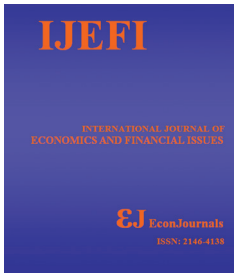

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The Effect of Financial Inclusion on Nigeria's Real Economic Growth

O.E. Obademi, K.F.B. Biiranee*, Adeyanju Thomas

Department of Finance, University of Lagos, Akoka, Nigeria. *Email: Kfb.biiranee@gmail.com

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ABSTRACT

This study investigated the effect of financial inclusion on economic development in Nigeria over the period 1990-2023. Using an ex-post facto research design, secondary data were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin and the World Development Indicators (WDI). The growth rate of GDP per capita was employed as a proxy for economic development, while financial inclusion was captured through commercial bank loans to rural areas, deposits from rural areas, credits to small and medium-scale enterprises (SMEs), and the number of bank branches in rural areas. Descriptive statistics, unit root tests, the Johansen co-integration approach, and the error correction model (ECM) were employed, with diagnostic tests ensuring the robustness of results. The findings revealed a long-run relationship among the variables, indicating that financial inclusion and economic development move together over time. Specifically, commercial bank loans to rural areas, deposits from rural areas, and SME credits were all found to significantly and positively impact economic growth. The presence of bank branches in rural areas also contributed positively to growth by expanding financial infrastructure and enabling broader access to financial services. These results emphasize that financial inclusion is a critical driver of Nigeria's economic GROWTH. The study concluded that policies promoting rural lending, deposit mobilization, SME financing, and rural banking infrastructure are vital for inclusive and sustainable growth. It recommended that government and financial institutions design tailored loan schemes for rural communities, strengthen incentives for rural savings, and expand SME credit through credit guarantees and concessional financing. Moreover, expanding banking infrastructure through both physical branches and digital platforms was emphasized as essential for bridging the financial access gap.

Keywords: Financial Inclusion, Economic Development, Rural Banking, SME Credit, Nigeria, Johansen Co-Integration, Error Correction Model
JEL Classifications: E44, 016, G20

1. INTRODUCTION

Financial inclusion is needed for individual and businesses to have access to and use affordable financial products and services that appeal to their needs. It follows that the services must be affordable and delivered in a responsible and sustainable manner. The focus is to eliminate barriers that exclude people to gain access to a wide range of financial products and services. Globally, access to financial services is acknowledged as a growth and development stimulus for any economy. It enables individuals, organisations, and groups to participate in the global economy (Ratnawati, 2020). A persistent absence of access to financial services is one of the most prominent characteristics of the poor in developing countries in Asia and sub-Saharan Africa (Sarpong-Kumankoma et al., 2020). This suggests that the essential financial services needed to overcome the cycle of poverty are unavailable. A staggering 2.3 billion adults worldwide are financially excluded, and a significant portion of these individuals reside in Sub-Saharan Africa. While this situation persists, stakeholders have shifted their attention to enhancing the provision of fundamental financial services such as savings, loans, and credit to economically disadvantaged groups (Van et al., 2021).

Financial inclusion is relatively new, and its aim is to combat the issue of financial exclusion, which has been demonstrated to impede efforts to reduce poverty and grow the economy

(Beck et al., 2017). To achieve financial inclusion, it is necessary to make a wide range of affordable financial goods and services available to all members of society. Financial services and products include banking, lending, insurance, and retirement plans. Nigeria today has two distinct financial systems, the formal and informal sectors, which run independently of one another (Anthony-Orji et al., 2023).

Access to capital markets is a key driver of economic expansion. Financial inclusion refers to the process of enhancing the quantity, quality, and efficacy of the services provided by financial intermediaries to a larger percentage of the underserved (Francis and Henry, 2023). This is a characteristic of sophisticated financial systems. It stimulates local businesses to invest more in productive endeavours by generating local savings. Expanded access to capital for micro, small, and medium-sized businesses is one of the most significant outcomes of financial inclusion. Consequently, the naira's demand is stabilised, and productivity and non-oil exports increase (Ade'Soyemi et al., 2020). The financial system plays a crucial role in fostering economic development and development through financial intermediation. By transferring funds from one economic unit to another, a surplus becomes a deficit.

A well-functioning financial system ensures that people of all economic backgrounds have easy access to a full range of savings, credit, payment, and risk management options. It also lays the groundwork for financial intermediation, both of which contribute to economic development (Levine, 2005). By allowing people to buy customised financial goods at affordable prices and without the need for lengthy documentation, financially inclusive systems allow a wide range of people to obtain access to financial services.

The poor and other economically vulnerable people will benefit the most from this. There would be chronic income disparity and a drag on economic progress in most emerging nations if small enterprises had to rely on their limited profits and couldn't take advantage of attractive growth chances. Without such systems, low-income people would have to rely on their meagre savings for future investments, and small enterprises would be unable to take advantage of promising growth opportunities due to their lack of liquid capital (Younas et al., 2022).

