



Role of Financial Technology in Shaping Commercial Bank Branch Growth In Nigeria

AROGHENE, Kparobo Gloria¹ & ETOH, Juliet²

Department of Banking and Finance
Delta State University, Abraka
kparobo-aroghene@delsu.edu.ng

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Abstract

This study highlights the significant role of financial technological in shaping commercial bank branch growth in Nigeria. The financial technology parameters used were: Web pay (WEPA), mobile pay (MOPA), automated teller machine (AUMA) and point of sale (POSA). While bank performance was measured by commercial bank growth (branches). The geographical scope of the study is commercial banks in Nigeria. The time scope of the study span from 2009 through 2023. Data were sought from the CBN statistical Bulletin and international monetary fund. The study employ ex post facto research design. Different statistical test (descriptive statistics, correlation analysis, heteroskedasticity, unit root test & ordinary least square regression) was carried out with the aid of Econometric Views 9.0. From the analyses, results showed that WEPA and MOPA have positive coefficients with, the p-values (0.0076; 0.5328). AUMA and POSA have negative coefficients, but their p-values (0.0051 and 0.0405) were significant at 5%. The R-squared value 0.662484, means that approximately 66% of the variance in bank performance is explained by the model. From the results, the study concludes that fintech adoption has both substitution and complementary effects. Specifically, web-based transactions complement branch operations, whereas POS and ATM services significantly substitute for them, leading to reduced incentives for branch expansion. Mobile payments, on the other hand, do not significantly influence branch growth due to their operator-driven nature. The study recommends that commercial banks should embrace a hybrid model, leveraging web-based channels to complement existing branches while strategically reducing reliance on costly physical expansion. The CBN should strengthen regulatory frameworks to encourage collaboration between banks and fintech firms, ensuring consumer protection and interoperability.

Keywords: Financial, Technology, Performance

Introduction

The terminology "financial technology" (FinTech) comes from the words "finance" and "technology" to describe a new technology that can enlarge the scope of the financial sector (Simatupang & Siska, 2021). Moreover, Almaududi (2021) explained that Fintech is revolutionizing the way global financial institutions operate. Fintech's advancement has resulted in a slew of new financial tools and applications, including payment apps, lending, borrowing, etc. The advancement of global technology has resulted in new improvements and advances in various industries, particularly the financial industry. Financial Technology, or Fintech, is an innovation that has rocked the economic world and is currently quite popular in several countries, including Nigeria. Fintech adoption has become commonplace in the banking industry (Medyawati et al., 2021). Fintech services may be accessed by the public in a simple, practical, and

secure manner, greatly assisting the general public in accessing banking financial services (Abdillah, 2020). Financial technology (FinTech) is a blend of financial services and technology that alters the business model from traditional to moderate. Previously, people paid face to face and carry a certain amount of cash, but now they can make long-distance transactions using payments online.

Fintech is a revolutionary breakthrough in the financial industry that is now widely employed in the world of trade, business, and to address community needs (Lestari et al., 2021; Imene, 2023). This fact gives an opportunity for banks to grow its market and more accessible to the public through Fintech services. Any community activity in this era of globalization cannot be separated from technological advancements. Financial institutions, particularly bank, are in the same situation. To thrive in this new era of technology, financial institution must become technologically

literate (Siska, 2022). As a result, conventional banks, as a provider of financial services, must be able to keep up with the times by responding to challenges by gaining a competitive edge through the development of new financial products and services using Fintech.

Customers can use mobile phone and laptop, web pay, automated teller machine and point of sale to access financial services. The aforementioned channels gives customers access to banking services like financing, payments, transfers of money, and the purchase and sale of stocks and securities (Subbarao, 2017; Tiyan et al., 2020).

Several research on Fintech and banking services have been conducted. Research by Puspa & Hendratno (2020) found that Fintech has a beneficial impact on profitability (ROA & NIM) and banking operations efficiency (BOPO) at state-owned banks. Mar'atushsholihah & Karyani (2021) concluded their research that there are differences in CAR, LDR, NIM, and ROA at Indonesian conventional commercial banks after the ratification of Fintech regulations in 2016. According to the research finding of Lestari et al., (2021) banking innovation through Fintech services have increased banking performance in terms of ROA, BOPO, and NPL of Islamic banks. Then the research of Kristianti & Tulenan (2021) came to the same conclusion that Fintech services can helps conventional bank improve their performance.

