

Financial Technology and Poverty Alleviation in Nigeria: An Empirical Investigation

Okpe, Chidera Oliver¹; Akujor, Jane Chinyere²; Nnadozie, Angeline Chinyere²; Fort-Edward, Uchenna Ugochi²; Duru, Franklin Uche³; Igwegbe, Obinna Anthony¹; Stanley, Kalu Awa²

¹Department of Entrepreneurship and Innovation Technology, Federal University of Technology, Owerri

²Department of Finance and Innovation Technology, Federal University Of Technology, Owerri

³Academic Planning and Development, Federal University of Technology, Owerri

Received: 11.08.2026 | Accepted: 01.09.2026 | Published: 03.09.2026

*Corresponding Author: Okpe, Chidera Oliver

DOI: [10.5281/zenodo.22276505](https://doi.org/10.5281/zenodo.22276505)

Abstract

Original Research Article

Despite the rapid expansion of financial technology (FinTech) in Nigeria, particularly through digital payments, mobile and internet-based financial services, and other innovative financial platforms, poverty remains a persistent socioeconomic challenge. This raises an important question: to what extent has the growing penetration of FinTech actually translated into improved economic well-being and poverty alleviation in Nigeria? While FinTech is widely expected to promote financial inclusion, reduce transaction costs, and improve access to financial services, its capacity to deliver meaningful poverty-reduction outcomes in the Nigerian context remains an empirical concern. Against this background, this study examined the effects of Financial Technology on Poverty Alleviation in Nigeria, from 2010 to 2024 covering the period FinTech service was revolutionized and data was available. The data utilized was monthly data from 2010 to 2024. The objectives of the study are; to ascertain the level of access to FinTech in Nigeria and how this has affected poverty level; and analyze the relationship between transactions made through innovative FinTech services (blockchain technology) and poverty alleviation in Nigeria. And to examine the effect of POS services on poverty rate in Nigeria. These variables constitute the independent variables while poverty rate is the dependent variable. The methodology used ex-post-facto research method in compiling the data for this study; and the statistical tool applied was simultaneous equation model, Co-integration Test, and Granger Causality Test. The results identified that, Point-of-sale (POS) payments have significant effect on poverty rate in Nigeria; Lending services provided via mobile and internet payment channels have no significant effect on level of poverty in Nigeria; There is significant relationship between the availability of FinTech services and the poverty level in Nigeria; Transactions made through innovative FinTech services have statistically significant effect on the level of poverty in Nigeria; and Per capita income, POS transactions, financial openness and bank density increased financial technology penetration in Nigeria.

The study recommended that the government should give priority to expanding financial inclusion services by promoting greater financial openness and improving access to funding for local manufacturers. It also emphasized the need to accelerate the digital transformation of small and medium-sized enterprises (SMEs), particularly those operating in Nigeria's real sector, as a means of improving their productivity, business performance, and contribution to economic growth.

Keywords: Financial Technology, Poverty Alleviation, Point-of-Sale Payment System, Financial Openness, Innovative Fintech Services, simultaneous equation model.

Copyright © 2026 The Author(s). This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0).

INTRODUCTION

Nigeria's financial sector has undergone significant transformation over the years, evolving from a predominantly traditional banking system to one increasingly shaped by technological innovation. This transformation has given rise to financial technology (FinTech), which has fundamentally changed the way financial services are designed, delivered, and accessed. FinTech extends financial services beyond conventional banking activities such as deposits and withdrawals by facilitating digital payments, savings, lending, transfers, and other financial transactions through innovative technological platforms. In essence, financial technology represents the application of modern digital tools and systems to improve the efficiency, accessibility, affordability, and convenience of financial services (World Bank, 2020). The growing integration of technology into the financial sector has the potential to broaden financial inclusion, particularly among underserved and low-income populations, while simultaneously supporting economic participation and development (Asian Development Bank, 2016).

According to the World Bank (2020), saving money, making payments, getting a loan, and having insurance all assist the poor rise above their economic and social circumstances and escape poverty. So, it stands to reason that if we want financial services to reach the very poor section of society, we need to innovate the technology that enables the provision of such services. Giving people experiencing poverty in Nigeria access to financial technology will boost their financial inclusion, participation in financial services, and local-level empowerment, which is why there is a connection between the two regarding poverty alleviation in the country. Automation at the point of sale, smart cards, digital checks, automated teller machines, mobile phone banking with USSD codes, etc., are all such developments.

Kama and Adigun (2013) state that the rural banking initiative was the initial significant strategy for financial inclusion in Nigeria. It was initiated in the late 1970s to provide access to banking services in rural regions by establishing

one bank branch in each local government area. Subsequently, in 1989 and 1990, community banks (CBs) were set up to assist low-income individuals by accepting small deposits and lending them money, respectively. Since the turn of the century, several safeguards have been put in place. In the early 2000s, Nigeria developed the financial system plan for 2020 to turn the country's financial industry into a growth driver and propel it into the top 20 economies by 2020. After establishing the National Microfinance Policy in 2005, the CBN reformed its approach to Non-Interest Financial Institutions (NIFIs) in 2012 and introduced the National Financial Inclusion Strategy (NFIS) in 2013, which was later revised in 2018.

In this vein, Nigeria embraced the use of electronic banking in the early 2000s (CBN, 2019). The proliferation of e-banking in the country can be attributed in part to the dynamism of technology, such as the introduction of mobile telephones in 2001 and increased access to personal computers and Internet service facilities. Prior to 2003, only a select few financial institutions maintained their own proprietary ATM fleets (Oluwatosin, 2017). Based on data from Tope (2010) as quoted by Onodugo and Ifeanyi (2015), Nigeria's primary shared ATM network, Inter-switch, went live in 2003 with five machines from United Bank for Africa (UBA) and First Bank of Nigeria (FBN). However, since 2009 when e-banking services were fully launched to the general public, ATM transactions have averaged N2.5 trillion for the period 2009 to 2018 while mobile pay services averaged N422 billion within the same period (NIBSS, 2018). According to Ondiege (2017), the increase in e-banking transactions motivated the financial service providers to create retail banking services thus empowering locals to own one of these financial technologies and utilize same to offer financial services to the public thereby creating employment and empowerment.

Therefore, Nigeria has implemented several policies and methods over time to achieve inclusive growth and development and expand access to financial technology and financial inclusion. Money transfers, insurance, payments, and deposits are only some of the FinTech

services available online, via apps, via funding for businesses, via mobile phones, and via other electronic devices (Humby, 2020). Traditional African savings systems, such as the esusu and thrift plan tactics, which attract very little interest on loans, have also incorporated FinTech (Olatunji, 2020). These services have flourished in growing economies of Africa, like as Nigeria, because to their ease of use and the fact that they do not require the consumer or account holder's physical presence.

With Nigeria recording an increasing poverty rate above 60 percent, the World Bank and other International Agencies believe that the advent of financial technology will enhance the living standards of the people and serve as an avenue for poverty alleviation especially in rural Nigeria.

According to the National Bureau of Statistics (2021), the poverty rate in Nigeria reached a new height, jumping from 54.5% in 2004 to 69.0% in 2009, then again to 51.4% in 2020, and was estimated to be well over 60% by the end of 2021. The Human Development Index (HDI) for Nigeria also increased, from 0.465 in 2005 to 0.534 in 2019 (a 14.8% rise). In 2021, Nigeria's HDI stayed at 0.535, which was essentially the same as the previous year. Based on the World Bank classifications, a HDI of 0.535 is considered a "low human development index" thus confirming Nigeria's worsening poverty level. However, Usman (2020) posited that innovations in the financial sector through FinTech has the potential to lift Nigeria's human development above the current level. So, we get to the question of how financial technology may help reduce poverty in Nigeria.

2. LITERATURE REVIEW

2.1 Theoretical Framework

To ensure that all people may participate in the economy, financial technology should be widely adopted, according to the theory of financial inclusion. According to this notion of financial inclusion, businesses and people should be able to easily gain access to formal financial services that are both affordable and suitable for their specific needs (World Bank, 2020). A large body

of research supports the financial inclusion hypothesis's claim that it can help lower poverty rates, narrow income gaps, and boost low-income people's net worth (Honohan, 2008). More and more small businesses are being awarded retail banking licenses, demonstrating the benefits of financial inclusion. Nigeria's current position among the world's top countries with expanding retail banking demonstrates the viability of achieving economic independence via digital financing.

