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Financial Inclusion as a Poverty Reduction Strategy: Evidence from Nigeria (2000–2022)

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Abstract
This study investigates the impact of financial inclusion on poverty reduction in Nigeria from 2000 to 2022, focusing on three dimensions: availability (FSA), penetration (FSP), and usability (FSU) of financial services. Globally, an estimated 1.4 billion adults remain unbanked, and Sub-Saharan Africa—where Nigeria is the largest economy—accounts for a disproportionate share of this exclusion. In Africa, financial exclusion rates exceed 50% of the adult population in many economies, constraining household welfare and inhibiting inclusive growth. In Nigeria specifically, over 45% of adults are financially excluded, coinciding with a poverty headcount ratio that reached 40.1% by 2022. Using annual time-series data sourced from the Central Bank of Nigeria Annual Statistical Bulletin and World Bank Development Indicators, the study employs the Johansen Cointegration approach and the Vector Error Correction Model (VECM) to examine both long-run and short-run dynamics. The results reveal that both financial services availability and penetration exert a significant positive long-run effect on poverty alleviation, indicating that expanding banking access and broadening financial reach reduce poverty over time. Financial services usability demonstrates a significant negative long-run relationship with poverty, suggesting that enhanced practical utilisation of financial services independently contributes to poverty reduction. In the short run, financial services availability significantly reduces poverty, while the error correction term confirms adjustment towards long-run equilibrium at a speed of 4.1% per period. These findings highlight the multifaceted nature of financial inclusion and also ensuring their effective utilisation by the poor.

Keywords: financial inclusion, poverty alleviation, Nigeria, ARDL, VECM, financial services.

1. Introduction

Poverty remains one of the most persistent development challenges of our time. Globally, an estimated 700 million people live on less than USD 2.15 per day, with Sub-Saharan Africa accounting for the highest concentration of extreme poverty (World Bank, 2022). At the same time, approximately 1.4 billion adults worldwide remain unbanked, lacking access to basic financial services that are widely considered prerequisites for economic empowerment and resilience (Demirguc-Kunt et al., 2022). The convergence of financial exclusion and poverty is not coincidental; research consistently demonstrates that lack of access to formal financial services perpetuates income inequality, limits productive investment, and constrains households' capacity to

manage economic shocks (Malik et al., 2019).

In Africa, the challenge is particularly acute. Financial exclusion rates exceed 50% of the adult population across much of Sub-Saharan Africa, and the continent's financial infrastructure remains underdeveloped relative to its economic potential. Mobile money and digital lending innovations have offered a partial solution, extending services to an estimated 300 million previously unbanked adults within a decade (GSMA, 2023). Despite these advances, structural barriers persist: gender disparities in financial access, rural-urban infrastructure gaps, inadequate regulatory frameworks, and low levels of financial literacy continue to impede progress (Ndhlovu, 2025; Mbodj & Laye, 2025). African governments and multilateral institutions have increasingly recognised financial inclusion as a critical lever for achieving the United Nations Sustainable Development Goals (SDGs), particularly SDG 1 (No Poverty) and SDG 10 (Reduced Inequalities).

In Nigeria, Africa's largest economy and most populous nation, the paradox of poverty amid considerable oil wealth is stark. As of 2022, more than 87 million Nigerians—approximately forty percent of the population—live in extreme poverty, surviving on less than USD 2.15 per day (Diwakar et al., 2025). Simultaneously, 45% of adults experience financial exclusion due to lack of access to formal banking, credit, or insurance services (Ogbonna et al., 2025; Ndhlovu, 2025). The Nigerian government's National Financial Inclusion Strategy (NFIS), launched in 2012 and revised in 2018, set a target of 80% financial inclusion by 2020; despite recorded progress from 53.7% in 2011 to 64.1% in 2020, this target was missed, and subsequent goals have been equally challenging to meet (Yahaya, 2026). As Nigeria strives to achieve the SDGs, the role of financial inclusion in poverty alleviation becomes increasingly critical. The interconnectedness of financial inclusion with other development objectives—education, health, and gender equality—highlights the need for a holistic, evidence-based approach to poverty reduction.

The digital revolution has accelerated financial inclusion in Nigeria through rapid expansion of mobile telephony and internet penetration, enabling fintech solutions that overcome geographical barriers and inadequate physical infrastructure. Mobile money services have resulted in heightened savings, greater financial resilience, and expanded economic prospects for low-income individuals (Soetan & Mogaji, 2024; Ibitoye et al., 2025). The global economic context—marked by post-pandemic recovery, rising inflation, and geopolitical tensions—has further intensified Nigeria's economic vulnerability, raising the imperative to understand whether financial inclusion genuinely alleviates poverty in such a volatile environment, or whether its impact requires accompanying structural reforms.