Globally, financial inclusion is thought to be propelled by policies and activities that encourage people to save money (Menyelim et al., 2021; Khan and Rahim, 2021). Unfortunately, the Nigerian government does not have a strategy in place to encourage people to save money. Instead, most of its policies and intervention programmes are focused on credit creation, which has not yielded the desired results (Ibrahim and Aliero, 2020). But economic development can be stunted if financial progress isn't shared by all, especially if it leans heavily in favour of the wealthy. It's even worse when the wealthy receive an outsized part of the benefits (Dahiya and Kumar, 2020). The vital role that access to financial services plays in fostering economic development and reducing poverty in Africa. They stress the importance of governments developing policies and programmes to increase financial inclusion, especially for small and medium-sized businesses (SMEs), the lifeblood of many African economies.

The use of mobile money and digital financial services has been recognised as a key tool for promoting financial inclusion in recent years. The current trend is likely to continue (DFS). About half of adults in sub-Saharan Africa had a mobile money account in 2017, making it one of the key drivers of financial inclusion in the area, according to the World Bank. "(World Bank, 2018)."

Access to financial services has been found to improve a variety of economic and social outcomes, including GDP growth, poverty reduction, gender parity, and upward social mobility, among others (Demirguc-Kunt and Klapper, 2013; World Bank, 2010). Many programmes in Nigeria have been undertaken to broaden access to banking services. The National Financial Inclusion Strategy was formulated by the Central Bank of Nigeria with the goal of halving the adult population's rate of financial exclusion from 36.8% in 2010 to 20% by 2020 (CBN, 2021). Although significant progress has been made, there are still significant challenges that must be addressed, including as the population's low levels of financial literacy and awareness, inadequate infrastructure, and prohibitively high prices for financial services (CBN, 2021).

In low- and middle-income nations like Nigeria, financial inclusion has been shown to be a key factor in economic growth and development. In countries like Nigeria, where poverty is widespread, this is especially true. Expanding people's access to financial services and products can help unlock the potential of small and medium-sized businesses (SMEs), drive innovation and investment, and ultimately contribute to more inclusive and sustainable economic development. This study, therefore, attempts to empirically investigate the relationship between financial inclusion and economic development in Nigeria.

The recent figures of about 133 million in Nigeria suffering from acute poverty can be traced to the lack of access to financial services and credit, In Nigeria, financial inclusion has become a critical economic metric that is the central focus of various intergovernmental initiatives and policies. This is because a low rate of financial inclusion means that a significant percentage of the population has limited access to financial services that can help them escape poverty. However, a developing nation such as Nigeria cannot survive without the numerous benefits associated with a high level of financial inclusion, such as resource allocation, capital cost reduction, resource optimization, and the augmentation of formal financial sources.

Studies by (Ibrahim and Aliero, 2020; Dahiya and Kumar, 2020) confirm that an increase in saving rates and credit access ensures effective financial inclusion. This implies that financial inclusion is crucial to eradicating the scourge of destitution and fostering economic development. Despite these advantages and evidence of a positive correlation between economic development and financial inclusion, the level of financial inclusion in Nigeria remains low.

According to the CBN (2010) report only 21.6% of the population had access to financial services in 2010, and only 24% of the adult population had access to savings and other related services. The research further revealed that only 2% of adults have access to

loans, 1% to insurance, and 5% to pensions. These figures confirm that financial inclusion remains a policy conundrum that must be resolved definitively to ensure inclusive economic development and development in Nigeria.

EFInA's research revealed that of the 85 million Nigerians eligible for financial services, only 31 million have access to basic financial services within the country, while the remaining 54 million Nigerians are not served by formal institutions. Although approximately 15 million members of the formally banked population have utilized formal financial products and services because they are salaried employees or business owners, the preceding statistics demonstrate that financial inclusion is still a significant issue in Nigeria.

To ensure that financial inclusion levels are increased, the government and other stakeholders must participate in national inclusion strategies and programs, microfinance policy, non-interest banking, and leverage digital technology such as electronic banking products and electronic payments systems. However, this can only be possible if there is clear and empirical evidence to map the nature of the relationship between financial inclusion levels of a population and its access to financial services.

The broad objective of this study was to evaluate the effect of financial inclusion on economic development in Nigeria between 1990 and 2023. The specific objectives were to:

1. Examine the effect of commercial bank loans to rural areas (LRA) on the growth rate of GDP per capita in Nigeria.
2. Assess the impact of commercial bank deposits from rural areas (DRA) on the growth rate of GDP per capita in Nigeria.
3. Investigate the effect of commercial bank credit to small and medium-scale enterprises (CSM) on the growth rate of GDP per capita in Nigeria.
4. Determine the impact of the number of commercial bank branches in rural areas (BRA) on the growth rate of GDP per capita in Nigeria.