Bank-led, telecom-led, independent non-telecom, and non-bank agent-led Fintech developments are all contributing to a more equitable distribution of financial services, which in turn is reducing poverty and raising living standards. Therefore, this theory is appropriate for our research since we aim to experimentally examine the connection between financial technology and poverty reduction in Nigeria

2.2 Conceptual Literature Review

2.2.1 Financial Technology (FinTech)

Financial technology (FinTech) is a broad concept that refers to the use of innovative digital technologies to develop, improve, and transform the design, delivery, and consumption of financial products and services. It encompasses the integration of technologies such as artificial intelligence (AI), blockchain, big data analytics, cloud computing, machine learning, mobile technologies, application programming interfaces (APIs), and the Internet of Things (IoT) into the financial sector to enhance the efficiency, accessibility, transparency, security, and affordability of financial services. FinTech has fundamentally reshaped traditional financial systems by enabling faster and more convenient payment services, digital banking, peer-to-peer lending, crowdfunding, digital insurance (InsurTech), wealth management, cryptocurrency, regulatory technology (RegTech), and financial inclusion initiatives. Beyond improving operational efficiency, FinTech promotes innovation, expands access to financial services for underserved populations, reduces transaction costs, supports data-driven decision-making, and contributes to sustainable

economic development by fostering inclusive financial ecosystems (Arner, Barberis, & Buckley, 2016; Schueffel, 2016; Gomber, Koch, & Siering, 2017; Lee & Shin, 2018).

From a strategic perspective, FinTech represents the convergence of finance and technology, where digital innovations redefine the creation, delivery, and regulation of financial services. It enables financial institutions, businesses, governments, and consumers to interact more efficiently through digital platforms while fostering competition, innovation, and financial inclusion. As technological advancement continues, FinTech is increasingly recognized as a key driver of economic growth, digital transformation, and the modernization of financial systems worldwide (Nicoletti, 2017; Thakor, 2020).

2.2.2 Conceptual Review on Poverty

Poverty can generally be understood as a condition in which individuals or households lack sufficient resources to attain a reasonable standard of living. Black (2002) views poverty from the perspective of inadequate consumption, arguing that people are poor when they cannot afford the basic goods and services required for an acceptable quality of life. From this perspective, poverty goes beyond the mere absence of money; it reflects an individual's limited ability to satisfy essential needs and participate meaningfully in economic and social activities.

Mat Zin (2011) explains poverty from both case-based and generic perspectives. The case approach associates poverty with individuals who, because of their circumstances, are unable to adequately provide for themselves without external support. This may include vulnerable individuals who face particular social or economic disadvantages. The generic perspective, however, links poverty to broader structural and macroeconomic conditions such as limited employment opportunities, weak demand, and low national income, particularly in less-developed economies. This distinction suggests that poverty can arise from both individual circumstances and wider economic conditions.

The United Nations presents poverty as more than a shortage of income, describing it as a deprivation of choices, opportunities and human dignity. In practical terms, a person may be considered poor when he or she lacks adequate food, education, healthcare, productive assets, employment opportunities or access to credit. Similarly, the United Nations Development Programme regards poverty as a persistent deprivation of the resources, capabilities, security, choices and opportunities necessary to achieve an acceptable standard of living and enjoy basic social, economic, political and cultural rights. The World Bank (2011) also adopts a broad perspective by associating poverty with low income, inadequate access to basic goods and services, poor health and education, limited access to clean water and sanitation, insecurity, and restricted opportunities to improve one's living conditions. These perspectives demonstrate that poverty is fundamentally multidimensional and cannot be adequately assessed through income alone.

The Asian Development Bank (2006) categorizes poverty into human poverty, income poverty, and absolute poverty. Human poverty reflects inadequate basic capabilities such as literacy and nutrition, while income poverty arises from insufficient income to meet minimum consumption needs. Absolute poverty represents deprivation below the minimum level required to satisfy basic nutritional and essential non-food needs. These classifications reinforce the view that poverty is multidimensional and should be assessed from several interconnected dimensions of human well-being.

UNECA (2005), states that, poverty does not have a single or universally accepted definition, which makes it a multi-dimensional concept. Kotler, Roberto & Leisner (2006), went further to state that there is little or no agreement on a single definition and measurement of poverty. However, poverty is said to affect heterogeneous groups such that the concept of poverty is relative depending on different interest groups and individuals experiencing it (Rank, 2004).

2.3 Empirical Review

There have been several studies linking financial

technology with poverty both in Nigeria and other economies of the world. With particular reference to Nigeria, ample studies exist and these studies analyzed different mix of variables. Other studies in other economies also devised other variables mix to come up with interesting findings. It is pertinent at this point of the study to examine these studies in order to establish a gap in literature and identify areas that should be improved upon.

Wayne et al. (2020) examined the role of technology in expanding access to banking services in Nigeria, with particular attention to financial inclusion, financial vulnerability and the growing relevance of financial technology in emerging economies. The study highlighted Nigeria's large and youthful population, noting that a significant proportion of the population, particularly those living in underserved areas, still had limited access to conventional banking facilities. Their field-based assessment revealed that the level of financial inclusion remained relatively low, largely because of the inadequate presence of bank branches and automated teller machines in many rural communities. However, the study identified financial technology as an important avenue for addressing this gap, particularly because digital platforms can lower the cost of delivering financial services and extend access to populations that conventional banking infrastructure has not adequately reached. The study therefore suggests that greater investment in technology-driven financial services could help improve financial inclusion among financially vulnerable Nigerians.

Eze and Alugbuo (2021) investigated the contribution of financial inclusion to poverty reduction in Nigeria using data from the World Bank's 2017 Global Findex survey. The researchers employed logit and instrumental-variable techniques to examine the relationship between financial inclusion and household poverty. Poverty was represented using a binary indicator identifying individuals within the lowest 40 percent income group, while financial inclusion was measured through an index incorporating factors such as age, education, gender, employment, government transfers, income, savings, pension participation and self-

employment. Their findings indicated that improved access to financial services contributes to a reduction in household poverty. The study consequently emphasized the need for stronger institutional and regulatory frameworks, particularly through improved enforcement of financial contracts and appropriate regulatory measures by the government and the Central Bank of Nigeria. The evidence reinforces the view that expanding access to formal financial services can provide low-income households with greater opportunities to improve their economic well-being.

Aderibigbe (2020) investigated how the Nigerian banking system contributes to poverty reduction by examining the influence of financial institutions on the welfare of low-income groups and the wider economy. The study noted that the government and financial institutions had introduced microcredit schemes to address the persistent challenge of limited access to credit among poor households. Despite these initiatives, however, their impact on poverty reduction remained relatively low, partly due to weaknesses in the methods and approaches adopted in implementing the programmes. The study argued that access to financial resources alone is not sufficient to achieve sustainable poverty reduction; beneficiaries should also be actively involved in identifying, implementing, and monitoring community-based projects that reflect their needs. It therefore advocated a people-oriented and sustainable development strategy that combines improved access to finance with employment creation and broader economic opportunities. The study further supported the UNDP approach, which emphasizes community participation, effective use of financial services, collaboration among government institutions, banks, NGOs, and community-based organizations, and the achievement of financial and operational sustainability. Ultimately, the study concluded that accessible, affordable, and dependable financial services are important instruments for improving the economic conditions of low-income Nigerians and promoting sustainable poverty reduction.

Abimbola et al. (2018) investigated how financial inclusion might help Nigerians escape

poverty. It looked at mobile banking, mobile money, and agent banking as potential ways for the government and banks to collaborate in fighting poverty. Using time series data collected from 1992 to 2016, we looked at financial inclusion features significant to Nigeria's unbanked population. Those with lower incomes and less education on financial inclusion made up the vast majority of Nigeria's unbanked population, the researchers found. Few were hesitant about the necessity to utilize a bank, and many were eager to make use of banking services if they were made available. Accordingly, they suggested that banks be encouraged to keep utilizing the government's financial inclusion measures to bring in cash from the shadow economy.

