

Enhancing Financial Inclusion in Nigeria: The Role of Digital Banking Platform

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Abstract

This study examined the effect of digital banking platforms on financial inclusion in Nigeria, with a specific focus on the contribution of mobile money, USSD, internet banking, agency banking, and POS terminal transactions to account ownership. Using quarterly time-series data from 2016Q1 to 2025Q4, the study employed the Autoregressive Distributed Lag (ARDL) bounds testing approach to analyze both short-run dynamics and long-run relationships. The empirical results revealed a stable long-run cointegrating relationship between digital banking activities and account ownership. In the short run, USSD transactions exerted the strongest positive and significant effect on account ownership, while mobile money transactions showed a statistically significant negative (substitution) effect. Agency banking transactions demonstrated a delayed positive impact, becoming significant after two quarters. POS terminals and internet banking transactions had positive but statistically insignificant effects in both the short and long run. The error correction term was negative and highly significant, indicating a slow adjustment speed of approximately 3.86% per quarter toward the long-run equilibrium. The findings highlight the differential effectiveness of digital banking channels in driving financial inclusion. While low-barrier channels such as USSD deliver rapid gains in account ownership, agency banking holds greater long-run potential, particularly for rural and underserved segments. The study concludes that digital banking platforms have significantly expanded access in Nigeria, but their ability to achieve deep, equitable, and resilient inclusion remains constrained by structural barriers. The study recommends enhanced interoperability between mobile money and formal accounts, sustained support for USSD services, aggressive expansion and incentivization of agency banking networks, and comprehensive digital financial literacy programs. These measures are essential for translating digital transaction growth into meaningful formal account ownership and achieving the objectives of NFIS 4.0.

Keywords: Digital banking platforms, financial inclusion, account ownership, mobile money, agency banking.

1.0 Introduction

Nigeria, Africa's most populous nation with over 220 million people, has made financial inclusion a cornerstone of poverty alleviation, economic empowerment, inclusive growth, and the achievement of broader sustainable development goals. In a country where a large proportion of the population operates in the informal economy, access to formal financial services is essential for mobilising savings, facilitating credit, managing risks, and enabling participation in the modern

economy. However, Nigeria's journey towards financial inclusion has been marked by gradual yet uneven progress since the early 2000s.

Early surveys by Enhancing Financial Innovation & Access (EFInA) in 2008 found that about 53 per cent of Nigerian adults were financially excluded, relying predominantly on cash transactions, informal savings mechanisms such as *ajo* or *esusu*, or having no financial services at all. Although significant progress has been made in recent years, substantial gaps remain. According to EFInA's Access to Financial Services (A2F) surveys, formal financial inclusion rose from 56 per cent in 2020 to 64 per cent in 2023, while overall inclusion (formal and informal channels) reached around 74 per cent by mid-2025. Account ownership, a key proxy for financial inclusion, stood at about 63 per cent, according to the 2025 Global Findex Report, with financial exclusion still hovering around 26 per cent (EFInA, 2023; World Bank, 2025). These figures, though improved, fall short of the ambitious targets set under the Central Bank of Nigeria's (CBN) National Financial Inclusion Strategies.

The CBN has been at the forefront of advancing inclusion through successive policy frameworks. The inaugural National Financial Inclusion Strategy (NFIS 1.0), launched in 2012, aimed to reduce exclusion to 20 per cent by 2020, with specific targets for payments, savings, credit, insurance, and pensions. Subsequent revisions, NFIS 2.0 (2018–2020) and NFIS 3.0 (2022), intensified the focus on digital innovation, agent banking, and addressing gender and regional inequities. As the country transitions towards NFIS 4.0 (under development as of 2025), emphasis is shifting from mere access to deeper financial health, resilience, product diversity, and consumer protection.

