

Impact of Financial Inclusion on Economic Growth in Nigeria: (1986-2023)

¹Kanu Joy Chinyere,
²Ogwuche O. David, &
³Ezie Obumneke
^{1,2&3}Department of Economics,
Faculty of Social Sciences,
Bingham University Karu

Article DOI:
10.48028/iiprds/ijdshms.v14.i2.16

Keywords:
Financial inclusion,
Bank usage,
Proximity,
Accessibility,
Financial Literacy

Corresponding Author:
Kanu Joy Chinyere

Abstract

The general discussion stressed that financial inclusion can reduce poverty and inequality, foster economic stability, and support inclusive growth by providing access to financial resources through bank usage, bank accessibility, bank proximity, financial literacy and interest rate. Therefore, the main objective of this paper is to examine the impact of financial inclusion on economic growth in Nigeria. This paper employed the Autoregressive Distributed Lag (ARDL) and the result revealed that bank usage and interest rate have a negative impact on economic growth in Nigeria however, the negative impact of bank usage and interest rate on economic growth in Nigeria was statistically insignificant at 5 percent level of significance. On the other hand, the result revealed bank accessibility, bank proximity and financial literacy have a positive impact on economic growth in Nigeria but bank proximity was seen to be statistically significant on economic growth in Nigeria while bank accessibility and financial literacy were positive but have insignificant impact on economic growth in Nigeria. Thus, the paper recommended that considering the negative impact of bank usage, the Central Bank of Nigeria through deposit money banks to educate the general public on the benefits of bank usage could also enhance engagement and effective usage of bank services to prevent the negative impact on economic growth in Nigeria. Furthermore, the Central Bank of Nigeria should create an enabling environment to encourage an increase in the number of bank branches and ATMs, especially in remote and rural areas, and leverage technology to reduce physical barriers to banking services to increase the impact of economic growth in Nigeria. Finally, the Central Bank of Nigeria through the deposit money banks should aim to maintain single-digit interest rates at all levels that encourage investment and economic activity for economic growth in Nigeria.

Background to the Study

Globally speaking, economic growth is the gradual expansion of a nation's economy as evidenced by rising productivity and total production. According to Mouratidis (2021), De et al. (2020), Uysal et al. (2020), and other scholars, this expansion is essential for improving living standards, ensuring sustainable development, and elevating the quality of life. Economic growth is measured by a number of metrics, such as real gross domestic product (RGDP), employment rates, income levels, and advancements in technology. The most important of them is the RGDP, which measures the entire value of goods and services produced in a nation over a given time period and accounts for inflation. It offers a thorough analysis of economic performance and frequently shows correlations with other development indicators, like lower rates of poverty, better access to healthcare, and higher educational attainment (Kuprianov & Sudyko, 2022).

Financial inclusion, which is defined as all social groups' access to and use of formal financial services, is acknowledged as a key factor in economic growth (Kumar et al., 2020; Pradhan et al., 2021; Ezzahid & Elouaourti, 2021). It encourages economic growth by making it possible for people and companies to make investments in businesses, healthcare, and education. By facilitating access to financial resources, financial inclusion can lower poverty and inequality, promote economic stability, and assist inclusive growth. Bank usage, accessibility, proximity, interest rate, and financial knowledge are all indicators of financial inclusion (Rashdan & Eissa, 2020; Amari & Anis, 2021; Ezzahid & Elouaourti, 2021; Matsebula & Yu, 2020; Tinta et al., 2022). The degree to which financial services are incorporated into people's and enterprises' daily lives depend on several variables.

The evolution of financial inclusion in Nigeria has been influenced by legislative reforms, technology improvements, and socioeconomic shifts between 1986 and 2023. The National Financial Inclusion Strategy (NFIS), which was introduced in 2012, is one of the measures the government has put in place to encourage financial inclusion (Ajekwe, 2020; Samputra and Soesilo, 2023; Tuba and Lawack, 2023). By increasing financial literacy, expanding access to financial services, and encouraging innovation in financial products, this plan aims to bring down the number of adults who are financially excluded to 20% by 2020 (Ajekwe, 2020; Eze & Alugbuo, 2021).