E-payment channels, especially POS and mobile transactions, have experienced exponential but uneven growth due to policy reforms and consumer adaptation (Central Bank of Nigeria [CBN], 2023). Similarly, Osabutey et al. (2024) highlight that fintech adoption in Africa often follows irregular patterns, heavily influenced by regulatory and infrastructural developments. Adetunji and Olowolaju (2021) reported that POS adoption significantly displaced branch-based banking in semi-urban Nigeria. Similarly, Mogaji (2022) explains that, mobile money services while promoting inclusion, often operate independently of bank infrastructure, thereby weakening the link between fintech and physical branch expansion. Olatunji and Bello (2020) argued that internet banking often complements branch operations in Nigeria. In view of the aforementioned there exist need to explore the extent to which financial technology shape the growth of commercial bank in Nigeria.

Statement of the Problem

One of the most lengthy, tedious, and expensive processes Fintechs have to deal with is credit risk scoring. Operationally speaking, credit risk scoring has always been one of the most inefficient, protracted processes in banking due to the absence of data, the lack of knowledge about data analysis, and the shortcomings in the availability and access to data

management tools. Furthermore, since most modern Fintech firms have to give out loans and credit cards to expand their portfolios, they must have the proper data management and analysis tools to regulate their risk exposure, and keep it as low as possible. However, with modern technologies demanding faster response times, the key to performing efficient credit risk assessments and eclipsing traditional banking's drawn-out assessment processes lies in the quality and speed provided by Big Data and AI-powered technologies (Aroghene et al., 2025).

After 2008 global financial crisis, regulators have been trying to balance the objectives of innovation and growth with considerations of financial stability and consumer protection, and as a result, they are developing an increasing number of experimentation-based approaches (Imene & Udjo-Onovughakpor, 2023). As technology alters financial service attributes and market structure, financial regulation must therefore, adapt to remain effective (Aroghene & Obiekea, 2025). Acceptance of financial technology platforms goes a long way in influencing the volume and value of commercial banks. A case where the avenues provided by financial institution are not viable the expansion /provision of more sophisticated platform for financial deepening becomes difficult. It is in light of this, the study explore impact of financial technology on bank performance (commercial bank branch growth) in Nigeria.

Research Questions

- i To what extent does web pay (WEPA) affect bank financial performance in Nigeria?
- ii To what magnitude does mobile pay (MOPA) affect bank financial performance in Nigeria?
- iii To what extent does automated teller machine (AUMA) affect bank financial performance in Nigeria?
- iv To what magnitude does point of sale (POSA) affect bank financial performance in Nigeria?

Objectives of the study

The study main objective of the study is impact of financial technology on bank performance in Nigeria. The specific objectives are:

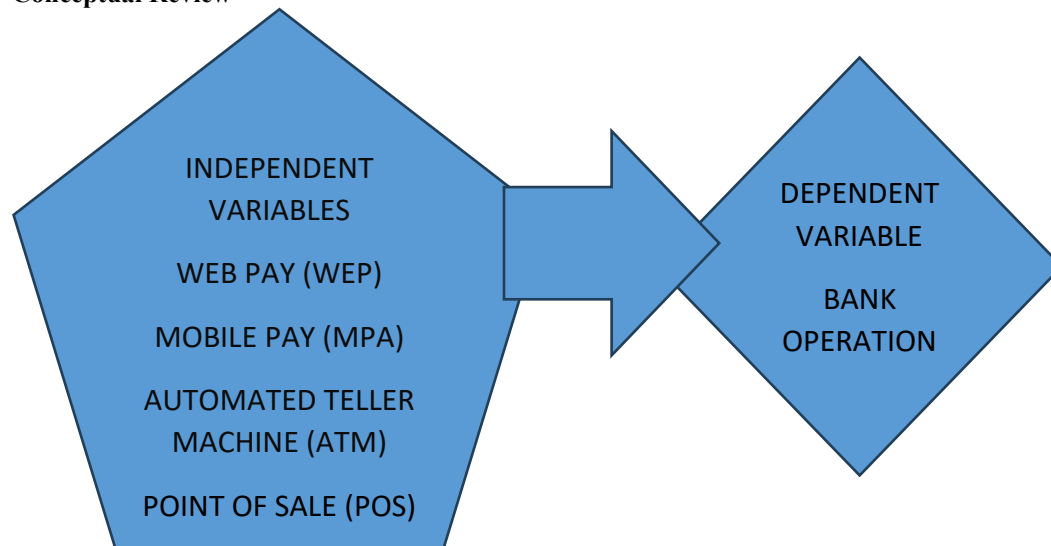
- i To determine the effect of WEPA on commercial bank branch growth in Nigeria.
- ii To examine the effect of MOPA on commercial bank branch growth in Nigeria.
- iii To explore the effect of AUMA on commercial bank branch growth in Nigeria.
- iv To investigate the effect of POSA on commercial bank branch growth in Nigeria.