Microfinance was employed as a moderating factor by Hussaini et al. (2018) to analyze the effects of financial inclusion on poverty reduction. Data was gathered through the use of self-administered questionnaires. Three hundred and eighty clients of microfinance banks in Kebbi State, Nigeria, were randomly selected to fill out the survey. Structural Equation for Partial Least Squares The relationship between the variables was investigated using models. The study found that poverty rates drop in direct correlation with the availability of financial services. Furthermore, microfinance was found to aid in reducing the correlation between the variables under investigation. Microfinance services that have been studied and found to be beneficial in rural regions include loans for education, technical support, skills training, and home appliances.

Using statistics collected between 1996 and 2013, Ajide (2018) examined how financial inclusion affected poverty reduction in rural Nigeria, adding to the existing body of knowledge. Researched data came from the CBN, the World Bank, and the National Bureau of Statistics via Autoregressive Distributed Lag Modelling (ARDL). The boundary test results suggested a long-term correlation between the variables. Both immediate and retrospective interactions confirmed financial inclusion's importance as a viable strategy for alleviating poverty in rural areas. The results of this study have significant consequences for public policy.

Maximising the positive impact of financial inclusion on rural poverty reduction requires the Nigerian policy package to consider the risk of interest charged by banks and the financial vulnerability or openness of rural communities. This is the case because of the often low level of financial literacy in rural areas. Since most people do not know how to use the many financial services that are accessible to them, banks could be a target for fraud. According to the study, the country's central bank is aggressively pushing for more access to banking services for rural residents.

With a focus on Nigeria, Fadun (2018) looked at financial inclusion's potential to reduce poverty and increase income equality in emerging nations. This research looked at international initiatives to expand access to financial services and emphasized Nigeria's own aim to bring more people into the financial mainstream. This research examines financial inclusion from four angles: the definition of financial exclusion, the efforts made at the international level to promote financial inclusion, the current state of financial inclusion in Nigeria, and the National financial inclusion strategy (NFIS) adopted by the country's government. The study concluded that financial inclusion was a valuable instrument for fighting poverty and redistributing earnings in Nigeria and other developing nations. To help alleviate poverty and improve income redistribution in emerging nations, they suggested that stakeholders in the financial sector make ongoing efforts to expand access to financial services.

From 2009Q1 to 2014Q4, Ageme et al. (2018) used quarterly data to determine the impact of financial inclusion on poverty reduction in Nigeria. They set themselves apart from the current literature by selecting a set of parameters for measuring financial access that are founded on hard data about developments in banking technology and the availability of credit in general. A considerable beneficial effect on poverty reduction was found for both the ATM inclusion channel and deposit money bank credit to the rural populace. However, microfinance loans and online banking have counterproductive effects on poverty reduction. They speculated that the poor literacy level among the banking

population may be related to the negative consequences attributed to Internet banking channels. As a result, a smaller fraction of Nigeria's adult banked population uses the internet to gain access to financial services than does so via automated teller machines. They found evidence of a long-run equilibrium connection between financial inclusion and poverty reduction via the Johansen cointegration test. The ECM indicated that 71% of the time, the system was able to rectify its quarterly divergence from the equilibrium path. So that the broad unbanked populace, whose economic prosperity has yet to be integrated into the financial system, can be financially included, they advocated for an increase in alternative banking outlets coupled with rigorous financial education.

Ogbeide and Igbinigie (2019) examined the impact of financial inclusion on alleviating poverty in Nigeria using a time series of data spanning 2002 to 2015. The data was sourced from the World Bank Indicators for 2016. Researchers in this study employed the ordinary least squares regression approach with several variables. Results showed that the implementation of financial inclusion improved quality of life, poverty rate, and per capita income. A positive correlation existed between the number of commercial bank branches per 100,000 adults and improved living standards, per capita income, and poverty rates. During the reference period, no statistically significant association existed between the number of adults with bank deposits and decreased poverty. The correlation between the number of adults borrowing from commercial banks per 1000 and either per capita income or poverty reduction did not reach statistical significance. According to the research, financial inclusion, income production, and poverty reduction were not significantly correlated with the number of ATMs. According to the findings, Nigeria's Central Bank needs to implement new monetary policies to improve financial inclusion and reduce poverty.

Ilori (2020) examined the contribution of financial sector development to poverty reduction in Nigeria. A distinctive feature of the study was the use of the United Nations

Development Programme's Human Development Index (HDI) as a broader indicator of human well-being and a proxy for poverty reduction. The study covered the period from 1988 to 2017 and employed the Augmented Dickey-Fuller (ADF) unit root test to establish the stationarity of the variables, followed by the Johansen cointegration test to determine their long-run relationship. The findings revealed a positive and statistically significant relationship between financial sector development and HDI. This suggests that the expansion of the financial sector can improve human welfare by enhancing the ability of the banking system to provide credit for private-sector investment and other income-generating activities. However, the study also reported a significant negative relationship between HDI and aggregate deposits mobilized by deposit money banks, implying that deposit mobilization had not yet reached a level capable of producing substantial improvements in living standards. The study therefore stressed that policies aimed at strengthening Nigeria's financial sector should place greater emphasis on human development and the welfare of the population.

Aribaba (2020) investigated the role of financial inclusion in reducing poverty among low-income earners in Nigeria over the period 2004–2019. The study adopted a causal-comparative research design and utilized data obtained from the Central Bank of Nigeria and the World Bank. The analysis was conducted using Ordinary Least Squares (OLS) and Error Correction Model (ECM) techniques, while the Augmented Dickey-Fuller (ADF) test was employed to examine the stationarity of the time-series variables. The study considered indicators such as the loan-to-deposit ratio, loans extended to rural areas, financial deepening and social investment loans to small and medium-sized enterprises, while poverty and per capita income served as the major outcome measures. The results showed that financial inclusion initiatives made a significant contribution to poverty reduction among low-income Nigerians and also improved per capita income and general living conditions. Based on these findings, the study recommended that monetary and financial policies should be made more responsive to the

needs of low-income groups, particularly through measures that can improve access to affordable credit and reduce the burden of high interest rates.

Education about personal finance was identified by Faboyede, Ben-Caleb, and Oyewo (2015) as a crucial factor in reducing poverty and fostering national development in Nigeria. Their findings were critical to developing the idea behind the financial literacy framework that lays out an overarching plan for educating Nigerians about money management. They used a secondary data analysis method to look at the importance of financial education in Nigeria, the current state of financial education in the country, how to implement best practices in financial education and awareness, and the difficulties of creating long-lasting financial education infrastructure. Educating Nigerians about money gave them the tools they needed to take control of their financial futures, which in turn boosted the country's economy. That's because, as the complexity of financial markets rises and as households take on a greater share of the responsibility and risk associated with making financial decisions, financial literacy is becoming increasingly important for everyone to have, not just for their own sakes but for the sake of the economy as a whole. As a result, they advocated for a wide range of stakeholders, including government at all levels, major institutions, and the private sector, to work together on financial education initiatives.

Using a survey research design and data collected from 525 randomly selected families in three highly populated sub-urban locations across three regions in Nigeria, Okoye et al. (2021) investigated the relationship between financial literacy and poverty alleviation. Respondents were asked to score their agreement or disagreement with a series of study statements using a Likert-type research instrument, and the resulting data was processed and evaluated using a means-ends framework. They probed our knowledge and strategies for better handling money, earning more money, getting out of poverty, and so on. Poor financial decisions put people in poverty, therefore it makes sense that improving people's financial literacy will help alleviate poverty. They drew the conclusion that

financial education may be used to help people out of poverty. They suggested including financial education in the formal curriculum of all levels of schooling as well as in the informal education that is disseminated at home and through other educational media in order to foster financial literacy in all its forms.

Edozie C.C (2026) examined financial inclusion technologies and poverty reduction in Nigeria, the econometrics analysis reviews that point on sales (POS) contributes positively in Nigeria. As a financial inclusion technology, it serves as a means of employment and has provided a means of livelihood to many unemployed youths.

