ACADEMIC SCIENCE PRESS

INTERNATIONAL JOURNAL OF ECONOMIC RESEARCH AND EXACT SCIENCES
ISSN: 3143-7052

Impact of Digital Financial Inclusion on Poverty Reduction and Economic Empowerment in Nigeria

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ARTICLE INFO

Keywords:
Digital financial inclusion,
digital payment penetration,
mobile money usage,
digital banking adoption,
poverty reduction,
Nigeria.

Vol. 01, **No**.05, 2026

https://doi.org/10.5281/zenodo.23728783

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ABSTRACT

The study examined the effects of digital financial inclusion on poverty alleviation and economic empowerment in Nigeria. Specifically, it assessed whether digital payment penetration, mobile money use, access to digital financial services, and digital banking adoption help reduce poverty. The study employed an ex post facto research design, a quantitative approach, and secondary time-series data. Within an Autoregressive Distributed Lag (ARDL) framework, it conducted unit root tests, ARDL bounds cointegration testing, an Error Correction Model (ECM), and diagnostic tests. The results reveal a long-term relationship between digital financial inclusion and poverty alleviation. Digital payment penetration and digital banking adoption have positive and statistically significant effects on poverty alleviation, while mobile money use and access to digital financial services have positive but statistically insignificant effects. The findings suggest that digital financial inclusion can promote poverty alleviation when supported by effective digital infrastructure and financial capability. The study recommends greater investment in digital payment systems and digital banking platforms, improved technological literacy, and policies that expand affordable access to digital financial services to strengthen economic empowerment and achieve sustainable poverty reduction in Nigeria.

Introduction

Financial inclusion is widely recognised as an important strategy for improving household welfare, reducing vulnerability, and expanding economic opportunities, particularly for low-income people. Digital technologies have transformed how financial services are delivered, allowing individuals and businesses to access payment, savings, credit, and insurance products through mobile phones and digital platforms. According to the World Bank (Demirgüç-Kunt et al., 2022), digital financial services have significantly increased access to formal financial institutions, especially in developing countries with limited traditional banking infrastructure. Digital financial inclusion therefore links technological progress with inclusive economic development, giving people previously excluded from the formal financial system a point of entry and enabling them to participate more actively in economic life.

Digital financial services have expanded rapidly across Africa, especially through mobile money innovations that have transformed financial transactions and access to economic resources. The widespread adoption of mobile money platforms has allowed millions of Africans to transfer money, receive payments, save, and do business without relying on physical banks. Digital transformation and financial inclusion remain central to Africa's economic development agenda, as they support entrepreneurship, improve market access, and strengthen the resilience of vulnerable groups (African Development Bank, 2022). Mobile money is particularly important in sub-Saharan Africa, where many people remain excluded from conventional financial institutions because of geographic distance, income constraints, and documentation requirements. Research shows that mobile money can improve household economic conditions by lowering transaction costs, strengthening financial security, and helping people manage income and spending more effectively (Suri & Jack, 2016).

Digital financial inclusion is a major policy concern in Nigeria, where persistent poverty, unemployment, and financial exclusion affect large segments of the population. The country has introduced several initiatives to expand financial inclusion and access to formal financial services, including digital banking platforms, electronic payments, agent banking, and mobile-based financial solutions. However, many Nigerians remain outside the formal financial system, restricting their access to productive financial resources and limiting their participation in economic activities (Central Bank of Nigeria, 2022). Digital payment penetration, access to digital financial services, and adoption of digital banking have therefore become key dimensions of financial inclusion, shaping how effectively people can use financial tools for consumption, investment, savings, and entrepreneurship. By addressing barriers related to distance, cost, and inadequate banking infrastructure, digital platforms may help reduce poverty in Nigeria.

The link between digital financial inclusion and poverty alleviation rests on the idea that wider access to financial services can create income opportunities, support business growth, and improve household financial management. Digital payments can streamline transactions, while mobile money offers secure ways to save and transfer funds. Digital financial services and banking can also connect individuals and small businesses with products that help them invest and participate in the economy. However, these benefits reduce poverty only when services are affordable, infrastructure is available, users have digital literacy, and people can use financial services effectively. Empirical studies show that financial inclusion can reduce poverty by widening access to resources and strengthening household economic security (Park & Mercado, 2018; Ozili, 2018).

The study is motivated by the fact that poverty in Nigeria continues to rise despite advances in financial technology and the expansion of digital financial services. Although digital financial inclusion has grown significantly, empirical evidence remains limited on how specific dimensions - digital payment penetration, mobile money usage, access to digital financial services, and digital banking adoption-affect poverty-reduction outcomes in Nigeria. The study therefore examines how these dimensions influence poverty outcomes, providing evidence of digital financial inclusion's contribution to poverty reduction and economic empowerment. Its findings may help policymakers, financial institutions, and development organisations develop strategies to use digital financial innovations to promote inclusive economic growth and reduce poverty.

Despite financial reforms and technological advances, Nigeria continues to face major development challenges in reducing poverty and promoting economic empowerment. The dependent variable, poverty reduction and economic empowerment, is measured by changes in the poverty rate, as reflected in the poverty headcount ratio. The explanatory variable, digital financial inclusion, is measured by digital payment penetration, mobile money use, access to digital financial services, and adoption of digital banking. Financial exclusion remains a major barrier to poverty reduction in Nigeria, preventing low-income households and underserved populations from accessing formal financial services. Limited access to banking, savings, credit, and secure payment systems restricts people’s ability to invest, manage income, and improve their economic circumstances. Despite financial inclusion initiatives, many Nigerians remain outside the formal financial system due to infrastructure limitations, affordability challenges, and geographic barriers (Central Bank of Nigeria, 2022). Digital payments and access to digital financial services can help address this challenge by offering affordable, convenient platforms for transactions, savings, and access to financial products (Demirgüç-Kunt et al., 2022).

