

FINTECH INNOVATIONS AND FINANCIAL INCLUSION IN NIGERIA: A CATALYST FOR SUSTAINABLE ECONOMIC DEVELOPMENT

AKUNOMA ONOME OMENA PhD

Department of Accountancy
Federal Polytechnic, Orogun,
Delta State, Nigeria
akunomaonome@gmail.com;akunoma.onome@Fepo.edu.ng

OSAYANDE MONDAY PhD

Department of Accounting
Banking and Finance
Edo State University, Iyamho, Edo State, Nigeria
osayandemonday26@gmail.com:osayande.monday@edouniversity.edu.ng

NIKORO HENRY OTOME

Department of Accountancy, Federal Polytechnic, Orogun,
Delta State, Nigeria
henryotorme@gmail.com
<https://doi.org/10.57233/gujaf.v7i1.16>

Abstract

This study examines the effect of fintech innovations and financial inclusion in promoting sustainable economic development in Nigeria from 2009 to 2023. The study utilized a quantitative research design using secondary panel and time-series data sourced from the Central Bank of Nigeria Financial stability report, NIBSS, World Bank Global Findex and IMF reports. Fintech innovations is the independent variables proxied by mobile banking transactions (MB), point of sale transactions (POS), automated teller machine transaction (ATM), and internet banking transactions (IB). Financial inclusion, proxied by account ownership and digital payment usage, served as the mediating variable, while economic development, measured by GDP per capita growth is the dependent variable. Bank performance measures (ROA, ROE, and CAR), together with inflation and exchange-rate volatility, were introduced as control variables. Data analysis was conducted using Eviews 12 software. The methodology involved descriptive statistics, correlation analysis, and multiple regression models. The results of the study show that mobile banking transaction (MB) and point of sales transactions (POS) significantly enhanced financial inclusion, while automated teller machine transactions (ATM) negatively affected financial performance. Financial inclusion exerted a strong positive effect on GDP per capita growth and fully mediated the relationship between fintech innovations and economic development in Nigeria. The study concludes that fintech serves as a catalyst for inclusive growth in Nigeria, but its developmental potential depends on extending access to underserved groups and maintaining macroeconomic stability.

Keywords: Fintech innovations, financial inclusion, economic development, panel regression, mediation analysis.

1.0 Introduction

Sustainable economic development has become a crucial policy interest for many developing nations where issues such as poverty, unemployment, financial exclusion, inflation, and income inequality persistently challenge the achievement of inclusive growth. In contrast, financial technology (fintech) is reshaping global finance, transforming how individuals and businesses access services. In developing economies like Nigeria, where many people remain unbanked as they are either unable to meet up with all inconveniences of the conventional banks or had unsatisfactory services experiences, fintech has therefore help to overcome barriers regards financial inclusion and promotes sustainable growth. The World Bank (2023) reports that over

60% of Sub-Saharan Africans lack formal financial services, yet mobile money, agency banking, and digital lending are bridging this gap. Nigeria being Africa's largest economy, has seen rapid growth in this regard, with mobile money transactions rising by over 61% in 2023 (NIBSS, 2023). Uniquely, fintech innovations integrate technology with finance to extend access beyond traditional systems. Such innovations have birth mobile banking, internet banking, ATMs, and POS services which has greatly help to reduce transaction costs, improve efficiency, and expand participation (Ehiedu, Erhijakpor, & Onuorah, 2023).

Akunoma (2025) established that fintech innovation influences the financial performance of Nigerian banks in different ways depending on the nature of technology adopted, with mobile banking making the most impact on financial inclusion and institutional resilience. Beyond the financial performance, other researchers have reported that fintech innovations make a significant contribution towards sustainable economic development through their influence on financial inclusion, digital transactions, financial services availability, and economic participation of people within underserved communities in Nigeria (Sam-Abugu, Luo, & Wong, 2025). These innovations drive Nigeria's cashless policy and support SDGs 1, 8, and 9.

Conversely, although fintech services have experienced rapid adoption in Nigeria, their contribution towards sustainable economic development remains low due to inflation, exchange rate fluctuation, poverty, unemployment, lack of adequate infrastructure, cyber insecurity, inadequate regulations, low digital literacy level, and transaction cost, weak regulation, low digital literacy, among others (Central Bank of Nigeria [CBN], 2023; World Bank, 2023, Olofin, Haruna, & Njoku, 2024). Such identified barriers hinder inclusive growth and highlight the need for strategies to ensure equity and consumer protection in fintech services.

Theoretically, fintech innovation, financial inclusion, and sustainable economic development in Nigeria are examined in this study using the Diffusion of Innovation (DOI) theory and the Financial Intermediation theory. DOI is concerned with how financial services including mobile banking, POS, internet banking, and payment solutions are useful and easy to use, hence adopted by financially underserved Nigerians. In terms of financial intermediation theory, the fintech platforms are considered intermediary entities that perform financial functions like facilitating transactions, offering savings opportunities, accessing credit and financial inclusion in formal financial systems. The theories help explain why fintech facilitates financial inclusion in Nigeria, which in turn promotes sustainable economic development in Nigeria.