2. LITERATURE REVIEW

Financial inclusion is defined by Akinleye and Adediran (2020) as "the process of providing access to a diverse range of financial services that suits the needs of all sectors of the population, including those who are underserved or excluded from the formal financial system." Financial inclusion, according to the authors, is critical for stimulating entrepreneurship, job creation, and poverty reduction, and it demands several policy interventions that promote financial literacy, innovation, and regulation. Similarly, Demirguc-Kunt and Klapper (2013) discovered a positive relationship between financial inclusion and economic development and poverty reduction. According to the authors, "financial inclusion is critical for economic development because it enables individuals and enterprises to use financial services that are critical for growth and poverty reduction" (Demirguc-Kunt and Klapper, 2013). Furthermore, recent United Nations Development Programme (UNDP) research emphasises the importance of financial inclusion in ensuring inclusive and sustainable economic development. "Financial inclusion is a vital enabler of inclusive economic development and development since it fosters entrepreneurship, job creation, and poverty reduction," according to the paper (UNDP, 2021).

2.1. Theoretical Review

This study is underpinned by different theories such as the Financial Deepening Theory, Financial Intermediation Theory, Inclusive Growth Theory and Human Capital Theory which are described below:

The financial deepening theory, advanced by Ronald McKinnon (1973) and Shaw (1973), argues that expanding access to financial services increases the volume and efficiency of investment, thereby fostering economic development. Later empirical work by King and Levine (1993) reinforced this view, showing that deeper financial systems are positively associated with higher long-term growth. Within the financial inclusion discourse, this theory highlights how access to credit, savings, and insurance mechanisms empowers individuals and businesses to manage risks, accumulate capital, and engage in productive investments (Beck and Demirgüç-Kunt, 2006). For example, the rise of microfinance illustrates how new financial products can integrate the poor into financial systems (Morduch, 1999). However, critics caution that financial deepening does not automatically translate into equitable growth, as benefits may accrue disproportionately to those already positioned to exploit financial opportunities (Rajan and Zingales, 2003). This underscores the need to combine financial deepening with regulatory safeguards and inclusive policies to ensure that financial inclusion contributes meaningfully to broad-based economic development.

The financial intermediation theory, rooted in the work of Joseph Schumpeter (1911) and later formalized by scholars such as Goldsmith (1969) and Gurley and Shaw (1960), emphasizes the vital role of financial intermediaries in mobilizing savings and channeling them into productive investments. According to Levine (2005), intermediaries such as banks reduce information asymmetries, facilitate transactions, and allocate resources efficiently, all of which are essential for growth. In the context of financial inclusion, intermediaries extend services like credit, savings, and payment platforms to underserved populations, allowing them to participate in economic activities that were previously inaccessible (Beck, 2002). Yet, reliance on intermediaries has limitations: Excessive intermediation may lead to inefficiencies or systemic risks if poorly regulated (Allen et al., 2005; Demirgüç-Kunt and Levine, 2008). Moreover, financial intermediaries may prioritize profitable clients over marginalized groups, thereby limiting the inclusivity of growth. Thus, while financial intermediation theory validates the link between financial inclusion and economic development, it also highlights the importance of balancing efficiency with equity through strong regulatory frameworks.

The inclusive growth framework, popularized by the works of Sen (1999) on development as freedom and reinforced by the Stiglitz et al. Commission (2009), stresses that growth must be broad-based and equitable to be sustainable. Unlike traditional growth theories that prioritize GDP expansion, this perspective

emphasizes reducing inequality and ensuring that all groups benefit from economic progress. Financial inclusion is central to this theory because it integrates marginalized populations into the formal financial system, providing them with access to credit, insurance, and savings that facilitate upward mobility (World Bank, 2018). By enabling individuals to invest in health, education, and entrepreneurship, financial inclusion ensures that growth translates into tangible improvements in well-being. Nonetheless, critics note that inclusive growth strategies may face challenges in implementation, especially in contexts of weak governance or entrenched inequality, where financial access alone may not overcome structural barriers (IMF, 2015). Despite these challenges, inclusive growth theory offers a strong normative foundation for positioning financial inclusion as a driver of both equity and economic sustainability.

The human capital theory, introduced by Theodore Schultz (1961) and later expanded by Becker (1964) and Lucas (1988), argues that investments in education, skills, and health increase productivity and, consequently, national income. In relation to financial inclusion, the theory suggests that access to finance provides individuals and households with the resources needed to invest in education, vocational training, and healthcare, all of which enhance their human capital (Demirgüç-Kunt and Levine, 2001). Furthermore, financial inclusion supports entrepreneurship by easing access to start-up and growth capital, which not only fosters innovation but also generates employment opportunities (Allen et al., 2014). This link between finance and human capital accumulation is particularly critical in developing economies where educational and entrepreneurial financing gaps persist. Yet, critics such as Psacharopoulos (1994) argue that returns to education and skills may vary significantly depending on institutional quality and labor market conditions. Hence, while financial inclusion complements human capital development, its effectiveness depends on broader structural and policy environments that enable individuals to convert financial access into meaningful economic opportunities.