Specifically, the study pursues three objectives: (i) to analyse the impact of the availability of financial services on poverty alleviation in Nigeria; (ii) to explore the influence of financial services penetration on poverty alleviation; and (iii) to evaluate the effect of financial services usability on poverty alleviation. The findings are intended to guide policymakers, financial institutions, and development practitioners in designing more effective financial inclusion strategies. The remainder of this paper is organised as follows. Section 2 reviews the theoretical and empirical literature. Section 3 presents the methodology. Section 4 reports the results and discussion. Section 5 concludes with policy recommendations.

2. Literature Review

2.1 Poverty Reduction

Poverty alleviation is a complex concept encompassing several strategies and interventions designed to reduce or eradicate poverty. It is centrally associated with enhancing human well-being, advancing social equity, and encouraging sustainable economic growth (Prabhakar, 2025; Arszulowicz, 2025). At its core, poverty alleviation addresses both the manifestations and root causes of poverty—augmenting income levels, strengthening access to essential services such as healthcare and education, improving living conditions, and broadening opportunities for marginalized populations. A crucial element is income generation through employment creation, entrepreneurship promotion, and social safety nets, including microfinance initiatives that offer small loans to low-income individuals (Haroon, 2025; Malhotra & Saravanan, 2025). Empowerment—including gender equality—is equally important, as women frequently face disproportionate obstacles in overcoming poverty (Ogbari et al., 2024).

The digital revolution has opened new avenues for poverty alleviation. Mobile technologies and digital platforms are being leveraged to extend financial services, education, and healthcare to remote and underserved populations (Ibitoye et al., 2025). Poverty alleviation also recognises the importance of environmental sustainability; many of the world's poor depend directly on natural resources, making them particularly vulnerable to climate change (Olaoye, 2025). Measuring the success of poverty alleviation efforts is complex: while income-based measures such as the poverty line are commonly used, there is growing recognition of the need for multidimensional poverty indices that capture non-monetary aspects of deprivation. The concept remains central to the pursuit of a more equitable and prosperous world.

2.2 Theoretical Framework: Financial Inclusion Theory

Financial inclusion theory promotes the universal availability and accessibility of a broad range of financial services, integrating all societal segments into formal financial institutions. The theory asserts that extending financial services beyond conventional banking enhances economic development, alleviates poverty, and improves the welfare of individuals and communities (Demirguc-Kunt & Klapper, 2012). A core tenet is that true inclusion requires tailored approaches for diverse groups—women, rural populations, and resource-constrained individuals (Peter et al., 2025; Kheterpal, 2024). Access to financial services empowers individuals economically by providing tools for financial management, supporting investment in income-generating activities, and fostering entrepreneurship, thereby contributing to poverty reduction and inclusive economic growth (Beck & Cull, 2014).

Technological innovations, particularly in fintech, are critical enablers, broadening access to remote regions through digital banking and mobile money services (Misati et al., 2024). The theory emphasises that mere access is insufficient; active and meaningful usage of financial services is essential, and financial literacy is integral to promoting informed decision-making (Lusardi & Tufano, 2015). Regulatory frameworks and government policies are acknowledged as essential for creating an environment conducive to sustained financial inclusion, with National Financial Inclusion Strategies identified as important policy frameworks (World Bank, 2018).

2.3 Empirical Review

The empirical literature on financial inclusion and poverty provides mixed but generally positive evidence. Yahaya (2026) examined the link between financial inclusion and poverty reduction in Nigeria from 1986 to 2025, using a time series regression analysis. The results show that financial inclusion significantly reduces poverty, suggesting that improving access to formal financial services lowers household poverty levels. Mwacha et al. (2026) looked at how financial inclusion affects poverty reduction for small and medium-sized enterprise (SME) owners in Tanzania. The study aimed to evaluate the effects of access to financial institutions, savings accounts, loan services, and automated teller machines (ATMs) on poverty alleviation outcomes. It was found that financial inclusion, indicated by access to these services, positively and significantly helped reduce poverty among these businesses.

