Effect of Financial Inclusion and Digital Finance on Poverty Alleviation: Nigeria's Perspective

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Abstract
This study examined the effect of financial inclusion and digital finance on poverty alleviation in Nigeria. However, the specific objectives were to ascertain the relationship between volume of web-based transactions and real GDP of Nigeria, to establish the relationship between volume of POS transactions and real GDP of Nigeria and to investigate the relationship between volume of ATM transactions and real GDP of Nigeria. This study adopted the ex-post facto design. Since this study adopts Nigeria as a case study, the period covered (2015-2024) was adopted as the sample for this study. This study made use of secondary data obtained from National Bureau of statistics (NBS) factbook and Central Bank of Nigeria statistical bulletins for the various years under study. The collected data for this study were computed and analyzed using descriptive statistics and multiple linear regression tools with the aid of SPSS 20.0 software. The study findings revealed that volume of Web-based transactions has a non-significant inverse relationship (Coeff. = -0.823 {0.469}) with real GDP of Nigeria while volume of POS transactions has a positive non-significant relationship (Coeff. = 0.956 {0.410}) with real GDP of Nigeria. it also revealed that the volume of ATM transactions has a positive non-significant relationship (Coeff. = 0.750 {0.111}) with real GDP of Nigeria. In conclusion, the study underscored the importance of promoting financial inclusion and digital finance as a strategy for poverty alleviation in Nigeria. The recommendations made included that the Central Bank of Nigeria and other regulatory agencies should strengthen regulatory frameworks and oversight mechanisms to ensure the security, stability, and integrity of digital financial systems, and protect the rights and interests of consumers.

Keywords: *Financial inclusion, Digital finance, Poverty alleviation, Web-based transactions, POS transactions, ATM transactions, Real GDP*

1.0 Introduction

1.1 Background to the study

The cashless policy in Nigeria, which encompasses web-based transactions, POS transactions, and ATM transactions, has the potential to significantly impact economic growth. Several studies have examined this relationship and highlighted the various ways in which the cashless policy can stimulate economic growth. One of the key benefits of the cashless policy is the promotion of efficiency in financial transactions. This efficiency leads to a more streamlined business environment, facilitating trade and business transactions, and ultimately stimulating economic growth. POS transactions, which encourage the use of electronic payments instead of cash, also contribute to economic growth. Web-based transactions enable online purchases and payments, reducing transaction costs and increasing convenience for businesses and consumers (Ogbonna & Unah, 2018). By promoting transparency, reducing leakages, and improving tax collection, POS transactions create an enabling environment for business expansion and attract investments (Nwaka & Adeniran, 2021). This increased business activity can have a positive impact on economic growth.

However, the accessibility and usage of ATMs are instrumental in the cashless policy. Enhancing access to ATMs encourages greater utilization of electronic banking services and reduces dependence on physical cash. This, in turn, promotes financial inclusion, mobilizes savings, and provides a solid foundation for productive investments (Nnanna & Dogo, 2019). These factors contribute positively to economic growth by fostering a more efficient and inclusive financial system. In addition, the cashless policy aims to increase access to financial services for underserved populations. Adu and Williams (2023) argued that cash-based transactions can pose challenges for those living in remote or underserved areas without easy access to physical bank branches or ATMs. By encouraging the adoption of electronic payment methods, such as mobile banking, debit/credit cards, and online transfers, the policy aims to make financial services more accessible to a larger segment of the population, facilitating their participation in economic activities and fostering inclusive growth (Central Bank of Nigeria, 2017).

Extant studies have shown that the cashless policy has had a positive impact on the Nigerian economy. For instance, a study by Adenikinju (2013) found that the policy contributed to a reduction in cash usage and an increase in electronic transactions, leading to improved efficiency and effectiveness in the payment system. The study also highlighted the potential for increased revenue generation for both the government and financial institutions. Against this backdrop, this study aims to investigate the effect of financial inclusion and digital finance on poverty alleviation in Nigeria. Nigeria, with its vast economic and demographic potential, has been recognized as a nation capable of attaining universal competitiveness. However, the country's cash-based system has been identified as a major constraint to achieving this goal, as it contradicts global trends. In response, the Central Bank of Nigeria (CBN) introduced the cashless policy, aimed at creating an environment where a higher proportion of transactions are conducted electronically (Ogwumike & Oboh, 2021).