A major catalyst for recent gains has been the rapid proliferation of digital banking platforms. These include mobile money wallets (e.g., OPay, PalmPay, Moniepoint, Paga, and FairMoney), USSD-based services, internet and app-based banking, extensive agency banking networks, and Point-of-Sale (POS) terminals. Backed by infrastructure such as the Nigeria Inter-Bank Settlement System (NIBSS) Instant Payments (NIP), which processed over 11 billion transactions in 2024, these platforms have transformed financial service delivery. They have substantially lowered transaction costs, removed geographical barriers, reduced reliance on physical branches, and extended services to previously underserved segments, including rural dwellers, low-income households, youth, women, and small and medium-sized enterprises (SMEs). The surge was particularly pronounced during periods of cash scarcity, such as the 2022–2023 naira redesign crisis, which accelerated mass adoption of digital channels.

Despite these impressive quantitative gains in transaction volumes and account openings, significant challenges continue to constrain the depth and quality of financial inclusion. Persistent infrastructure deficits, including unreliable electricity, limited broadband coverage (especially in rural and northern regions), and high data costs, hinder widespread adoption. Low levels of digital and financial literacy, cybersecurity threats, rising fraud, complex Know-Your-Customer (KYC) requirements, and socio-cultural barriers (particularly affecting women's access due to lower smartphone ownership and traditional norms) further exacerbate exclusion. Moreover, usage remains shallow: while account ownership and payment volumes have grown, formal credit uptake hovers between 6–9 per cent, insurance penetration is as low as 3 per cent, and many accounts function primarily as transfer tools rather than as vehicles for savings, credit, or risk management (EFInA, 2023; World Bank, 2025).

This study therefore examines the effect of digital banking platforms on financial inclusion in Nigeria, using account ownership as the primary dependent variable. The specific objectives are:

- i. To assess the extent to which mobile money transactions contribute to account ownership in Nigeria.
- ii. To assess the extent to which USSD transactions contribute to account ownership in Nigeria.
- iii. To assess the extent to which internet banking transactions contribute to account ownership in Nigeria.
- iv. To assess the extent to which agency banking transactions contribute to account ownership in Nigeria.
- v. To assess the extent to which POS terminal transactions contribute to account ownership in Nigeria.

2.0 Literature review

The study is grounded in an integrated, multi-theoretic framework that combines micro-level adoption theories with macro-level economic perspectives. This integrative approach offers a comprehensive lens for understanding how digital banking platforms affect financial inclusion in Nigeria's unique socio-economic context. Four complementary theories are adopted:

The Technology Acceptance Model (TAM) (Davis, 1989) remains one of the most widely used frameworks in information systems research. TAM posits that an individual's intention to adopt and use a new technology is primarily determined by two key constructs: Perceived Usefulness (PU), the degree to which a person believes that using the technology will enhance their

performance or outcomes, and Perceived Ease of Use (PEOU), the extent to which the technology is expected to be free of effort. In the context of digital banking in Nigeria, PU reflects users' beliefs that platforms such as mobile money, USSD, or fintech apps (e.g., OPay, PalmPay) offer faster transactions, lower costs, greater convenience, and better financial management compared with traditional cash-based or informal systems. PEOU highlights the importance of intuitive interfaces, simple USSD codes (e.g., *901#), and compatibility with feature phones, which are critical for low-literacy and rural users. Empirical extensions of TAM in Nigeria consistently show that these constructs significantly predict the adoption and use of digital financial services (Ogunleye et al., 2020; Inegbedion, 2018).

The Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003) builds on and synthesises TAM with seven other models. UTAUT identifies four core determinants of behavioural intention and actual use: performance expectancy (similar to PU), effort expectancy (similar to PEOU), social influence (the extent to which important others endorse the technology), and facilitating conditions (the availability of supporting infrastructure and resources). The model also accounts for moderating variables such as age, gender, experience, and voluntariness of use. In Nigeria, UTAUT is particularly relevant given pronounced gender gaps, regional disparities (urban vs. rural/northern), and infrastructural challenges. Social influence through community agents and peer networks, together with facilitating conditions such as agent liquidity and network coverage, play crucial roles in driving adoption among underserved populations (Adanigbo et al., 2025; Ojiaku et al., 2024).