Research Hypotheses

- i WEPA does not affect commercial bank branch growth in Nigeria.

- ii MOPA does not affect commercial iv POSA does not affect commercial bank
bank branch growth in Nigeria. branch growth in Nigeria.
- iii AUMA does not affect commercial
- bank branch growth in Nigeria.

Conceptual Review



**Figure 2.1 Diagrammatic relationship between the dependent and independent variable.
Web Pay (WEPA)**

Web pay refers to online payment services that enable individuals and businesses to conduct financial transactions over the internet. It typically involves the use of debit cards, credit cards, or internet banking to pay for goods or services on websites or through online portals. WEPA systems are widely used for e-commerce transactions, utility bill payments, and other online financial services. They offer convenience, security, and speed for users conducting transactions digitally. Web Pay automates many routine transactions, leading to faster processing times and reducing the workload on branch employees, making operations smoother (Olatunji & Bello, 2020).

Mobile Pay (MOPA)

Mobile pay refers to financial transactions conducted through a mobile device, such as a smartphone or tablet. These transactions can involve mobile banking apps, mobile wallets (Apple Pay, Google Pay), or USSD codes in developing countries. Mobile pay services are increasingly popular due to the widespread use of smartphones, offering a convenient and fast method for individuals to make payments, transfer funds, and access banking services on the go (Mogaji, 2022). Mobile payments enhance financial inclusion by allowing people in remote areas to access banking services, and they reduce the need for cash transactions. It is a key driver of digital banking transformation.

Automated Teller Machine (AUMA)

Automated teller machine is an electronic banking outlet that allows customers to perform basic banking transactions without the need for a human teller (Osabutey et al., 2024). Its common services include

cash withdrawals, deposits, balance inquiries, and funds transfers. AUMA provide convenient access to banking services outside of regular bank hours and across different locations, allowing customers to withdraw cash or check balances without entering a bank branch. The machine reduces congestion in bank branches, provide 24/7 services, and enhance the operational efficiency of banks by automating many routine tasks.

Point of Sale (POSA)

A Point of Sale (POSA) refers to the location and method where sales transactions occur, typically in retail environments. The terminals allow customers to pay for goods or services using debit or credit cards. Increasingly, POSA systems also support mobile payments and other digital payment methods (Adetunji & Olowolaju, 2021). The systems enable efficient, cashless transactions at retail stores, restaurants, and other service points, facilitating instant payments. They reduce the need for cash handling and provide a digital trail for every transaction. The machines are crucial for promoting cashless societies and are a key element in the digital payment infrastructure. Banks support POSA networks to encourage digital payments and reduce the reliance on physical cash.

Bank Performance

Bank performance refers to the various activities that a bank undertakes to provide financial services to its customers, manage internal processes, and ensure the smooth functioning of all its services. This includes deposit-taking, loan issuance, transaction processing, customer service, risk management, and regulatory

compliance. Effective bank operations are critical for maintaining customer trust, ensuring the security and accuracy of financial transactions, and meeting regulatory requirements (Aroghene et al., 2024). It encompasses everything from branch operations to digital banking platforms. The efficiency of bank operations influences customer satisfaction, profitability, and competitiveness.

The integration of Web Pay (WEPA), Mobile Pay (MOPA), Automated Teller Machines (AUMA), Point of Sale (POSA), s can significantly enhance the operations of commercial bank branches by improving customer experience, increasing efficiency, reducing costs, and expanding the reach of banking services. With fewer manual tasks, branches can focus on providing personalized services such as wealth management, business loans, or advisory services. This shifts the role of bank branches from transaction processing to relationship management. The use of digital payment systems provides valuable customer data that can be analyzed to improve decision-making in bank operations. Branches can use these insights to tailor services to customer needs and preferences, improving operational efficiency and customer satisfaction.

Theoretical framework

The impact of financial technology on bank performance in Nigeria can be explained within several theoretical perspectives that address technology adoption, innovation, and structural transformation in industries. One of the most relevant frameworks is the Technology Acceptance Model (TAM), developed by Davis (1989), which posits that the adoption of technology is determined by two main constructs: perceived usefulness and perceived ease of use. In the Nigerian banking sector, customers are more likely to adopt web-based banking, mobile payments, ATMs, and POS systems if they perceive these technologies as useful in enhancing convenience, reducing transaction costs, and saving time. Banks, in turn, incorporate these technologies into their operations when they are seen as capable of improving efficiency, reducing operational bottlenecks, and expanding market reach. This theory thus explains why some digital channels, such as web banking, have complemented bank branch growth, while others, such as POS services, have replaced certain branch functions by offering more accessible alternatives.