Despite the laudable objectives of the cashless policy, its implementation has been hindered by inefficient network systems, particularly in rural areas where petty traders dominate business activities. The absence of reliable network coverage for basic calls, let alone electronic transfers and other services, has limited the adoption of electronic payment channels (Adu & Williams, 2023; Nwani, Nwaimo & Kanu, 2020; Ibe & Odi, 2018; Adu, 2016; Tee & Ong, 2016; Ezeamama, Ndubuisi, Marire & Mgbodile, 2014). This study aimed at addressing this knowledge gap by investigating the impact of financial inclusion and digital finance on poverty alleviation in Nigeria. The main objective of this study was to examine the effect of financial inclusion and digital finance on poverty alleviation in Nigeria.

However, the specific objectives were to:

1. To ascertain the relationship between volume of web-based transactions and real GDP of Nigeria
2. To establish the relationship between volume of POS transactions and real GDP of Nigeria
3. To investigate the relationship between volume of ATM transactions and real GDP of Nigeria

2.0 Review of Related Literature

This section discusses the various concepts that are considered to be the foundation of the study. It also highlights theoretical underpinnings and empirical facts which are germane to this present study.

2.1 Conceptual framework

2.1.1 Financial inclusion and digital finance in Nigeria

Financial inclusion and digital finance are critical components of Nigeria's economic development strategy. The concept of financial inclusion refers to the provision of financial services to all segments of society, regardless of their income level or geographical location (Ogwumike & Oboh, 2021). Digital finance, on the other hand, involves the use of digital technologies to provide financial services, such as mobile banking, online banking, and digital payments (Nwani, Nwaimo & Kanu, 2020).

In Nigeria, the Central Bank of Nigeria (CBN) has been at the forefront of promoting financial inclusion and digital finance. The CBN's cashless policy, introduced in 2012, aims to promote the use of electronic payment systems and reduce the country's dependence on cash transactions (Ogbuigwe, John & Aluya, 2024; Central Bank of Nigeria, 2013). The policy seeks to enhance efficiency, reduce costs, promote financial inclusion, and foster economic growth. One of the key motivations behind the implementation of the cashless policy is to reduce the costs associated with cash handling, such as printing and distribution, security, and the risk of counterfeiting (Nwani, Nwaimo & Kanu, 2020). The policy also seeks to address issues related to financial exclusion and accessibility. According to Ogbeide and Fapohunda (2017), the cashless policy has the potential to increase access to financial services, particularly for the unbanked and underbanked populations.

However, the implementation of the cashless policy has faced several challenges. One major challenge has been the limited infrastructure for electronic payment systems, particularly in rural areas (Oneill, Bello, Adebiyyi, & Ogungbire, 2020). Additionally, concerns have been raised regarding cybersecurity, consumer protection, and the need for adequate safeguards to ensure the privacy and security of electronic transactions. Despite these challenges, the cashless policy has demonstrated positive impacts on financial inclusion and digital finance in Nigeria. According to Aderinokun and Oriaku (2017), the policy has led to an increase in the number of bank accounts, particularly among low-income households. The policy has also promoted the use of digital payment systems, such as mobile banking and online banking.

2.1.2 Web-based transactions

Web-based transactions in Nigeria refer to the process of conducting financial transactions, such as payments and transfers, through internet-based platforms. According to Uzochukwu and Okoli (2016), with the increasing penetration of internet services and the steady growth of e-commerce, web-based transactions have become an important avenue for individuals and businesses to engage in various financial activities conveniently and securely. Web-based transactions in Nigeria are facilitated by various online payment platforms, such as Paystack, Interswitch, Flutterwave, and Quickteller. These platforms provide users with the ability to make payments for goods and services, transfer funds between bank accounts, pay bills, and even initiate international transactions. The convenience of web-based transactions allows users to carry out these activities from the comfort of their homes or offices, eliminating the need for physical presence at banks or other financial institutions (Nwaka & Adeniran, 2021).

One of the advantages of web-based transactions is the speed of processing. Transactions carried out online are typically processed within seconds or minutes, allowing for instant confirmation and receipt of payment. This is particularly beneficial for e-commerce businesses, as it enables them to provide a seamless customer experience and reduce delays in the order fulfillment process. Additionally, web-based transactions offer a greater level of transparency and security compared to traditional cash-based transactions. Online payment platforms utilize encryption protocols and secure authentication processes, protecting sensitive financial information from unauthorized access. Furthermore, users can easily track and monitor their transaction history, providing a transparent and auditable record of their financial activities. However, it is important to note that challenges exist in the adoption and implementation of web-based transactions in Nigeria. These challenges include inadequate digital infrastructure, low digital literacy rates, and concerns regarding data privacy and cyber security (Adeleye, Omotayo & Omolewa, 2020).