2.2. Empirical Review

Several studies on the nexus between financial inclusion and economic growth have been carried out with varying results. Oyadeyi (2025) examined the impacts of financial inclusion and e-payments on economic growth in Nigeria using quarterly data from 2009Q1 to 2021Q4. The paper contributes to the ongoing debate by establishing the growth-inducing e-payment channels and how the drive toward financial inclusion has affected the economy of Nigeria. The paper adopted the principal component analysis, the autoregressive distributed lag, and the Granger-causality techniques to achieve the results. The results showed that financial inclusion and e-payments (except for cheque payments) had a significant long and short-run impact on economic growth. Furthermore, the findings showed that POS payments had the most significant effect on economic growth in Nigeria. This was followed by ATM payments, mobile payments, and web payments respectively. In addition, the results showed that causality runs from real GDP to ATM

Lamba et al. (2025) examined the impact of financial inclusion on economic growth in Nigeria from 1992 to 2022. The study adopted analytical research design while finance-led growth theory was adopted as the theoretical framework. The data used were obtained from CBN statistical bulletins for data on bank credits or loans and bank branches and World Bank and World Development Indicators, 2022 for data on economic growth rate. The study conducted correlation test, unit root test, and ARDL bound test for co-integration to analyze the data. The ARDL results revealed that a unit increase in financial inclusion reduced economic growth by 5.14 units. It therefore means that financial inclusion increase access to financial credits that promotes economic growth. However, if the borrowed funds are channeled into consumption or unproductive sectors rather than investment in growth-enhancing activities, it can negatively affect economic growth. The study therefore concluded that financial inclusion has a positive impact in promoting economic growth in Nigeria for the period under review.

Ibitoye et al. (2025) investigated the nexus between financial inclusion and poverty reduction in Nigeria over the period of 2013-2023. Financial inclusion, defined as access to a wide array of formal financial services, is crucial for economic development and poverty alleviation. The research utilizes a quantitative approach, analysing data from the World Bank global database to explore various indicators such as GDP, domestic credit to the private sector, bank non-performing loans, and poverty headcount ratios. The findings reveal significant challenges hindering financial inclusion in Nigeria, including limited access to credit, low financial literacy, and disparities in banking infrastructure distribution between urban and rural areas. Despite efforts by the government and financial institutions to promote financial inclusion, the study identifies persistent gaps in reaching marginalized populations.

Mbodj and Laye (2025) explored the impact of financial inclusion and financial development on poverty reduction in developing economies. The study aims to determine whether these financial factors contribute positively or negatively to alleviating poverty. Using quantile regression analysis, the investigation focuses on how financial accessibility and institutional growth influence poverty levels across various economic conditions. The findings indicate that both financial inclusion and financial development play a significant role in reducing poverty by expanding access to financial resources and improving economic participation. As financial systems advance, they facilitate greater utilization of banking services, credit availability, and investment opportunities among low-income populations, ultimately strengthening financial security in developing regions. The study emphasizes the need for governments to enhance financial inclusion through policies that improve accessibility, service quality, and public awareness of financial tools.

Rahman et al. (2025) examined the impact of Digital Financial Inclusion (DFI) on economic growth [(Industrial Production Index (INDP)] of Bangladesh. Using the monthly data over the period 2018 M12-2021 M12, this study applied the Auto-regressive Distributed Lag (ARDL) model to assess the effect of DFI indicators on INDP. The secondary data was collected from the Bangladesh Bank and CEIC Global Economic Data. The study found that the majority of DFI indicators are positively

associated with INDP. From the short-run ARDL, it is seen that one-unit positive increase in Point of Sales Transactions (POST) can increase the INDP by 0.055 units. From the long-run ARDL, it is seen that POST and e-commerce transactions (ECOMT) have a significant positive impact, while Automated Teller Machine Transactions (ATMT) have a significant negative effect on INDP. One unit increase in POST and ECOMT increases INDP by 0.13544 and 0.11611 units, respectively.

Atta and Ibrahim (2024) investigate the effect of financial inclusion on economic development in Nigeria, with the aim of analysing the interplay between the two variables through a review of relevant literature and empirical evidence. The finance-growth theory posits that development of financial systems cultivates an environment conducive to growth, operating through demand-following mechanism. This theory provides a solid basis for understanding the context of the investigation. Financial inclusion was proxied through money supply, which represents the size of the banking sector, while credit to the private sector measures the size and financial depth of the banking sector. Data were sourced from the Central Bank of Nigeria Statistical Bulletins and the World Development Indicators. The findings indicate both short-term and long-term relationships between financial inclusion and economic growth, aligning with the theoretical framework.

Ogbonna et al. (2024) examined the financial inclusion and Nigerian economic growth for the period 1980-2022. The study considered the following three objectives; to examine the significant impact of financial inclusion on the Nigerian economic growth, evaluate the impact of financial inclusion on poverty reduction in Nigeria and to ascertain the impact of financial inclusion no savings growth in Nigerian economy. Secondary time series data were used to carry out the empirical analysis. The study employed the aid of vector error correction model (VECM) approach, Augmented Dickey-Fuller (ADF) and Phillips-Perron tests, Co-integration Test and ECM. Based on the above econometric and statistic techniques conducted, it was observed that financial inclusion has significant positive impact on the Nigerian economic growth. The results indicated that financial inclusion has significant positive impacts on poverty reduction in Nigeria.