Notwithstanding these endeavors, obstacles such as restricted availability of financial services in remote regions, inadequate financial literacy, and unstable interest rates endure, impeding the attainment of complete financial inclusion. Nigeria's endeavors towards financial inclusion are comparable to those of other African nations such as South Africa and Kenya, who have achieved noteworthy advancements in this domain. For example, Kenya has significantly improved access to financial services by enhancing financial inclusion through the use of mobile money platforms like M-Pesa. In a similar vein, bank usage and financial literacy have increased as a result of financial sector policy in South Africa (Abdulhamid, 2020; Tiony, 2023; Kingiri & Fu, 2020; Aluthge & Piyananda). However, due to legislative obstacles, economic volatility, and inadequacies in infrastructure, Nigeria's progress towards financial inclusion has been slower.

Financial inclusion is essential for economic growth, as it ensures that financial resources are mobilized efficiently and directed towards productive investments. Increased bank usage and accessibility can facilitate savings and credit, boosting investment and consumption. Financial literacy is crucial for making informed financial decisions, while optimal interest rates are essential for balancing investment incentives and savings rates. So therefore, research aims to analyze the impact of financial inclusion on Nigeria's economic growth from 1986 to 2023. In other to achieve this objective, the following hypotheses were stated and tested.

- H₀₁:** Bank usage has no significant impact on Nigeria's economic growth.
- H₀₂:** Bank accessibility does not have a significant impact on Nigeria's economic growth.
- H₀₃:** Bank proximity has no significant impact on Nigeria's economic growth.
- H₀₄:** Financial literacy does not have a significant impact on Nigeria's economic growth.
- H₀₄:** Interest rates have no significant impact on Nigeria's economic growth.

Literature Review

Conceptual Review

The process of guaranteeing that people and businesses have access to the right financial goods and services in order for them to successfully manage their finances is known as financial inclusion. These services ought to be rendered sustainably and with responsibility. Because it encourages saving, investing, and the wise use of resources, financial inclusion plays a key role in boosting economic growth and raising living standards. The degree to which people and companies make use of banking services like loans, savings accounts, checking accounts, and digital banking is also known as bank utilization. High bank usage rates are a sign of active participation in the formal financial system, which promotes loan availability, savings, and financial planning, all of which support economic expansion and stability. On the other hand, bank accessibility describes how simple it is for people and businesses to obtain financial services. This covers both digital and physical access via online and mobile banking services, as well as physical access to bank locations and ATMs. A greater number of people can receive financial services thanks to improved bank accessibility, which promotes financial inclusion and boosts economic growth.

The term "bank proximity" refers to how physically close banking locations are to the general public. People can interact with the banking system more easily when they live close to banks and ATMs because doing so cuts down on the time and expense involved in obtaining financial services. Financial literacy is the knowledge and comprehension of financial concepts and the capacity to apply this information to make wise and efficient financial decisions. Closer banks are linked to better levels of financial inclusion and economic involvement. Better financial management, product interaction, and future planning are made possible by higher financial literacy levels, and these actions can enhance economic results as well as an individual's financial well-being. The cost of

borrowing money or the yield on savings is known as the interest rate, and it is typically stated as a percentage. It has an impact on consumer purchasing, investment choices, and the general state of the economy, making it a crucial factor in financial inclusion and economic progress. Excessively high or low interest rates can impede economic activity and financial inclusion, while optimal rates can encourage savings and investment and propel economic growth.

Empirical Review

An Ordinary Least Square regression model was utilized by Ebimobowei & Tebepah (2023) with yearly data from Nigeria from 2012 to 2021. Olajide (2023) looked at the effects of financial inclusion and banking innovation on economic growth in Nigeria using quarterly data from 2009 to 2021. Autoregressive distributed lag (ARDL) was used to find that financial inclusion and banking sector innovations have a significant role to play in fostering economic growth in Nigeria. The study finds positive and significant relationships between several financial inclusion measures and (Deposit Money Banks) DMB performance. The same Vien et al., (2023) investigated the role of financial inclusion in economic development in Nigeria using the Auto-Regressive Conditional Heteroskedasticity (ARCH) technique. They discovered that while financial inclusion in credit to the private sector had no significant effect or variation in the Human Development Index within the period under review in Nigeria, financial inclusion in the number of bank branches per 100,000 adults significantly explained the variation in the index.