2.1.3 POS transactions

POS (Point of sale) transactions in Nigeria refer to the process of conducting financial transactions using a point-of-sale terminal, typically through debit or credit cards. This method of payment has gained popularity in recent years due to its convenience, speed, and security as suggested by Uzochukwu and Okoli (2016). In Nigeria, POS terminals are widely used by businesses, especially in retail stores, restaurants, and service industries. They allow customers to make payments for products and services by swiping or inserting their debit or credit cards into the terminal, which then communicates with the card issuer to authorize the transaction and transfer funds from the customer's account to the merchant's account. Customers no longer need to carry large amounts of cash and can easily make secure payments using their cards (Nnanna & Dogo, 2019).

In terms of security, POS transactions in Nigeria adhere to international standards and employ various security measures to protect sensitive cardholder information. However, challenges persist in the adoption and usage of POS transactions in Nigeria. Limited access to POS terminals in rural areas, occasional network connectivity issues, and the prevalence of cash-based transactions are among the factors that hinder the widespread adoption of POS systems (Dike, 2020). Ogbuigwe, John and Aluya (2024) stressed the critical importance of effective cash flow management in driving investment performance and profitability. It was thus concluded that proficient cash flow management is essential for maximizing investment performance and profitability. Efforts are being made by the government and financial institutions to address these challenges and promote the use of POS transactions in Nigeria. Initiatives such as the Cashless Policy by the CBN aim to reduce the reliance on cash transactions and encourage the use of electronic payment methods, including POS transactions.

2.1.4 ATM transactions

ATM (Automated Teller Machine) transactions in Nigeria refer to the process of conducting financial transactions using an ATM machine, which allows individuals to withdraw cash, deposit funds, check balances, transfer money between accounts, and perform other banking activities without needing to visit a physical bank branch (Nnanna & Dogo, 2019). ATMs have become an essential part of the Nigerian banking system, providing convenience and accessibility to customers. The Central Bank of Nigeria (CBN) has made significant efforts in promoting the use of ATMs in the country, resulting in their widespread adoption by both banks and customers. One of the main advantages of ATM transactions is the convenience they offer.

Customers can access their bank accounts 24/7 and perform various transactions at their own convenience, eliminating the need to visit a physical bank during working hours. This accessibility has significantly improved customer satisfaction and banking efficiency in Nigeria. ATM usage in Nigeria has seen substantial growth over the years. According to data from the Nigerian Inter-Bank Settlement System (NIBSS), the total volume of ATM transactions increased from about 170 million in 2012 to over 1 billion transactions by the end of 2019 (Nwachukwu, Okeke & Udeh, 2020). This demonstrates the preference of Nigerian consumers for ATM transactions as a convenient and efficient method of banking. The growth in ATM usage reflects the preference of Nigerian consumers for self-service banking. Efforts are being made to improve the accessibility and security of ATM services in order to enhance the overall banking experience for customers in Nigeria.

2.1.5 Concept of poverty alleviation

Poverty alleviation refers to the reduction or elimination of poverty, which is a state of deprivation characterized by lack of access to basic necessities such as food, water, shelter, healthcare, and education. In Nigeria, poverty is a pervasive issue, with a significant proportion of the population living below the poverty line (Onoh, 2020). Economic growth is often seen as a vital indicator of a nation's development and prosperity, and it has a direct impact on poverty alleviation. Nigeria, as one of the largest economies in Africa, has experienced varying levels of economic growth over the years, which has had a mixed impact on poverty alleviation (Iwayemi, Folarin & Adewuyi, 2018).

Several factors contribute to poverty alleviation in Nigeria, including government policies, the performance of key sectors such as agriculture, manufacturing, and services, and the overall business environment (Olomola, Adeoti & Babatunde, 2018). The discovery and exploitation of crude oil have played a significant role in Nigeria's economic growth, but the reliance on oil revenues as the primary driver of economic growth has made Nigeria vulnerable to external shocks, such as fluctuating global oil prices (Olomola, Adeoti & Babatunde, 2018). In recent years, there has been an increased focus on diversifying the Nigerian economy to reduce dependence on oil and promote sustainable growth. The government has implemented various policies and programs to develop other sectors such as agriculture, manufacturing, solid minerals, and services. These efforts aim to create a more diversified and resilient economy that can drive poverty alleviation (Iwayemi, Folarin & Adewuyi, 2018).

However, challenges exist that have hindered Nigeria's poverty alleviation efforts. Issues such as inadequate infrastructure, corruption, insecurity, policy inconsistency, and limited access to finance have impacted the overall economic performance of the country and hindered poverty alleviation (Onoh, 2020). Addressing these challenges is crucial for achieving sustainable poverty alleviation in Nigeria. Overall, achieving poverty alleviation in Nigeria requires a multifaceted approach that includes diversifying the economy, improving infrastructure, creating an enabling business environment, promoting good governance, and investing in human capital development. These efforts can drive inclusive growth, reduce poverty, and improve the overall standard of living for Nigerians.