Fundji (2024) conducted an empirical study to investigate the relationship between financial inclusion and economic growth in East, West, and Southern Africa. The study goes from 2009 to 2021, using a unique econometric method known as fully modified ordinary least squares. The results of the impact of financial inclusion on economic growth based on all countries, in all the models estimated, show that financial inclusion has statistically significant effects on economic growth.

Anthony-Orji et al. (2023) analysed the impact of financial development and financial inclusion on economic growth in Nigeria from 1981 to 2019. Adopting the classical linear regression modelling technique, the results showed that financial development and financial inclusion have significant positive impact on economic growth in Nigeria. The study therefore recommended that government should make policies that would enable financial intermediaries mobilise funds more efficiently and also make these funds accessible and affordable to individuals (even at the lowest segments of the society), businesses, as well as other productive sectors of the economy. This is how financial development, and financial inclusion will continue to enhance growth in Nigeria.

Dewi et al. (2023) discusses the effect of financial inclusion, e-money infrastructure and inflation on economic growth in Indonesia, from an economics standpoint, using a quantitative approach, collecting monthly secondary data from January 2014 to December 2021, which is the starting year. The financial inclusion variable contributes up to 35% in the sixth to tenth period proving that it gives significant positive effect on the growth variable.

Akinrinola and Folorunso (2022) examines how financial inclusion relates with economic growth in Nigeria. Data was obtained from the bulletins of the Central Bank of Nigeria covering the period 1981-2020. Statistical analysis involves the use of descriptive statistics, Johansen Co-Integration Test, Phillips-Perron Unit Root Test, Pairwise Granger Causality and Error Correction Model. To estimate the hypotheses formulated in alignment with the set objectives, the error correction model was used. Economic growth, the dependent variable, was proxied by Gross Domestic Product, while total bank deposit and total credit disbursement constitute what was used to proxy the independent variable financial inclusion. The Error Correction Model result shows that there was a positive and statistically significant relationship between total bank deposit and gross domestic product. Total credit disbursement has a negative and an insignificant relationship with gross domestic product. The result from the study validates the finance led growth hypothesis and established that finance is one of the factors that causes economic growth in Nigeria.

3. MODEL SPECIFICATION

Following the work of Aruwa et al. (2024), who evaluated the effect of financial inclusion on sustainable development in Nigeria using the error correction model (ECM) and fully modified ordinary least squares (FMOLS) to capture both short-run and long-run relationships between 2001 and 2022, the present study adapted their modeling framework. The functional relationship was expressed as:

$$GGDPt = f(LRAt, DRAt, CSMt, BRAt)$$

The econometric model was explicitly written as:

$$GGDPt = \beta 0 + \beta 1LRAt + \beta 2DRAt + \beta 3CSMt + \beta 4BRAt + \mu t$$

GGDPt denoted the growth rate of GDP per capita (proxy for economic development), LRAt represented commercial bank loans to rural areas, DRAt denoted commercial bank deposits from rural areas, CSMt captured commercial bank credit to small and medium-scale entrepreneurs, and BRAt reflected the number of bank branches in rural areas.

3.1. Variables Description and Measurement

The description, measurement, sources, and apriori expectations of the study variables are presented in Table 1.

3.2. Estimation Techniques

The study employed both descriptive and econometric methods. Descriptive statistics such as mean, median, and standard deviation were used to summarize the characteristics of the data. Unit root tests, specifically the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP), were conducted to determine the stationarity of the time series. The Johansen co-integration test was then applied to examine the existence of a long-run equilibrium relationship among the variables. To capture both the short-run dynamics and the long-run adjustment process, the study estimated an error correction model (ECM). In addition, diagnostic tests, particularly the heteroskedasticity test, were performed to confirm the robustness and efficiency of the estimated model.

4. RESULTS AND DISCUSSION

The descriptive statistics for the growth rate of GDP per capita (GGDP) revealed an average value of 4.25%, reflecting moderate economic development in Nigeria during the study period (Table 2). The distribution was approximately normal, as confirmed by the Jarque-Bera test, with a median close to the mean, and a slight positive skew. This indicated that while the economy exhibited stability, there were episodes of both rapid expansion and contraction, as shown by the wide range between the maximum and minimum values.

For commercial bank loans to rural areas (LRA), the results highlighted significant disparities. The mean was much higher than the median, with extreme maximum values pushing the distribution into a highly positive skew. The heavy-tailed leptokurtic nature of the data suggested that a few years recorded exceptionally high lending, while most years reflected very low disbursements. The Jarque-Bera test confirmed the non-normality of the data, pointing to structural inconsistencies in credit allocation to rural communities.

Similarly, deposits from rural areas (DRA) displayed large disparities, with the mean significantly exceeding the median. The results indicated that while a few rural regions contributed substantial deposits, most rural areas recorded very low values. The highly skewed and peaked distribution, coupled with non-normality, suggested concentration of financial mobilization in limited locations. These findings implied that rural financial participation was uneven, with a few areas dominating rural deposit inflows.