Using the ADF unit root test, ARDL bounds test, and error correction model, Abdullahi & Oladipo (2022) examined the relationship between financial inclusion and economic development in Nigeria between 2003 and 2020 and discovered that, while there is no documented relationship between banking inclusion and HDI, there is a long-run relationship between HDI and capital markets inclusion. Using the autoregressive distributed lag (ARDL) method to analyze the data, Linus and Orji (2023) also looked into the effect of financial inclusion on economic growth in Nigeria for the years 1991 to 2021. They discovered that banks' financial inclusion through rural savings mobilization has a significant positive impact on the country's real gross domestic product.

Using Granger causality testing and the ordinary least square (OLS) regression model, Ogbuagu (2022) investigated the impact of inclusive finance on economic growth in Nigeria between 2001 and 2021. The study's findings supported the idea that monetary policy would be more successful if it encouraged higher levels of financial inclusion. Comparably, Ifediora et al. (2022) employed the Generalized Method of Moments (GMM) system to analyze panel data from 22 sub-Saharan African (SSA) countries from 2012 to 2018 in order to investigate the impact of financial inclusion on economic development. They discovered that, although the usage dimension of financial inclusion slightly increases economic growth, the availability, penetration, and composite dimensions of financial inclusion all significantly and favorably influence economic growth.

Using the Zivot-Andrew unit root test with Auto Regressive Distributive Lag (ARDL) result, Ibrahim et al. (2022) investigated the effect of financial inclusion on economic growth in Nigeria from 1986 to 2020. They discovered that the long run coefficient shows the positive and statistically significant influence of commercial bank branches on Nigeria's GDP. Using quarterly data from 2007 to 2018, Sakanko et al. (2020) used the ARDL bounds testing technique to investigate the impact of financial inclusion on inclusive growth in Nigeria.

The empirical data shows that there is cointegration between inclusive growth (poverty, household expenditure, employment, and per capita income) and financial inclusion indicators (account ownership, bank access, ATM and credit, loans to SMEs, and internet usage). Kenechukwu & Onyeka (2020) examined the relationship between financial inclusion and Nigerian economic growth from 2004 to 2018 using the Error Correction model and the Auto Regressive Distributive Lag bounds test for cointegration. They discovered that the number of ATMs per 100,000 adults was found to be positively and significantly correlated with economic growth, while the number of commercial bank borrowers per 1000 adults and lending interest rates were found to be significantly negative. Among other things, the report suggests that successful campaigns or awareness be launched to raise financial literacy and/or awareness.

Using the ARDL model, Obayori & George-Anokwuru (2020) conducted a second study that looked at financial inclusion and economic growth in Nigeria from 1981 to 2018. The findings showed that having access to and making good use of financial services significantly boosts economic growth both in the short and long terms. Nonetheless, there is a substantial inverse link between per capita income and economic growth. Afolabi (2020) used the Auto-Regressive Distributed Lag (ARDL) model to examine the impact of financial inclusion on inclusive growth in Nigeria from 1981 to 2017. Their research revealed that while interest rates obstruct inclusive growth, financial inclusion – in the form of rural loans, bank branch count, and liquidity level – has a favorable and significant impact on inclusive growth over the long term.

Gebrehiwot & Makina (2019) used GMM dynamic panel data analysis to investigate the factors that influence a bank branch's proximity across 27 African countries. The findings indicated that a bank branch's proximity is negatively correlated with government borrowing and significantly and positively correlated with its lagged value, GDP per capita, and mobile infrastructure. Additionally, Nwafor & Yomi (2018) investigated, using data tested using the two-stage Least Squares Regression Method, the association between financial inclusion and economic growth in Nigeria from 2001 to 2016. They discovered that financial industry intermediation had no effect on financial inclusion over the reviewed period, and that financial inclusion has a major impact on economic growth in Nigeria. Using an econometric analysis from 1990 and 2014 and the Error Correction Model, Wakdok (2018) investigated the relationship between financial inclusion and economic growth in Nigeria. He concluded that financial inclusion positively and significantly affects economic growth in Nigeria through financial

deepening variables, which are influenced by financial inclusion variables like broad money, credit to the private sector, loan deposits in rural areas, and commercial banks' liquidity ratio.