Odeleye and Oyeneeye (2022) examined the effect of financial technology on financial inclusion in Nigeria using quarterly data covering the period from 2009 to 2019. The study employed the Autoregressive Distributed Lag (ARDL) technique to investigate both the short-run and long-run relationship between FinTech and financial inclusion. The analysis incorporated indicators such as ATM withdrawals, Point of Sale (POS) transactions, online payments, mobile money withdrawals, GSM subscriptions, real income growth and savings. Contrary to the expectation that technological advancement would automatically enhance financial inclusion, the findings indicated that FinTech had a negative effect on financial inclusion during the period studied. The study also established that economic growth had a strong influence on financial inclusion in both the short and long run. Based on these findings, the authors emphasized the need for stronger collaboration among FinTech providers, government institutions, the Ministry of Science and Technology, the Nigerian Communications Commission and traditional financial institutions to ensure that technological innovations translate into broader and more effective financial access.

Boloupremo and Ogege (2024) examined financial technology as a driver for poverty reduction in Nigeria using ARDL, the result indicates a negative and significant between poverty rate and financial technology innovation. This inverse and significant relationship implies that financial technology tends to be depleted and retrogressive due to poverty rate. Therefore, concerted effort and

policy measures to curb poverty is necessary.

Bassey et al. (2022) examined the effect of financial inclusion on poverty reduction among small and medium-sized enterprise (SME) owners in Akwa Ibom State, Nigeria. The study obtained primary data from 295 business owners and managers selected through purposive sampling, using a structured questionnaire to assess issues relating to access to financial services and poverty status. The researchers employed Spearman's rank correlation to determine the relationship among the variables. The findings showed that access to bank loans by SME owners did not have a statistically significant effect on poverty reduction. However, other dimensions of financial inclusion, particularly access to automated teller machines (ATMs) and internet banking, were significantly associated with poverty reduction among the sampled SME operators. The study therefore suggested that reducing the cost of borrowing through lower interest rates could encourage more SME owners to utilize bank credit and potentially strengthen the poverty-reduction benefits of financial inclusion.

Damilola (2022) investigated the role of FinTech in promoting financial inclusion in West Africa, with particular emphasis on Nigeria's small and medium-sized enterprise (SME) sector. The study recognized SMEs as an important component of the regional economy, particularly because of their contribution to employment and economic activity, while also noting that inadequate access to finance remains a major constraint to their growth. Using a qualitative research approach, the study examined three prominent West African FinTech firms—Flutterwave, Interswitch and Paystack—to understand how FinTech is addressing financial access challenges and the barriers limiting its wider adoption. The findings indicated that FinTech firms have supported Nigerian SMEs through improved access to loans, investment opportunities, financial literacy and more convenient cross-border payment services. However, the study also identified inflation, political instability, poverty, inequality in access to financial resources and other socio-economic challenges as significant barriers to financial inclusion. Although collaboration between

government and FinTech firms was already taking place, the study emphasized that stronger and more sustained cooperation among stakeholders is required to fully harness FinTech for broader financial inclusion and economic development.

Ayensu et al. (2017) looked into the role of financial inclusion in Sub-Saharan Africa's poverty alleviation efforts. This study looks at the availability of formal financial services in 40 countries using data collected between 2010 and 2014 from a geographically representative sample. Using Sarma's (2012) financial inclusion index, we calculated the index for each 40 nations. Efforts to reduce poverty in Sub-Saharan Africa are examined in the study, as are the elements that impact expanded access to financial services. Estimates were derived from econometric models. Thus, the research is quantitative. The survey indicated that most nations in Sub-Saharan Africa have medium-to-low financial economies, except four (Nigeria et al., the Seychelles, and Sao Tome & Principe).

Furthermore, remittances and per capita GNI are the most influential factors when it comes to financial inclusion in Sub-Saharan Africa. This suggests that income per capita is the most critical factor in this region and that factors like low household income and high-risk profiles can significantly contribute to involuntary financial exclusion. In addition, financial depth, defined as loans from domestic banks to the private sector, considerably decreased poverty in Sub-Saharan Africa, whereas financial access did not.

Park et al. (2018) expanded the existing body of work on financial inclusion by narrowing their focus to developing Asian nations. The study developed its financial inclusion metric to examine the macroeconomic and country-specific variables impacting financial inclusion in 37 developing Asian nations. Financial inclusion is one of many variables examined in this study that impact income inequality and poverty. Who in emerging Asia has access to formal financial services depends on several factors, including population density, legal stability, and per capita income, according to the report. Researchers also discovered that financial inclusion helped reduce poverty rates and evened out income disparity. According to the study, if

we increase access to financial services, along with measures to help the young and old, like retirement pensions, enforce financial contracts, and oversee financial regulators more strictly, we can help reduce income inequality and poverty.

Lal (2018) investigated cooperative banks because of their ability to reduce poverty. From July to December 2015, 540 members of the J&K, HP, and Punjab cooperative banks' customer databases were surveyed in India. Factor analysis was employed to distil the data down to its barest essentials. A second-order CFA was used to assess the data's validity and reliability. The data was analyzed using standard statistical procedures, including a t-test, one-way ANOVA, and structural equation modelling (SEM). According to the research, a great way to alleviate poverty is to establish cooperative banks as a form of financial inclusion. According to the study, more access to savings, loans, insurance, and credit improved the quality of life for low-income people.

Using data collected in Bolivia, Bangladesh, Nigeria, and Mali, Amadou (2018) examined the effects of financial inclusion on poverty. The study used a questionnaire to find out what the poorest people in Mali desire and need and to look into the causes of poverty in the country. Several recommendations were derived from the findings of the descriptive and comparative analyses. These included urging the agricultural sector to support credit for acquiring agricultural inputs and machinery, raising public awareness and encouraging people to sign up for loans for agricultural purposes, educating the impoverished about money management, and funding agricultural endeavours through banks. Importing more farmland, agricultural machinery, agricultural items for export, and agricultural products for industrialization are all crucial. Finally, it is critical to prioritize technical and vocational training, increase school construction in neglected areas, and ensure all pupils have access to quality education.

The inaccessibility of legal financial services forces many Africans to resort to less secure but more convenient options, according to research by Andrianaivo and Kpodar (2019). They also found that people had a significant propensity to

save but needed more banking services and technology to develop their economy. The problem has worsened due to the shortage of suitable financial technology and the abundance of neither bank offices nor ATMs. According to Andrianaivo and Kpodar (2019), a substantial amount of Africans' income comes from mobile phones, so investing in this technology is seen as an absolute need. Additionally, the growth regression shows a positive and statistically significant interaction between mobile phone penetration and financial inclusion. From this, a mobile financial service platform could fill a need in financial technology.

Ibrahim et al. (2019) examined 49 Sub-Saharan African nations' data from 1980 to 2017 to determine the impact of financial inclusion on poverty reduction. We used a static panel model to examine the data. The sub-region saw a more significant change in poverty reduction rates due to savings, private sector credit as a proportion of GDP, availability of automated teller machines, IT, inflation, and government spending. Contrary to expectations, it was found that interest rates and economic growth were the culprits behind a 50% spike in poverty. According to their findings, one way to alleviate poverty in countries of Sub-Saharan Africa is to increase people's access to financial services. It was proposed that central regulatory agencies reduce interest rates, restore rural banking institutions, and make internet connectivity more affordable in urban and rural areas so that individuals with lower incomes may use formal financial resources.

Noha and Mahmoud (2020) assessed the role of financial technology (FinTech) in advancing the Sustainable Development Goals, particularly its capacity to reduce extreme poverty by 2030. The study covered 127 developing countries across the MENA and SSA regions using annual data from 2004 to 2018. The Generalized Method of Moments (GMM) was employed, while FinTech adoption was measured through indicators such as mobile subscriptions, fixed broadband connections, and internet usage. The results showed that FinTech has a significant effect on poverty reduction. However, the study noted that dependence on FinTech alone would not enable countries in MENA and SSA to completely

achieve the UN's poverty eradication target by 2030. The authors therefore argued that the effectiveness of digital financial services depends on complementary factors, particularly good governance and investment in human capital. They concluded that combining FinTech development with appropriate institutional and human-capital policies would enhance its capacity to contribute meaningfully to poverty reduction and the achievement of the SDGs.