Empirically, some studies shows that fintech innovations make a significant contribution towards sustainable economic development in Nigeria by expanding financial inclusion, facilitating digital transactions, financial services accessibility, and economic participation of people living in underserved communities in Nigeria (Sam-Abugu, Luo, & Wong, 2025). Nonetheless, empirical evidence in Nigeria has mostly been focusing on bank performance, financial inclusion, or digital banking usage separately without considering the role of financial inclusion in mediating the association between fintech innovations and sustainable economic development. These notable gaps are intended to be filled in this study. The study therefore examines: (1) fintech's role in enhancing inclusion for underserved Nigerians, (2) its contribution to sustainable economic development, and (3) challenges to adoption. The conference theme of Interdisciplinary Innovations: Bridging Knowledge for a Sustainable Future finds its connection to these goals because technology demonstrates its ability to create both equitable systems and

sustainable practices which provide valuable knowledge to academics and policymakers and practitioners.

Operational Definitions of Terms

Fintech Innovations: fintech innovations include technology-based financial service channels that involve mobile banking, internet banking, ATM transactions, and POS transactions for facilitating financial transactions using the internet.

Financial Inclusion: Financial inclusion is the level at which people or firms can participate in formal financial systems, including savings accounts, payment systems, loans, and digital financial platforms.

Sustainable Economic Development: Sustainable economic development is associated with improvements in the economic wellbeing of an economy through GDP per capita growth coupled with financial inclusion.

Mobile Banking: Mobile banking involves conducting financial transactions using mobile phones or other mobile applications. **POS Transactions:** POS Transactions are digital transactions conducted through point-of-sale terminals.

Internet Banking: Internet banking refers to the conduct of financial transactions through online banking platforms.

ATM Transactions: ATM transactions refer to financial activities conducted via ATM terminals.

Technological Innovation: This type of innovation involves the application of digital financial technology innovations, including mobile banking, POS, internet banking, and ATMs, towards delivering efficient financial services in Nigeria.

Socio-Economic Innovation: This type of innovation involves the application of innovative fintech services to promote financial inclusion, participation in economic activity, and sustainable economic development in Nigeria

Conceptual Review

This section reviews the core concept that form the basis of this study. This includes fintech innovations, financial inclusion, and sustainable economic development, in relation to how digital financial technologies such as mobile banking, POS, internet banking, and ATMs improve financial inclusion for promoting inclusive economic growth, as well as their conceptual relationship with each other.

Concept of Fintech Innovations

Fintech refers to the use of digital tools to deliver financial services more efficiently and inclusively. It includes mobile payments, digital lending, blockchain, robo-advisory, and P2P platforms (Soetan & Mogaji, 2024). In Nigeria, fintech growth is driven by mobile and agency banking, as well as payment solutions beyond traditional banks (Ehiedu *et al.*, 2023). Akunoma (2025) highlights that ATMs, POS, mobile, and internet banking have reshaped access to finance

by reducing reliance on physical branches, cutting transaction costs, and expanding inclusion. Thus, fintech is both a technological and socio-economic innovation.

Concept of Financial Inclusion

Financial inclusion means affordable access to savings, credit, payments, and insurance, especially for underserved groups (World Bank, 2023). Despite CBN's strategies, gaps persist among rural dwellers, women, and youth (CBN, 2023). Fintech addresses these gaps via mobile apps, wallets, and agency networks, lowering costs and geographic barriers. Mobile money and agent banking improve participation of low-income households, enabling saving, credit, and investment (Kipchoge & Mutuku, 2024).

Challenges Affecting Fintech Adoption

Barriers include cybersecurity risks, fraud, high transaction costs, poor electricity, and weak broadband (Akunoma, 2025; Olofin *et al.*, 2024). Low digital literacy, especially in rural areas, limits adoption. Regulatory gaps persist, as CBN policies remain reactive, creating uncertainty (CBN, 2023). Overcoming these challenges is crucial to ensure inclusivity, consumer protection, and long-term sustainability. The figure 1 linked the conceptual reviews