Olaniyi & Olaniyi (2017) also used co-integration and the Granger causality test to assess the causal relationships between financial inclusion and economic output as well as between financial inclusion and the five sectors of the Nigerian economy. The findings implied that financial inclusion and the overall economy are causally related in both directions. Even Okoye et al. (2017) investigated the impact of financial inclusion on economic growth and development in Nigeria between 1986 and 2015 using the Ordinary Least Squares approach. The study showed that while credit delivery to the private sector has not considerably boosted economic growth in Nigeria, financial inclusion has encouraged poverty alleviation in the country through the distribution of credit to rural areas. In order to ensure efficient and effective resource allocation and use, the report advised that the monetary authorities step up their efforts to promote financial inclusion through expanded credit delivery to the private sector.

Theoretical Framework

This study adopts the Endogenous Growth model, which holds that internal variables rather than external influences are primarily responsible for economic growth. It was established in the 1980s by economists like Paul Romer and Robert Lucas. This idea holds that information, innovation, and human capital investments all have a major impact on economic progress. The idea places a strong emphasis on the roles that technology, education, and growth-promoting policies play in society. Regarding financial inclusion and Nigeria's economic expansion, the Endogenous Growth theory offers a useful foundation. By expanding access to financial services, financial inclusion boosts the economy's internal capabilities. This, in turn, makes it easier to invest in innovation and human capital because more people and businesses can take advantage of credit, savings accounts, and investment opportunities when they use banking services. The main forces behind endogenous growth are the encouragement of entrepreneurship and investments in health and education provided by this access. More people, especially those living in underserved and rural areas, will be able to engage in the formal economy thanks to improved accessibility to banking services. By encouraging savings and directing them toward profitable ventures, this inclusion contributes to domestic economic growth.

Banking locations are physically close to one another, which lowers transaction costs and times and facilitates economic activity. Being close to banks also makes it easier to plan and handle finances, which can improve productivity and allocate resources more effectively. Those who are financially literate possess the information and abilities needed to make wise financial decisions. Better money management, more savings, and greater investments in enterprises and education are all results of empowerment and endogenous growth. The correct incentives are provided by appropriate interest rates, which encourage saves and investments. Sustained economic growth is encouraged by an interest rate policy that is well-managed, as it guarantees the effective allocation of resources within the economy.

Methodology

Research Design, Sources, and Nature of Data

The secondary annual time series data from 1986 to 2023 was obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin 2023. This study used an ex-post facto research design.

Model Specification

Autoregressive distributed lag was adopted and employed in the study (ARDL). The theoretical framework of the study served as the model's foundation. Additionally, the original model was modified from the research of Adegboyegun et al. (2020), who used the Auto Regressive Distributed Lag (ARDL) to examine financial inclusion and economic growth in Nigeria from 1986 to 2018. The functional form of the model is as follows:

$$GDP = f(LRA, DRA, BNBR, INTR) \quad (1)$$

The equation 1 can further be stated explicitly hereunder as:

$$GDP_t = B_0 + B_1LRA_t + B_2DRA_t + B_3BNBR_t + B_4INTR_t + \mu_t \quad (2)$$

Where GDP is Gross Domestic Product, LRA is Loans to Rural Areas, DRA is Deposit from Rural Areas, BNBR is Number of Bank Branches and INTR is Interest Rate. Equation (1) was modified and specified to follow the paper objective:

$$RGDP = f(BAU, ACS, PROX, FINL, INTR) \quad (3)$$

Therefore, explicitly the model becomes:

$$RGDP_t = \beta_0 + \beta_1BAU + \beta_2ACS + \beta_3PROX + \beta_4FINL + \beta_5INTR + e_t \quad (4)$$

Where;

Real gross domestic product (RGDP) at time t in Nigeria is represented by RGDP; bank usage (BAU); bank accessibility (ACS); bank proximity (PROX); financial literacy (FINL); interest rate (INTR) at time t in Nigeria is represented by Intercept; slope is represented by Slope; and error terms are represented by Error Terms. The following details relate to the Autoregressive Distributed Lagged (ARDL) model that was employed in this investigation:

$$RGDP = \beta_0 + \sum_{j=1}^i \beta_{1j} \Delta RGDP_{t-j} + \sum_{j=1}^i \beta_{2j} \Delta BAU_{t-j} + \sum_{j=1}^k \beta_{3j} \Delta ACS_{t-j} + \sum_{j=1}^l \beta_{4j} \Delta PROX_{t-j} + \sum_{j=1}^m \beta_{5j} \Delta FINL_{t-j} + \sum_{j=1}^n \beta_{6j} \Delta INTR_{t-j} + \beta_{7j} \Delta RGDP_{t-j} + \beta_{8j} \Delta BAU_{t-j} + \beta_{9j} \Delta ACS_{t-j} + \beta_{10j} \Delta PROX_{t-j} + \beta_{11j} \Delta FINL_{t-j} + \beta_{12j} \Delta INTR_{t-j} + e_t \quad (5)$$