Koomson et al. (2020) examined the relationship between financial inclusion, household poverty, and vulnerability to poverty in Ghana. The researchers used data from the 2016–2017 Ghana Living Standards Survey and constructed a financial inclusion index using multiple correspondence analysis. They employed a three-stage feasible least squares approach and an instrumental-variable probit model to address the possible endogeneity of financial inclusion, using distance to the nearest bank as an instrument. The study revealed that 23.4% of the population was poor, while 51.4% remained vulnerable to poverty. Increased financial inclusion was found to reduce the likelihood of households being poor by approximately 27% and their vulnerability to poverty by about 28%. The benefits were, however, less pronounced among female-headed households, while rural households experienced greater poverty reduction than urban households. The study consequently established that improving access to financial services can play a significant role in reducing both household poverty and vulnerability.

Omar and Inaba (2020) investigated the extent to which financial inclusion contributes to poverty reduction and income inequality across 116 developing countries. The study utilized unbalanced panel data covering the period 2004–2016 and constructed a financial inclusion index based on indicators of banking-sector outreach. Using a fixed-effects estimation technique, the authors found that greater access to formal financial services was associated with lower levels of poverty and income inequality. Their findings suggest that expanding financial services to disadvantaged and underserved populations can serve as an effective mechanism for improving economic welfare. The study

therefore emphasized the need to promote wider access to formal financial services, particularly among low-income groups.

Appiah-Otoo and Song (2021) examined the relationship between financial technology and poverty reduction using data from 31 provinces in China over the period 2011–2017. The study considered household per capita consumption as a measure of poverty and examined FinTech through third-party payment and credit services. Other relevant factors, including domestic credit to the private sector, inflation, trade openness and economic growth, were incorporated into the analysis. The findings revealed that FinTech contributed significantly to reducing poverty, both directly and through its interaction with other supportive policies. The authors further observed that the expansion of FinTech strengthened economic activity and financial infrastructure, thereby improving the capacity of households to meet their economic needs. This finding demonstrates that the poverty-reducing role of FinTech may extend beyond access to financial services to include broader improvements in economic and financial systems.

Nsiah et al. (2021) investigated whether financial inclusion could reduce poverty in Sub-Saharan Africa by examining the possibility of a threshold or tipping-point effect. Using data covering 2010–2017 and applying the Hansen threshold model alongside the differenced Generalized Method of Moments (GMM) technique, the study assessed how financial inclusion influences poverty reduction under different economic conditions. The findings indicated that financial inclusion can contribute to poverty reduction when the required level of financial development and access is achieved. The study also identified increased money supply and expansion of domestic credit as important channels through which financial inclusion can support poverty reduction. Consequently, the authors recommended policies that would create a more supportive environment for banks and other financial institutions to expand financial services to underserved populations.

Tran and Le (2021) examined the influence of financial inclusion on poverty alleviation using

panel data from 29 European countries between 2011 and 2017. The study developed a financial inclusion index through Principal Component Analysis (PCA) and employed both Two-Stage Least Squares (2SLS) and Generalized Method of Moments (GMM) techniques to address the relationship between financial inclusion and poverty. The results showed an inverse relationship between financial inclusion and poverty, indicating that greater access to financial services was associated with lower poverty levels. The authors argued that financial inclusion can contribute to poverty reduction by improving the distribution and accessibility of economic resources. They therefore recommended stronger government interventions aimed at expanding access to banking services and improving educational opportunities. Overall, the study reinforces the argument that financial inclusion can play an important role in reducing poverty when supported by appropriate public policies.

3. METHODOLOGY

3.1 Research Design

Using econometric methods, this study's research design analyzes secondary sources of information. The data will be tested for stationarity as part of these processes to ensure they are adequate for the study. Granger causality tests are performed to establish whether or not the variables are cointegrating prior to model estimation. There is also analysis that aims to accomplish the study's unique aims.

3.2 Model Specification

By way of modification, we introduce the level of FinTech awareness and value of transactions made through innovative FinTech services in a linear model and specify as follows:

$$Y = f(x), \quad [3.1]$$

Where Y is dependent variable (poverty alleviation) and x is independent variables (financial technology). By substituting for the variables, we have:

$$PAL = f(POS, MIP, AFT, IFT) \quad [3.2]$$

Putting the above model in an econometric form, we obtain the linear model below:

$$PAL_t = \beta_0 + \beta_1 POS_t + \beta_2 MIP_t + \beta_3 AFT_t + \beta_4 IFT_t + \varepsilon_{1t} \quad [3.3]$$

Where:

PAL = Poverty alleviation index (income per capita)

POS = Payments made via point-of-sale (POS) payment system

MIP = Lending made via mobile and internet payment services

AFT = Access to FinTech in Nigeria (FinTech penetration rate)

IFT = Value of payments made via innovative FinTech services (Blockchain technology)

Additionally, Inuwa (2021) noted that the level of poverty prevalence can also be a driver for financial inclusion through innovative financial technology. What this implies is that the financial sector players and regulators having seen the level of poverty in Nigeria introduced FinTech to improve financial inclusion and enhance Nigeria's poverty profile.

This entails that there is a form of a mutual relationship between FinTech and poverty alleviation in Nigeria. This mutual dependency can be represented in a modified specification which takes the form of a simultaneous equation model stated as follows:

$$PAL = f(FINTECH) \quad [3.4]$$

$$FINTECH = f(PAL) \quad [3.5]$$

Where;

PAL = Poverty alleviation index (income per capita)

FINTECH = Financial technology indices

The equations [3.4] and [3.5] represent a simultaneous equation model where both poverty alleviation index and financial technology have an interconnected relationship.

By expanding equation (3.4), we obtain an implicit form of the model thus:

$$PAL = f(AFT, POS, MIP, IFT) \quad [3.6]$$

$$AFT = f(PAL, POS, MIP, BNK) \quad [3.7]$$

Where:

BNK = Bank density i.e. number of banks per 100,000 population

The equations [3.6] and [3.7] represent the simultaneous equation model where poverty alleviation (PAL) and access to FinTech (AFT) are the focal variables. The simultaneous model can be written in a multiple linear equation form to obtain the structural equations below:

$$PAL_t = \beta_{11} + \beta_{12}AFT_t + \beta_{13}POS_t + \beta_{14}MIP_t + \beta_{15}IFT_t + \varepsilon_{1t} \quad [3.8]$$

$$AFT_t = \beta_{21} + \beta_{22}PAL_t + \beta_{23}POS_t + \beta_{24}FIO_t + \beta_{25}BNK_t + \varepsilon_{2t} \quad [3.9]$$

Where;

PAL (Y₁) = Poverty alleviation index

AFT (Y₂) = Access to FinTech in Nigeria (FinTech penetration rate)

POS = Payments made via point-of-sale (POS) payment system

MIP = Lending made via mobile and internet payment services

IFT = Value of payments made via innovative FinTech services

FIO = Financial openness i.e., ratio of money supply to GDP

BNK = Bank density

β's = unknown coefficients of the simultaneous equation model

Note: Financial openness (FIO) and bank density (BNK) are both used as instrumental variables in the simultaneous equation model.

From the model specified above, poverty alleviation index (PAL) is a dependent variable in equation (3.8) and it is independent in equation (3.9), while access to FinTech (AFT) is independent in equation (3.8) but dependent in equation (3.9). Therefore, we have two endogenous variables represented by Y₁ and Y₂, namely PAL and AFT and five pre-determined variables conventionally represented by X₁ – X₅. Hence, the simultaneous equation model above may be rewritten as:

$$Y_{1t} = \beta_{11} + \beta_{12}Y_{2t} + \beta_{13}X_{1t} + \beta_{14}X_{2t} + \beta_{15}X_{3t} + U_{1t} \quad [3.10]$$

$$Y_{2t} = \beta_{21} + \beta_{22}Y_{1t} + \beta_{23}X_{1t} + \beta_{24}X_{4t} + \beta_{25}X_{5t} + U_{2t} \quad [3.11]$$

3.3 Method of Data Analysis

This paper employed the Augmented Dickey Fuller test in order to check unit root test. A co-integration test was done considering that the variables were integrated at the same order. Consequently, a simultaneous model was developed, granger causality test and auto regressive distribution lag brought in line to achieve the objectives of the paper.