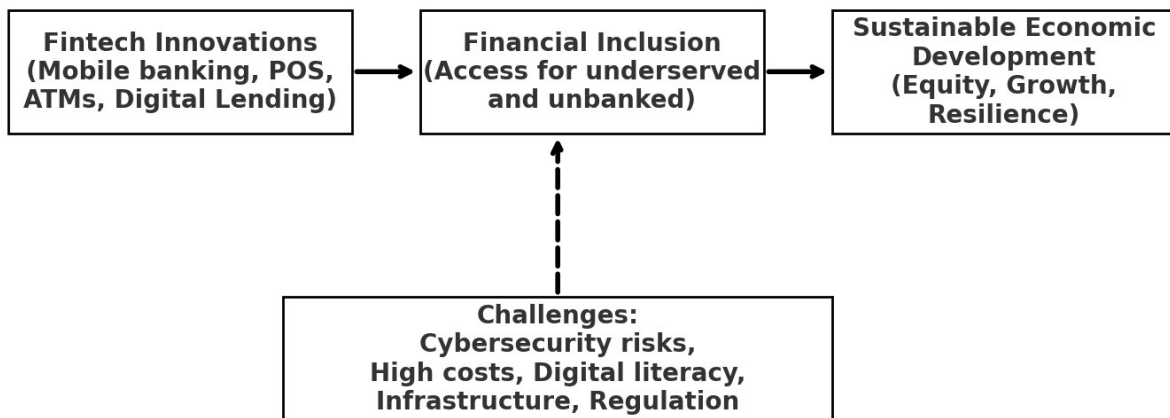


Fig. 1: Conceptual (Linkage) framework of the study

Theoretical Review

The Diffusion of Innovation (DOI) Theory, introduced by Rogers (1962, revised 2003), explains how new technologies spread through stages: knowledge, persuasion, decision, implementation, and confirmation based on factors like relative advantage, compatibility, and complexity. It has been applied to fintech adoption, showing why mobile banking and digital payments spread unevenly across groups (Okoye & Eze, 2022; Kipchoge & Mutuku, 2024). Critics argue DOI overemphasizes individual choice, neglecting barriers such as poverty, illiteracy, and weak regulation (Abubakar & Bala, 2023). For this study, DOI is relevant in explaining fintech adoption challenges among underserved Nigerians, aligning with objectives on inclusion and barriers to sustainable use.

The Financial Intermediation Theory, advanced by Gurley and Shaw (1960) and extended by Scholtens and van Wensveen (2003), describes how institutions mobilize savings to borrowers, reducing information gaps and costs. Fintech now assumes this role through mobile money, P2P lending, and agency banking, extending affordable services to excluded groups. Proponents highlight its inclusive potential (Soetan & Mogaji, 2024; Ehiedu, Erhijakpor, & Onuorah, 2023), while critics warn of risks like cybersecurity gaps and weak consumer protection (Olofin, Haruna, & Njoku, 2024).

Both theories provide a framework for this study: DOI explains adoption dynamics across groups, while Financial Intermediation clarifies fintech’s systemic role in bridging savers and borrowers. Together, they highlight fintech’s opportunities for financial inclusion and growth, while underscoring challenges that must be addressed for sustainability in Nigeria. The figure 2 linked the Theoretical framework with the objectives of the study.

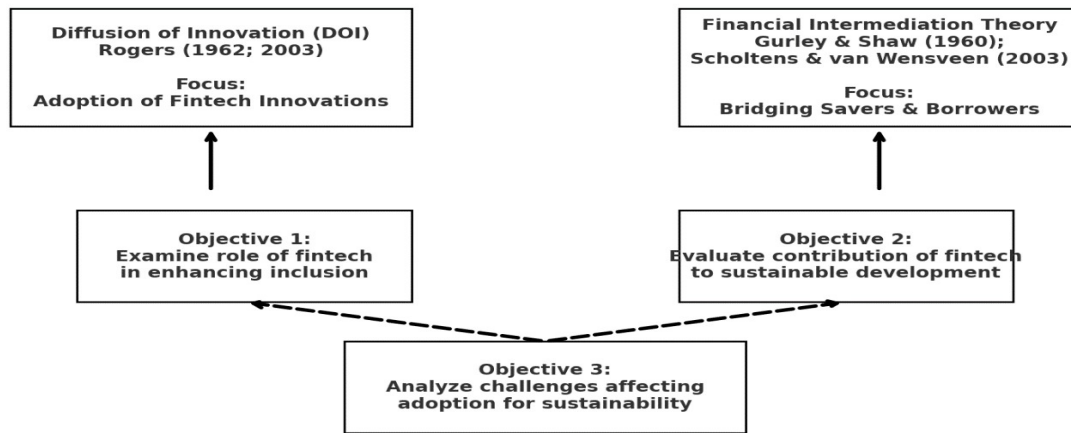


Fig. 2: Theoretical Framework Linking the DOI and the Financial Intermediation Theory to the objectives