Equation (5) was used to examine the short-run and long-run relationship and the impact of financial inclusion on economic growth in Nigeria. While the Error Correction Model (ECM) used in this study is specified as follows:

$$\Delta RGDP = \beta_0 + \sum_{i=1}^j \beta_{1i} \Delta RGDP_{t-i} + \sum_{i=1}^j \beta_{2i} \Delta BAU_{t-i} + \sum_{i=1}^j \beta_{3i} \Delta ACS_{t-i} + \sum_{i=1}^j \beta_{4i} \Delta PROX_{t-i} + \sum_{i=1}^m \beta_{5i} \Delta FINL_{t-i} + \sum_{i=0}^n \beta_{6i} \Delta INTR_{t-i} + ECM_{t-1} + e_t \quad (6)$$

Equation 6 above is used to adjust the estimation until the ECM turns negative. The negative sign of the coefficient of the error correction term ECM (-1) shows the statistical significance of the equation in terms of its associated t-value and probability value.

Variable Description, Measurements and Apriori Expectation

Table 1: Description of the Variables Used for the Model

Variable	Description/Measure	Type	Source	Apriori Expectation
RGDP	Real Gross Domestic Product	Dependent	CNN, 2024	
BAU	Bank Usage in Nigeria	Independent	CBN, 2024	$\beta_1 \geq 0$
ACS	Bank Accessibility in Nigeria	Independent	CBN, 2024	$\beta_2 \geq 0$
PROX	Bank Proximity in Nigeria	Independent	CBN, 2024	$\beta_3 \geq 0$
FINL	Financial Literacy in Nigeria	Independent	CBN, 2024	$\beta_4 \geq 0$
INTR	the interest rate in Nigeria	Independent	CBN, 2024	$\beta_5 \leq 0$

Source: Author Compilation, 2024

The presupposition is that $\beta_1, \beta_2, \beta_3, \beta_4 > 0$ and $\beta_5 < 0$ signify a positive or negative correlation between the dependent and independent variables. In other words, a rise or fall in certain financial inclusion factors like interest rates, bank usage, accessibility, and proximity, as well as financial literacy, will result in a change in Nigeria's real gross domestic product.

Method of Analysis

The Autoregressive Distributed Lag (ARDL) model was created in the late 1990s by M. Hashem and Bahram Pesaran, and it was used in this study. When examining the dynamic interaction between variables when both short- and long-term components are present, it is an invaluable tool.

Presentation and Interpretation of Results

Descriptive Analysis

Table 2: Descriptive Analysis

	RGDP	BAU	ACS	PROX	FINL	INTR
Mean	42354.34	3860.548	93.48789	3698.816	80.11158	24.05947
Median	37218.26	837.5950	15.85000	3240.000	14.13500	23.10000
Maximum	75739.56	20117.00	988.5900	5809.000	518.3800	36.09000
Minimum	17007.77	7.530000	0.370000	1367.000	0.020000	12.00000
Std. Dev.	21066.55	5667.211	209.4372	1590.416	144.9463	4.811884
Skewness	0.309283	1.681304	3.155080	0.068787	1.842406	0.112208
Kurtosis	1.450952	4.833009	12.33120	1.288755	4.893554	3.002049
Jarque-Bera	4.405110	23.22284	200.9081	4.666535	27.17535	0.079747
Probability	0.110520	0.000009	0.000000	0.096978	0.000001	0.960911
Sum	1609465.	146700.8	3552.540	140555.0	3044.240	914.2600
Sum Sq. Dev.	1.64E+10	1.19E+09	1622966.	93588658	777349.2	856.7066
Observations	38	38	38	38	38	38

Source: Researcher's Computation Using EViews-12 (2024)