4. RESULTS

4.1 Unit Root Test: The summary of unit root test (ADF) results using E-views software is detailed in the Table 4.1 below:

Table 4.1: ADF Summary results at 5% critical value

Variables	ADF Test Statistics		Order of Integration	Decision Rule
	@ Level	@1st Difference		
LnPAL	-0.1279 [0.6381]	-2.7408 [0.0063]	I(1)	Stationary at first difference
LnAFT	-0.5569 [0.8753]	-3.9469 [0.0022]	I(1)	Stationary at first difference

LnPOS	-1.0257 [0.7434]	-8.4602 [0.0000]	I(1)	Stationary at first difference
LnMIP	0.0985 [0.9646]	-4.7748 [0.0001]	I(1)	Stationary at first difference
LnIFT	0.0953 [0.9645]	-9.8223 [0.0000]	I(1)	Stationary at first difference
LnFIO	-2.1311 [0.2329]	-4.3978 [0.0004]	I(1)	Stationary at first difference
LnBNK	0.8896 [0.8994]	-2.0668 [0.0376]	I(1)	Stationary at first difference
5% critical value @ level = -2.9389 5% critical value @ 1 st difference = -2.9458				

Source: Extracted from E-view 9

The results shows that all the variables of the model – PAL, AFT, POS, MIP, IFT, FIO and BNK are stationary after first differencing. This means that the variables are integrated at order one $I(1)$. The implication is that the statistical

properties of the variables do not vary over time since they were found to be integrated at first difference i.e. $I(1)$. Therefore, this necessitates the test for long run relationship using the Johansen cointegration test (Egbulonu, 2019).

Table 4.2: Summary of the Engle-Granger Cointegration Test

Dependent	t-statistic	Prob.*	z-statistic	Prob.*
PAL	-6.945114	0.0222	-7.651922	0.0458
AFT	-5.625128	0.0362	-26.53756	0.4787
BNK	-1.620079	0.9973	-23.96238	0.5887
FIO	-3.742931	0.5151	-26.77272	0.4689
IFT	-8.994408	0.0371	-32.08847	0.2724
MIP	-2.505776	0.9556	-30.72220	0.3117
POS	-3.677660	0.5490	-26.81620	0.4671

Source: Extracted from Eviews 9.0 Output

The Table 4.2 above shows that the Tau-statistic for poverty alleviation and access to FinTech are -6.9451 and -5.6251 respectively. Their probability values are 0.0222 and 0.0362

respectively. Based on the decision rule for the Engle-Granger single equation cointegration test, we reject the null hypothesis that the series are not cointegrated and accept the alternate hypothesis that the series are cointegrated.

4.3 Estimating the Simultaneous Equation Model

A necessary condition that necessitated the fitting of a simultaneous model to the model is

the existence of bidirectional causal relationship between financial technology and poverty alleviation. The Granger Causality test is summarized below as follows:

Table 4.3: Summary of Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
AFT does not Granger Cause PAL	154	6.32976	0.0277
PAL does not Granger Cause AFT		4.46111	0.0131
POS does not Granger Cause PAL	154	3.63364	0.0288
PAL does not Granger Cause POS		3.06640	0.0495
MIP does not Granger Cause PAL	154	3.80333	0.0245
PAL does not Granger Cause MIP		3.56813	0.0378
IFT does not Granger Cause PAL	154	2.11709	0.1240
PAL does not Granger Cause IFT		0.12106	0.8861
FIO does not Granger Cause PAL	154	1.76383	0.1749
PAL does not Granger Cause FIO		3.85732	0.0233
BNK does not Granger Cause PAL	154	2.07311	0.1294
PAL does not Granger Cause BNK		1.70069	0.1861

Source: Extracted from E-views 9.0 Output

The Granger causality test summarized in Table 4.3 above shows that FinTech (AFT) and poverty alleviation (PAL) have bidirectional causal relationship. Their respective *p-values* (0.0277 and 0.0131) are less than 0.05 critical values and

as such we reject their null hypotheses. This implies that there is ample evidence to prove that the present trend of growth in financial technology can be used to predict poverty alleviation and vice versa.

4.4 Estimation of the 2SLS Result

Table 4.4: Modelling equation 1 (poverty alleviation – FinTech) by 2SLS

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.347449	0.699985	11.92518	0.0000
AFT	-0.504426	0.034753	-14.51456	0.0000
POS	0.021388	0.017334	1.233900	0.2192
MIP	0.101544	0.082596	1.229408	0.2208
IFT	0.059704	0.020039	2.979373	0.0034

Dependent variable = poverty alleviation (per capita income)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.754246	2.377876	4.102084	0.0001
PAL	1.406649	0.093746	15.00494	0.0000
POS	0.159001	0.010025	15.86044	0.0000
FIO	0.485716	0.326620	1.487096	0.1391
BNK	0.340343	0.201304	1.690698	0.0930

Dependent variable = Access to FinTech

Source: Extracted from E-view 9.0 Output

The Simultaneous equation model is estimated thus:

$$PAL_t = 8.347 - 0.504 \cdot AFT_t + 0.021 \cdot POS_t + 0.102 \cdot MIP_t + 0.0597 \cdot IFT_t + \varepsilon_{1t}$$

$$AFT_t = 9.754 + 1.407 \cdot PAL_t + 0.159 \cdot POS_t + 0.486 \cdot FIO_t + 0.3403 \cdot BNK_t + \varepsilon_{2t}$$

From the above simultaneous equation regression line, the intercepts 8.347 and 9.754 indicate that holding financial technology adoption at a steady state or at zero, there will be positive movements in per capita income and access to FinTech respectively. This explains the importance of financial technology in raising the living standards of the people.

Evidence from the 2SLS model shows that per capita income decreases by 0.504 units as a result of changes in access to FinTech while access to FinTech (AFT) increases by 1.407 units as a result of changes in per capita income. What this implies is that FinTech has a decreasing effect per capita income while per capita income has an increasing effect on FinTech adoption. In other words, the penetration of financial technology in Nigeria has not increased the per capita income of Nigerians and at the same time, the level of poverty in Nigeria (measured by per capita income) increases access to financial technology.

Furthermore, the simultaneous equation shows

that POS transactions, mobile and internet payments and innovative FinTech payments increased per capita income by 0.021, 0.102 and 0.059 units respectively. Thus, the level of adoption of POS, mobile and internet payment as well as innovative FinTech payment gateways has proven to have positively affected poverty alleviation as it increases per capita income. The magnitude of increase is such that mobile and internet have the highest effect increase per capita income by 0.102 units. In terms of significance, only innovative FinTech payment gateways increased per capita income

significantly.

In the second equation, value of POS transactions, financial openness and bank density increased access to FinTech by 0.159, 0.486 and 0.3403 units respectively. Only POS transactions significantly increased access to FinTech in Nigeria expectedly. The positive effects of the financial technology variables on FinTech access shows that Nigeria is gradually adopting financial technology as a means of raising the living standards of the people; POS especially has been dominant in this regard.

