% was

achieved through the personal administration of questionnaires at bank branch offices. The primary data collection instrument was a structured, self-administered questionnaire, designed in two sections. Section A captured respondents' demographic characteristics, including gender, age, educational qualification, professional certification, work experience, department, and management level. Section B comprised 30 items measuring respondents' perceptions of the impact of ATM (8 items), E-Banking (6 items), POS (6 items), and Financial Performance (8 items). A two-item attention check was embedded to screen out inattentive respondents, and two additional items assessed the broader perceived impact of ICT on accounting performance. All Section B items were measured on a five-point Likert scale, anchored at 1 (Strongly Disagree) and 5 (Strongly Agree).

Content validity was established through a systematic review of the instrument by three academic experts in accounting and management information systems, who confirmed the relevance, clarity, and coverage of all items. Construct validity was assessed through factor analysis, which confirmed that items loaded appropriately on their intended constructs. Reliability was assessed using Cronbach's Alpha, which returned coefficients of 0.81 (ATM), 0.79 (E-Banking), 0.78 (POS), and 0.83 (Financial Performance) all comfortably above the conventional threshold of 0.70, confirming acceptable internal consistency (Nunnally, 1978).

Data were analysed in three stages. First, descriptive statistics including frequency distributions, percentages, means, and standard deviations were computed to profile respondents and describe their perceptions of each ICT tool. Second, Pearson correlation analysis was conducted to examine the bivariate relationships between ATM, E-Banking, POS, and Financial Performance, and to assess potential multicollinearity among the predictors. Third, stepwise OLS multiple regression analysis was employed to test the three null hypotheses and estimate the independent and combined contributions of ATM, E-Banking, and POS to financial performance. ANOVA F-tests were used to assess the overall significance of each regression model. All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 26.

Model Specification

The regression model estimated in this study takes the following form:

$$FP_i = \alpha + \beta_1 ATM_i + \beta_2 EB_i + \beta_3 POS_i + \varepsilon_i$$

Where: FP = Financial Performance (dependent variable); ATM = Automated Teller Machine usage index; EB = E-Banking usage index; POS = Point of Sale terminal usage index; α = constant (intercept); β_1, β_2, β_3 = regression coefficients; ε = error term. All constructs were operationalised as mean composite scores derived from the Likert-scale items in each respective section of the questionnaire.

4. Results and Discussion

Table 1 presents the demographic characteristics of the 100 respondents who participated in the study. The sample is predominantly male (58%), reflecting the gender composition of the banking workforce in Nigeria, particularly in accounting and senior management roles. The largest age cohort is 30–39 years (46%), suggesting a relatively experienced yet digitally-attuned workforce well-positioned to assess ICT performance impacts. The majority of respondents hold HND/B.Sc. qualifications (52%), with a significant proportion holding postgraduate degrees (36%), indicating a high level of educational attainment in the sample. In terms of work experience, 42% have been in their current bank for 10 to15 years, reflecting substantial institutional knowledge. Accounting (38%) and audit (26%) are the most represented departments, consistent with the study's targeting of ICT-relevant roles.

Table 1: Demographic Profile of Respondents (N = 100)

Variable	Category	Frequency (%)
Gender	Male	58 (58%)
	Female	42 (42%)
Age	20–29 years	14 (14%)
	30–39 years	46 (46%)
	40–49 years	30 (30%)
	50 and above	10 (10%)
Qualification	ND/NCE	6 (6%)
	HND/B.Sc.	52 (52%)
	M.Sc./MBA	36 (36%)
	Ph.D.	6 (6%)
Work Experience	Less than 10 years	38 (38%)
	10–15 years	42 (42%)
	Above 15 years	20 (20%)
Department	Accounts	38 (38%)
	Audit	26 (26%)
	Marketing	20 (20%)
	Others	16 (16%)
Management Level	Top Level	22 (22%)
	Middle Level	50 (50%)
	Lower Level	28 (28%)

Source: Field Survey, 2024

4.1 Descriptive Statistics of Study Variables

Table 2 presents the descriptive statistics for the key study variables. ATM usage recorded an overall mean of 3.42 (SD = 0.91), indicating a moderate to positive perception of ATM's impact on financial performance among respondents. Individual items such as 'ATM enhances timely financial reporting' (Mean = 3.51) and 'ATM information is accurate for decision-making' (Mean = 3.44) attracted relatively higher agreement, while items relating to ATM's direct positive impact on financial performance showed slightly lower mean scores, suggesting room for improvement in how ATM capabilities are leveraged for strategic financial outcomes.