Table 2 revealed that the average value of the real gross domestic product in Nigeria between 1986-2023 is 42354.34, the maximum is 75739.56 and the minimum is 17007.77. The average value for the bank usage is 3860.548, the maximum is 20117.00, and the minimum is 7.530000. The average value for the bank accessibility is 93.48789, the maximum is 988.5900, and the minimum is 0.370000. The average value for the bank proximity is 3698.816, the maximum is 5809.000, and the minimum is 1367. 000.The average value for the financial literacy is 80.11158, the maximum is 518.3800, and the minimum is 0.020000. The average value for the interest rate is 24.05947, the maximum is 36.09000, and the minimum is 12.00000. Also, the Jarque-Bera statistic tests the hypothesis that the series is normally distributed Jarque-Bera test with p-values less than 0.05 for BAU, ACS, and FINL suggest deviations from normality. While RGDP, PROX, INTR are normally distributed as their probability value is greater than 0.05. RGDP and PROX Kurtosis are Platykurtic less than 3 (less peaked than normal distribution), BAU, ACS, FINL kurtosis are leptokurtic (more peaked than normal distribution) and INTR Kurtosis is Mesokurtic (similar peakedness to normal distribution)

Correlation Matrix Results

Table 3: Correlation Matrix Results

Probability	RGDP	BAU	ACS	PROX	FINL	INTR
RGDP	1.000000					

BAU	0.842464	1.000000				
	0.0000	----				
ACS	0.494407	0.339736	1.000000			
	0.0016	0.0369	----			
PROX	0.952758	0.690107	0.477909	1.000000		
	0.0000	0.0000	0.0024	----		
FINL	0.684501	0.927839	0.145942	0.493219	1.000000	
	0.0000	0.0000	0.3820	0.0017	----	
INTR	0.418591	0.455989	0.248058	0.353882	0.478051	1.000000
	0.0089	0.0040	0.1332	0.0293	0.0024	----

Source: Author's Computation, using E-Views 12, (2024)

Given the correlation co-efficient value of 0.842464 and the probability value of 0.0000 indicating a significant relationship between RGDP in Nigeria and BAU in Nigeria, Table 3 displays the correlation matrix of the variables used in this paper. The results of the correlation matrix indicate a strong and positive relationship between RGDP in Nigeria and BAU in Nigeria. However, the correlation coefficient value of 0.494407 and the probability value of 0.0016 indicated a substantial association between the RGDP and ACS in Nigeria, indicating a weak but positive relationship between the two variables.

The correlation coefficient value of 0.952758 and the probability value of 0.0000 indicated a significant association between the RGDP and PROX in Nigeria, indicating a strong and positive relationship between the two variables. Similarly, there is a moderately positive link between RGDP and FINL in Nigeria, as indicated by the correlation coefficient value of 0.684501 and the probability value of 0.0000, which both point to a substantial relationship between the two variables. Additionally, there is a somewhat positive correlation between Nigeria's RGDP and INTR, as evidenced by the correlation coefficient value of 0.418591 and the probability value of 0.0089, which both indicated a meaningful association.

Stationary Tests (Unit Root Tests)

This section shows the unit root of the variables using the Augmented Dickey-Fuller (ADF) Test to check the stationary at a 5 per cent level of significance.

Table 4: Unit Root Test Result

Variable	Augmented Dickey-Fuller (ADF) Test		Status
	ADF	@ 5%	
RGDP	-3.894919	-3.552973	1(0)
BAU	-5.838454	-3.540328	1(1)
ACS	-4.839867	-2.967767	1(1)
PROX	-4.955737	-2.945842	1(1)
FINL	-5.796467	-3.540328	1(1)
INTR	-4.018070	-2.943427	1(0)

Source: Author's Computation Using EViews-12 (2024)

Table 4 shows the stationary tests of real gross domestic product (RGDP), bank usage (BAU), bank accessibility (ACS), bank proximity (PROX), financial literacy (FINL) and interest rate (INTR). Thus, Table 4 of the ADF test results revealed that RGDP and INTR are stationary at level, which means that they are integrated of order zero 1(0) at a 5% level of significance. On the other hand, ACS, PROX, FINL were not stationary at the level until they were differenced once, and they were said to be integrated of order 1(1). Given the mix result, as shown by ADF tests, as well as the order of integration of the variables, the long-run relationship among the variables will be tested using the Co-integration of ARDL-Bounds Test, which can capture the characteristics of a mixture of 1(0) and 1(1) of the variables as postulated by Pesaran *et al.*, (2001).