In contrast, commercial bank credits to small and medium-scale enterprises (CSM) appeared more evenly distributed, with the mean and median values close, and the data exhibiting approximate normality. This suggested moderate variability and relative stability in SME financing compared to loans and deposits in rural areas. Finally, bank branches in rural areas (BRA) showed a high concentration in certain regions, as indicated by the negative skew and peaked distribution. Although the average number of branches was relatively high, the presence of non-normality suggested unequal distribution of banking infrastructure across rural Nigeria.

4.1. Stationarity Test

A stationarity test on the variables is performed. Economic theory requires that variables be stationary before the application of standard econometrics technique. This is to avoid misleading results. The results of the ADF was reported in Table 3.

The Augmented Dickey-Fuller (ADF) unit root test revealed that all variables (GGDP, LRA, DRA, CSM, BRA) were non-stationary

Table 1: Variables description and measurement

Variable	Description	Measurement	Source	Apriori expectation
GGDP	Economic development	Growth rate of GDP per capita (annual %)	WDI	Dependent variable
LRA	Commercial bank loans to rural areas	Value of loans to rural areas as reported in CBN bulletin	CBN	Positive, as increased lending in rural areas was expected to enhance agricultural output, rural productivity, and income
DRA	Commercial bank deposits from rural areas	Value of deposits mobilized from rural areas	CBN	Positive, as higher rural deposits indicated savings mobilization for investment and broader financial inclusion
CSM	Commercial bank credit to SMEs	Value of commercial bank credit to SMEs	CBN	Positive, since SME financing was expected to spur entrepreneurship, job creation, and sustained growth
BRA	Bank branches in rural areas	Number of bank branches located in rural communities	CBN	Positive, as increased bank presence was expected to expand access to finance and foster inclusive economic activity

Table 2: Summary of descriptive statistics

Variables	GGDP	LRA	DRA	CSM	BRA
Mean	4.245752	119.5248	100.8320	42.45141	657.5588
Median	4.212993	18.26814	16.36820	41.68055	722.0000
Maximum	15.32916	988.5879	798.7996	123.9321	775.0000
Minimum	−2.035119	1.602200	0.019723	10.74789	240.0000
Standard deviation	3.905546	238.6438	186.6575	28.58731	139.9199
Skewness	0.500458	2.468682	2.234464	0.829409	−1.651340
Kurtosis	3.486541	8.013656	7.501991	3.138361	4.567823
Jarque-Bera	1.754617	70.14529	57.00558	3.925330	18.93483
Probability	0.415901	0.000000	0.000000	0.140484	0.000077
Observations	34	34	34	34	34

Source: Researcher's Computations Using EVIews 10 (2025)

Table 3: Augmented Dickey-Fuller Unit root Stationarity test

Variables	Test at levels			Test at 1st difference			Inference
	ADF statistic	t-statistic	Probability*	ADF statistic	t-statistic	Probability*	
GGDP	−0.977039	−2.971853	0.7473	−3.291102	−2.971853	0.0016	I (1)
LRA	−0.607123	−2.967767	0.8541	−5.638815	−2.971853	0.0001	I (1)
DRA	−0.077233	−2.967767	0.9430	−5.033150	−2.971853	0.0003	I (1)
CSM	−0.018805	−2.967767	0.9492	−4.312196	−2.981038	0.0024	I (1)
BRA	−0.498231	−2.967767	0.6380	−3.673123	−2.981038	0.0011	I (1)

Source: Researcher's Computations Using EViews 10 (2025)

at their levels, with P-values above 0.05, confirming the presence of unit roots. For example, GGDP had an ADF statistic of −0.977039 with a P = 0.7473. However, after first differencing, all variables became stationary with significant ADF statistics and P-values below 0.05. This indicates that the variables are integrated of order one, I(1), making them appropriate for subsequent time-series econometric analysis.

4.2. Co-Integration Test

Since all the variables are not stationary at level but at first difference it is quite possible that there is a linear combination of integrated variables that is stationary, such variables are said to be cointegrated. To understand the cointegrating relationship across these variables the study uses Johansen (1991) cointegration test. The cointegration results are presented in the Table 4.

The Johansen Co-integration test results indicated the existence of a long-term equilibrium relationship among economic development (GGDP) and the financial inclusion variables (LRA, DRA, CSM, and BRA). The trace statistics consistently exceeded their critical values across all hypothesized ranks, with P-values below the 0.05 significance level, thereby rejecting the null of no cointegration. This implied the presence of up to five cointegrating equations, confirming that the variables moved together in the long run. The findings therefore established that financial inclusion indicators and the growth rate of GDP per capita were strongly interlinked, suggesting that improvements in financial access and services contributed to Nigeria's long-term economic development.