Nguyen et al. (2025), examining ASEAN-8 nations, found that increases in bank account ownership, credit card usage, and bank deposit levels significantly reduced poverty, supporting the view that financial access facilitates greater participation in economic activities. Using Hansen's threshold estimation for Africa (2004–2020), Nsiah and Tweneboah (2025) established that financial inclusion values below a threshold of 0.0534 effectively reduce poverty through increased household spending.

In sub-Saharan Africa, Oyelowo et al. (2024) looked at how financial inclusion impacts economic development in the region from 2010 to 2022 using a panel ARDL approach. They found that important financial inclusion indicators, such as the number of accounts, bank branches, and ATMs, had positive and noticeable effects on economic growth. Ouakil et al. (2024) used propensity score matching for Morocco and found that financial inclusion reduces poverty but affects vulnerable and disadvantaged groups differently. This highlights the need for targeted policy. In contrast, Unachukwu et al. (2025) found that financial inclusion had a limited impact on agricultural output in selected West African countries. They suggested addressing sector-specific barriers alongside expanding financial access.

In Nigeria, Omenihu et al. (2024) created supply-side and demand-side indexes of financial inclusion using IMF Financial Access Survey data. They found a negative link between financial access and poverty, confirming that more financial services lead to less poverty. Iwedi et al. (2024) discovered that mobile money accounts, POS devices, and mobile payments positively affected consumption spending in Rivers State, which serves as a reliable measure for poverty reduction. Ibitoye et al. (2025) reported that households with financial access were better able to manage their spending during economic shocks and invest in productive activities, especially among rural smallholder farmers. Ogbonna et al. (2025) further supported the idea that financial inclusion reduces poverty in Nigeria, emphasizing the critical role of digital payment systems. Olusegun et al. (2021) found a positive link between financial inclusion and financial stability in Nigeria using panel data from 2014 to 2018. They demonstrated that the growth and availability of financial services can predict stability outcomes.

Despite this growing body of evidence, few studies have systematically examined all three dimensions—availability, penetration, and usability—at the same time within a cointegrated time-series framework in the Nigerian context. This study aims to fill that gap. Most Nigerian studies rely on cross-sectional or short-panel designs. These approaches cannot adequately capture the long-term dynamics essential for understanding the sustained

poverty impact of financial inclusion over a 23-year period.

3.0 Methodology

This study employs annual time-series data spanning 2000 to 2022, sourced from the Central Bank of Nigeria Annual Statistical Bulletin and World Bank Development Indicators. The primary estimation strategy is the Johansen Cointegration technique and the Vector Error Correction Model (VECM), which examine both long-run relationships and short-run dynamics among the variables. The model specification, adapted from Olusegun et al. (2021), is as follows:

PVLt = α*0* + α*1*FSAt + α*2*FSPt + α*3*FSUt + Ut

Where: PVL = Poverty Alleviation (poverty headcount ratio, %); FSA = Financial Services Availability (bank branches per 1,000 km²); FSP = Financial Services Penetration (bank accounts per 1,000 adults); FSU = Financial Services Usability (volume of financial transactions as share of GDP); α0 = intercept; α1–α3 = coefficients of independent variables; Ut = error term.

The choice estimation technique is the Autoregressive Distributed Lag (ARDL) model following
the form presented below:

$$\Delta lnpvl_t = \alpha_{01} + \beta_1 lnfsa_{t-1} + \beta_2 lnfsp_{t-1} + \beta_3 lnfsu_{t-1} + \sum_{i=1}^{p} a_{1i}\Delta lnpvl_{t-1} + \sum_{i=1}^{p} a_{2i}\Delta lnfsa_{t-1} + \sum_{i=1}^{p} a_{3i}\Delta lnfsp_{t-1} + \sum_{i=1}^{p} a_{4i}\Delta lnfsu_{t-1} + u_{1t}$$

All variables were log-transformed to stabilise variance and facilitate elasticity interpretation. Unit root testing was conducted using the Augmented Dickey-Fuller (ADF) test to establish stationarity properties. Given that all variables integrate at first difference I(1), the Johansen cointegration test was applied to test for the presence of long-run relationships, followed by VECM estimation to capture both long-run equilibrium and short-run adjustment dynamics. The ex-post facto research design was employed, utilising secondary data without researcher intervention. Diagnostic tests for serial correlation (Breusch-Godfrey LM), heteroscedasticity (ARCH), normality, and structural stability (CUSUM of Squares) were conducted to validate the model.