Empirical Review

Empirical evidence across Nigeria and Sub-Saharan Africa underscores the transformative role of fintech in bridging financial access gaps. Findings show that financial inclusion facilitated by fintech innovations contributes significantly to sustainable economic development through expanded access to financial services, promoting entrepreneurship, alleviating poverty, and enhancing economic resilience in developing economies. The findings reveal that fintech innovations such as mobile banking, digital payments, agency banking, and mobile money facilitate financial participation for inclusive growth and sustainable development objectives (Soetan & Mogaji, 2024). In Nigeria, digital financial inclusion has increased during and after the outbreak of COVID-19, including the introduction of the 2023-naira redesign policy, thereby accelerating cashless transactions through fintech innovations for economic resilience and financial inclusion (NIBSS, 2023; IMF, 2023). Additionally, current evidence shows that financial inclusion facilitates sustainable development in Nigeria, especially under macroeconomic stability and digital infrastructure conditions (Adebanjo et al., 2026). These findings are consistent with SDGs 1, 8, and 9 concerning poverty, decent work, innovation, and

inclusive economic growth (World Bank, 2023). At the micro level, Nduka (2024) reported that agent banking networks enhanced efficiency and accessibility, particularly in underserved rural areas. The EFINA (2021) survey further revealed a potential market of over 24 million adults who could benefit from agent and mobile banking services, while NIBSS (2023) data confirmed the surge in e-payments. Collectively, these findings demonstrate that fintech innovations have become critical in enhancing inclusion, though effectiveness varies across channels.

In addition, several studies provide evidence of the broader developmental benefits of fintech adoption. Idris (2025) found a long-run positive relationship between fintech activity and Nigeria's GDP growth, confirming fintech's contribution to economic sustainability by promoting financial inclusion, offering SMEs credit facilities, reducing transaction costs, improving efficiency in payments and savings mobilization, and boosting economic resilience and productivity. Supporting this, Soetan and Mogaji (2024) highlighted how digital financial inclusion accelerates progress toward sustainable growth and the SDGs. Choudhary (2025), in a cross-country study, revealed that fintech adoption aligns with poverty reduction and economic resilience, conditional on sound regulation. At the global level, World Bank (2022, 2023) and IMF (2023) reports emphasized fintech's potential to promote financial resilience and sustainable practices, while Osabutey et al. (2024) observed that mobile money facilitated SME participation in digital economies across Sub-Saharan Africa. Together, these studies underscore that fintech is not merely a tool for access but also a catalyst for macroeconomic growth and long-term sustainability.

On the other hand, despite its promise, empirical evidence points to persistent barriers undermining fintech adoption in Nigeria. Isiaku (2024) revealed that trust, perceived usefulness, and ease-of-use remain decisive in sustaining consumer adoption, echoing Rogers' diffusion theory. Olofin *et al.* (2024) showed that while fintech improved bank performance, regulatory uncertainty hindered its full potential, a concern echoed by IMF (2023) and Wezel *et al.* (2023), who highlighted infrastructure gaps and high transaction costs. Similarly, EFINA (2021) and World Bank (2023) identified persistent gender and rural divides in financial access, while Reuters (2024) industry reporting on Monie point highlighted scalability challenges despite rapid growth. Furthermore, studies by Osazevbaru and Yomere (2015) noted trust deficits, cybersecurity risks, and infrastructural weaknesses as systemic hurdles. Collectively, these findings emphasize that addressing adoption challenges is vital for fintech to achieve sustainable, inclusive economic impact. The gaps identified from reviewed literature therefore include the fact that previous studies (World Bank, 2023; Reuters, 2024) examined fintech access expansion, but ignore the issue of fintech adoption. Prior studies (Osazebaru and Yomere, 2015) discuss trust and cybersecurity issues and offer little link to the outcomes as it affects financial inclusion in Nigeria either negatively or positively. Moreover, previous studies do not appropriately address fintech adoption problems in combination with macroeconomic development indicators. It was based on the identified gaps that this study was centred.

3.0 Methodology

This study employs a quantitative research design to investigate the relationship between fintech innovations, financial inclusion, and sustainable economic development in Nigeria. The choice of this design is appropriate as it permits statistical examination of how fintech services influence financial inclusion outcomes and economic performance. The study specifically explores the effect of fintech innovations, measured through digital transaction channels, on financial

inclusion, and assesses the mediating role of financial inclusion in enhancing economic development.

The study relies on secondary, time-series data of all the 36 licensed Deposit Money Banks (DMBs) in Nigeria as at 31st December, 2023, of which thirty (30) are Commercial banks and six (6) are Merchant banks and covering the period from 2009 to 2023, a timeframe that captures the surge in Nigeria's adoption of digital financial services. Data on fintech innovations (the independent variable) were obtained from the Central Bank of Nigeria (CBN) Financial stability report and the Nigerian Interbank Settlement System (NIBSS). These were proxied by the volume of mobile banking transactions (MB), Point-of-Sale (POS) transactions, Automated Teller Machine (ATM) transaction, and internet banking transactions (IB).

The financial inclusion variable (mediating variable) was derived from the Global Findex Database (World Bank, 2022) and EFINA Access to Financial Services Survey (2021). It was proxied by the percentage of adults with a formal financial account (bank or mobile money) and the percentage of adults who used digital payments in the last 12 months. The Economic Development measure (Dependent variable) was proxied by GDP per capita growth, sourced from the World Bank Global Findex.