Diffusion of innovations (DOI) theory (Rogers, 2003) explains how innovations spread through social systems over time, following an S-shaped curve. Key attributes influencing adoption rates include relative advantage, compatibility with existing practices (e.g., digitising ajo/esusu savings groups), low complexity, trialability, and the observability of benefits. DOI Theory effectively accounts for the rapid diffusion of mobile money and USSD during periods of cash scarcity, as well as slower adoption in rural and northern regions due to higher perceived complexity and weaker observability (David-West et al., 2022; Lashitew et al., 2019; Edo et al., 2023).

Financial intermediation theory (Gurley & Shaw, 1960; Levine, 2005) provides the macroeconomic foundation. It views financial intermediaries as mechanisms that reduce transaction costs, mitigate information asymmetries, pool savings, allocate capital efficiently, and manage risk. Digital banking platforms serve as modern intermediaries, leveraging big data,

algorithmic credit scoring, and agent networks to extend services to previously unbanked populations, thereby enhancing savings mobilisation, access to credit, and overall economic growth (Ozili, 2025; Salami, 2025). Collectively, these theories offer a robust multi-level explanation: TAM and UTAUT address individual adoption decisions, DOI explains the diffusion process across populations, and Financial Intermediation Theory links platform use to broader economic and inclusion outcomes. This integration strengthens the study's theoretical foundation.

A growing body of empirical literature has examined the relationship between digital banking/fintech and financial inclusion, yielding generally positive but heterogeneous findings. Yahaya (2026), using ARDL on data from 2001–2022, found a statistically significant positive long-run effect of digital financial services (proxied by mobile money and internet banking) on financial inclusion. Bamanga et al. (2025) reported that fintech adoption, particularly mobile banking and POS terminals, explained more than 83.7 per cent of the variation in inclusion metrics. Iwedi (2023) similarly concluded, based on quarterly data up to 2021, that digital banking technology had a significant overall positive impact on the proportion of banked adults.

However, results vary by channel. Onyeogo (2025) found that while ATMs and internet banking had positive effects, POS transactions had negative effects, and mobile banking was insignificant in some specifications. Anama and Evbayiro-Osagie (2024) reported mixed outcomes, with agents positively affecting access, but mobile phone ownership showing negative effects in certain models. Studies focusing on specific channels highlight the strength of USSD and agency banking in reaching rural and low-income segments (Siano et al., 2020; David-West et al., 2022).

International and regional evidence reinforces these patterns. Akenzua (2025), in a systematic review across Sub-Saharan Africa, linked a 10 per cent increase in mobile money usage to approximately 1.2 per cent GDP growth through improved SME liquidity and household resilience. Chinoda and Kapingura (2023) found that digital financial inclusion enhances bank stability in SSA.

Despite these contributions, important gaps persist. Most prior studies treat digital banking as a composite variable or focus on one or two channels, with limited disaggregated analysis of mobile money, USSD, internet banking, agency banking, and POS. Few examine both short-run dynamics and long-run relationships using recent data. Moreover, many studies end before the post-2022 naira redesign acceleration and the 2024–2025 developments. This study addresses these voids by

providing a comprehensive, channel-specific time-series analysis covering 2016Q1–2025Q4 using the ARDL approach.

3.0 Methods

This study adopted an ex-post facto quantitative research design using a time-series econometric approach. The ex-post facto design was considered most suitable because the research examined causal relationships between existing phenomena (digital banking platform transactions) and financial inclusion (account ownership) without any manipulation of variables by the researcher (Kothari, 2004). The time-series dimension allows for the analysis of both short-run dynamics and long-run equilibrium relationships, which is critical for understanding the evolving impact of digital innovations in Nigeria's financial sector.