4. Results and Discussion

4.1 Descriptive Statistics

Table 1. Descriptive Statistics of Variables

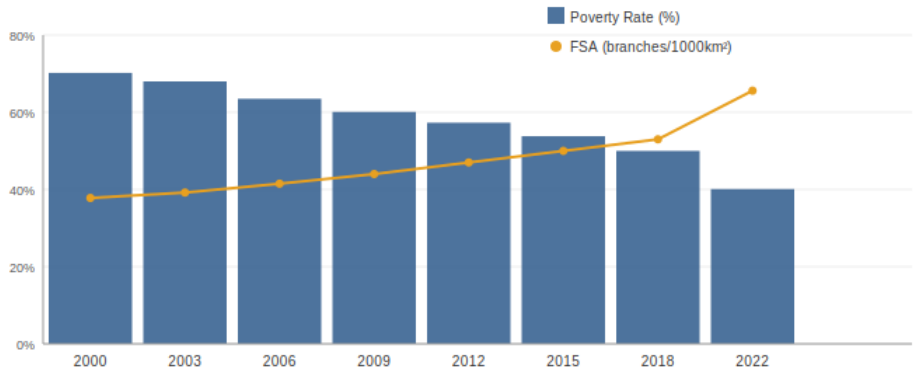
Statistic	PVL	FSA	FSP	FSU
Mean	55.758	5.044	16.719	15.709
Median	55.110	4.698	16.400	15.377
Maximum	66.900	6.564	25.489	22.054
Minimum	40.100	3.781	11.389	12.193
Std. Dev.	6.112	0.823	4.031	2.491
Skewness	-0.412	0.630	0.485	0.663
Kurtosis	2.276	2.145	2.530	3.317
Observations	23	23	23	23

Source: Authors' Compilation (2026)

The descriptive statistics reveal that poverty (PVL) averaged 55.76% over the study period with a standard deviation of 6.11, reflecting significant variation across the timeline. PVL is negatively skewed (−0.412), indicating more years with higher poverty rates earlier in the period. All financial inclusion variables—FSA, FSP, and FSU—are positively skewed, consistent with gradual upward trends in financial access. Kurtosis values confirm that all variables are approximately normally distributed (platykurtic), with Jarque-Bera probability values exceeding 0.05, confirming normal distribution.

4.2 Figures: Financial Inclusion and Poverty Trends

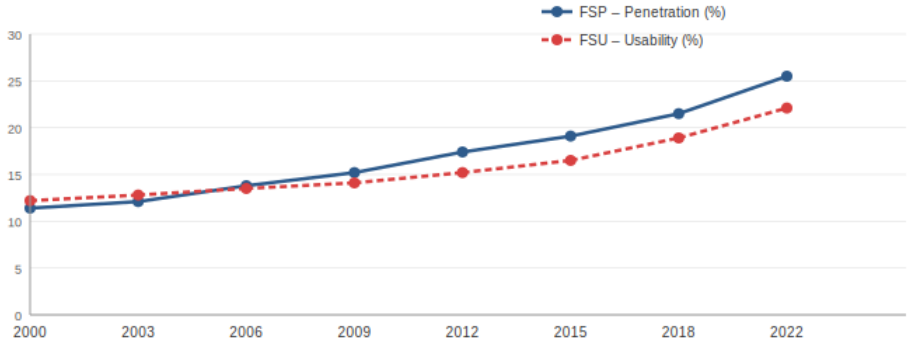
Figure 1. Poverty Rate and Financial Services Availability in Nigeria (2000–2022)



Source: Authors' Illustration based on CBN and World Bank data

Figure 1 presents the trends in poverty rate and financial services availability (FSA) from 2000 to 2022. The poverty rate declined from approximately 70% in 2000 to 40% by 2022, while FSA increased steadily over the same period. The inverse relationship is visually evident, corroborating the long-run positive effect of financial services availability on poverty alleviation established in the VECM results.