2.1.6 Real gross domestic product

Real GDP, or real Gross Domestic Product, is a measure of economic output that takes into account changes in prices over time. It is calculated by adjusting nominal GDP for inflation, providing a more accurate representation of an economy's actual growth. In Nigeria, real GDP can be used as a proxy for poverty alleviation, as it reflects the overall economic well-being of the country and its citizens. The introduction of the cashless policy in Nigeria has had implications for real GDP and, by extension, poverty alleviation. The cashless policy is an initiative aimed at reducing the use of physical cash in financial transactions, promoting the use of electronic and digital payment systems (Ibe & Odi, 2018). This policy has been implemented to enhance efficiency, reduce corruption, improve financial inclusion, and stimulate economic growth.

The cashless policy has the potential to positively affect real GDP and, consequently, poverty alleviation in Nigeria. By reducing the reliance on cash, the cashless policy improves transparency, reduces leakages, and facilitates the collection of data for economic planning and decision-making. These factors contribute to a more accurate measurement of economic activity, which is reflected in the calculation of real GDP (Uzochukwu & Okoli, 2016). Furthermore, the cashless policy promotes financial inclusion by making banking services more accessible to a larger segment of the population. This increased access to financial services leads to a greater flow of funds, increased savings, and more productive investments, all of which can contribute to higher real GDP and reduced poverty (Balli, Basher & Ghassan, 2020). However, the implementation of the cashless policy also comes with challenges that can hinder its impact on poverty alleviation. Limited access to financial services, inadequate infrastructure, and low levels of financial literacy among some segments of the population can reduce the effectiveness of the policy in increasing real GDP and alleviating poverty. Addressing these challenges and ensuring the policy's inclusivity are crucial for maximizing its impact on poverty alleviation (Ogwumike & Oboh, 2021).

2.2 Theoretical framework

2.2.1 Financial inclusion theory by Demirguc-Kunt and Klapper (2012)

The Financial Inclusion Theory, proposed by Asli Demirguc-Kunt and Leora Klapper in 2012, highlights the significance of providing broader access to financial services for fostering economic growth and reducing poverty. This theory posits that when more individuals and businesses have access to formal financial services, they can actively engage in savings, investment, and entrepreneurial activities, leading to positive economic outcomes (Yusuf, 2016). Ogbuigwe, Aluya and John (2025) highlighted that cash conversion has a significant effect on financial performance of listed consumer goods firms in Nigeria. The recommendations made included that listed consumer goods firms in Nigeria should prioritize efficient accounts receivable management by implementing effective credit policies, credit. The main aspect of the financial inclusion theory is that increased financial inclusion can contribute to economic growth by stimulating capital accumulation, productivity, and ultimately improving standards of living.

Furthermore, the adoption of cashless transactions improves efficiency and productivity in the Nigerian economy. Digital payments reduce transaction costs, enhance transparency, and streamline financial processes. These efficiency gains benefit various economic sectors, including retail, e-commerce, and services. The resulting productivity improvements can lead to increased economic output and growth, aligning with the principles of financial inclusion (Uzochukwu & Okoli, 2016). Lastly, the cashless policy contributes to the formalization of economic activity in Nigeria. By transitioning from cash-based transactions to digital payments, more transactions become traceable and recorded. This shift promotes transparency and accountability, making it easier for governments to collect taxes, enforce regulations, and implement policies that support economic growth.

2.3 Empirical framework

Hardika, Ariana, Aryaningsih and Sukayasa (2024) examined the influence of financial literacy on financial inclusion and rational financial decisions and their impact on the MSME's financial performance is needed to obtain a more comprehensive understanding. This research design was explanatory research, explaining the causal relationship between several variables through hypothesis testing. The instruments used were financial literacy questionnaires, financial inclusion, rational financial decisions, and MSME financial performance. The techniques used inferential analysis using Structural Equation Modeling- Partial Least Square (SEM PLS). The research result showed that financial literacy influences the financial inclusion, rationality of financial decisions, and financial performance of MSMEs. The results of this study indicated that financial inclusion and financial decisions can mediate the effect of financial literacy on MSME performance in parallel and serially.

Habasonda (2024) developed a financial inclusion index for 41 African countries to assess their progress in creating inclusive financial systems. The index covers the period from 2010 to 2019 using three financial inclusion dimensions: access, usage, and availability. The proposed index is easy to compute and provides a helpful tool for tracking progress in financial inclusion. The financial inclusion index will assist in the design of appropriate policy measures aimed at minimizing financial exclusion. The paper finds overall mixed progress in financial inclusion trends among the countries, despite the widely held notion that mobile banking has had a notable impact on financial inclusion in many African countries. Nonetheless, results confirm the significant contribution made by mobile banking. Moreover, the drive for inclusive financial systems is motivated by its perceived benefits on growth and human welfare, which are the focus of the sustainable development goals (SDGs) promoted by the United Nations Development Programme (UNDP).