The study utilised quarterly secondary data covering the period from 2016Q1 to 2025Q4, yielding 40 observations. This timeframe was deliberately chosen to capture significant policy shifts following the launch of NFIS 1.0, the acceleration of fintech adoption post-2020 (the COVID-19 era), and the transformative effects of the 2022–2023 naira redesign crisis. Secondary data were sourced from reputable and official institutions to ensure reliability, consistency, and validity: Central Bank of Nigeria (CBN) Statistical Bulletins and Payment System Vision reports; Nigeria Inter-Bank Settlement System (NIBSS) quarterly transaction statistics; Enhancing Financial Innovation & Access (EFInA) Access to Financial Services (A2F) surveys.; World Bank Global Findex Database (2025); and National Financial Inclusion Strategy (NFIS) documents and related policy papers.

Dependent Variable: Account ownership (AO): operationalized as the percentage of Nigerian adults aged 18 years and above who possess a formal transactional account at a regulated financial institution. This serves as the primary proxy for financial inclusion, consistent with EFInA and Global Findex methodologies.

Independent Variables (all measured in natural logarithms to reduce heteroskedasticity and interpret coefficients as elasticities):

Mobile money transactions (MMT): Volume/value of transactions through mobile money platforms and wallets.

USSD transactions (USSD): Volume/value of banking and payment activities conducted via unstructured supplementary service data codes.

Internet banking transactions (IBT): Volume/value of transactions via web and mobile banking applications.

Agency banking transactions (ABT): Volume/value of services delivered through third-party agents.

POS terminal transactions (POST): Volume/value of payments processed through Point-of-Sale devices.

All variables were transformed into logarithmic form (LAO, LMMT, LUSDD, LIBT, LABT, LPOST) for estimation.

The study specified a multiple linear regression model in its basic form, which was later extended into an autoregressive distributed lag (ARDL) framework:

$$AO_t = \beta_0 + \beta_1 MMT_t + \beta_2 USSD_t + \beta_3 IBT_t + \beta_4 ABT_t + \beta_5 POST_t + \epsilon_t$$

where β_0 is the intercept, β_1 to β_5 are coefficients of the independent variables, and ϵ_t is the error term.

To account for the time-series properties of the data (potential stationarity issues and cointegration), the study employed the ARDL bounds testing approach developed by Pesaran et al. (2001). The ARDL model is particularly advantageous for this study because: it can handle small sample sizes (such as 40 observations); it is robust to variables integrated of order zero $I(0)$, one $I(1)$, or a combination; and it simultaneously estimates short-run dynamics and long-run relationships. The error correction form of the ARDL model was specified as follows:

$$\Delta LAO_t = \alpha_0 + \sum_{i=1}^p \phi_i \Delta LAO_{t-i} + \sum_{j=0}^q \beta_j \Delta X_{t-j} + \lambda EC_{t-1} + \mu_t$$

where X represents the vector of independent variables, EC_{t-1} is the error correction term, and λ measures the speed of adjustment.

4.0 Results and Discussions

Descriptive statistics and preliminary tests

The descriptive statistics provide an overview of the behavior of the variables over the 40 quarterly observations from 2016Q1 to 2025Q4. As shown in Table 1, account ownership (AO), the dependent variable, recorded a mean of 60.64 per cent with a median of 60.15 per cent. The variable exhibited steady growth, ranging from a minimum of 38.2 per cent in 2016Q1 to a maximum of 85.3 per cent in 2025Q4. The low standard deviation (15.13) and near-zero skewness

(0.071) indicate moderate variability and a relatively symmetric distribution. The Jarque-Bera test confirms normality for AO ($p = 0.204 > 0.05$).

All independent variables displayed exponential upward trends with high variability, reflecting the rapid digital transformation in Nigeria's financial sector, especially after 2020. USSD transactions had the highest mean volume (451.41 million), followed by POS (275.99 million), Agency Banking (252.63 million), Mobile Money (246.77 million), and Internet Banking (201.19 million). These variables were positively skewed and leptokurtic, with Jarque-Bera tests rejecting normality ($p < 0.05$), which is typical for fast-growing financial time-series data.