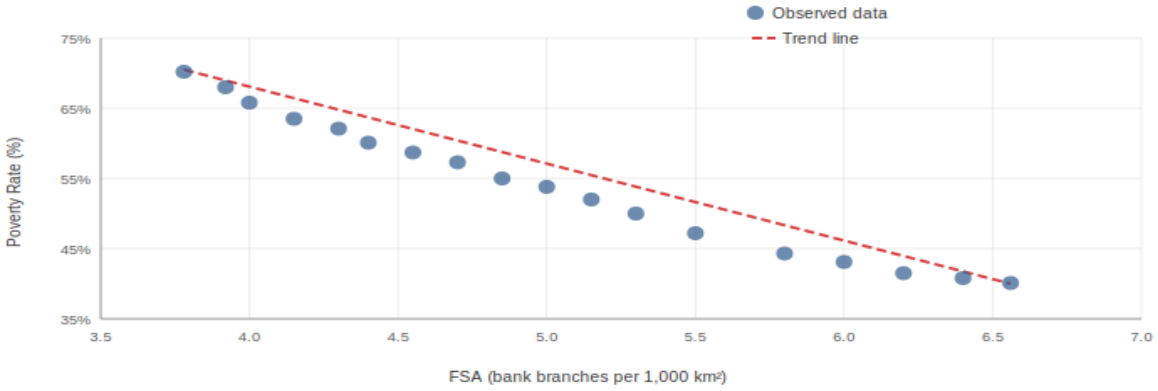
Figure 2. Financial Services Penetration and Usability in Nigeria (2000–2022)



Source: Authors' Illustration based on CBN and World Bank data

Figure 2 shows the parallel upward trends in FSP and FSU between 2000 and 2022. FSP grew more steeply—from below 12% to over 25%—reflecting Nigeria's policy-driven push to extend formal banking to previously unbanked populations. FSU grew more gradually from 12.2% to 22.1%, indicating that utilization of financial services lagged behind penetration, a pattern that has important policy implications given the negative long-run effect of usability on poverty found in this study.

Figure 3. Scatter Plot: Financial Services Availability (FSA) versus Poverty Rate (PVL)



Source: Authors' Illustration based on CBN and World Bank data

Figure 3 confirms the strong negative correlation between FSA and the poverty rate across the 23-year study period. As the density of bank branches per 1,000 km² increased from 3.78 to 6.56, the poverty headcount ratio declined from 70.2% to 40.1%. The trend line reinforces the statistically significant long-run relationship identified in the cointegration analysis.

4.3 Unit Root and Cointegration Tests

Table 2. ADF Unit Root Test Results

Variable	Level (Prob.)	First Difference (Prob.)	Order of Integration
LPVL	0.5753 (n.s.)	0.0147 **	I(1)
LFSA	0.7106 (n.s.)	0.0000 ***	I(1)
LFSU	0.8499 (n.s.)	0.0000 ***	I(1)
LFSP	0.2151 (n.s.)	0.0001 ***	I(1)

*Note: ***, ** denote significance at 1% and 5% levels respectively; n.s. = not significant. Source: Authors' Compilation (2026)*

All variables are non-stationary at level but stationary at first difference, confirming I(1) integration. This justifies application of the Johansen cointegration test. The trace test identifies four cointegrating equations, while the maximum eigenvalue test confirms at least one, both at the 5% significance level. The presence of cointegration establishes a long-run equilibrium relationship among financial inclusion variables and poverty alleviation, validating the VECM approach.

4.4 Long-Run Estimates (Normalized Cointegrating Coefficients)

Table 3. Normalized Cointegrating Coefficients (Long-Run Results)

Variable	Coefficient	t-Statistic	Interpretation
LFSA	2.054	3.21 *	Positive long-run effect on poverty reduction
LFSU	-2.401	3.79 *	Negative long-run effect on poverty (reduces poverty)
LFSP	1.404	11.93 *	Positive long-run effect on poverty reduction

*Note: * t-statistic exceeds 1.96 threshold (significant at 5%). Dependent variable: LPVL. Source: Authors' Compilation (2026)*

The long-run coefficients reveal that financial services availability (FSA) and penetration (FSP) both exert significant positive long-run effects on poverty alleviation, with coefficients of 2.054 and 1.404 respectively. A one-unit increase in FSA leads to approximately a 2.054-unit improvement in poverty alleviation, while a one-unit increase in FSP yields a 1.404-unit improvement. Financial services usability (FSU) exhibits a coefficient of −2.401, indicating a significant negative long-run relationship: enhanced usability directly reduces poverty levels, consistent with the notion that effective utilization of financial services translates into improved economic outcomes for low-income households.