Closely related to this is the Disruptive Innovation Theory, advanced by Christensen (1997), which argues that new technologies initially enter the market by serving less-demanding segments or underserved populations before gradually displacing established products and services. Applied to the Nigerian banking context, fintech innovations such as POS agents and

mobile money services first emerged as solutions to the lack of access to formal banking in rural and semi-urban communities. Over time, however, these innovations have moved into mainstream financial services, directly competing with traditional banking channels and reducing the demand for physical bank branches. POS adoption, for instance, has grown exponentially and is increasingly viewed as a substitute for conventional branch transactions. Disruptive Innovation Theory therefore captures the dual nature of fintech, as it not only provides alternative channels of access but also redefines the competitive dynamics of the banking industry.

In addition, the Diffusion of Innovation Theory, developed by Rogers (1962), provides an explanatory framework for how fintech innovations spread among consumers and financial institutions. According to this theory, innovations are adopted through a process involving innovators, early adopters, early majority, late majority, and laggards. In the Nigerian financial system, web-based payments and ATM usage can be considered relatively mature innovations that have already diffused widely among customers. Mobile payments and POS adoption, by contrast, represent more recent innovations that have experienced rapid growth, especially as policies such as the Central Bank of Nigeria's cashless policy and financial inclusion strategy have accelerated their diffusion. This perspective explains why the diffusion of POS terminals and mobile money has been uneven across regions, with urban centers experiencing faster adoption compared to rural areas due to infrastructural and digital literacy disparities.

Empirical Literature Review

Olamide and Ogunleye (2023) explored role of web-based payment systems in enhancing bank performance in Nigeria. This study showed that the adoption of Web Pay systems significantly increased the operational efficiency of banks by reducing in-branch transaction volumes, leading to higher profitability and customer satisfaction in Nigerian commercial banks. Kwarteng and Boakye (2022) looked at mobile payment systems and bank efficiency in Ghana. The research demonstrated that the rise of mobile pay in Ghana has been instrumental in increasing financial inclusion, which led to more customers using banking services. This resulted in an increase in the number of transactions processed without increasing branch overhead costs. Muzenda and Phiri (2021) explore the impact of ATMs on the operational performance of banks in Zimbabwe. This study found that ATM installations in Zimbabwean banks helped improve customer service by providing 24/7 access to cash and banking services. The use of ATMs reduced the workload for in-branch staff and improved overall bank

operational efficiency. Adetunji and Yusuf (2021) studied point of sale terminals and bank profitability in the Nigerian Banking Sector. The research showed that POS systems in Nigeria led to increased cashless transactions, reducing the need for manual cash handling and in-branch visits. This enhanced banks' profitability by lowering transaction costs and boosting revenue through transaction fees. Chirwa and Manda (2020) examined the effects of digital payment systems on bank operations in Malawi: A case of web and mobile payment platforms. The study illustrated that both web pay and mobile pay platforms have reduced the operational costs for Malawian banks by automating payments and transactions. Customer satisfaction improved as a result of easy access to digital banking services. Okeke, E. & Obasi (2020) explored ATMs and POS Systems: Drivers of operational efficiency in the Nigerian banking industry. The paper found that the combined use of ATMs and POS terminals in Nigeria streamlined banking operations, enabling banks to serve more customers with fewer resources and improved financial performance. Said and Khalil (2019) explored digital payment systems and their impact on the operational performance of Egyptian banks. This study focused on the effects of Mobile Pay and Web Pay platforms in Egypt, revealing that they significantly increased the efficiency of banking operations by reducing paperwork and manual processes, leading to improved profitability.

Mutuku and Wanyama (2019) examined ATM network expansion and its impact on bank efficiency in Kenya. The expansion of ATM networks across Kenya was found to reduce the reliance on bank branches for routine transactions, leading to reduced operational costs and increased customer satisfaction. Matheka and Njuguna (2018) explored adoption of point of sale terminals and bank profitability in Tanzania. The study highlighted the role of POS systems in Tanzania in promoting cashless transactions, which enhanced bank profitability by cutting down operational costs and increasing fee-based income. Hagos and Mesfin (2018) examined mobile payment systems and their contribution to bank performance in Ethiopia. The research demonstrated that mobile pay systems in Ethiopia contributed to an increase in the number of bank customers, improving financial inclusion and overall bank performance by reducing transaction processing times. Adebayo and Aluko (2023) studied the influence of digital payment systems on bank profitability in Nigeria. Their findings suggest that the adoption of Mobile Pay and Web Pay significantly enhances bank profitability by reducing transaction costs and increasing customer engagement through digital channels. Asare and Mensah (2023) analyzed the impact of ATM usage on bank efficiency in Ghana.