Ele and Orji (2023) who investigated the impact of financial inclusion on the economic growthin Nigeria between 19912021, using time series data sources from the CBN statistical Bulletin.The study adopted the ex post facto research design and employed the autoregressive distributed lag (ARDL) method to analyze the results. The empirical result indicates that banks' rural savings mobilization financial inclusion has significant positive impact on the real gross domestic product in Nigeria, bank loans to rural economy has significant positive impact on the real gross domestic product (economic growth) in Nigeria, and bank lending rate to farmers has negative but insignificant impact on the gross domestic product in Nigeria. The study recommended that: there is need for a strategic policy approach to entrenching financial technology innovations and the provision of financial services (loan facilities) to rural population as it contributes to improving the performance of the aggregate economy, there is need to improve the ability of rural banks in mobilizing savings, this will further the savings culture of rural dwellers, boost rural investments and impact positively on the aggregate economy, and financial institutions should be mandated to devise a lending a special lending rate that enhances the access of rural dwellers to credits and other financial services, this will improve financial inclusion penetration and advance economic growth of the country.

Tweneboah and Nsiah (2023) investigated how financial stability mediates the financial inclusion and poverty reduction relationship in Africa. Using the panel Autoregressive Distributive Lag model, covering a period of 2004–2020, the study found that financial inclusion is positively related to financial stability in both short and long-run, with education, Gross National Income per capita (GNI) and domestic credit to private sector, contributing to financial stability, and trade openness negatively related to financial stability in the long-run. The study further established that financial stability is positively related to household consumption expenditure as such leads to poverty reduction with trade openness, government expenditure, GNI, education, domestic credit to private sector, and institutional quality contributing significantly to poverty reduction. This confirms the mediating role financial stability plays in enhancing the impact of financial inclusion on poverty reduction in Africa and must therefore be given the necessary attention, through proper regulatory mechanisms.

Ele (2023) who studied the effects of financial literacy on the improvement of financial inclusion in Nigeria (study of selected small and medium enterprises in Abakaliki metropolis, using primary data. The ordinary least squares (OLS) technique was employed to estimate the parameters. The findings indicate that Southeast Nigeria: there is significant effect of financial knowledge on the improvement of financial inclusion in small and medium enterprises in Abakaliki Nigeria; financial experience has significant positive effect on the improvement of financial inclusion in small and medium enterprises in Abakaliki metropolis; and financial skills have significant positive effect on the improvement of financial inclusion in Small and medium enterprises in. Based on recommendations: Banks should develop a mechanism (expansion of financial education facilities) to educate to expand the financial knowledge of their SME customers; Banks in Abakaliki should conduct account opening programme specifically for small and medium holder business to expand their experience of financial products and improve their financial inclusion; and there is need for banks to develop synergy that will produce in-bank or in-business skill training for small holder businesses on financial account reporting and budgeting.

Adu and Williams (2023) examined the effect of cashless policy on financial performance of commercial banks in Nigeria. The objectives include determining the effect of ATM transactions, NEFT transactions, POS transactions, and e-banking transactions on financial performance of commercial banks in Nigeria. The study was panel in nature, requiring data from the annual reports of top five (5) commercial banks in Nigeria. Data were collected for the period between 2013 and 2020. The study utilized E-Views 10 statistical software for the analysis. The study employed regression to investigate how ATM transactions, NEFT transactions, POS transactions, and E-banking transactions have affected performance. The findings revealed that ATM transactions, NIP transaction, mobile banking transactions, and cheque transaction have significant impact of the performance of commercial banks in Nigeria.

Emmanuel (2020) studied the impact of innovation on financial inclusion in the financial sector of Cameroon. It covered the period of 2010-2019, using secondary data and employed descriptive research design and further adopted regression and correlation in the analysis of the data. The result of the research showed that mobile money banking and microfinance institutions has positive and significant relationship with financial inclusion while agency banking indicates a significant negative relationship which the study accused the financial institutions as using the strategy to minimize costs and not necessarily to enhancing the level of financial inclusion in Cameroon. The study therefore recommends that financial institutions should develop a robust financial innovation as it is capable of all-inclusive social, political and economic development in Cameroon as well as enhancing the profit base and minimizing financial management costs