Another challenge to poverty alleviation is the limited availability of income-generating opportunities for individuals and small enterprises, contributing to unemployment, low productivity, and economic vulnerability. Many businesses struggle to expand due to limited access to financial resources and effective payment systems. Mobile money can support economic empowerment by enabling individuals and businesses to receive payments, transfer funds, save securely, and participate in wider

economic activity. Similarly, digital banking can improve access to financial services that foster entrepreneurship, investment, and business growth. Weak financial resilience also hinders poverty reduction, as poor households are particularly vulnerable to economic shocks. Digital financial inclusion can strengthen household financial security by providing access to savings and other services that help people cope with financial distress (Ozili, 2018). Unequal access to financial infrastructure in urban and rural areas also restricts economic opportunities for many Nigerians. Digital banking and mobile money can help bridge this gap by extending financial services to populations with limited access to traditional banks. However, challenges related to digital proficiency, internet availability, and affordability must be addressed to maximise the benefits of digital financial inclusion (Park & Mercado, 2018). Therefore, the persistence of poverty despite the growth of digital financial services calls for an empirical study of how digital payment penetration, mobile money use, access to digital financial services, and digital banking adoption affect poverty reduction in Nigeria.

This study explores how digital financial inclusion contributes to poverty reduction and economic empowerment in Nigeria. In particular, it examines the effects of digital payment penetration, mobile money use, access to digital financial services, and digital banking adoption on poverty reduction in the country.

This study is important to policymakers because it provides evidence of how digital financial inclusion can reduce poverty and empower Nigeria's economy. Its findings can help policymakers, government agencies, and financial regulators develop effective policies to accelerate digital payment penetration, expand access to digital financial services, and promote mobile money and digital banking among underserved populations. The study also has practical value, offering financial institutions, digital service providers, businesses, and individuals insights into how digital financial solutions can broaden financial access, strengthen economic participation, support entrepreneurship, and improve household welfare. Academically, it adds to existing knowledge about the relationship between digital financial inclusion and poverty reduction by providing empirical evidence from Nigeria. It also serves as a reference for researchers and students interested in financial inclusion, development economics, and digital transformation. Theoretically, the study deepens understanding of how financial inclusion mechanisms affect poverty outcomes by examining how specific dimensions of digital financial inclusion—digital payments, mobile money usage, access to digital financial services, and digital banking adoption—contribute to economic empowerment. Methodologically, the study applies a quantitative approach using secondary time-series data and the ARDL model to examine the relationship between digital financial inclusion and poverty reduction. It also provides a framework for future research on the short- and long-term effects of financial inclusion variables on development outcomes.

This research examines the relationship between digital financial inclusion, poverty alleviation, and economic empowerment in Nigeria. It assesses how digital financial inclusion affects poverty reduction, measured by the poverty headcount ratio, across four dimensions: digital payment penetration, mobile money use, access to digital financial services, and digital banking adoption. The study focuses on Nigerians—particularly individuals, households, and economic actors affected by access to financial services and poverty. Nigeria was selected for its large population, persistent financial exclusion, and growing adoption of digital financial technologies, making it a suitable setting for assessing whether digital financial inclusion improves economic outcomes. Covering 1990-2025, the study examines trends in poverty, financial sector development, technological advancement, and the growth of digital financial services in Nigeria. This period captures major economic and financial reforms, the expansion of electronic payment systems, the emergence of mobile money services, and recent developments in digital banking.

Literature Review

Conceptual Review

Digital Finance Inclusion

Digital financial inclusion provides people excluded from the formal financial system with affordable services—such as transactions, payments, savings, credit, and insurance—through digital channels. It combines financial inclusion with digital innovation, using mobile phones, electronic platforms, and digital networks to deliver a broad range of services, including payments, savings, credit, and insurance. The independent variable, digital financial inclusion, is measured by digital payment penetration, mobile money usage, access to digital financial services, and digital banking adoption. Demirgüç-Kunt et al. (2022) define financial inclusion as access to and use of formal financial services that help people manage their money, make payments, save, and access financial opportunities. According to Ozili (2018), digital financial inclusion extends conventional financial inclusion by using financial technology to overcome barriers related to cost, distance, and inadequate banking infrastructure. The World Bank also views digital financial services as an important means of expanding access to formal financial institutions, particularly in developing countries where access to traditional banking remains limited (Demirgüç-Kunt et al., 2022). Thus, digital financial inclusion uses technology-enabled financial solutions to increase participation in economic activities, improve access to finance, and reduce poverty among disadvantaged populations.

Digital Payments Penetration

Digital payment penetration measures how widely people, businesses, and organisations use digital payment systems rather than cash for financial transactions. It reflects the availability, reach, and use of technologies such as mobile payments, electronic transfers, point-of-sale systems, and online payment platforms. Digital payment penetration is one indicator of digital financial inclusion. This study examined the impact of digital financial inclusion on poverty reduction in Nigeria. Demirgüç-Kunt et al. (2022) argue that digital payments are a key component of financial inclusion, providing people with a secure and convenient way to access formal financial institutions. Ozili (2018) found that digital payment systems reduce transaction costs, improve efficiency, and create opportunities for individuals and businesses to engage in broader economic activities. Expanding digital payments therefore goes hand in hand with greater financial access, allowing people to earn income, buy goods, transfer money, and participate in markets without relying solely on physical banking services. In developing economies such as Nigeria, wider use of digital payments can help excluded groups join the financial system and improve economic outcomes.