E-Banking usage recorded the highest overall mean among the three ICT tools (Mean = 3.55, SD = 0.87), reflecting a relatively stronger consensus among respondents regarding E-Banking's contribution to accounting efficiency and financial performance. This is consistent with the growing adoption of internet and mobile banking services in Nigeria and their direct integration into banks' core accounting systems. POS usage recorded the lowest mean among the three ICT predictors (Mean = 3.38, SD = 0.93), which may reflect challenges related to POS terminal reliability, network connectivity, and merchant acceptance in the Nigerian context. The overall financial performance variable recorded a mean of 3.47 (SD = 0.89), indicating moderate to positive perceived financial outcomes across the sampled banks. Skewness values across all constructs are close to zero, suggesting approximately normal distributions, which supports the use of parametric statistical tests.

Table 2: Descriptive Statistics of Study Variables

Construct / Item	N	Min	Max	Mean	Std. Dev.	Skewness
ATM Usage (Overall)	100	1	5	3.42	0.91	-0.12
ATM enhances financial reporting timeliness	100	1	5	3.51	0.88	-0.18
ATM info accurate for decision-making	100	1	5	3.44	0.94	-0.09
ATM directly improves bank financial performance	100	1	5	3.38	0.97	-0.14
E-Banking Usage (Overall)	100	1	5	3.55	0.87	-0.21
E-banking increases accounting processes efficiency	100	1	5	3.60	0.85	-0.23
E-banking broadens financial accessibility	100	1	5	3.51	0.90	-0.19
POS Usage (Overall)	100	1	5	3.38	0.93	-0.08
POS improves financial transaction volumes	100	1	5	3.45	0.92	-0.11
POS enhances bank financial performance	100	1	5	3.33	0.95	-0.06
Financial Performance (Overall)	100	1	5	3.47	0.89	-0.15

Source: Field Survey, 2024

4.2 Correlation Analysis

Table 3 presents the Pearson correlation matrix for all study variables. All three ICT tools exhibit significant positive correlations with Financial Performance: ATM ($r = 0.601$, $p < 0.01$), E-Banking ($r = 0.578$, $p < 0.01$), and POS ($r = 0.543$, $p < 0.01$). These correlations indicate moderate to strong positive bivariate relationships between each ICT tool and financial performance, providing initial support for the study's hypotheses. The correlations among the independent variables (ATM–E-Banking: $r = 0.612$; ATM–POS: $r = 0.574$; E-Banking–POS: $r = 0.589$) are statistically significant but do not exceed the commonly accepted multicollinearity threshold of $r = 0.80$ (Field, 2018), suggesting that multicollinearity is unlikely to distort the regression estimates.

Table 3: Pearson Correlation Matrix

Variable	ATM	E-Banking	POS	Fin. Performance
ATM	1.000	0.612**	0.574**	0.601**
E-Banking	0.612**	1.000	0.589**	0.578**
POS	0.574**	0.589**	1.000	0.543**
Financial Performance	0.601**	0.578**	0.543**	1.000

***** Correlation is significant at the 0.01 level (2-tailed). Source: Field Survey, 2024***

4.3 Regression Analysis: ANOVA Results

Table 4 presents the ANOVA results for the two regression models estimated in this study. Model 1, which includes ATM as the sole predictor of financial performance, produces an F-statistic of 14.887 ($p < 0.001$), confirming that the model is statistically significant overall. The regression sum of squares of 9.394 against a residual sum of squares of 61.842 indicates that while ATM explains a meaningful portion of the variance in financial performance, substantial unexplained variance remains, motivating the inclusion of additional predictors in Model 2.

Model 2, which incorporates E-Banking and POS alongside the context established by Model 1, yields an F-statistic of 12.029 ($p < 0.001$). The regression sum of squares increases to 14.157, while the residual sum of squares decreases to 57.080, confirming that the addition of E-Banking and POS improves model fit and provides incremental explanatory power. The mean square error decreases from 0.631 (Model 1) to 0.588 (Model 2), reflecting a tighter model specification with the inclusion of multiple ICT predictors.

Table 4: ANOVA Results for Regression Models

Model	Source	Sum of Squares	df	Mean Square	F	Sig.
Model 1 (ATM)	Regression	9.394	1	9.394	14.887	.000***
	Residual	61.842	98	.631	-	-
	Total	71.236	99	-	-	-
Model 2 (E-Banking + POS)	Regression	14.157	2	7.078	12.029	.000***
	Residual	57.080	97	.588	-	-
	Total	71.236	99	-	-	-

Dependent Variable: Financial Performance. *** p < 0.001. Source: Field Survey, 2024

Table 5 presents the regression coefficients for all predictor variables and provides the statistical basis for testing the three null hypotheses.