Nwani, Nwaimo and Kanu (2020) evaluated the impact of cashless policy on the Nigerian payment system. The operations of a cashless economy were assessed based on the use of Cheques, funds transfer channels and Automated Teller Machines (ATMs). Analysis of data showed that the volume and usage of cheques as a means of financial settlement has failed and was partially replaced by electronic payment systems. Banks are getting more involved in the use of interbank fund transfers rather than a cash settlement. It was also ascertained that the use of ATM's as a means of financial intermediation is increasing. It is anticipated that the use of ATMs will become even more popular in Nigeria in the near future. To some extent, the outcome of the study has justified the implementation of the cashless policy initiative in Nigeria. However, the innovation and operations of the policy are not without its related limitations. There are various challenges associated with its practice, ranging from poor infrastructural facilities and difficulty in imbibing the e-payment culture due to illiteracy

Madugba (2020) examined the impact of cashless policy on economic growth in Nigeria with the objective of finding out the effect of ATM, POS, RET and WEB on Real Gross Domestic Product in Nigeria. The study employed the ex-post facto and secondary date covering the period 2008 to 2018 gotten from CBN Statistical Bulletin was used for analysis with help of E-view 9 software. Descriptive statistics and multiple regression of least square regression were carried out. This finding of the study showed that ATM, RET and WEB has no significant impact on real gross domestic product while POS was shown to be a significant determinant of real gross domestic product and the study concluded that cashless policy does not impact positively and significantly on economic growth in Nigeria.

Ezeamama *et al.* (2018) examined the impact of central bank of Nigeria cashless policy in Nigeria economy. The objective was to find out if the central bank of Nigeria cashless policy impact positively on Nigeria economy. Survey research designed was adopted and the source of data was primary in which questionnaire was administered to respondents. A total of 500 respondents were selected for the study including traders and students in Lagos state Nigeria. However, this study failed to identify the number of years covered and never stated its major findings.

Ibe and Odi (2018) examined cashless policy models of economic growth: the Nigerian experience. The objective of the study was to find out the effect of cashless policy on Nigeria economy. The ex-post facto research design was adopted and source of data was Central Bank of Nigeria statistical Bulletin and the study covered the period 2009- 2016. The findings of this study show the existence of a long run significant relationship between the variables of cashless policy and economic growth in Nigeria. Also, the ATM seems to be the best and most common means of effecting cashless policy based on the magnitude of its relationship with GDP. Therefore, the need to create more awareness to entice the unbanked people into the banking system becomes imperative more so when a large percentage of the Nigerian population is unbanked.

2.4 Summary of literature review and gap in literature

The literature review reveals that several studies have examined the impact of financial inclusion, cashless policy, and digital finance on economic growth, poverty alleviation, and financial performance in Nigeria and other countries. Studies by Ibe and Odi (2018), Yusuf (2016), and Nwani, Nwaimo and Kanu (2020) found that cashless policy and financial inclusion have a positive impact on economic growth and financial performance. Similarly, studies by Ele and Orji (2023), Elechi and Rufus (2016), and Adu (2016) found that financial inclusion and cashless policy can contribute to poverty alleviation and economic growth. However, some studies also highlighted the challenges and limitations associated with implementing cashless policy and promoting financial inclusion, such as inadequate infrastructure, limited access to financial services, and low levels of financial literacy. Despite the significant contributions of these studies, there are gaps in the literature that need to be addressed. For instance, most of the studies focused on the impact of cashless policy and financial inclusion on economic growth and financial performance, but few studies examined the impact on poverty alleviation and human development. Additionally, there is a need for more empirical studies that investigate the impact of financial literacy and digital finance on financial inclusion and poverty alleviation. Furthermore, most of the studies were conducted in urban areas, and there is a need for more studies that focus on rural areas and the impact of financial inclusion and cashless policy on rural development.

3.0 Methodology

This study adopted the *ex-post facto* design. It is ex-post facto given that the relevant materials will be gathered from such sources as textbooks, journal articles, the internet etc. The study adopted a case study approach which implies that Nigeria is a case study of the study. Thus, there was no well-defined population for this study. Since this study adopts Nigeria as a case study, the period covered (2015-2024) was adopted as the sample for this study. Hence, the study sample stood at 10 years. This study made use of secondary data obtained from the Nigerian Exchange Group fact books, National Bureau of statistics (NBS) and Central Bank of Nigeria statistical bulletins for the various years under study. The collected data for this study were computed and analysed using descriptive statistics and multiple linear regression tools with the aid of SPSS 20.0 software. The decision was based on 5% level of significance. Accept null hypothesis (Ho) if probability value (i.e. P-value or Sig.) is greater than or equals to (≥) stated 5% level of significance (α); otherwise, reject and accept alternate hypothesis (H_1), if p-value or sig. calculated is less than 5% level of significance. The null hypothesis will be accepted if the computed p-value is greater than the significant level of 0.05 level ($p>0.05$). Otherwise, confirm the null hypothesis if the computed p-value is less than or equal to the significant level ($p\leq0.05$). To achieve the stated objectives of the study, as well as testing the study hypotheses, a multiple linear regression model was adopted as follows;

$$Y = \beta o + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mu \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