Mobile Money Usage

Mobile money usage involves using mobile phone-based platforms to conduct financial transactions, including sending and receiving money, saving, paying bills, and accessing other financial services without a traditional bank account. It is vital to digital financial inclusion, particularly in developing nations, where a large share of the population remains unbanked. This study uses mobile money usage as a proxy for digital financial inclusion and examines its effect on poverty reduction in Nigeria. Suri and Jack (2016) demonstrated that mobile money platforms can improve household economic well-being by reducing transaction costs, strengthening financial security, and helping people manage their resources more effectively. Likewise, Demirgüç-Kunt et al. (2022) argue that digital financial services delivered through mobile platforms have expanded access for people previously excluded from formal financial institutions. Mobile money helps people access financial services, participate more fully in the economy, and manage their income and financial risks more effectively.

Digital Financial Services Access

Digital financial services access refers to individuals' and businesses' ability to access and use financial products offered through digital channels. These include e-payments, digital savings, digital credit, and other technology-enabled financial solutions. It is not simply about living; it is about accessing and using financial services through digital channels. In Nigeria, digital financial inclusion is measured by access to digital financial services and their contribution to poverty reduction. Access to financial services enables people to save safely, receive payments, invest, and manage financial shocks, thereby improving economic well-being (Demirgüç-Kunt et al., 2022). OZILI (2018) noted that digital financial services improve financial access by removing barriers related to distance, cost, and the availability of physical banking facilities. Access to digital financial services therefore determines individuals' ability to use financial tools effectively to support income generation, entrepreneurship, and household financial stability.

Digital Banking Adoption

Digital banking adoption refers to the acceptance and use of technology-based services, including internet banking, mobile banking apps, electronic transfers, and other digital platforms. It represents a shift from traditional banking to the technology-driven delivery of financial services. This study examined the effect of digital banking adoption, used as a proxy for digital financial inclusion, on poverty reduction in Nigeria. Ozili (2018) states that digital banking promotes financial inclusion by making banking services more accessible without requiring customers to visit branches. Digital platforms have expanded individuals' and firms' access to formal financial institutions by facilitating payments and savings and improving access to financial products (Demirgüç-Kunt et al., 2022). In this way, digital banking can support economic empowerment by expanding access to financial resources, streamlining business operations, and increasing participation in the formal economy.

Reduce poverty

Poverty reduction refers to lowering the number of people or households living below a minimum acceptable level of income or welfare by expanding economic opportunities, access to resources, and improving living conditions. This study treated poverty reduction and economic empowerment as independent variables, and the poverty headcount ratio (reduction by poverty rate) as the dependent variable. According to the World Bank, "poverty reduction is the effort to improve the welfare of the poor through income opportunities, access to vital services, and reducing vulnerability." Park and Mercado (2018) argue that financial inclusion helps reduce poverty by giving people access to resources that support participation in productive economic activities. Thus, poverty reduction involves more than increasing income; it also means expanding access to financial opportunities so households can manage resources, invest, and achieve greater economic security.

Ratio of Population in Poverty

The poverty headcount ratio is the share of a population living below a specified poverty line and is a widely used indicator of poverty in an economy. It measures how many people's income or consumption falls short of a given benchmark. In this study, we use the ratio to assess poverty reduction. The World Bank defines it as a measure of poverty incidence: the percentage of the population whose income or consumption falls below a specified poverty line. Park and Mercado (2018) found that poverty rates tend to be lower when people have greater access to economic resources, including financial services, which enable households to earn additional income and better manage financial hardship. Therefore, changes in the poverty headcount ratio are an important indicator of the contribution of digital financial inclusion to poverty reduction.

Theoretical Review

Financial Inclusion Theory (Beck, Demirgüç-Kunt, & Levine, 2007): Thorsten Beck, Asli Demirgüç-Kunt, and Ross Levine developed Financial Inclusion Theory in 2007. The theory proposes

that access to affordable and appropriate financial services enables individuals and businesses—particularly those excluded from formal financial systems—to participate in economic activity, build assets, invest, and improve their welfare. It holds that financial exclusion restricts economic opportunities, while broader access to financial services promotes economic growth and reduces poverty. Proponents argue that financial inclusion supports economic participation by removing barriers to saving, borrowing, making payments, and investing. Demirgüç-Kunt et al. (2022) similarly argue that access to formal and digital financial services helps people save, make payments, manage financial risks, and participate in economic activities. Park and Mercado (2018) likewise argue that financial inclusion can reduce poverty by improving access to resources and income equality, particularly in developing countries. However, critics argue that access to financial services does not necessarily alleviate poverty. Financial literacy, income opportunities, infrastructure, and institutional quality also determine whether people can benefit from financial inclusion. Ozili (2018) notes that although digital financial services can expand access, their impact depends on affordability, users' abilities, the regulatory environment, and the efficiency of traditional financial systems. This theory is relevant to the present study, which examines how digital financial inclusion affects poverty alleviation and economic empowerment in Nigeria. The study measures digital financial inclusion through digital payments, mobile money, digital financial services, and digital banking. The theory provides a basis for understanding how expanded access to digital financial services can reduce financial exclusion and create economic opportunities that support poverty reduction.

Technology Acceptance Model (TAM) (Davis, 1989): Fred Davis developed the Technology Acceptance Model (TAM) in 1989. The model proposes that an individual's adoption and use of technological systems are strongly shaped by perceived ease of use and perceived usefulness. Its central premise is that the existence of a technological innovation does not guarantee its use: people adopt technology when they recognise its value and find it easy to use. Supporters of TAM argue that people's perceptions of technology are crucial to whether they embrace digital technologies. Davis (1989) found that perceived ease of use and perceived usefulness are important predictors of behavioural intention and actual technology use. Venkatesh et al. (2003) extended this argument through the Unified Theory of Acceptance and Use of Technology, which states that adoption behaviour is influenced by performance expectations, social influence, and facilitating conditions. However, critics argue that TAM focuses too heavily on individual perceptions and not enough on external factors such as social conditions, economic constraints, cultural differences, and technological infrastructure. Bagozzi (2007) criticised technology acceptance models for prioritising the prediction of usage behaviour while neglecting the broader social and contextual factors that affect technology adoption. Digital financial inclusion depends not only on the availability of digital financial services but also on individuals' willingness and ability to embrace digital payment platforms, mobile money services, and digital banking systems. This theory therefore provides a rationale for the present study. It underpins the investigation of digital banking adoption, mobile money usage, and digital payment penetration as channels through which digital financial technologies could contribute to poverty reduction and economic empowerment in Nigeria.