Table 1: Descriptive statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.
AO	60.63750	60.15000	85.30000	38.20000	15.12971	0.070953	1.626345	3.178444	0.204084
MMT	246.7650	113.9500	1156.800	12.40000	298.6511	1.569039	4.554686	20.44098	0.000036
USSD	451.4075	250.5000	1842.700	45.20000	478.3156	1.406144	4.039087	14.98112	0.000558
POST	275.9950	144.5000	1177.400	18.50000	306.9994	1.434351	4.126936	15.83239	0.000365
IBT	201.1875	98.85000	907.3000	8.100000	236.4886	1.491471	4.310948	17.69421	0.000144
ABT	252.6325	142.0500	1031.900	22.30000	267.0283	1.406040	4.057414	15.04320	0.000541

Unit root tests: Group unit root tests (Levin-Lin-Chu, Im-Pesaran-Shin, ADF-Fisher, and PP-Fisher) were conducted. While results were mixed at levels with automatic lag selection (1–4), the more flexible specification (0–4) strongly rejected the null hypothesis of unit roots for most tests at the 1 per cent level. The series were predominantly stationary at levels $I(0)$, making the ARDL bounds testing approach appropriate and eliminating concerns of spurious regression.

Short-run dynamics

The preferred model, selected via Akaike Information Criterion (AIC), was ARDL(1,0,1,0,0,2). The model demonstrated an excellent fit with $R\text{-squared} = 0.99998$ and $\text{Adjusted } R\text{-squared} = 0.99997$. The F-statistic (158,409.7, $p=0.0000$) confirms overall significance, and the Durbin-Watson statistic (1.494) indicates no serious serial correlation.

Table 2: Short-run ARDL estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LAO(-1)	0.961398	0.032529	29.55479	0.0000
LMMT	-0.102580	0.046775	-2.193056	0.0368
LUSSD	0.166733	0.053241	3.131688	0.0040

LUSSD(-1)	-0.246041	0.047397	-5.191036	0.0000
LPOST	0.014721	0.070839	0.207806	0.8369
LIBT	0.002185	0.029713	0.073526	0.9419
LABT	-0.119339	0.094089	-1.268361	0.2151
LABT(-1)	0.069611	0.067089	1.037603	0.3083
LABT(-2)	0.237807	0.060333	3.941554	0.0005
Constant	0.116700	0.148426	0.786251	0.4383

Key short-run findings were: USSD transactions exerted the strongest positive immediate effect (0.1667, $p=0.0040$), though partially offset by a negative lagged effect, suggesting rapid but transient impact; mobile money transactions showed a significant negative effect (-0.1026, $p=0.0368$), indicating a substitution effect toward standalone wallets; agency banking had a significant positive effect at the second lag (0.2378, $p=0.0005$), reflecting delayed trust-building and community onboarding; POS and internet banking had positive but statistically insignificant effects in the short run.

Long-run relationship and cointegration

The ARDL bounds test confirmed a stable long-run cointegrating relationship.

Table 3: ARDL bounds cointegration test

Test Statistic	Value	Significance	I(0) Bound	I(1) Bound
F-statistic	130.9937	1 per cent	3.06	4.15

Table 4: Long-run coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LMMT	-2.657383	3.126855	-0.849858	0.4026
LUSSD	-2.054511	1.571325	-1.307502	0.2017
LPOST	0.381346	1.568081	0.243193	0.8096
LIBT	0.056594	0.798509	0.070875	0.9440
LABT	4.872289	5.612244	0.868154	0.3927
Constant	3.023156	1.571743	1.923442	0.0646

In the long run, agency banking recorded the largest positive coefficient (4.8723), highlighting its substantial potential for sustainable inclusion, though statistically insignificant at conventional levels. Mobile money and USSD maintained negative signs, consistent with substitution effects. The error correction term (CointEq(-1)) was negative and highly significant (-0.0386, $p=0.0000$), confirming convergence to long-run equilibrium at a slow speed of 3.86 per cent per quarter (approximately 6.5 years for full adjustment). Wald tests rejected the null hypotheses for Mobile Money ($p=0.0368$), USSD ($p=0.0415$), and Agency Banking ($p=0.0319$), but failed to reject for POS and internet banking.