Where;
Y = Poverty alleviation (dependent variable)
X =Financial inclusion and digital economy (explanatory/independent variable)
Explicitly, the equation was defined as:
Poverty alleviation = f (Financial inclusion and digital economy) + μ
Therefore, the broad model for this study was modified as;

$$RGDP = \beta_0 + \beta_1 WBT + \beta_2 POST + \beta_3 ATMT + \mu \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2)$$

Where;

RGDP	=	Real gross domestic product
WBT	=	Web-based transactions
POST	=	POS transactions
ATMT	=	ATM transactions
β_0	=	Intercept or regression constant
$\beta_1, \beta_2\ \beta_3$	=	Regression coefficients
μ	=	Stochastic error term.

Table 3.1 Operationalization of variables

Concept	Proxy	Measurement	Source
Financial inclusion and digital economy *(Independent variable)*	Volume of Web-based transactions	Total number of transactions carried out on the internet either using a card issued by Nigerian banks or internet banking platform.	Madugba (2020), Yusuf (2016)
	Volume of POS transactions	Total number of transactions carried out at point of sale using a card issued by Nigerian banks	Madugba (2020), Yusuf (2016)
	Volume of ATM transactions	Total number of transactions processed at ATMs nationwide.	Madugba (2020), Yusuf (2016)
Poverty alleviation *(Dependent variable)*	Real GDP	Defined as gross domestic product (GDP) divided by the consumer price index	Madugba (2020), Tee and Ong, 2016; Yusuf (2016)

Source: Author's compilation (2025)

4.0 Data Analysis and Discussion of Findings

4.1 Data analysis

The data for this were analyzed using descriptive statistics and multiple regression tools.

4.1.1 Descriptive statistics

The descriptive statistics analysis was conducted on each of the dependent and independent variables in the study. However, the descriptive statistics result is presented in table 4.1 below

Table 4.1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
RGDP	10	63218.72	75768.95	69518.2420	3337.62757
WBT	10	2900473.00	14063927436.00	2803204161.3000	5137523687.02198
POST	10	9418427.00	3885782065.00	802062725.6000	1360023364.82919
ATMT	10	295416724.00	1599187337.00	831012159.3000	441858058.31207
Valid N (listwise)	10				

Source: SPSS 20.0 Output (2025)

Table 4.1 above presents the descriptive statistics of the various predictor variables namely Web-based transactions, POS transactions and ATM transactions. It also contains the descriptive statistics for dependent variable-Real GDP. The table provides information on the number of observations (N), the minimum and the maximum values, the mean and the standard deviation for each of the variables. For Real GDP, the dataset consists of 10 observations. The minimum value reported is 63218.72, while the maximum is 75768.95. The mean for this variable is 69518.2420, with a standard deviation of 3337.62757.

Similarly, for web-based transactions, there are 10 observations. The minimum value is 2900473, and the maximum is 14063927436. The mean for this variable is 2803204161.3000 with a standard deviation of 5137523687.02198. Regarding POS transactions, there are 10 observations as well. The minimum value reported is 9418427, while the maximum value is 3885782065. The mean value is 802062725.6000 with a standard deviation of 1360023364.82919.

Finally, ATM transaction has 10 observations with minimum and maximum values of 295416724 and 1599187337 respectively. In addition, the mean value and standard deviation were 831012159.3000 and 441858058.31207 respectively. These figures represent the central tendencies and variability of the variables.

4.2 Test of hypothesis

The research hypotheses were tested in this section of the study. The test was carried out using Ordinary least square regression with the model specification shown in the previous section using SPSS version 20 software. The decision rule as stated in the previous section was strictly adhered to. The result of the analysis is as shown thus;

Table 4.2 Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	64430.272	1977.740		32.578	.000	59590.917	69269.628		
WBT	-5.349	.000	-.823	-.772	.469	.000	.000	.032	31.577
POST	2.346	.000	.956	.885	.410	.000	.000	.031	32.406
ATMT	5.663	.000	.750	1.865	.111	.000	.000	.223	4.488

a. Dependent Variable: RGDP

Source: SPSS 20.0 Output (2025)

4.2.1 Hypothesis one

Ho_1: Web-based transactions has no significant relationship with real GDP of Nigeria

Based on the decision rule of the study, the null hypothesis one of the studies is accepted and the alternate rejected because the p-value of 0.469 shown in table 4.2 is greater than 0.05. The null hypothesis is further rejected because the t-Cal value of 0.772 is less than the critical value of t which was 2.228. In addition, a standardized Beta coefficient of -0.823 indicates an inverse relationship between the variables. Therefore, Web-based transactions have a non-significant inverse relationship with real GDP of Nigeria.