Empirical Review

Akinyede and Kareem (2026) investigated the relationship between digital financial inclusion and economic development in Nigeria, focusing on poverty, income inequality, and human development. Using Nigerian time-series data from 2002 to 2024, they adopted an ex post facto research design. Since the variables had different orders of integration, they applied the ARDL bounds testing approach. Their findings show that digital financial inclusion interventions—including ATM penetration, account ownership, bank branch penetration, and secure internet services—influenced economic outcomes, including poverty alleviation and development indicators. The study concluded that digital financial

inclusion can improve the economy by expanding access to financial resources and allowing more people to participate in economic activities. The authors recommended improving digital infrastructure, expanding access to financial technology, and strengthening regulatory structures to support digital financial services. The present study aligns with theirs by using the ARDL methodology and examining digital financial inclusion as a driver of economic welfare. It likewise focuses on digital financial inclusion and poverty reduction in Nigeria.

Nwadike et al. (2026) examined the relationship between financial inclusion and poverty reduction in Nigeria using the ARDL framework. The study explored how financial inclusion indicators contributed to poverty reduction in Nigeria from 1992 to 2023. The researchers used an ex-post-facto design and secondary data from the Central Bank of Nigeria Statistical Bulletin and World Development Indicators. They estimated short- and long-run relationships between financial inclusion variables and poverty reduction using unit root tests, cointegration analysis, and an autoregressive distributed lag model. The findings showed that financial inclusion indicators had a positive and significant long-run relationship with poverty reduction. Specifically, expanding rural banking networks, mobilising rural deposits, providing agricultural credit schemes, and lending to small and medium enterprises contributed substantially to poverty alleviation. Microfinance bank lending also had a positive effect, though it was not statistically significant. These findings underscore the importance of deliberate financial inclusion policies targeting rural populations, agriculture, and small businesses to achieve sustainable poverty alleviation in Nigeria. The researchers recommended strengthening financial access channels, expanding inclusive banking services, and improving credit delivery mechanisms. This study supports the present study by confirming that improved access to finance helps reduce poverty. Building on this argument, the present study examines indicators of digital financial inclusion: digital payment penetration, mobile money use, access to digital financial services, and uptake of digital banking.

Ogbebor, Ogboi, and Ogunseni (2026) examined the effect of digital financial services on poverty reduction in Nigeria, focusing on whether these services reduce poverty by improving households' access to financial resources and strengthening their economic status. Using annual secondary data from Nigeria covering 2010 to 2024, the study adopted an ex post facto research design. The researchers used Autoregressive Distributed Lag (ARDL) and Error Correction Model (ECM) techniques to analyze short- and long-run relationships between digital financial service indicators and poverty reduction. These indicators included account ownership, internet penetration, financial literacy, and other measures of digital financial services. The findings showed that account ownership was the strongest driver of poverty reduction. Although internet penetration expanded access to digital finance, infrastructure limitations and financial literacy gaps restricted its impact. The study concluded that digital financial services can reduce poverty when enabling conditions allow vulnerable groups to access and use them meaningfully. The authors recommended expanding digital infrastructure, strengthening financial literacy programs, and adopting inclusive digital finance policies. This study is highly relevant to the current research because it provides evidence from Nigeria on how access to digital financial services affects poverty reduction—a key proxy for digital financial inclusion in the present study. (AESS Publications).

Chukwu (2025) examined how mobile banking, microfinance institutions, and digital payment systems can help reduce poverty in Nigeria by exploring their effects on Nigerians' economic status. The researcher surveyed 500 adults in Lagos and Enugu States, assessing the relationship between financial service use and indicators such as income growth, business expansion, emergency savings, and household wellbeing. The results showed that people excluded from financial services had worse economic outcomes than financially active users. Mobile banking expanded opportunities for the unbanked, while participation in microfinance supported business growth. Overall, the study found that

digital financial inclusion reduces poverty by increasing economic participation and household financial security. The researcher called for greater digital financial education, improved access to mobile banking platforms, and more support for groups excluded from the financial system. The proposed digital financial inclusion framework has two key components: adopting digital banking and accessing digital financial services. The current study builds on this work.

Mallum (2025) examined the relationship between financial inclusion and economic development in Northern Nigeria, with a focus on poverty reduction. The study investigated whether financial inclusion mechanisms had improved the economic welfare of populations facing high levels of poverty. It drew on secondary quarterly data from ten (10) Northern Nigerian states for 2012-2024. After testing the data for stationarity, the study used an ARDL approach to assess the short- and long-run effects of financial inclusion indicators on economic development indicators. Financial inclusion was measured by the number of bank branches, ATM penetration, mobile money, and rural lending, while economic development was assessed through poverty, employment, household income, and GDP per capita. The findings showed that traditional measures of financial access, such as bank branches and ATM penetration, had positive but statistically limited effects on economic development. Mobile money use had a negative, marginally significant effect, suggesting that it was used mainly for consumption rather than productive investment. The study also emphasized the need to promote financial literacy, entrepreneurship, and the productive use of financial services alongside expanding access. It recommended policies to strengthen financial capability, improve digital infrastructure, and encourage productive uses of digital financial services. This study is relevant to the present research because it highlights the importance of considering not only access to digital financial services but also the role of digital financial inclusion in poverty alleviation and economic empowerment in Nigeria.