Additionally, bank-level performance indicators were included as control variables. These comprised Return on Assets (ROA), Return on Equity (ROE), and Capital Adequacy Ratio (CAR), obtained from annual reports of selected Deposit Money Banks (DMBs) and the CBN Financial Stability Reports. Other macroeconomic control variables such as inflation and exchange rate volatility were obtained from the National Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN).

The empirical framework consists of two main equations that capture both the direct and mediating effects of fintech innovations on financial inclusion and economic development.

The first model examines the effect of fintech innovations on financial inclusion as follows:

$$FI_t = \alpha_0 + \beta_1 MB_t + \beta_2 POS_t + \beta_3 ATM_t + \beta_4 IB_t + \gamma_1 ROA_t + \gamma_2 ROE_t + \gamma_3 CAR_t + \theta X_t + \varepsilon_t$$

Where:

FI_t represents the Financial Inclusion Index, standardized from account ownership and digital payment usage.

MB, POS, ATM, and IB denote mobile banking, POS, ATM, and internet banking transactions (log-transformed).

ROA, ROE, and CAR represent bank-level controls,

while:

X_t represents macroeconomic controls such as inflation and exchange rate.

The second model links fintech innovations and financial inclusion to economic development:

$$GDP_{pcg_t} = \alpha_1 + \delta_1 MB_t + \delta_2 POS_t + \delta_3 ATM_t + \delta_4 IB_t + \phi FI_t + \lambda_1 ROA_t + \lambda_2 ROE_t + \lambda_3 CAR_t + \psi X_t + v_t$$

Where:

GDP_{pcg_t} denotes GDP per capita growth, while other variables are as previously defined. The coefficient ϕ specifically measures the mediating effect of financial inclusion.

To establish mediation, the study applies a two-step approach: (a) estimating the impact of fintech innovations on financial inclusion, and (b) examining the effect of fintech innovations and financial inclusion on GDP per capita growth.

4.0 Data Analysis Results and Discussion

The data analysis proceeded in three phases. First, descriptive statistics and correlation analysis were conducted to summarize the data and explore preliminary relationships among variables. Second, regression analysis was carried out to estimate the models specified, focusing on fintech’s effect on financial inclusion and the mediated effect on GDP per capita growth. Third, mediation analysis was implemented using a structural equation modeling (SEM) framework, complemented with bootstrap resampling to assess the significance of indirect effects.

Table 1:
Descriptive Statistics of Fintech Channels and Bank Performance Indicators.

Variable	Mean	SD	Minimum	Maximum
ATM (transactions)	127,804,900	122,155,900	371,008	437,759,654
POS (transactions)	246,798,200	645,540,300	76,521	2,649,056,326
Internet Banking (transactions)	601,653,300	1,577,842,000	133,424	5,747,293,643
Mobile Banking (transactions)	130,750,100	343,652,300	96,377	1,596,241,648
ROA (%)	1.31	1.77	-8.82	4.26
OE (%)	12.98	15.87	-45.66	57.64
CAR (%)	14.04	4.85	0.20	22.51

Note. SD = Standard Deviation. Source: Author’s computation from CBN, NIBSS, and bank reports.

Table 1

Presents descriptive statistics for fintech transactions (ATM, POS, Internet Banking, Mobile Banking) and bank performance indicators (ROA, ROE, CAR) from 2009Q1–2023Q4. Results show wide variability in transaction volumes. POS averaged 246.8 million with a peak above 2.6 billion, reflecting rapid adoption, while internet banking had the highest variability (SD = 1.58

billion), indicating sharp growth after 2015. Bank performance fluctuated, with ROA averaging 1.31% but falling to -8.82% in some quarters, this is linked to periods of macroeconomic instability, regulatory changes, fintech transition expenses, and risk management at Nigerian banks during the period under consideration and ROE ranging from -45.66% to 57.64%, showing vulnerability to shocks. CAR averaged 14.04%, above regulatory thresholds, suggesting capital buffers were maintained despite fintech disruptions. Overall, fintech adoption grew unevenly across channels, with mixed impacts on bank performance.

Table 2:
Descriptive Statistics of Macroeconomic Indicators (2009–2023)

Variable	Mean	SD	Minimum	Maximum
GDP per Capita Growth (%)	2.9	1.8	-1.6	5.6
Financial Inclusion (% with account) *	48.0	9.9	33.0	55.0
Inflation (CPI, %)	13.7	5.0	8.1	24.0
Exchange Rate Volatility (%)	9.2	6.1	3.2	19.8

Sources: World Bank (WDI), Global Findex, IMF/CBN.

Table 2 presents descriptive statistics for macroeconomic indicators. GDP per capita growth, financial inclusion, inflation, and exchange-rate volatility (2009-2023). GDP per capita grew on average by 2.9%, with a low of -1.6% during the 2016 recession. Financial inclusion increased from 33% in 2011 to 55% in 2021, averaging 48%. Inflation averaged 13.7% but peaked at 24% in 2023, while exchange-rate volatility averaged 9.2%, reaching 19.8% in 2021. These figures suggest that despite gradual improvements in inclusion, persistent inflation and currency instability remained key constraints on fintech’s contribution to sustainable growth.