Diagnostic Test

Table 4.5: Diagnostic Tests

Diagnostic tests	Result	Decision Rule
Adjusted coefficient of determination (Adj. R ²)	Equation 1 = 0.641 = 65.1% Equation 2 = 0.876 = 87.7%	The models have overall Strong coefficients of determination.
Fishers test (F-stat)	Equation 1 = 73.18(<i>p-value</i> = 0.0000) Equation 2 = 27.74 (<i>p-value</i> = 0.0000)	Overall model is significant i.e. jointly significant.
Durbin Watson	Equation 1 = 1.923 Equation 2 = 1.817	No autocorrelation in the models since DW values tends towards 2.
Heteroskedasticity test	Eqn 1 = F-stat = 11.206(<i>p</i> = 0.0148) Eqn 2 = F-stat = 2.085(<i>p</i> =0.0543)	Error variance of the data in equation 1 are not equal but are equal in equation 2 i.e. data is heteroskedastic for equation 1 but homoscedastic for equation 2 (we ignored the homoscedasticity present in eqn 2).
Overall Normality test	Eqn 1 = JB-stat = 1.6907(<i>p</i> = 0.4294) Eqn 2 = JB stat = 2.0342(<i>p</i> = 0.3616)	Accept null i.e. Data in both equations are normally distributed

Source: Exacted from Eviews9 Output

5. Discussion of Findings

The findings made in this study emanated from the analysis of the simultaneous equation model which proved that financial technology can be a

function of poverty level in the economy and vice versa. The simultaneous model formulated were borne out of the need to find out the effect of financial technology on poverty alleviation in Nigeria. Using the Augmented Dickey Fuller

Unit root test at 5% level of significance, we found that the data were all stationary after first differencing which necessitated the use of the data and further test for long run relationship amongst the variables (cointegration). The long run relationship was ascertained using the Engle-Granger single equation co-integration test. The adoption of this test is based on the peculiarity of the model which is comprised of two equations which are simultaneous. The result revealed that there was long-run relationship between financial technology and poverty alleviation in Nigeria. This means that in the long run, financial technology would result to decrease in poverty level in Nigeria. This finding is in consonance with Ajide (2018) who affirmed that financial inclusion has long run effect on poverty reduction in rural Nigeria.

The 2SLS estimation provides an important insight into the two-way relationship between financial technology and poverty conditions in Nigeria. The results indicate that a change in access to FinTech is associated with a 0.504-unit decline in per capita income, whereas a 1.407-unit increase in FinTech access is associated with changes in per capita income. This suggests that, despite the expansion of digital financial services, greater FinTech penetration has not, during the period covered by the study, translated into a corresponding improvement in the income position of Nigerians. At the same time, declining income conditions appear to encourage greater reliance on FinTech services. This outcome differs from the argument of Fadun (2018), who regarded financial inclusion as an important mechanism for poverty reduction and income redistribution in Nigeria and other developing economies. The divergence may be explained by the broader period covered in the present study and the inclusion of newer FinTech-related variables, which may have altered the observed relationship. The finding is also consistent with Ageme et al. (2018), who reported that some forms of financial services, particularly microfinance loans and online banking, may produce limited or counterproductive poverty-reduction outcomes.

Further examination of the simultaneous equation results shows that individual FinTech channels do not contribute equally to changes in

per capita income. POS transactions, mobile and internet payments, and innovative FinTech services increased per capita income by 0.021, 0.102, and 0.059 units, respectively. These results indicate that increased use of digital payment channels has the potential to improve economic welfare and contribute to poverty alleviation through higher income levels. Among the channels examined, mobile and internet transactions recorded the largest effect on per capita income, suggesting that their wider reach and convenience may provide greater opportunities for economic participation. However, only innovative FinTech payment gateways produced a statistically significant increase in per capita income. This distinction is important because it shows that increased usage of digital financial services does not automatically produce significant poverty-reduction outcomes; rather, the effectiveness of FinTech depends on the particular service through which financial access is delivered.

Evidence from the second equation showed that the value of POS transactions, financial openness and bank density increased access to FinTech. However, only POS transactions significantly increased access to FinTech in Nigeria expectedly. The positive effects of the financial technology variables on FinTech access shows that Nigeria is gradually adopting financial technology as a means of raising the living standards of the people; POS especially has been dominant in this regard. This finding supports the work of Ogbeide and Igbini (2019) who also proved that the number of commercial bank branches per 100,000 adults was found to have a significant beneficial effect on per capita income, the standard of life, and the reduction of poverty. Similarly, Aribaba (2020) posited that financial inclusion plans significantly contributed to reducing poverty among Nigeria's low-income earners and proved empirically that by lowering poverty and raising per capita income, the new social investment plan also raised the general quality of life. Other researchers that used survey method such as Bassey et al. (2022), Okoye et al. (2021), Eze and Alugbuo (2021) etc. found positive influence of FinTech adoption in reducing poverty in Nigeria.

The intercept of the simultaneous equations were

positive which means that the level of poverty in Nigeria slows at a gradual pace due to the increase in per capita income in the event that the financial technology variables are reduced drastically or even halted given the effect of the stochastic variables in the model. On the other hand, financial technology adoption would increase given that per capita income and other associated variables of FinTech are held constant at zero. This underlines the impact of the stochastic variables which are the variables that affect the outcome of the endogenous variables but are not accounted for in the simultaneous equation model.

The findings from the second equation indicate that POS transactions, financial openness, and bank density positively influenced access to FinTech by 0.159, 0.486, and 0.3403 units, respectively. However, only POS transactions had a significant effect. This suggests that POS services have become a major channel for expanding financial access in Nigeria, particularly for individuals with limited access to traditional banking. The result further indicates that Nigeria is steadily adopting technology-driven financial services, with POS transactions playing a leading role in this process.

6. Conclusion

This study concludes that financial technology has an important role to play in poverty alleviation in Nigeria by improving access to and the use of digital financial services. The findings establish a meaningful relationship between FinTech development and poverty alleviation, although the effects vary across the different FinTech channels examined. POS transactions, mobile and internet payments, and innovative FinTech services contributed positively to per-capita income, while innovative FinTech services recorded a statistically significant effect. POS transactions also significantly enhanced access to FinTech, indicating their growing importance in extending financial services to Nigerians. However, the findings suggest that the poverty-reducing potential of FinTech has not been fully realized because its penetration and effective use remain uneven, particularly among businesses and economically

vulnerable groups. Therefore, greater efforts are required to expand affordable and accessible digital financial services, promote the digitization of small businesses, strengthen agent banking, and improve the overall financial inclusion environment. If these measures are effectively supported by appropriate policies and institutional cooperation, FinTech can become a stronger instrument for improving income opportunities, reducing poverty, and raising the living standards of Nigerians.

7. Recommendations

Based on the findings of the study, the following recommendations are proposed:

- Government should strengthen financial inclusion initiatives. Greater attention should be given to policies that make digital financial services affordable, accessible, and easy to use, particularly for low-income individuals, rural communities, and other financially underserved groups. Financial openness should be improved to encourage wider FinTech participation. Government and relevant regulatory authorities should create a more supportive financial environment that allows individuals and businesses to access formal financial services with fewer barriers. This will encourage greater adoption of digital payment and other technology-driven financial services.
- Access to finance for local manufacturers should be expanded. Financial institutions and government agencies should develop more accessible funding arrangements for local producers, particularly small and medium-sized enterprises. Affordable credit and suitable digital lending platforms can help these businesses expand their operations, create employment, and contribute to household income. The digitization of small and medium-sized enterprises should be accelerated. More SMEs, especially those operating in the real sector, should be encouraged and supported to adopt digital payment

systems, online financial platforms, and other relevant FinTech solutions. Such adoption can reduce transaction costs, improve business efficiency, broaden market opportunities, and strengthen the income-generating capacity of small businesses.

- FinTech development should be accompanied by appropriate infrastructure and financial literacy. Expanding digital financial services without ensuring that people understand how to use them may limit their poverty-reducing potential. Therefore, financial literacy programmes, reliable digital infrastructure, affordable internet access, and consumer protection should form an important part of Nigeria's FinTech development strategy. The government and financial-sector regulators should promote inclusive digital finance rather than focusing only on technological expansion. The ultimate objective should be to ensure that FinTech creates meaningful economic opportunities for ordinary Nigerians. Policies should therefore be designed to connect digital financial services with entrepreneurship, employment creation, savings, credit access, and sustainable income generation.