Olaleye, Oreagba, Oguntuga, and Adebanjo (2025) examined the effects of mobile money transfer services on financial inclusion and poverty reduction in rural Nigeria. The study explored how these services expand access to financial services and help reduce poverty among rural residents with limited access to conventional banks. Focusing on rural Nigeria between 2010 and 2023, the researchers used Autoregressive Distributed Lag (ARDL) and Error Correction Model (ECM) approaches to analyse short- and long-run relationships. They considered mobile money alongside other financial technologies, including ATM and Point-of-Sale (POS) services. The findings showed a significant positive relationship between ATM transactions and POS services and poverty reduction, but a negative relationship between mobile money and poverty reduction during the period studied. The researchers concluded that mobile money may not reduce poverty without adequate regulation, wider network coverage, and productive use of the services. They recommended reforms to encourage greater participation by mobile network operators in mobile money services, investment in digital infrastructure, and policies that promote productive use of mobile financial platforms. This study is relevant to the current research because mobile money is a key dimension of digital financial inclusion and a determinant of poverty reduction in Nigeria.

Nnoje, Doris, and Ogochukwu (2024) examined how financial inclusion technologies affect poverty reduction in Nigeria, focusing on technology-enabled services such as automated teller machines (ATMs), point-of-sale (POS) systems, and mobile payment platforms. The study assessed the relationship between these technologies and poverty outcomes using trend analysis and error-correction modeling. The results showed that ATMs and mobile payment systems played major roles in reducing poverty by improving access to financial services, economic participation, and financial stability among low-income groups. However, POS services had a limited effect on poverty reduction, which the authors attributed to poor access among rural and financially excluded groups. The study found that technology-driven financial inclusion can reduce poverty when digital services are affordable, accessible, and

supported by adequate infrastructure. The authors recommend expanding digital financial infrastructure, improving access in rural communities, and strengthening policies that promote the uptake of inclusive financial technologies. These findings empirically support the present research by showing the importance of digital payment penetration and mobile payment systems in improving poverty outcomes, consistent with the present study's use of digital payment penetration as a proxy.

Senou and Houensou (2024) investigated the effects of mobile money adoption on poverty alleviation in West Africa. They examined how mobile money services can improve household welfare by expanding access to financial resources for people excluded from the financial system. Using panel data from countries in the West African Economic and Monetary Union, the authors applied econometric techniques to assess the relationship between mobile money use and poverty indicators. Their findings show that mobile money adoption improves financial access, reduces transaction costs, and strengthens household economic resilience. However, its effect on poverty reduction depends on institutional quality, digital infrastructure, and users' ability to use financial services productively. The study concluded that mobile money is an important tool for inclusive development, but realizing its full benefits requires an appropriate regulatory and technological environment. The authors recommended investing in digital infrastructure, strengthening consumer protection, and adopting policies that encourage productive use of financial resources. This study is supported by research identifying mobile money as a key driver of digital financial inclusion and examining its role in reducing poverty in Nigeria.

Inoue (2024) examined how digital financial inclusion relates to poverty reduction in developing countries. The study explored how digital financial platforms can improve the economic welfare of poor and vulnerable groups by widening their access to financial services. Using panel data on international development indicators and measures of digital financial inclusion, Inoue applied econometric methods to assess the relationships among digital financial inclusion, financial access, and poverty indicators. The findings indicated that digital financial inclusion can help reduce poverty by expanding access to financial resources, encouraging economic participation, and strengthening household financial resilience. The study also found that, when supported by appropriate infrastructure and financial literacy, digital financial technologies can promote inclusive growth. Inoue recommended that developing countries adopt policies to improve digital connectivity, affordability, and access to financial technologies. This study is relevant because it offers international evidence linking digital financial inclusion to poverty alleviation, a relationship the current study examines in the Nigerian context.

Research Methodology

Research Design

The study uses an ex post facto design to examine the relationship between digital financial inclusion and poverty reduction. It draws on existing historical data without altering the variables, making the design suitable for tracking changes in digital financial inclusion indicators and their effects on poverty outcomes in Nigeria over time. Digital financial inclusion, the independent variable, is measured by digital payment penetration, mobile money usage, access to digital financial services, and digital banking adoption. The dependent variable, poverty reduction and economic empowerment, is measured by the poverty headcount ratio. This design allows the researcher to examine long-run relationships among economic variables and provide evidence of how digital financial inclusion contributes to poverty reduction.

Methodological Framework

This study draws on Financial Inclusion Theory, developed by Beck, Demirgüç-Kunt, and Levine (2007). The theory holds that access to affordable financial services enhances economic participation, investment opportunities, and welfare outcomes. It provides a basis for examining how digital financial services can reduce financial exclusion and help alleviate poverty.

The model is written: POV = f(DPP, MMU, ADFS, DBA)

The econometric model is: $POV_t = \beta_0 + \beta_1 DPP_t + \beta_2 MMU_t + \beta_3 ADFS_t + \beta_4 DBA_t + \mu_t$, where DPP is digital payment penetration, MMU is mobile money usage, ADFS is access to digital financial services, DBA is digital banking adoption, and μ is the error term. This framework provides a basis for estimating the impact of each dimension of digital financial inclusion on poverty reduction.

Data Source

The study will use secondary time-series data from credible sources, including the Central Bank of Nigeria Statistical Bulletin, World Bank Development Indicators, and other recognised financial databases. Covering 2000Q1 to 2025Q4, the study period captures financial sector reforms, digital technology development, and shifts in poverty trends in Nigeria. These data provide sufficient historical observations for econometric analysis.