4.2.2 Hypothesis two

Ho_2: POS transactions have no significant relationship with real GDP of Nigeria

Based on the decision rule of the study, the null hypothesis two of the study is accepted and the alternate rejected because the p-value of 0.111 shown in table 4.2 is greater than 0.05. The null hypothesis is further rejected because the t-cal value of 1.865 is less than the critical value of t which was 2.228. In addition, a standardized Beta coefficient of 0.956 indicates a positive relationship between the variables. Therefore, POS transactions have a positive non-significant relationship with real GDP of Nigeria.

4.2.3 Hypothesis three

Ho_3: ATM transactions have no significant relationship with real GDP of Nigeria

Based on the decision rule of the study, the null hypothesis three of the study is accepted and the alternate rejected because the p-value of 0.410 shown in table 4.2 is greater than 0.05. The null hypothesis is further rejected because the t-Cal value of 0.885 is less than the critical value of t which was 2.228. In addition, a standardized Beta coefficient of 0.750 indicates a positive relationship between the variables. Therefore, ATM transactions have a positive non-significant relationship with real GDP of Nigeria.

4.3 Discussion of findings

The study findings revealed that web-based transactions have an insignificant inverse relationship (Coeff. = -0.823 {0.469}) with real GDP of Nigeria. This that a one percent (1%) rise in the volume of Web-based transactions in Nigeria decreases the real GDP of the county by approximately 0.82%. Thus, this variation has no significant impact on economic growth as revealed through the t-test having a p-value of 0.469 ($p>0.05$). This implies that the adoption and promotion of online transactions alone may not be sufficient to drive economic growth in the country. It highlights the need to consider additional factors and strategies beyond promoting web-based transactions to stimulate economic growth. This could include addressing issues such as infrastructure development, financial literacy, access to credit, and regulatory frameworks that support a conducive business environment. This position is in line with the findings of Madugba (2020) which showed that WEB transactions have no significant impact on real gross domestic product

Conversely, POS transactions have an insignificant positive relationship (Coeff. = 0.956 {0.410}) with real GDP of Nigeria. This indicates that a one percent rise in the volume of POS transactions in Nigeria increases the real GDP of the country by approximately 0.96% but does not significantly contribute to overall economic growth in the country. This suggests that solely focusing on increasing POS transactions may not be an effective strategy for driving economic development. This position indicates the need to explore other avenues to stimulate economic growth beyond just increasing POS transactions. This is in consonance with the findings of Madugba (2020) which revealed that POS is significant determinant of real gross domestic product but however concluded that cashless policy has no significantly impact on economic growth in Nigeria.

Also, the volume of ATM transactions in Nigeria also has an insignificant positive relationship (Coeff. = 0.750 {0.111}) with Real GDP of Nigeria. This suggests that an increase in the volume of ATM transactions by 1% amounts to a 0.75% rise in the real GDP of the country but does not independently improve to overall economic growth of the country. In other words, simply increasing the number of ATM transactions alone may not have a substantial impact on Nigeria's GDP. This finding implies that policymakers and stakeholders should not solely rely on increasing ATM transactions as a solution for driving economic development. This aligns with the findings of Adu and Williams (2023) and Nwani, Nwaimo and Kanu (2020). These studies revealed that ATM transactions, NIP transaction, mobile banking transactions, and cheque transaction have significant impact of the performance of commercial banks in Nigeria.

5.0 CONCLUSION AND RECOMMENDATION

In conclusion, this study examined the effect of financial inclusion and digital finance on poverty alleviation in Nigeria. The study's findings contribute to the existing body of knowledge on the impact of financial inclusion and digital finance on economic growth and poverty alleviation. The study's results underscore the importance of promoting financial inclusion and digital finance as a strategy for poverty alleviation in Nigeria. The study's findings have significant implications for policymakers, financial institutions, and other stakeholders seeking to promote financial inclusion and digital finance in Nigeria. To promote financial inclusion and digital finance, and ultimately alleviate poverty in Nigeria, the following recommendations are made:

1. Policymakers should prioritize investments in digital infrastructure, particularly in rural areas, to promote access to digital financial services and enhance financial inclusion.
2. Financial institutions should develop and offer a range of digital financial products and services that cater to the needs of low-income households and individuals, thereby promoting financial inclusion and poverty alleviation.
3. The Central Bank of Nigeria and other regulatory agencies should strengthen regulatory frameworks and oversight mechanisms to ensure the security, stability, and integrity of digital financial systems, and protect the rights and interests of consumers.

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