4.3. Error Correction Regression Model

This section deals with examination of the relationship that exist between the variables identified in the study as stated in the research objectives, research questions and the hypothesis. The model formulated earlier is tested using the regression technique. Note that the chosen alpha (α) at 5% significant level is 0.05.

$$GDPRt = \beta 0 + \beta 1LRAt + \beta 2DRAt + \beta 3CSMt + \beta 4BRAt + \epsilon t$$

The error correction model (ECM) results presented in Table 5 reveal both the short-run dynamics and long-term relationships between economic development (GGDP) and financial inclusion indicators (LRA, DRA, CSM, BRA). Starting with the short-run dynamics, the coefficient for D(GDPR[−1]) is 0.836752, with a t-statistic of 5.199079 and a P = 0.0008. This indicates that past economic development has a substantial positive effect on current economic development, suggesting that momentum from previous periods strongly influences the present economic conditions. The coefficient for D(LRA) is 1.202997, with a t-statistic of 2.017402

Table 4: Johansen co-integration test rest

Trend assumption: Linear deterministic trend

Series: GGDP LRA DRA CSM BRA
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE (s)	Eigenvalue	Trace Statistic	0.05 Critical value	Probability**
None*	0.671900	91.95400	69.81889	0.0003
At most 1*	0.466797	56.29200	47.85613	0.0066
At most 2*	0.388206	36.16871	29.79707	0.0081
At most 3*	0.311530	20.44522	15.49471	0.0082
At most 4*	0.233277	8.500152	3.841466	0.0036

Trace test indicates 5 cointegrating eqn (s) at the 0.05 level. *Denotes rejection of the hypothesis at the 0.05 level. **MacKinnon-Haug-Michelis (1999) P values.
Source: Researcher's Computations Using EVIews 10 (2025)

Table 5: ECM result

ARDL error correction regression
Dependent variable: D (GGDP)
ECM regression

Variable	Coefficient	Standard error	t-statistic	Probability
D(GGDP [−1])	0.836752	0.160942	5.199079	0.0008
D(LRA)	1.202997	0.001486	2.017402	0.0424
D(DRA)	0.011245	0.006775	2.159764	0.0355
D(CSM)	0.165659	0.025667	6.454089	0.0002
D(BRA)	−0.054645	0.009677	−5.646898	0.0005
CointEq(−1)*	−0.693117	0.222727	−9.397683	0.0000
R-squared	0.933554	Mean dependent var		0.163178
Adjusted R-squared	0.851774	S.D. dependent var		3.279122
Durbin-Watson stat	2.056632			

Source: Researcher's Computations Using EVIews 10 (2025)

and a P = 0.0424, which shows that increased commercial bank loans to rural areas significantly boost economic development in the short run. Similarly, D(DRA) has a coefficient of 0.011245, a t-statistic of 2.159764, and a P = 0.0355, which suggests that deposits from rural areas contribute positively, though to a lesser extent than loans, in driving economic development. The coefficient for D(CSM) is 0.165659, with a t-statistic of 6.454089 and a P = 0.0002, indicating that credit to small and medium-scale enterprises (SMEs) has a significant positive impact on economic development in the short term. In contrast, the coefficient for D(BRA) is −0.054645, with a t-statistic of −5.646898 and a P = 0.0005, revealing that an increase in the number of bank branches in rural areas actually has a negative short-term effect on economic development. This could reflect potential inefficiencies or barriers in rural banking infrastructure that hinder economic expansion.

Moving to the long-term relationship, the coefficient for CointEq(−1) is −0.693117, with a t-statistic of −9.397683 and a P = 0.0000, indicating that any deviations from the long-term equilibrium are corrected at a rate of approximately 69.3% per period. This adjustment mechanism suggests that the variables in the model tend to return to equilibrium relatively quickly after any disturbances. The overall fit of the model is strong, as evidenced by the R-squared value of 0.933554, meaning that 93.36% of the variation in economic development is explained by the model. The Adjusted R-squared of 0.851774 further supports the robustness of the model, accounting for degrees of freedom. Additionally, the Durbin-Watson stat of 2.056632 indicates that there is no significant autocorrelation in the residuals, suggesting that the model is well-specified. Overall, these results suggest that while financial inclusion variables have a significant impact on economic development, there are also short-run fluctuations that need to be addressed, particularly in the context of rural banking infrastructure. Furthermore, the long-term equilibrium is stable, with strong adjustments to any deviations from the equilibrium path.

4.4. Heteroskedasticity Test

The Heteroskedasticity Test results from the Breusch-Pagan-Godfrey test, as shown in Table 6, indicate no evidence of heteroskedasticity in the model. The F-statistic of 0.290713 with a P = 0.9890 suggests that the null hypothesis of homoskedasticity cannot be rejected, meaning that there is no significant difference in the variance of the residuals across different levels of the explanatory variables. Additionally, the Obs*R-squared value is 12.98472, with a P = 0.9092, further confirming the absence of heteroskedasticity, as the P-value is well above the 0.05 significance threshold. Lastly, the Scaled explained SS value of 1.927623, with a P = 1.0000, also supports the conclusion that there is no evidence of heteroskedasticity, as the very high P-value suggests that the variance of the residuals is consistent across observations. These results imply that the assumption of constant variance (homoskedasticity) holds in this model, ensuring that the standard errors of the estimated coefficients are reliable.