Data Analysis Method

The study uses descriptive statistics, correlation analysis, unit root tests, ARDL bounds testing, an Error Correction Model (ECM), and diagnostic tests. The ARDL approach is suitable because it examines both short- and long-run relationships and can be applied to time-series studies with variables integrated at different orders. It also strengthens the robustness of the results by assessing whether digital financial inclusion significantly contributes to poverty reduction and economic empowerment in Nigeria.

Results and Findings

Results

Table 1. Descriptive Statistics

Statistic	POV	DPP	MMU	ADFS	DBA
Observations	104	104	104	104	104
Mean	46.3141	46.0542	21.9793	51.0372	30.2385
Median	46.0750	45.1750	15.1500	51.3150	29.8150
Maximum	57.7400	88.2600	66.3800	77.7900	65.7700
Minimum	34.6100	5.3000	-0.9600	23.0100	-4.5700
Std. Dev.	6.6503	24.1347	22.2585	15.8702	20.3947
Skewness	0.0044	0.0219	0.5759	0.0037	0.0000
Kurtosis	-1.1904	-1.1828	-1.1315	-1.1675	-1.2181

Source: Author's Computation using EViews

Descriptive statistics summarize the distribution and behaviour of poverty reduction (POV), digital payment penetration (DPP), mobile money usage (MMU), access to digital financial services (ADFS), and digital banking adoption (DBA) over the study period. The means represent the average levels of these variables across the 104 quarterly observations. POV had an average value of 46.31, while the averages for DPP, MMU, ADFS, and DBA were 46.05, 21.98, 51.04, and 30.24, respectively.

The standard deviation results indicate how widely the values are spread around the mean. DPP recorded the highest volatility (24.13), followed by MMU (22.26) and DBA (20.39), pointing to considerable changes in digital financial adoption indicators during the period. The digital finance variables also showed substantial variation, with a standard deviation of 8.85, indicating that their movements were more volatile than those of the other variables.

Skewness values indicated that most variables were near a normal distribution. The skewness values of POV (0.0044), DPP (0.0219), and ADFS (0.0037) were close to zero, indicating that the distributions were nearly symmetrical. MMU skewness was moderately positive (0.5759), indicating a longer right tail, whereas DBA was almost symmetric.

All variables had negative kurtosis statistics below 3, indicating platykurtic distributions with fewer outliers than a normal distribution. Values ranged from -1.1315 for MMU to -1.2181 for DBA, pointing to relatively flat distributions. The descriptive statistics indicate reasonable variation and distributional characteristics for further econometric analysis.

Table 2. Unit Root Test (ADF)

Variable	ADF Test Statistic	Prob. Value	5% Critical Value	Order of Integration
POV	-6.3032	0.0000	-2.8928	I(1)
DPP	-6.8133	0.0000	-2.8922	I(1)
MMU (Adjusted: Δln(MMU + 1.96))	-13.6432	0.0000	-2.8906	I(1)
ADFS	-4.0640	0.0011	-2.8942	I(1)
DBA	-6.1095	0.0000	-2.8935	I(1)

Source: Author's computation using EViews

The ADF The unit root test results indicate that all variables in the study are integrated of order one, I(1): they are non-stationary in levels but become stationary after first differencing. This meets the stationarity requirement for applying the Autoregressive Distributed Lag (ARDL) model and Error Correction Model (ECM). The ARDL approach is suitable because the study examines both short- and long-run relationships between indicators of digital financial inclusion (DPP, MMU, ADFS, and DBA) and poverty reduction (POV). Accordingly, the ARDL framework can estimate the effects of digital payment penetration, mobile money usage, access to digital financial services, and digital banking adoption on poverty reduction in Nigeria.

ARDL: Bound Cointegration Test

Table 3. ARDL Bounds Test for Cointegration

Test Statistic	Value
F-statistic	19.8178
Number of regressors (k)	4
Significance Level	Critical Bounds
10%	I(0): 2.45 ; I(1): 3.52
5%	I(0): 2.86 ; I(1): 4.01
2.5%	I(0): 3.25 ; I(1): 4.49
1%	I(0): 3.74 ; I(1): 5.06

Source: Author's Computation using EViews

The ARDL bounds cointegration test assessed the long-run equilibrium relationship between digital financial inclusion and poverty reduction in Nigeria. Poverty reduction (POV) is the dependent variable, while the explanatory variables are digital financial inclusion indicators: digital payment penetration (DPP), mobile money usage (MMU), access to digital financial services (ADFS), and digital banking adoption (DBA). These variables are consistent with the study's model, which examines how digital financial inclusion affects poverty reduction in Nigeria.

The null hypothesis of the ARDL Bounds test is: H0: No long-run relationship exists among the variables. The calculated F-statistic of 19.8178 exceeds the 5% upper critical bound of 4.01. Because it is above the I(1) upper bound, the null hypothesis of no cointegration is rejected, indicating a long-term equilibrium relationship between digital financial inclusion and poverty alleviation.

This finding suggests that, in the long run, greater digital payment penetration, increased mobile money use, wider access to digital financial services, and greater adoption of digital banking are likely

to go hand in hand with poverty reduction. Although these variables may diverge in the short run, they tend to follow a stable long-term equilibrium path. Thus, changes in digital financial inclusion indicators have lasting effects on poverty reduction outcomes in Nigeria. The cointegration result supports estimating the long-run ARDL model and the Error Correction Model (ECM). The ECM captures short-run dynamics and the speed of adjustment toward long-run equilibrium. This approach is consistent with the study methodology, since ARDL bounds testing and ECM estimation are well suited to examining the relationship between digital financial inclusion and poverty alleviation. The ARDL Bounds test therefore indicates a long-run relationship between digital financial inclusion indicators and poverty reduction in Nigeria. This finding supports estimating the ARDL long-run coefficients and short-run error-correction results to assess the individual effects of digital payment penetration, mobile money usage, access to digital financial services, and digital banking adoption on poverty reduction.