4.4 Regression Coefficients and Hypothesis Testing

Table 5: Regression Coefficients

Model	Variable	B	Std. Error	Beta (β)	t	Sig.
1	(Constant)	1.790	.322	-	5.561	.000
	ATM	.401	.104	.363	3.858	.000***
	$R^2 = 0.132$	Adj. $R^2 = 0.123$			F = 14.887***	
2	(Constant)	1.093	.396	-	2.761	.007
	E-Banking	.338	.103	.306	3.289	.001**
	POS	.283	.099	.265	2.845	.005**
	$R^2 = 0.199$	Adj. $R^2 = 0.182$			F = 12.029***	

*Dependent Variable: Financial Performance. ** p < 0.01, *** p < 0.001. Source: Field Survey, 2024*

Hypothesis 1 (H_{01}): ATM Transactions and Financial Performance

Model 1 reveals that ATM usage exerts a statistically significant and positive impact on financial performance (B = 0.401, β = 0.363, t = 3.858, p < 0.001). This means that for every one-unit increase in the composite ATM usage index, financial performance improves by 0.401 units, holding other variables constant. The standardised coefficient (β = 0.363) indicates a moderate positive effect. Model 1 explains 13.2% of the variance in financial performance ($R^2 = 0.132$; Adjusted $R^2 = 0.123$). On the basis of these results, H_0 is rejected: ATM transactions significantly affect the financial performance of selected Nigerian banks. This finding is consistent with Madugba et al. (2021), who reported a significant positive association between ATM usage and both EPS and ROA in Nigerian deposit money banks. It also aligns with Bickersteth (2019), who highlighted ATMs as a primary driver of improved customer service and operational efficiency in Nigeria's payment systems landscape. The result reflects the fact that ATMs as the most mature and widely deployed ICT tool in Nigerian banking have become deeply embedded in the banks' financial service delivery and accounting processes, generating automated transaction records, reducing cash-handling costs, and creating new revenue streams through service fees.

Hypothesis 2 (H_0): E-Banking Transactions and Financial Performance

In Model 2, E-Banking usage demonstrates a significant positive effect on financial performance (B = 0.338, β = 0.306, t = 3.289, p = 0.001). For every one-unit increase in E-Banking usage, financial performance improves by 0.338 units, ceteris paribus.

The standardised coefficient (β = 0.306) indicates a moderate positive impact, slightly lower than ATM but substantively meaningful. H_0 is therefore rejected: E-Banking transactions have a significant positive impact on the financial performance of selected Nigerian banks. This result is consistent with Oladejo and Yinus (2020), who found that e-accounting practices significantly improved financial reporting quality in Nigerian banks. It also aligns with the TAM framework: when bank staff perceive E-Banking systems as useful and easy to use, they engage more deeply with these platforms, driving higher transaction volumes, better accounting data quality, and ultimately stronger financial outcomes. The finding underscores the strategic importance of E-Banking as Nigeria's bank customers increasingly migrate from branch-based to digital channels a trend accelerated by the COVID-19 pandemic and the CBN's financial inclusion drive.

Hypothesis 3 (H_0): POS Transactions and Financial Performance

POS usage exerts a significant positive effect on financial performance in Model 2 (B = 0.283, β = 0.265, t = 2.845, p = 0.005). While POS records the smallest coefficient among the three predictors, its contribution remains statistically significant at the 1% level. H_0 is therefore rejected: POS transactions significantly contribute to the financial performance of selected Nigerian banks.This finding corroborates Mohammed et al. (2022), who demonstrated a significant positive long-run relationship between POS transactions and bank ROA in Nigeria. The relatively smaller coefficient for POS, compared to ATM and E-Banking, may reflect the challenges of POS deployment in Nigeria including unreliable network connectivity, high terminal maintenance costs, and limited merchant acceptance in certain regions. Nevertheless, the result confirms that POS systems make a measurable positive contribution to financial performance, particularly as the Nigerian government's cashless policy continues to expand POS penetration across the country.