Discussions

The empirical results reveal differential impacts across digital banking channels, validating the integrated theoretical framework. The strong short-run positive effect of USSD aligns with TAM and UTAUT, where low complexity and high perceived ease of use drive rapid adoption among feature-phone and rural users. The substitution effect of mobile money supports DOI theory, as these platforms are highly compatible with existing informal practices (*ajo/esusu*) but may delay transition to formal accounts (Anama & Evbayiro-Osagie, 2024). Agency banking's delayed positive impact reinforces financial intermediation theory, as agent networks gradually reduce information asymmetries and build trust in underserved areas (David-West et al., 2022). The insignificant effects of POS and internet banking suggest these channels primarily serve already-banked, urban segments rather than onboarding the unbanked.

The slow speed of adjustment (3.86 per cent per quarter) underscores persistent structural barriers, infrastructure deficits, low literacy, gender/regional disparities, and trust issues, explaining why impressive transaction growth has not fully translated into deep financial inclusion. These findings are consistent with recent literature (Yahaya, 2026; Bamanga et al., 2025) but provide greater granularity through channel-specific and dynamic analysis.

5.0 Conclusion and recommendations

This study demonstrates that digital banking platforms significantly influence financial inclusion in Nigeria, though with varying effectiveness across channels. USSD drives short-term gains, while agency banking offers superior long-run potential. The substitution tendencies of mobile money and the slow speed of adjustment highlight the limitations of technology-centric approaches alone. The integrated theoretical framework is validated, and the findings provide nuanced

evidence for transitioning from access to financial resilience under NFIS 4.0. thus, the following recommendations are proposed:

1. Enhance interoperability: Regulators and operators should facilitate seamless linkages between mobile money wallets and formal bank accounts, with incentives for savings and credit uptake.
2. Strengthen USSD: Maintain affordability, expand voice-guided and multilingual features, and deepen integration with banking products for low-literacy users.
3. Scale agency banking: Invest in agent liquidity, training, and rural/northern expansion with performance metrics tied to new account openings.
4. Optimize POS and internet banking: Tie deployments to account onboarding campaigns and develop hybrid low-data models.
5. Holistic policy support: Accelerate digital infrastructure rollout, nationwide financial/digital literacy programs, gender-sensitive designs, robust cybersecurity measures, and consumer protection frameworks.

REFERENCES

- Adanigbo, O. S., Soladoye, A. A., Olagunju, K. M., Asaolu, O. O., & Ajagbe, G. O. (2025). Examining challenges to adopting digital payments in Nigeria and the UK using the unified theory of acceptance and use of technology. *Journal of Scientific and Technological Research*, 7(1), 1401–1414. <https://journals.nipes.org/index.php/jstrissue/article/view/2288>
- Akenzua, P. O. U. (2025). The impact of digital banking on financial inclusion in Sub-Saharan Africa: A systematic review of existing literature and reports. *International Journal of Intellectual Discourse*, 8(1), 148–170. <https://ijidjournal.org/index.php/ijid/article/view/853>
- Anama, A. A., & Evbayiro-Osagie, E. I. (2024). The effect of FinTech on financial inclusion in Nigeria. *African Journal of Accounting and Financial Research*, 3(1), 21–36. <https://abjournals.org/ajaftr/papers/volume-3/issue-1/the-effect-of-fintech-on-financial-inclusion-in-nigeria/>
- Bamanga, F. M., Joshua, S. S., Abubakar, G. T., & Usman, S. G. (2025). Impact of Fintech adoption on financial inclusion in Nigeria. *International Journal of Business and Management Review*, 13(7), 67–77. <https://doi.org/10.37745/ijbmr.2013/vol13n76777>