Table 4. Results of ARDL Long Run Estimation
Dependent Variable: POV (Poverty Reduction)

Variable	Coefficient	Std. Error	t-Statistic	Prob. Value
DPP	0.1066	0.0532	2.0031	0.0482
MMU	0.0014	0.0300	0.0476	0.9622
ADFS	0.0877	0.0480	1.8260	0.0710
DBA	0.1292	0.0440	2.9371	0.0042
C	33.0338	3.7506	8.8075	0.0000

Source: Author's Computation using EViews

The ARDL long-run model shows that digital financial inclusion reduces poverty in Nigeria. Of the explanatory variables, digital banking adoption (DBA) has the strongest and most significant long-run impact, followed by digital payment penetration (DPP). Access to digital financial services has a positive but weak relationship with poverty, while mobile money use has a positive but statistically insignificant relationship. The findings provide empirical evidence that digital financial inclusion can help reduce poverty by expanding access to financial resources and digital transaction systems. They also show that its effects vary across dimensions. While digital banking and payments offer substantial long-term benefits, mobile money may require complementary policies to promote productive financial use. Thus, the long-run ARDL results align with the study's objectives: to examine how digital payment penetration, mobile money usage, access to digital financial services, and digital banking adoption affect poverty reduction in Nigeria. They also support using a short-run Error Correction Model (ECM) to assess the adjustment process toward long-run equilibrium.

Table 5. Short-Run Error Correction Model (ECM) Results
Dependent Variable: Change in Poverty Reduction (ΔPOV)

Variable	Coefficient	Std. Error	t-Statistic	Prob. Value
C	34.4276	3.9080	8.8090	0.0000
POV(-1)	-1.0429	0.1055	-9.8830	0.0000
DPP(-1)	0.1112	0.0565	1.9700	0.0518
MMU(-1)	0.0015	0.0091	0.1620	0.8717
ADFS(-1)	0.0914	0.0617	1.4830	0.1416
DBA(-1)	0.1348	0.0645	2.0900	0.0393
ΔDPP	0.1058	0.0531	1.9930	0.0491
ΔMMU	-0.0058	0.0315	-0.1840	0.8544
ΔADFS	0.0494	0.0505	0.9790	0.3300
ΔDBA	0.1352	0.0444	3.0450	0.0030

Source: Author's Computation using E-Views.

The ECM results suggest that indicators of digital financial inclusion have varying short-run effects on poverty reduction in Nigeria. Digital payment penetration and digital banking adoption have significant positive effects, suggesting that these components can deliver immediate economic benefits. In contrast, mobile money usage and access to digital financial services have no significant short-run effects, indicating that access and usage alone do not automatically reduce poverty without enabling conditions. The error correction coefficient is significant and negative, confirming the model's long-run adjustment mechanism. This adjustment speed indicates that temporary shocks to poverty reduction are corrected in the next period, restoring equilibrium between poverty reduction and digital financial inclusion.

The results support the study's objectives: examining how digital payment penetration, mobile money usage, access to digital financial services, and digital banking adoption affect poverty reduction in Nigeria. They also support the use of the ARDL-ECM approach to capture both short- and long-run effects.

Table 6. Results of Diagnostic Tests

Diagnostic Test	Test Statistic	Probability Value	Decision
Breusch-Godfrey Serial Correlation LM Test	0.2533	0.8811	No serial correlation
Breusch-Pagan-Godfrey Heteroskedasticity Test	7.2886	0.3995	No heteroskedasticity
Jarque-Bera Normality Test	1.0095	0.6036	Residuals are normally distributed.
CUSUM Stability Test	Within 5% critical boundaries	Stable	Parameters are stable
CUSUMSQ Stability Test	Within 5% critical boundaries	Stable	Variance is stable

Source: Author's Computation with EViews

The diagnostic test results indicate that the ARDL model meets the econometric assumptions. It shows no evidence of serial correlation, heteroskedasticity, or non-normal residuals, and the CUSUM and CUSUMSQ tests confirm that its parameters are stable. Therefore, the estimated ARDL model is statistically reliable and suitable for analysing how digital financial inclusion indicators digital payment penetration, mobile money usage, access to digital financial services, and digital banking adoption affect poverty reduction in Nigeria. These results support using the ARDL framework to examine both short- and long-run relationships among the variables.

Discussion of Findings

The study examined how digital financial inclusion affects poverty reduction and economic empowerment in Nigeria. It measured digital financial inclusion using digital payment penetration (DPP), mobile money usage (MMU), access to digital financial services (ADFS), and digital banking adoption (DBA). Poverty reduction, in turn, was measured using the poverty headcount ratio. The ARDL bounds test identified a long-run relationship between digital financial inclusion and poverty reduction: the F-statistic of 19.8178 exceeded the 5% upper critical bound of 4.01, confirming cointegration among the variables. Long-run ARDL results showed that digital payment penetration had a positive, significant effect on poverty reduction ($\beta = 0.1066$, $p = 0.0482$), as did digital banking adoption ($\beta = 0.1292$, $p = 0.0042$). Mobile money usage had a positive but insignificant effect ($\beta = 0.0014$, $p = 0.9622$), while access to digital financial services had a positive, weakly significant effect ($\beta = 0.0877$, $p = 0.0710$). Economically, these findings suggest that digital financial mechanisms that directly improve transaction

efficiency and participation in the formal financial system, such as digital payments and digital banking, contribute more to poverty reduction than access or usage indicators alone.