The study revealed that increasing the number of ATMs improved customer satisfaction and reduced in-branch queues, leading to higher operational efficiency. Adebayo and Aluko (2023) investigated the influence of digital payment systems on bank profitability. he used variables (digital payment systems, transaction costs, profitability, customer engagement). with quantitative analysis of financial performance indicators.

the study found that, adoption of mobile pay and web pay enhanced profitability by reducing transaction costs and boosting customer engagement. Asare and Mensah (2023) analyzed the impact of ATM usage on bank efficiency. They used variables: ATM network, customer satisfaction, in-branch queues, operational efficiency. With Customer satisfaction surveys and efficiency metrics. the study found that, Increased ATMs led to higher customer satisfaction, shorter in-branch queues, and enhanced operational efficiency. Nyaga and Kimani (2022) investigated the relationship between POS terminals and bank performance. They used variables: POS terminals, non-interest income, transaction volumes, operational efficiency. With Financial performance and transaction data analysis. they found that Significant increase in non-interest income and operational efficiency due to higher transaction volumes via POS systems. Nwosu and Adedokun, (2022) explored the role of Web Pay systems in enhancing customer satisfaction. Web Pay system, customer satisfaction, customer retention, bank performance were the study variables. Survey and performance metrics analysis was used. The study found that, Web-based payment convenience positively impacts customer satisfaction and retention, improving bank performance. Abubakar and Suleiman (2022) examined the effects of mobile pay adoption on financial inclusion focusing on rural banking. variables used were: mobile pay, financial inclusion, bank outreach, customer engagement. The study revealed that Mobile Pay systems greatly increased banking service accessibility, especially in rural areas, enhancing bank outreach and performance. Nyaga and Kimani (2022) investigated the relationship between POS terminals and bank performance in Kenya. They concluded that banks that invest heavily in POS infrastructure experience a significant increase in non-interest income and operational efficiency due to higher transaction volumes. Nwosu and Adedokun (2022) explored the role of Web Pay systems in enhancing customer satisfaction in the Nigerian banking sector. The study found that the convenience of web-based payments has a positive impact on customer satisfaction and retention, leading to improved bank performance. Abubakar and Suleiman (2022) examined the effects of Mobile Pay adoption on financial inclusion in Sudan. Their findings indicated

that mobile payment systems have greatly increased the accessibility of banking services, particularly in rural areas, leading to enhanced bank outreach and performance.

Kabir and Rahman (2021) analyzed the relationship between ATM deployment and banking efficiency in Bangladesh. The study showed that banks with extensive ATM networks reduce operational costs by minimizing customer reliance on in-branch services. Ali and Hassan (2021) studied the effects of POS systems on small and medium-sized enterprises (SMEs) in Pakistan. Their results showed that POS adoption by banks has facilitated easier access to financing for SMEs, improving overall bank profitability. Ndlovu and Moyo (2021) investigated the influence of Mobile Pay on customer service in Zimbabwean banks. The study found that mobile payment platforms increase customer service efficiency and reduce waiting times, leading to higher levels of customer satisfaction. Mwenya and Phiri (2020) examined the impact of ATM networks on bank profitability in Zambia. Their findings indicated that expanding ATM networks improved accessibility to banking services, leading to increased transaction volumes and bank profitability. Kabir and Rahman (2021) analyzed the relationship between ATM deployment and banking efficiency. variables used are: ATM network, operational costs, customer reliance on in-branch services, efficiency. Major Findings were: Extensive ATM networks reduced operational costs by minimizing customer reliance on branches, enhancing banking efficiency. Ali and Hassan (2021) study the effects of POS systems on small and medium-sized enterprises (SMEs) and bank profitability. Variables used were: POS systems, SME financing, bank profitability, transaction volumes. Major Findings were: POS systems facilitated easier access to financing for SMEs, improving bank profitability through fee-based income from transactions. Ndlovu, and Moyo (2021) investigate the influence of mobile pay on customer service in Zimbabwean banks.

Variables used were: mobile pay, customer service efficiency, waiting times, customer satisfaction.

Major findings were: Mobile Pay platforms increased service efficiency and reduced waiting times, leading to higher levels of customer satisfaction. Mwenya and Phiri (2020) examined the impact of ATM networks on bank profitability. Variables used were: ATM networks, accessibility to banking services, transaction volumes, profitability. Major Findings included: Expanding ATM networks improved accessibility to banking services, leading to increased transaction volumes and higher profitability.