4.5. Discussion of Findings

The discussion showed that commercial bank loans to rural areas significantly contributed to economic growth in Nigeria, confirming that credit availability in rural regions stimulates local enterprises, agricultural productivity, and poverty reduction. These findings were consistent with previous studies such as Lamba et al. (2025) and Ibitoye et al. (2025), which emphasized the role of rural credit in strengthening small-scale businesses and regional development. The implication was that policies encouraging rural lending could create a multiplier effect by expanding economic activities and boosting national growth.

Table 6: Heteroskedasticity test

Heteroskedasticity test: Breusch-Pagan-Godfrey			
F-statistic	0.290713	Prob. F (21,8)	0.9890
Obs*R-squared	12.98472	Prob. Chi-square (21)	0.9092
Scaled explained SS	1.927623	Prob. Chi-square (21)	1.0000

Source: Researcher's Computations Using EViews 10 (2025)

Commercial bank deposits from rural areas were also found to have a significant positive effect on economic growth, underscoring their role in capital mobilization. The results indicated that rural deposits provided banks with critical resources that were redirected into investment and productive activities. Studies by Oyadeyi (2025) and Atta and Ibrahim (2024) supported these findings by showing that deposit mobilization from rural populations enhances fund availability for lending and investment, thereby fostering long-term growth. The evidence suggested that increasing savings mobilization in rural communities could improve capital formation and contribute substantially to sustainable economic development.

Similarly, credit extended to small and medium-scale enterprises (SMEs) was shown to have a highly significant impact on economic growth. This affirmed that access to credit enables SMEs to invest in technology, expand production, and create employment opportunities, thereby driving entrepreneurship and innovation. Empirical support from Beck et al. (2007) and Mbodj and Laye (2025) confirmed that SME financing is central to reducing poverty and enhancing productivity in developing economies. The findings implied that strengthening SME credit facilities through tailored loan products and supportive government policies would accelerate Nigeria's economic growth and diversification.

Lastly, the presence of bank branches in rural areas was found to significantly enhance economic growth by improving access to financial services. Bank branches were observed to act as vital entry points for rural communities to participate in the financial system, thereby facilitating savings, credit, and investment. These findings aligned with Ibitoye et al. (2025) and Beck et al. (2000), who emphasized that expanding banking infrastructure reduces financial exclusion and supports balanced regional development. The implication was that expanding physical banking facilities, complemented by digital and agent banking models, would bridge financial access gaps and promote inclusive economic growth in Nigeria.

5. CONCLUSION AND POLICY RECOMMENDATIONS

This study examined the effect of financial inclusion on economic development in Nigeria between 1990 and 2023, using the growth rate of GDP per capita as a proxy for economic development and financial inclusion indicators such as commercial bank loans to rural areas, deposits from rural areas, credits to small and medium-scale enterprises, and bank branches in rural areas. The results revealed the existence of a long-run relationship among the variables, indicating that financial inclusion and economic development move together over time.

Specifically, commercial bank loans to rural areas were found to significantly enhance economic growth, suggesting that improving access to credit in underserved areas stimulates local enterprises and reduces poverty. Deposits from rural areas also exhibited a positive effect on growth, underscoring the importance of rural savings mobilization in providing capital for productive investments. Furthermore, credits to small and

medium-scale enterprises were shown to have a strong impact on growth, confirming the role of SMEs as engines of innovation, employment, and diversification in Nigeria. Also, the presence of bank branches in rural areas was found to significantly influence growth, highlighting the importance of expanding financial infrastructure in underserved regions.

Thus, the findings affirmed that financial inclusion is a critical driver of Nigeria's economic development. By expanding access to financial services, enhancing rural deposits and credit, and strengthening SME financing, the financial sector can contribute to inclusive and sustainable growth. However, disparities in loan and deposit distribution, as well as uneven access to banking infrastructure, suggest the need for targeted interventions to ensure that the benefits of financial inclusion are widely shared.

Based on the findings, several policy implications emerge. First, commercial banks and policymakers should design and implement financial products that are tailored to the needs of rural populations. Loan schemes targeting smallholder farmers and rural entrepreneurs should be prioritized, with flexible repayment structures to encourage uptake and reduce default risks.

Second, strategies to improve rural deposit mobilization should be strengthened. This could include awareness campaigns on the benefits of formal savings, as well as incentives such as higher interest rates for rural savers. Such initiatives would deepen financial intermediation by channeling idle rural funds into productive investments.

Third, the financing gap for small and medium-scale enterprises should be addressed through policy measures that encourage commercial banks to expand credit to SMEs. Government interventions, such as credit guarantee schemes, subsidized interest rates, and capacity-building programs, can reduce lending risks and enhance the ability of SMEs to contribute to growth, innovation, and job creation.

Finally, the expansion of banking infrastructure in rural areas should remain a priority. While physical bank branches are crucial, innovative models such as mobile banking, agent banking, and digital finance should complement brick-and-mortar expansion. These approaches would reduce financial exclusion in remote communities and ensure a more equitable distribution of financial services, thereby fostering inclusive growth.

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