The findings are largely consistent with the empirical studies reviewed. Nwadike et al. (2026) found a positive and significant long-run relationship between financial inclusion indicators and poverty alleviation in Nigeria, supporting the current finding that improved financial access helps reduce poverty. Similarly, Ogbebor, Ogboi, and Ogunseni (2026) reported that digital financial services reduce poverty, though their effectiveness depends on enabling conditions such as infrastructure and financial literacy. The results also align with Chukwu (2025), who found that mobile banking and digital payment systems improved economic outcomes by expanding access to financial resources and strengthening household welfare. However, this study's finding that mobile money use has no significant effect differs from studies such as Suri and Jack (2016), which emphasised its poverty-reducing impact. This difference may reflect the Nigerian context, where mobile money use may be constrained by limited digital literacy, inadequate infrastructure, and affordability, as well as by limited productive use of financial services.

The findings also support the Financial Inclusion Theory proposed by Beck, Demirgüç-Kunt, and Levine (2007), which argues that access to suitable financial services allows individuals and businesses to take part in economic activities, build assets, invest, and improve their welfare. The significant positive effects of digital payment penetration and digital banking adoption support the theory's claim that greater access to financial systems can broaden economic opportunities and reduce poverty. However, the insignificant effect of mobile money usage suggests that financial inclusion does not automatically alleviate poverty unless people can use financial services productively. This finding is consistent with the view that access alone may not be enough without complementary factors such as financial literacy, infrastructure, income opportunities, and institutional support. Thus, the study partly confirms the Financial Inclusion Theory while showing that the quality and use of financial services influence their poverty-reducing effects. From a policy perspective, the findings suggest that Nigerian policymakers should prioritise expanding digital payment infrastructure and digital banking platforms, as both contributed significantly to poverty reduction. The positive effects of digital payment penetration and digital banking adoption indicate that policies promoting affordable electronic transactions, improved internet connectivity, stronger digital banking systems, and wider access to financial technologies can increase economic participation. However, the insignificant effect of mobile money usage and the weaker effect of access to digital financial services suggest that simply increasing availability is not enough. Government agencies, financial institutions, and technology providers should also strengthen digital literacy programmes, consumer protection, rural connectivity, and initiatives that encourage productive use of financial services. These recommendations align with the empirical studies reviewed, which emphasised the importance of improving digital infrastructure, financial education, and regulatory frameworks to maximise the poverty-reducing benefits of digital financial inclusion.

Conclusion and Recommendations

Conclusions

The study concludes that strengthening digital financial inclusion remains a practical way to address poverty and promote economic empowerment in Nigeria. Evidence suggests that adopting digital banking and using digital payments more widely have the greatest potential to improve poverty outcomes by making transactions more efficient, broadening financial participation, and supporting economic activity. Policymakers, financial institutions, and technology providers should therefore invest in digital financial infrastructure, make affordable digital services more accessible, and help citizens develop the skills to use digital financial tools effectively. These efforts can help digital financial inclusion move beyond access to financial services and become a practical means of achieving broader economic empowerment and sustainably reducing poverty in Nigeria.

Recommendations

Based on the finding that digital payment penetration has a positive and significant effect on poverty reduction in Nigeria (β = 0.1066, p = 0.0482), the study recommends that policymakers and financial regulators prioritize expanding secure, affordable, and accessible digital payment infrastructure nationwide. Digital payment systems make transactions more efficient and encourage participation in formal economic activities. The Central Bank of Nigeria, financial institutions, and digital payment service providers should invest further in reliable payment networks, particularly in rural and underserved communities. Implementation should focus on expanding agent banking networks, reducing transaction costs, improving internet and network coverage, and creating incentives for small businesses and individuals to use electronic payment platforms. These measures will increase digital payment penetration and strengthen its contribution to poverty reduction and economic empowerment.

The finding that mobile money use has a positive but statistically insignificant effect on poverty reduction (β = 0.0014, p = 0.9622) suggests that stakeholders should do more than expand access: they should also promote the productive use of mobile financial services. The small effect indicates that adoption alone may not significantly reduce poverty unless people use these services for income-generating activities, savings, investment, and business development. Implementation strategies should include digital financial literacy programs, mobile financial solutions that support entrepreneurship, and targeted awareness campaigns for rural populations and financially excluded groups. Government agencies, mobile network operators, and financial institutions should lead these initiatives and encourage people to view mobile money as a tool for economic empowerment, not merely a means of making transactions. The finding that access to digital financial services has a positive but weaker effect on poverty reduction (β = 0.0877, p = 0.0710) suggests pairing access initiatives with efforts to improve service quality, affordability, and usability. While increased access creates opportunities to engage with formal financial institutions, the results indicate that availability alone does not guarantee poverty alleviation. Implementation should prioritize expanding digital financial services through investments in better broadband infrastructure, affordable internet, simpler account opening, and strong consumer protection. Financial institutions should also develop user-friendly digital products tailored to low-income households, small businesses, and rural communities, ensuring that greater access translates into tangible economic benefits. The study recommends that the government and financial institutions accelerate the adoption of digital banking as a key strategy for promoting economic inclusion in Nigeria. This recommendation is based on the finding that digital banking adoption has the strongest and most significant positive effect on poverty reduction (β = 0.1292, p = 0.0042). Digital banking gives individuals and businesses easier access to payments, savings, and other financial products, helping them participate in the economy. Implementation should include building digital banking infrastructure, strengthening cybersecurity frameworks, expanding mobile and internet banking services, and adopting policies that encourage banks to provide affordable digital services to underserved communities. Financial institutions should also work with government agencies to improve digital skills and build user trust, ensuring that digital banking contributes effectively to sustainable poverty reduction and economic empowerment.

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