Fashola and Adeyemi (2020) explored the role of Web Pay platforms in improving the competitiveness of Nigerian commercial banks. The study found that

banks offering web-based payment options experienced higher customer acquisition and retention, enhancing their competitive edge. Chimuka and Musonda (2020) studied the relationship between POS terminals and banking sector growth in Zambia. Their findings suggest that the proliferation of POS terminals has contributed to the growth of non-cash transactions, thus improving bank performance. Okeke and Nwachukwu (2020) explored the impact of Mobile Pay on the operational performance of Nigerian banks. The study revealed that mobile payment services help reduce operational costs and improve transaction speed, leading to higher profitability. Mutiso and Kamau (2019) investigated the effects of Web Pay on customer loyalty in the Kenyan banking sector. Their findings indicate that web-based payment systems significantly enhance customer loyalty, as they offer convenience and security in financial transactions.

Yeboah and Agyeman (2019) studied the influence of Mobile Pay on banking operations in Ghana. The study found that mobile payments reduced operational costs and enhanced customer outreach, leading to improved bank performance. Mohammed and Ahmed (2019) examined the effects of ATM usage on customer satisfaction in Egypt. Their findings indicate that banks with more ATMs tend to have higher levels of customer satisfaction due to greater accessibility to banking services. Samba and Toure (2019) analyzed the role of POS systems in promoting financial inclusion in Senegal. The study revealed that banks leveraging POS systems have been able to increase financial access for underserved populations, boosting their market performance. Njoku and Uche (2019) explored the impact of Web Pay on operational efficiency in the Nigerian banking sector. Their study found that web payment platforms reduce processing time for transactions and improve operational efficiency, thus enhancing bank profitability. Mahmoud and Karim (2019) investigated the effects of Mobile Pay on the profitability of Bangladeshi banks. Their findings indicate that mobile payment platforms significantly contribute to bank profitability by facilitating quick and secure transactions. Kassim and Abdallah (2019) studied the impact of ATM expansion on banking operations in Tanzania. Their results showed that a larger ATM network reduces the operational burden on branches, allowing banks to serve more customers efficiently. Okoro and Igwe (2019) examined the relationship between POS systems and bank profitability in Nigeria. The study concluded that POS terminals enhance bank profitability by promoting cashless transactions and reducing the need for in-branch services.

Gap in Literature

Most studies provide general insights on WEPA, MOPA, AUMA and POSA that they enhance bank financial performance (Mar'atushsholihah & Karyani, 2021; Lestari et al., (2021), but there is insufficient research on how these services specifically engender financial performance with regard to their ability to create bank branches. There is a gap in the literature regarding how financial technology intermingle to facilitate commercial bank branches. Very few studies address how exposure to these technologies contributes to the financial literacy of the banking population (Osabutey et al., 2024; Adetunji & Olowolaju, 2021). This present study bridge the aforementioned literature gaps using the complementary role of the selected financial technology and their effect on bank performance in Nigeria using secondary data.

Research Methodology

The study inspected impact of financial technology on commercial bank branch growth in Nigeria. The

financial technology parameters are: WEPA, MOPA, AUMA and POSA. While bank performance was measured by commercial bank branches. The ex post facto research design was used. Ex post facto research design helps provide answers to the questions of who, what, when, where and how associated with a particular research problem. for the study. The geographical scope of the study is financial institution in Nigeria commercial banks was used as sample. The probability sampling method was used The time scope of the study span from 2009 through 2023. The data used for this study already existed hence were sought from the CBN statistical Bulletin and international monetary fund. The different estimations used for the study are: descriptive statistics, correlation analysis, multicollinearity, and heteroskedascity test. While ordinary least square was used to test the hypotheses raised in the study. The model of Manda and Kaleb (2021), was adopted for purpose of the study. The adopted model was modified and stated in its functional form as:

$$\text{COBG} = f(\text{WEPA}, \text{MOPA}, \text{AUMA}, \text{POSA}) \quad \text{eqn (1)}$$

The model is further specified in its econometric form as:

$$\text{BAPE} = \beta_0 + \beta_1 \text{WEPA} + \beta_2 \text{MOPA} + \beta_3 \text{AUMA} + \beta_4 \text{POSA} + \varepsilon \quad \text{eqn (2)}$$

Where:

COBG	=	Commercial bank growth measured by number of commercial bank branches excluding headquarters for commercial banks in Nigeria.
WEPA	=	Web pay measured as volume of web pay transactions
MOPA	=	Mobile pay measured as volume of mobile transactions
AUMA	=	Automated teller machine measured as volume of automated teller machine transactions
POSA	=	Point of sale measured as volume of point of sale transactions
ε	=	Error Term
$\beta_1 - \beta_4$	=	Coefficient of the independent variables.