REFERENCES

- Aderibigbe, J. O. (2020). The role of the financial sector in poverty reduction. *CBN Economic & Financial Review*, 39(4), 1-30
- African Development Bank (2020). The millennium development goals and poverty reduction in Nigeria: progress, prospects and policy implication. Final report.
- Ageme, A.E., Anisiuba, C.A., Alio, F.C., Ezeaku, H.C., & Onwumere, J.U.J. (2018). Empirical assessment of the effects of financial inclusion on poverty reduction in Nigeria. *European Journal of Economics Finance and Administrative Science*, 99, 22-29.
- Ajide, F.M. (2013). Socio-economic antecedents of failing rural development policy: An appraisal of rural development programmes and projects in Nigeria. *International Journal of Humanities and Management Science*, 1(1), 94-102.
- AlMomani, A. A., & Alomari, K. F. (2021). Financial technology (FinTech) and its role in supporting the financial and banking services sector. *International Journal of Academic Research in Business and Social Sciences*, 11(8), 1793–1802.
- Amadou, D. (2018). Financial Inclusion and poverty reduction: selected approaches and implications for Mali's choice. *Academic Journal of Economic Studies*, 4(4), 50-56
- Andrianaivo, B & Kpodar, N. F. (2019). The 2019 Brookings financial and digital inclusion project report: Measuring Progress on Financial Access and Usage. Washington, DC. Center for Technology Innovation
- Asian Development Bank, (2016). Better policy Series India Sustaining high and inclusive growth, Retrieved from: <http://www.oecd.org/india/IndiaBrochure2012>
- Asribaba, F., Adedokun, J., Oladele, R., Babatunde, A., Ahmodu, A. & Olassehinde, S. A. (2020). Financial inclusion scheme and poverty alleviation in Nigeria (2004 – 2019). *Acta Universitatis Danubius* 16(4), 220-233
- Ayensu, A. E. (2017). The impact of financial inclusion on poverty reduction in some selected Sub-Saharan Africa countries. *Journal of Economics and Development*, 4(3), 23-39
- Bassey, E., Walter, M., Henry, J., Lebo, P. & Asuquo, I. (2022). Financial inclusion and poverty alleviation in Akwa Ibom State, Nigeria: the case study of small and medium enterprises. *International*

Journal of Economics and Financial Issues, 12(5), 129-134

- Boloupremo T and Ogege's (2024) financial technology (fintech) as a driver for poverty reduction in Nigeria, *Journal of Developing Areas, Tennessee State University, College of Business*, Vol 58 (4), pages 77-87.
- Central Bank of Nigeria (2019), (2021). Financial Sector Statistics, FRN
- Churchill, S. A. & Smith, R. (2020). Financial inclusion and poverty: Micro level evidence from Nigeria.
- Damilola, A. O. (2022). FinTech and financial inclusion in West Africa: Nigeria's SMEs market. *International Journal of Multidisciplinary and Current Educational Research* 4(1), 210-218
- Edozie C.C (2026) Financial Inclusion Technologies and Poverty Reduction in Nigeria. *African Journal of Economic and sustainable Development* volume 9 (2)156- 169. [https:// 10.52589/AJESD-FEXFSXJH](https://10.52589/AJESD-FEXFSXJH).
- Egbulonu, K. G. (2019). Advanced econometric methods for postgraduate. Unpublished lecture notes, Imo State University Owerri
- Enhancing Financial Innovation and Access (2020). EFinA Access to financial services in Nigeria 2020 Survey. EFinA.
- Eze, E., &Alugbuo, J. C. (2021). Financial inclusion and poverty reduction in Nigeria: A survey-based analysis. *GSC Advanced Research and Reviews*, 7(3), 75-84
- Faboyede, S. Ben-Caleb, E. &Oyewo, B. (2018). Financial literacy education: key to poverty alleviation and national development in Nigeria. *International Technology, Education and Development Conference Valencia, Spain*
- Honohan, P. (2008): Cross-country variation in household access to financial Services, *Journal of Banking & Finance*, 32(11): 2493-2500
- Hussaini, U. &Chibuzo, I. (2018). The effects of financial inclusion on poverty reduction: The moderating effects of microfinance. *International Journal of Multidisciplinary Research and Development*5. 188-198.
- Ibrahim, H.B., Manu, D., Adamu, I., Jediel, E.H., Kasima, W., Hajara, B., &Yusrah, I. (2019). An examination of the impact of financial inclusion on poverty reduction: Empirical evidence from Sub-Saharan Africa. *International Journal of Scientific and Research Publication*, 9(1), 239-252
- Ilori, D. B. (2020). Financial sector development and poverty reduction nexus: evidences from Nigeria. *European Journal of Accounting, Auditing and Finance Research* 8 (3), 1-12
- Inuwa, K. (2021). NITDA DG describes Nigeria's FinTech sector as a poverty remover. www.itpulse.com.ng
- Koomson, I., Villano, R. A. & Hadley, D. (2020) Effect of financial inclusion on poverty and vulnerability to poverty: evidence using a multidimensional measure of financial inclusion. *Soc Indic Res* 149, 613–639. <https://doi.org/10.1007/s11205-019-02263-0>
- Lal, T. (2018). Impact of financial inclusion on poverty alleviation through cooperative banks, *International Journal of Social Economics*, 45(5), 808-828. <https://doi.org/10.1108/IJSE-05-2017-0194>
- Noha,E.& Mahmoud, M. (2020). Financial technology and the poverty gap: the case of Middle East and Africa. *Social Science Research Network* Available at: <https://ssrn.com/abstract=4062334>
- Nsiah, A.Y., Yusif, H., Tweneboah, G., Agyei, K., & Baidoo, S.T. (2021). The effect of financial inclusion on poverty reduction in Sub-Sahara Africa: Does threshold

- matter? *Cogent Social Sciences*, 7(1), 1-17
- Odeleye, A. T., & Oyeneye, I. (2022). Impact of financial technology (Fintech) on financial inclusion in Nigeria. *Fuoye Journal of Finance and Contemporary Issue*, 2(1), 72-86.
- Ogbeide, S.O & Igbinigie, O.O. (2019). Financial inclusion and poverty alleviation in Nigeria. *Accounting and Taxation Review*, 3(1): 42-54
- Okoye, H. C., Okoye, L. U., Omankhanlen, A. E., Urhie, E., Okoh, J. & Ezeji, F. (2021). The role of financial literacy in poverty reduction. *Journal of Science Technology and Education* 9(3), 199-108
- Olatunji, T. (2020). Advancing the Cause of FinTech in Nigeria through Regulation. *The Gravitas Review of Business & Property Law*, 11(4), 19.
- Oluwatosin, A. (2017). The impact of electronic banking on bank performance in Nigeria. Available @ <https://ynaija.com/impact-electronic-banking-bank-performancenigeria/>
- Omar, M.A., & Inaba, K. (2020). Does financial inclusion reduce poverty and income inequality in developing countries? A panel data analysis. *Journal of Economic Structures*, 9(37), 1-25
- Ondiege, P. (2017) Mobile Banking in Africa: Taking the Bank to the People, African Development bank (AfDB), *Africa Economic Brief*, 1(8)1-15 www.afdb.org
- Onodogu, C. and Ifeanyi, K. (2015) Overview of electronic banking in Nigeria, *International Journal of Multidisciplinary Research and Development*, 2(7) 336-342
- Park, C. & Mercado, R. V. Jr. (2015). Financial inclusion, poverty, and income inequality in developing Asia. *ADB economics working paper series*. No. 426
- Salaudeen, A., (2018). USSD Codes may not be as safe as we think. [Online] Available at: <https://www.stearsng.com/article/ussd-codes-may-not-be-as-safe-as-we-think> [Accessed 3/3/2022].
- Sarma M. (2012). Index of financial inclusion - A measure of financial sector inclusiveness. Berlin Working Papers on Money, Finance, Trade and Development
- Swamy, V. (2014). Financial inclusion, gender dimension, and economic impact on poor households, *World Development*, 56, 1-15.
- Tarek, I. (2016). Granger Causality Test, VAR Granger Causality, www.researchgate.net/
- Toda, H. Y. and Yamamoto, T. (1995). Statistical Inferences in Vector Autoregressions with Possibly Integrated Processes. *Journal of Econometrics*. 66. 225-250
- Tope, K. (2010). E-Banking and commercial bank performance in Nigeria: a cointegration and causality approach, *International Journal of e-Education, e-Business, e-Management and e-Learning*, 6(3) 175-185
- Umaru, H., & Imo, C.C. (2018). The effects of financial inclusion on poverty reduction: The moderating effects of microfinance. *International Journal of Multidisciplinary Research and Development*, 5(12), 188-198
- Usman, M. U. (2020). The effect of financial technology on financial inclusion in Nigeria. Baze University Abuja, Masters Thesis.