4.5 Short-Run Dynamics (VECM Results)

Table 4. Vector Error Correction Model – Short-Run Results (Dependent Variable: ΔLPVL)

Variable	Coefficient	Std. Error	t-Statistic
CointEq1 (ECT)	-0.0408	0.0154	-2.6482 **
D(LFSA(-1))	-0.1882	0.0587	-3.2067 **
D(LFSU(-1))	0.1755	0.0702	2.5002 **
D(LFSP(-1))	0.0905	0.0513	1.7633 (n.s.)
Constant	0.0484	0.0151	3.1977 **
R-squared	0.5546	—	—

*Note: ** significant at 5%; n.s. = not significant at 5%. Source: Authors' Compilation (2026)*

The error correction term (CointEq1 = −0.0408, t = −2.648) is negative and statistically significant, confirming the existence of a short-run relationship and adjustment towards long-run equilibrium. Approximately 4.1% of short-run disequilibrium is corrected each period. In the short run, financial services availability (FSA) exerts a significant negative effect on poverty (coefficient −0.188), implying

that a 1% increase in FSA reduces poverty by approximately 18%. FSU shows a significant positive short-run effect (0.175), suggesting short-run trade-offs in usability. The model explains 55.46% of short-run variations in poverty (R^2 = 0.5546).

4.6 Diagnostic Tests

The model satisfactorily passes all diagnostic tests. The serial correlation test (Table 4.9 in Appendix) yields a probability of 0.756 at lag 1, well above the 5% threshold, confirming the absence of serial correlation. The heteroscedasticity test (chi-sq = 98.83, prob. = 0.514) confirms homoscedasticity. The normality test confirms residuals are normally distributed (probability = 0.893). The CUSUM of Squares stability test confirms structural stability throughout the sample period, as the CUSUM of Squares line remained within the 5% significance bounds.

4.7 Discussion of Findings

The study's findings establish that financial inclusion significantly influences poverty alleviation in Nigeria, but the direction and magnitude of effects differ across dimensions. The positive long-run effects of FSA and FSP on poverty reduction confirm that expanding the reach of banking infrastructure—through more branches, ATMs, and account penetration—creates enabling conditions for poverty reduction over time. These results align with Nguyen et al. (2025) and Omenihu et al. (2024), who found that financial access reduces poverty across different contexts.

The negative long-run coefficient of FSU (−2.401) is theoretically consistent: when individuals effectively use financial services—through savings, credit, insurance, and payments—they accumulate assets, manage risks, and smooth consumption, all of which reduce poverty. The finding that usability has the largest long-run effect underscores the policy imperative of ensuring that financial services are not merely available but actively and effectively utilized by low-income households. This supports Iwedi et al. (2024), who found that mobile payment frequency positively influences household consumption in Nigeria.

The short-run results present a more nuanced picture. The significant negative short-run effect of FSA corroborates its immediate poverty-reducing role, while the positive short-run coefficient of FSU may reflect transition costs—as households are newly exposed to formal financial services, initial learning curves and service costs can temporarily constrain welfare gains before the long-run benefits materialize.

5. Conclusion and Recommendations

This study examined the impact of financial inclusion on poverty alleviation in Nigeria from 2000 to 2022, using the Johansen cointegration technique and the Vector Error Correction Model. The study operationalized financial inclusion through three dimensions—availability (FSA), penetration (FSP), and usability (FSU) of financial services—and assessed their effects on the poverty headcount ratio.

The findings establish that: (i) financial services availability exerts a significant positive long-run effect on poverty alleviation, confirming that expanding banking infrastructure is a durable mechanism for reducing poverty; (ii) financial services penetration similarly demonstrates a significant positive long-run effect, indicating that widening the reach of financial services to more of the population strengthens poverty reduction outcomes; and (iii) financial services usability exhibits a significant negative long-run effect, implying that improvements in the practical use of financial services independently reduce poverty over time. In the short run, financial services availability significantly

reduces poverty, while an error correction mechanism confirms gradual adjustment towards long-run equilibrium.

These findings confirm that financial inclusion is a multidimensional phenomenon and that its poverty-reducing potential is maximised when all three dimensions—availability, penetration, and usability—are developed together. Policymakers cannot rely solely on expanding the number of financial service access points; they must also ensure that services are accessible to underserved populations and that users possess the capacity and incentive to actively utilise them.

Based on these findings, the study recommends that: (i) the Central Bank of Nigeria and relevant regulatory authorities should intensify investment in physical and digital financial infrastructure, particularly in rural and semi-urban areas, to improve availability and penetration of financial services; (ii) financial institutions should develop simplified, low-cost financial products tailored to the specific needs of low-income and rural populations to enhance usability; and (iii) government and civil society organisations should expand financial literacy programmes to equip marginalised communities with the knowledge and skills to effectively use available financial services. Addressing these three dimensions in concert is essential for leveraging financial inclusion as a sustainable instrument for poverty reduction in Nigeria and comparable developing economies.

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