- David-West, O., Oni, O., & Ashiru, F. (2022). Diffusion of innovations: Mobile money utility and financial inclusion in Nigeria. Insights from agents and unbanked poor end users. *Information Systems Frontiers*. <https://doi.org/10.1007/s10796-021-10196-8>
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>
- Edo, O. C., Tenebe, T. C., Etuk, A. E., & Ochei, L. C. (2023). Fintech adoption dynamics in a pandemic. *Cogent Business & Management*, 10(3), Article 2242985. <https://doi.org/10.1080/23311975.2023.2242985>
- Enhancing Financial Innovation & Access (EFInA). (2023). *Access to financial services in Nigeria (A2F) survey 2023*. <https://www.efina.org.ng/wp-content/uploads/2024/06/EFInA-A2F-2023-Key-Findings.pdf>
- Gurley, J. G., & Shaw, E. S. (1960). *Money in a theory of finance*. Brookings Institution.
- Inegbiedion, H. (2018). Influence of perceived ease of use on internet banking attitudes in Nigeria. *Journal of Internet Banking and Commerce*, 23(1), 1–12. <https://www.arraydev.com/commerce/jibc/2018-04/Inegbiedion.pdf>
- Iwedi, M. (2023). Digital banking technology and financial inclusion in Nigeria. *DS Journal of Digital Science and Technology*, 2(3), 9–16. <https://doi.org/10.59232/DST-V2I3P102>
- Lashitew, A. A., van Tulder, R., & Liasse, Y. (2019). Mobile phones for financial inclusion: What explains the diffusion of mobile money innovations? *Research Policy*, 48(5), 1201–1215. <https://doi.org/10.1016/j.respol.2019.01.010>
- Levine, R. (2005). Finance and growth: Theory and evidence. In P. Aghion & S. Durlauf (Eds.), *Handbook of economic growth* (Vol. 1A, pp. 865–934). Elsevier. [https://doi.org/10.1016/S1574-0684\(05\)01012-9](https://doi.org/10.1016/S1574-0684(05)01012-9)
- Ogunleye, O. O., Afolabi, O. O., & Ogunleye, O. A. (2020). Technology acceptance model and financial inclusion: Evidence from mobile money users in Nigeria. *Journal of Financial Services Marketing*, 25(3–4), 97–110. <https://doi.org/10.1057/s41264-020-00085-5>
- Ojiaku, O. C., Nwankwo, C. A., & Eze, E. C. (2024). Integrating TTF and UTAUT models to illuminate factors that influence fintech adoption. *International Journal of Technology Marketing*, 18(4), 456–478. <https://doi.org/10.1504/IJTMKT.2024.10067890>
- Ozili, P. K. (2025). Financial inclusion in banking: A literature review and future research directions. *Modern Finance*, 3(1), 1–28. <https://doi.org/10.62019/mf.v3i1.45>
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.

- Salami, O. (2025). FinTech services and financial inclusion in Nigeria. *Global Research Journal of Business Management*, 6(1), 45–68. <https://doi.org/10.5281/zenodo.1456789>
- Siano, A., Raimi, L., Ogunleye, O., & Idowu, A. (2020). Mobile banking: An innovative solution for increasing financial inclusion in Sub-Saharan African countries: Evidence from Nigeria. *Sustainability*, 12(23), Article 10130. <https://doi.org/10.3390/su122310130>
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478. <https://doi.org/10.2307/30036540>
- World Bank. (2025). The Global Findex Database 2025: Connectivity and financial inclusion in the digital economy. <https://www.worldbank.org/en/publication/globalfindex>
- Yahaya, O. A. (2026). Digital financial services and financial inclusion in Nigeria. *Journal of Finance and Economic Sciences*, 20(2), 198–226.