Results and Discussion

Table 1: Descriptive Statistics

	COBG	WEPA	MOPA	AUMA	POSA
Mean	5246.933	3.52E+09	6.26E+08	7.44E+08	1.21E+09
Median	5392.000	14088247	47053252	5.90E+08	63715203
Maximum	5810.000	2.18E+10	5.26E+09	1.91E+09	9.85E+09
Minimum	4546.000	1601086.	1156533.	60133610	918256.0
Std. Dev.	402.5700	6.73E+09	1.38E+09	5.60E+08	2.65E+09
Skewness	-0.260215	1.724460	2.786429	0.776210	2.583873
Kurtosis	1.899349	4.736336	9.780073	2.526801	8.743678
Jarque-Bera	0.926426	9.318698	48.14134	1.646205	37.30965
Probability	0.629259	0.009473	0.000000	0.439067	0.000000
Sum	78704.00	5.28E+10	9.39E+09	1.12E+10	1.81E+10
Sum Sq. Dev.	2268877.	6.33E+20	2.67E+19	4.39E+18	9.84E+19
Observations	15	15	15	15	15

Source: Researchers' Compilation, 2025.

The descriptive statistics in Table 1, revealed that commercial bank branch growth (COBG) averaged 5,247 branches during the study period, showing relatively low variability compared with fintech transaction volumes. In contrast, web payments (WEPA), mobile payments (MOPA), ATM transactions (AUMA), and POS transactions (POSA) displayed substantial fluctuations, reflecting the rapid and uneven expansion of financial technology in Nigeria. The Jarque-Bera test further suggested that COBG and AUMA were normally distributed, while

WEPA, MOPA, and POSA deviated significantly from normality, reflecting irregular adoption patterns.

This outcome is consistent with CBN e-Payment Statistics, which show that e-payment channels, especially POS and mobile transactions, have experienced exponential but uneven growth due to policy reforms and consumer adaptation (Central Bank of Nigeria [CBN], 2023). Similarly, Osabutey et al. (2024) highlight that fintech adoption in Africa often follows irregular patterns, heavily influenced by regulatory and infrastructural developments.

Table 2: Correlation Analysis

	COBG	WEPA	MOPA	AUMA	POSA
COBG	1.000000	-0.395230	-0.462076	-0.437800	-0.461553
WEPA	-0.395230	1.000000	0.731593	0.625629	0.951696
MOPA	-0.462076	0.631593	1.000000	0.411304	0.988557
AUMA	-0.437800	0.625629	0.411304	1.000000	0.422333
POSA	-0.471553	0.551696	0.688557	0.422333	1.000000

Source: Researchers' Compilation, 2025.

The correlation analysis in Table 3 revealed a negative relationship between COBG and all fintech indicators, with the strongest inverse associations observed between COBG and both MOPA (-0.46) and POSA (-0.47). This indicates that as fintech transactions expand, bank branch growth tends to contract. At the same time, fintech indicators were strongly and positively correlated with each other, particularly between mobile payments and POS (0.69), signifying integrated

adoption patterns. The aforementioned findings align with prior studies such as Adetunji and Olowolaju (2021), who reported that POS adoption significantly displaced branch-based banking in semi-urban Nigeria. Similarly, Mogaji (2022) explains that mobile money services in sub-Saharan Africa, while promoting inclusion, often operate independently of bank infrastructure, thereby weakening the link between fintech and physical branch expansion.

Table 3: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.284176	Prob. F(4,10)	0.3394
Obs*R-squared	5.090312	Prob. Chi-Square(4)	0.2782
Scaled explained SS	2.431311	Prob. Chi-Square(4)	0.6570

Source: Researchers' Compilation, 2025.

The Breusch-Pagan-Godfrey test in Table 3, indicated no evidence of heteroskedasticity in the model. This suggests that the regression residuals are stable, making the coefficient estimates reliable. The absence of

heteroskedasticity is significant because it implies that fintech adoption impacts branch growth consistently across the years, without distortion from unequal variance.

Table 4: Summary of Unit root test

Variables	T-Statistics	Critical value 5% level	Order of Intergration	Probability	Decision
COBG	-1.511467	-3.098896	1(0)	0.4986	Non-Stationary
WEPA	-2.215440	-3.365053	1(0)	0.2015	Non-Stationary
MOPA	-3.061675	-1.781344	1(0)	0.0317	Stationary
AUMA	-4.756843	-2.108748	1(0)	0.0283	Stationary
POSA	-1.568432	-3.415251	1(0)	0.3282	Non-Stationary
@ First Difference					
COBG	-2.308748	-1.982344	1(1)	0.0268	Stationary
WEPA	-5.541137	-3.134053	1(1)	0.0241	Stationary
MOPA	-4.747850	-2.123541	1(1)	0.0115	Stationary
AUMA	-2.989853	-1.531214	1(1)	0.0083	Stationary
POSA	-3.804008	-2.345321	1(1)	0.0356	Stationary

Source: Researchers' Compilation, 2025.