Correlation Results

Table 3:
Correlation Matrix of Key Variables (2009–2023)

Variable	1	2	3	4	5	6	7	8
ATM transactions (1)	—							
POS transactions (2)	.42**	—						
Internet banking (3)	.36**	.48**	—					
Mobile banking (4)	.40**	.52**	.61**	—				
Financial inclusion (5)	-.12	.33*	.29*	.41**	—			
ROA (6)	-.26*	.09	.05	.14	.22	—		
ROE (7)	-.31*	.11	.07	.18	.25	.74**	—	
GDP per capita growth (8)	-.18	.22	.20	.28*	.39**	.27*	.23	—

Source: Author’s computation.

Table 3 presents the Pearson correlation matrix for fintech transaction channels, financial inclusion, bank performance measures, and GDP per capita growth. Fintech channels (POS, IB, MB) are strongly inter-correlated, confirming that digital channels expanded together. Mobile banking shows a strong positive relationship with financial inclusion ($r = .41, p < .01$), suggesting that mobile access is critical for bridging gaps. ATM transactions are negatively correlated with ROA and ROE, implying cash-based channels reduce profitability. Financial inclusion correlates positively with GDP growth ($r = .39, p < .01$), aligning with the study's mediation hypothesis.

Regression Results: Fintech and Bank Performance

Table 4:

Regression Results: Fintech Channels and Bank Performance (2009-2023)

DV	Predictor	B	SE	B	t	p
ROA	ATM (log)	-0.224	0.101	-.23	-2.22	.03*
	POS (log)	0.061	0.084	.08	0.72	.47
	MB (log)	0.052	0.079	.07	0.66	.51
	IB (log)	0.011	0.068	.02	0.16	.87
ROE	ATM (log)	-2.820	1.110	-.25	-2.54	.01*
	POS (log)	0.720	0.990	.09	0.73	.46
	MB (log)	0.960	0.870	.12	1.10	.27
	IB (log)	0.210	0.710	.03	0.30	.76
CAR	ATM (log)	-0.310	0.280	-.10	-1.11	.27
	POS (log)	0.250	0.240	.09	1.04	.30
	MB (log)	4.150	1.250	.29	3.32	.00**
	IB (log)	-1.430	0.620	-.20	-2.31	.02*

Source: Authors' Computation, 2026.

Table 4 showed the results of the regression analysis on the effect of fintech on the performance metrics (ROA, ROE, and CAR) for 2009-2023. Regarding ROA, the use of ATMs was found to have a negative and statistically significant impact ($B = -0.224, p < .05$), meaning that higher operational and maintenance expenses hindered the profitability of banking institutions. POS transactions, mobile banking, and internet banking exhibited positive but statistically insignificant impacts on assets' returns.

In terms of ROE, the utilization of ATMs was found to have a negative and statistically significant impact ($B = -2.820, p < .05$), implying that increased operational and technological expenses affected the profitability of shareholders. POS transactions, mobile banking, and internet banking were found to exhibit positive but statistically insignificant impacts on ROE.

As for CAR, mobile banking had a strong positive and statistically significant effect ($B = 4.150, p < .01$), which means that banking institutions have become financially more stable and strengthened their capital resources owing to increased digitalization. On the other hand, internet banking had a negative impact on CAR ($B = -1.430, p < .05$), implying that cybersecurity risks might have an adverse effect on capital adequacy. The results highlight that fintech affects banks differently depending on the channel and performance dimension.

Regression Results: Mediation Analysis (Fintech → FI → GDP)

Table 5:

Mediation Results: Financial Inclusion as a Mediator between Fintech and Economic Development

Model	Predictor	B	SE	β	t	p
Step 1 (DV = FI)	Mobile banking	0.042	0.018	.38	2.33	.03*
	POS	0.031	0.015	.29	2.07	.05*
	ATM	-0.018	0.014	-.19	-1.29	.21
	IB	0.027	0.016	.24	1.69	.11
Step 2 (DV = GDPG)	FI	0.041	0.019	.37	2.20	.04*
	Mobile banking	0.013	0.015	.12	0.87	.40
	POS	0.008	0.013	.09	0.62	.54
	ATM	-0.011	0.012	-.10	-0.91	.38
	IB	0.006	0.011	.07	0.55	.59

Source: Authors' Computation, 2026.

Table 5 presents the mediation test results using annual data (2009–2023). Mobile banking and POS transactions significantly increase financial inclusion (Step 1). In Step 2, financial inclusion has a positive and significant effect on GDP per capita growth ($\beta = .37, p < .05$), while direct fintech effects become insignificant. This indicates full mediation, confirming that fintech innovations influence economic development primarily by enhancing financial inclusion rather than directly boosting growth.