4.5 Summary of Hypothesis Testing

Table 6: Summary of Hypothesis Testing Results

H	Null Hypothesis	Coefficient (B)	t-value	p-value	Decision
H_{01}	ATM transactions do not significantly affect banking financial performance.	0.401	3.858	.000***	**Rejected**
H_{02}	E-Banking transactions have no significant impact on banking financial performance.	0.338	3.289	.001**	**Rejected**
H_{03}	POS transactions do not significantly contribute to banking financial performance.	0.283	2.845	.005**	**Rejected**

*** p < 0.01, *** p < 0.001. Source: Field Survey, 2024*

4.6 Discussion of Major Findings

The collective findings of this study affirm the significant and positive role of ICT tools ATM, E-Banking, and POS in driving financial performance in the Nigerian banking sector, a conclusion that has important implications for both banking management and regulatory policy. ATM's pre-eminence as the most influential predictor of financial performance reflects its maturity as a technology, its deep integration into bank accounting systems, and its role as the primary cash access point for millions of Nigerian customers. E-Banking's strong performance impact reflects the accelerating shift toward digital banking in Nigeria and the efficiency gains that E-Banking platforms bring to both customer service and internal accounting processes. POS's significant but smaller impact reflects both its growing importance under Nigeria's cashless economy policy and the operational challenges that temper its full performance potential.

The two-model regression explains up to 19.9% of variance in financial performance (Model 2: R^2 = 0.199; Adjusted R^2 = 0.182). While this leaves substantial unexplained variance reflecting the many other factors (macroeconomic conditions, management quality, regulatory environment, loan

quality, human capital) that influence bank financial performance it represents a meaningful and statistically robust contribution for a three-predictor model based on perception data. The explanatory power is consistent with similar primary survey studies in the ICT banking performance literature (Thottoli, 2022; Oladejo & Yinus, 2020). From a theoretical perspective, the findings validate all three theoretical frameworks underpinning this study. The positive and significant ICT–performance relationships confirm TAM's core proposition that perceived usefulness of ICT tools translates into tangible performance outcomes. The differential impact of the three ICT tools supports Contingency Theory's contention that performance impacts are context-specific varying with the maturity, deployment quality, and operational integration of each technology. And the moderate correlations observed among the ICT predictors suggest that, consistent with IDT, different technologies are at different stages of diffusion within the Nigerian banking ecosystem, each contributing distinctively to the overall performance picture.

5. Conclusion and Recommendations

This study examined the impact of ICT specifically ATM, E-Banking, and POS technologies on accounting and financial performance in ten selected Nigerian commercial banks. Grounded in the Technology Acceptance Model, Contingency Theory, and Innovation Diffusion Theory, and based on primary survey data from 100 bank staff analysed through descriptive statistics, Pearson correlation, and stepwise multiple regression, the study yields the following key conclusions.

First, ATM transactions exert the strongest positive impact on financial performance among the three ICT tools examined ($B = 0.401$, $p < 0.001$), confirming the pivotal role of ATM infrastructure in Nigerian banking operations. Second, E-Banking transactions contribute significantly to financial performance ($B = 0.338$, $p = 0.001$), underscoring the growing strategic importance of digital banking channels as Nigeria advances its financial inclusion and cashless economy agendas. Third, POS transactions make a significant positive contribution to financial performance ($B = 0.283$, $p = 0.005$), reflecting the expanding deployment of POS terminals under the CBN's cashless policy and their increasing integration into bank revenue and accounting systems.

The combined three-predictor model explains approximately 19.9% of variance in financial performance, and all three null hypotheses are rejected at conventional significance levels. The study concludes that ICT adoption is not merely an operational enhancement but a strategic imperative that directly and measurably improves accounting performance and financial outcomes in the Nigerian banking industry. Banks that invest purposefully, consistently, and comprehensively in ICT infrastructure, system integration, staff training, and cybersecurity are positioned to achieve lasting competitive advantages in an increasingly digital financial landscape.

Based on the findings and conclusions, the following recommendations are offered:

i. Bank management should increase and sustain capital allocation to ICT infrastructure particularly ATM networks, E-Banking platforms, and POS systems prioritizing system reliability, uptime, and user-friendliness as key performance indicators for ICT investment. Banks should design and implement structured ICT training and capacity development programs for all accounting, audit, and finance staff, ensuring that personnel can effectively leverage the full capabilities of deployed ICT tools and maintain accurate, real-time financial records.

ii. Given the persistent concerns about security and fraud risks identified in this study, banks must invest in advanced cybersecurity frameworks including multi-factor authentication, real-time fraud detection algorithms, and end-to-end encryption across all ICT platforms. The Central Bank of Nigeria and other regulatory authorities should formulate and enforce ICT-specific banking regulations that promote inter-operability across platforms, mandate minimum ICT infrastructure standards, and protect data privacy and financial information integrity.

iii. Banks should improve network infrastructure and power backup systems supporting ATM

and POS terminals, particularly in rural and peri-urban areas, to address the connectivity and power supply challenges that currently limit POS performance impact. Future research should explore the longitudinal effects of ICT investment on financial performance using panel data from multiple years, as well as the impact of emerging technologies including mobile banking, blockchain, artificial intelligence, and Fintech applications on banking accounting performance.

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