The Augmented Dickey-Fuller (ADF) test in Table 4 revealed that COBG, WEPA, and POSA became stationary only at first difference, while MOPA and AUMA were stationary at level. The results suggest that fintech adoption has long-run implications for branch growth, with shocks in transaction volumes likely to persist over time. This finding aligns with

Uzonwanne (2020), who emphasized that Nigerian banks adjust gradually to digital innovations, with equilibrium achieved only in the long run. This mix of integration orders validates the use of the ARDL model for analysis but due to limited observation ordinary least squares was used to evaluate the hypothesis raised in the study

Table 5: Regression Result

Dependent Variable: COBG

Method: Least Squares

Date: 09/17/25 Time: 09:37

Sample: 2009 2023

Included observations: 15

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5772.097	152.2064	37.92283	0.0000
WEPA	2.09E-07	6.26E-08	3.333672	0.0076
MOPA	2.39E-07	3.69E-07	0.646011	0.5328
AUMA	-8.90E-07	2.50E-07	-3.564301	0.0051
POSA	-6.17E-07	2.62E-07	-2.351824	0.0405
R-squared	0.662484	Mean dependent var	5246.933	
Adjusted R-squared	0.527478	S.D. dependent var	402.5700	
S.E. of regression	276.7276	Akaike info criterion	14.34515	
Sum squared resid	765781.6	Schwarz criterion	14.58116	
Log likelihood	-102.5886	Hannan-Quinn criter.	14.34263	
F-statistic	4.907062	Durbin-Watson stat	1.971382	
Prob(F-statistic)	0.018888			

Source: Researchers' Compilation, 2025.

The regression model in Table 5 explained approximately 66% of the variation in bank branch growth (COBG), with an overall significance at the 5% level. The results showed mixed effects of fintech channels on bank branch growth. Below are the explanations:

Web Pay (WEPA): The coefficient was positive and significant, suggesting that web-based payments support bank branch growth. This could be attributed to the fact that web transactions are largely bank-driven and integrated into banks' IT systems, thereby requiring complementary physical support. This finding is consistent with Olatunji and Bello (2020), who argued that internet banking often complements branch operations in Nigeria.

Mobile Pay (MOPA): Although the coefficient was positive, it was statistically insignificant, indicating that mobile transactions do not strongly influence branch

expansion. This is unsurprising given that mobile money in Nigeria is dominated by mobile network operators rather than banks, as highlighted by Osabutey et al. (2024).

Automated Teller Machines (AUMA): ATM usage negatively and significantly affected bank branch growth, suggesting that ATMs substitute for branch services. This finding supports Ajayi and Akinwumi (2019), who demonstrated that ATM penetration reduced customer dependence on banking halls.

Point of Sale (POSA): POS adoption also had a negative and significant effect, indicating that POS agents reduce the demand for new branches, especially in rural areas. This outcome resonates with findings from CBN (2023) and industry reports (TechCabal, 2023), which note that POS adoption has become the dominant channel for expanding financial access in Nigeria.

Conclusion

This study examined the impact of financial technology on bank performance in Nigeria, using commercial bank branch growth (COBG) as a measure of performance. The findings demonstrate that fintech adoption has both substitution and complementary effects. Specifically, web-based transactions complement branch operations, whereas POS and ATM services significantly substitute for them, leading to reduced incentives for branch expansion. Mobile payments, on the other hand, do not significantly influence branch growth due to their operator-driven nature. The results imply that the Nigerian banking sector is experiencing a structural transformation where physical branch expansion is giving way to digital and agent-based models of service delivery. This outcome aligns with the CBN's financial inclusion strategy, which emphasizes digital channels as cost-effective tools for reaching underserved populations.

Recommendations

Commercial banks should embrace a hybrid model, leveraging web-based channels to complement existing branches while strategically reducing reliance on costly physical expansion. Investments should also focus on integrating POS and mobile services into bank systems to remain competitive. The CBN should strengthen regulatory frameworks to encourage collaboration between banks and fintech firms, ensuring consumer protection and interoperability. Enhanced oversight is also needed to manage risks associated with mobile payments and POS agents, such as fraud and liquidity constraints. Fintech firms should deepen partnerships with banks to ensure that digital solutions complement rather than compete excessively with branch networks. Joint initiatives in cybersecurity, infrastructure, and customer education can promote sustainable growth. Policies should encourage inclusive fintech adoption by improving digital infrastructure in rural areas. This will ensure that substitution effects from POS and mobile agents translate into broader financial inclusion rather than simply displacing formal banking services.

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