Discussion of Findings

The results of this study provide clear evidence that fintech innovations have a significant effect on financial inclusion in Nigeria, and through this channel, they influence sustainable economic development. The findings are particularly important in light of the country's increasing dependence on digital finance to close inclusion gaps.

First, the results confirm that mobile banking and point-of-sale (POS) channels are the strongest drivers of financial inclusion. These channels consistently showed positive and significant effects on the proportion of adults with access to formal financial accounts. These can be attributed to the growth in mobile money, agency banking, and POS terminal usage in Nigeria, particularly among the rural population. Innovations such as Opay, Palm Pay, and Monie point have provided access to financial products and services like transfer, deposit, withdrawal, and bill payment services. This finding is supported by recent national surveys such as the EFINA Access to Finance Survey Report (2023), which revealed that formal financial inclusion in Nigeria grew to 64% in 2023, up from 54% in 2020, with mobile banking and agent networks serving as the major contributors to the growth. Similarly, the World Bank Global Findex (2025) emphasizes that mobile money is now the fastest-growing driver of inclusion in developing economies, including Nigeria, particularly among women, youth, and rural populations. These patterns confirm that low-cost, digital-first channels are more effective in reaching underserved populations than traditional modes such as ATMs or internet banking.

Second, the study demonstrates that fintech contributes to sustainable economic development indirectly, mediated by financial inclusion. Once financial inclusion was included in the regression model, the direct effects of fintech channels on GDP per capita growth became insignificant, indicating full mediation. This suggests that fintech alone does not generate growth unless it expands access to financial services. This outcome resonates with the theoretical position that inclusive finance stimulates savings, investment, and productivity, thereby strengthening economic growth. Empirical evidence further validates this pathway: EFINA (2023) noted that expanded access to accounts, digital savings, and credit facilities has widened economic participation in Nigeria, while the Office of the Special Adviser to Nigeria's President on Economic Affairs (2024) reported that the fintech ecosystem attracted more than USD 2 billion in investments in 2024, making the ICT sector one of the largest contributors to GDP growth. These insights reinforce the conclusion that fintech innovations, when properly aligned with financial inclusion, serve as catalysts for sustainable development.

Third, the results highlight some challenges that limit the transformative impact of fintech. ATM transactions were found to negatively affect bank profitability (ROA and ROE), reflecting the cost intensity of cash-based operations. Internet banking also showed negative effects on capital adequacy ratios, which may be linked to risks of fraud, cybersecurity breaches, and digital credit exposures. These findings are consistent with reports that the Nigerian fintech ecosystem, though expanding rapidly, still faces structural challenges such as regulatory uncertainty, infrastructural gaps, and exchange-rate instability (Fintech News Africa, 2025). EFINA (2023) also emphasized that while inclusion has improved, persistent cost pressures and service delivery barriers in rural areas remain significant. Thus, while fintech channels like mobile banking and POS are proving effective for financial inclusion, banks and policymakers must address cost, security, and infrastructure constraints to ensure long-term profitability and system resilience.

Overall, these results underscore that fintech innovations are not a panacea. Their economic value is realized primarily when they effectively expand financial inclusion, and their potential benefits can be undermined by macroeconomic instability, high inflation, and exchange-rate volatility. As recent evidence indicates, Nigeria continues to grapple with rising inflation (24% in 2023) and currency volatility, both of which reduce household purchasing power and dampen the benefits of inclusion (EFINA, 2023). Policy interventions must therefore combine efforts to deepen mobile and POS penetration with broader macroeconomic stabilization measures. Furthermore, inclusion strategies must specifically target underserved groups, including rural residents, women, and low-income households, to maximize the developmental gains of fintech adoption (World Bank, 2025);

5.0 Discussions and Recommendations

The study concludes that fintech innovations are a critical catalyst for advancing financial inclusion in Nigeria. Channels such as mobile banking and POS have proven particularly effective in extending financial services to underserved populations, while traditional cash-reliant mechanisms such as ATMs contribute less positively. Importantly, the study confirms that fintech supports sustainable economic development indirectly through its impact on financial inclusion, aligning with inclusive growth theories. However, challenges such as high inflation, exchange-rate volatility, regulatory gaps, and infrastructural weaknesses continue to undermine the full potential of fintech in Nigeria. Thus, the promise of fintech lies in balancing innovation with macroeconomic stability and inclusive policy design.

Recommendations

Based on the findings, the following recommendations were put forward:

1. Policymakers should craft policies that will facilitate the expansion of mobile broadband networks, agency banking services, and POS terminals in underserved regions of the country.
2. The CBN and SEC should enhance and update the regulatory policies related to cybersecurity, digital lending, consumer protection, and data privacy through cooperation with fintech operators and Deposit Money Banks
3. Fintech companies and banks need to develop digital financial literacy initiatives in order to promote the use of fintech in rural and poor communities.
4. Policy makers in charge of fiscal and monetary policy should create policies that will ensure lower inflation and currency depreciation.
5. The use of secure digital banking systems can be encouraged by both banks and fintechs.

Reference

- Abubakar, A., & Bala, M. (2023). Digital finance adoption and financial inclusion in developing economies: Evidence from Nigeria. *Journal of African Financial Studies*, 11(2), 55–71.
- Adebanjo, S., Mishiwo, S. H., Adeniran, O. S., Alorzuke, B. C., & Banchani, E. (2026). Financial inclusion and macroeconomic drivers of sustainable development in Nigeria: Evidence from ARDL-ECM and SVAR with moderation. *Discover Sustainability*, 7(479), 1–18.
- Akunoma, O. O. (2025). *Digital banking channels and financial performance of DMBs in Nigeria* (PhD thesis). Delta State University, Abraka, Nigeria.
- Central Bank of Nigeria (CBN). (2023). *Financial stability report*. Abuja: CBN.
- Central Bank of Nigeria (CBN). (2023). *Financial Stability Report 2023*. Abuja: Central Bank of Nigeria. Central Bank of Nigeria (CBN)
- EFInA. (2021). *Access to financial services in Nigeria 2020 survey*. Enhancing Financial Innovation & Access.
- EFInA. (2023). *Access to Finance (A2F) Survey Report 2023: Unlocking Insights to Accelerate Financial and Economic Inclusion*. Enhancing Financial Innovation & Access. <https://a2f.ng/nigerias-formal-financial-inclusion-grows-to-64-in-2023-says-efina-report>
- Ehiedu, V. C., Erhijakpor, A. O. E., & Onuorah, A. C. (2023). Digital banking adoption and financial sector performance in Nigeria. *Journal of Banking and Finance Studies*, 15(2), 45–61.
- Fintech News Africa. (2025, January 15). *Nigeria's fintech sector surges 70% despite challenges*. Fintech News Africa. <https://fintechnews.africa/44869/fintech-nigeria/nigerias-fintech-sector-surges-70-despite-challenges>

- Guardian Nigeria. (2025, July 17). *Mobile money leads Nigeria's financial inclusion drive*. The Guardian (Nigeria). <https://guardian.ng/business-services/mobile-money-leads-nigerias-financial-inclusion-drive>
- Idris, A. A. (2025). Fintech innovations and economic growth in Nigeria: A time-series approach. *IIARD International Journal of Economics and Business Management*, 11(1), 44–60.
- International Monetary Fund (IMF). (2023). *Nigeria—Fostering Financial Inclusion through Digital Financial Services*. Washington, DC: IMF.
- Isiaku, S. (2024). Barriers to fintech adoption in rural Nigeria: Digital literacy and infrastructure challenges. *African Journal of Development and Policy Studies*, 14(2), 101–118.
- Kipchoge, M., & Mutuku, C. (2024). Fintech and inclusive growth in Sub-Saharan Africa: Opportunities and policy challenges. *African Journal of Economics and Sustainable Development*, 12(1), 88–107.
- Nduka, A. J. (2024). Agent banking and financial inclusion in Nigeria: Evidence from 2009–2022. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.4870325>
- Nigerian Interbank Settlement System (NIBSS). (2023). *E-payment fact sheet*. Lagos: NIBSS.
- Office of the Special Adviser to Nigeria's President on Economic Affairs. (2024, December 7). *Nigeria's fintech system attracted over \$2 billion in investments in 2024*. Nairametrics. <https://nairametrics.com/2024/12/07/nigerias-fintech-system-attracted-over-2-billion-in-investments-in-2024-fgs-economic-report>
- Olofin, S., Haruna, I., & Njoku, P. (2024). Regulatory responses to fintech adoption in developing economies: Evidence from Nigeria. *International Journal of Financial Innovation*, 9(3), 134–152.
- Osazevbaru, H. O., & Yomere, G. O. (2015). Benefits and challenges of Nigeria's cash-less policy. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 4(9), 1–10.
- Sam-Abugu, S., Luo, J., & Wong, W. (2025). Fintech adoption, inclusive finance and sustainable economic growth in developing economies. *Financial Innovation*, 11(1), 1–21. Springer Financial Innovation Journal
- Soetan, T. A., & Mogaji, E. (2024). Digital financial inclusion and sustainable economic growth in Nigeria. *Journal of Sustainable Finance & Policy*, 18(1), 73–95.
- World Bank. (2022). *Global Findex Database 2021: Financial inclusion, digital payments, and resilience*. Washington, DC: World Bank.
- World Bank. (2023). *Fintech and Financial Inclusion: Driving Sustainable Development in Emerging Markets*. Washington, DC: World Bank Publications. World Bank
- World Bank. (2025, July 16). *Global Findex Database 2025: Mobile money fuels record financial inclusion in Nigeria and other developing economies*. Nairametrics. <https://nairametrics.com/2025/07/16/world-bank-mobile-money-fuels-record-financial-inclusion-in-nigeria-other-developing-economies-in-2024>