Co-integration of ARDL-Bounds Test

This section shows the ARDL co-integration bounds test of the variables used in this paper.

Table 5: ARDL-Bound Testing

Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	3.480400	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.08	3
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15

Source: Researcher's Computation Using EViews-9 (2023)

Table 5 shows the ARDL bounds test for co-integration that was carried out for all six models based on the research objectives. The model result shows that the F-statistic derived from the ARDL bounds test is 3.480400, and when compared with the critical values obtained from the Pesaran Table at a 5% level of significance, its value exceeded

both 2.39 and 3.38 for 1(0) and 1(1), respectively. real gross domestic product (RGDP), bank usage (BAU), bank accessibility (ACS), bank proximity (PROX), financial literacy (FINL), interest rate (INTR) are co-integrated at a 5% level of significance.

ARDL Regression Result

The Autoregressive Distributed Lag (ARDL)-ECM and long-run estimates presented here provide significant insights into how financial inclusion affect economic growth in Nigeria over short and long term.

Table 6: Method- ARDL-ECM and Long Run Estimates

Dependent Variable: RGDP

Error Correction Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1))	0.490907	0.085377	5.749850	0.0000
D(BAU)	-0.292011	0.140066	-2.084812	0.0484
D(BAU(-1))	0.830961	0.140639	5.908462	0.0000
D(PROX)	2.344809	0.501672	4.673991	0.0001
D(PROX(-1))	-1.193955	0.537341	-2.221968	0.0364
D(INTR)	-18.14182	33.61892	-0.539631	0.5946
CointEq(-1)*	-0.146126	0.026365	-5.542410	0.0000
R-squared	0.283790			
Adjusted R-squared	-0.089885			
F-statistic	0.759458			
Prob(F-statistic)	0.683227			
Durbin-Watson stat	1.892182			
Long-Run Estimates				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
BAU	-1.029490	1.245420	-0.826621	0.4169
ACS	15.15488	8.409660	1.802080	0.0847
PROX	11.82975	1.660546	7.124009	0.0000
FINL	48.52817	31.68536	1.531564	0.1393
INTR	-535.8088	454.6821	-1.178425	0.2507
C	12105.10	10903.23	1.110231	0.2784

Source: Researcher's Computation Using EViews-12 (2024)

Table 6 of ARDL long-run results, as shown in the table, reveals the coefficients and their corresponding t-statistics and probability values for each independent variable's long-term impact on the real gross domestic product. The bank usage has a negative coefficient of -1.029490 with a standard error of 1.245420 and a t-statistic of -0.826621, indicating an insignificant negative impact on real gross domestic product in Nigeria at 5% level (Prob. 0.4169). This suggests that, in the long run, changes in bank usage do not significantly influence the real gross domestic product. On the other hand, bank accessibility exhibits a positive coefficient of 15.15488 with a standard error of 8.409660 and a t-statistic of

1.802080, indicating a borderline significant impact on real gross domestic product in Nigeria (Prob. 0.0847). This implies that an increase in bank accessibility tends to enhance the long-term value of real gross domestic product, although this effect is not highly robust.

The bank proximity shows a positive coefficient of 11.82975, with a standard error of 1.660546 and a t-statistic of 7.124009, which is highly significant (Prob. 0.0000). This finding underscores the strong and positive long-term impact of bank proximity on real gross domestic product, suggesting that improvements in bank proximity considerably benefit the dependent variable. Similarly, financial literacy presents a positive coefficient of 48.52817 with a standard error of 31.68536 and a t-statistic of 1.531664, indicating an insignificant impact on real gross domestic product in Nigeria on the long run (Prob. 0.1393). This denotes that variations in financial literacy do not significantly affect the real gross domestic product in Nigeria over the long term. The variable interest rate, however, has a negative coefficient of -535.8088 with a standard error of 454.6821 and a t-statistic of -1.178425, showing an insignificant negative relationship with real gross domestic product (Prob. 0.2507). This implies that higher interest rates do not have a substantial long-term impact on real gross domestic product in Nigeria.

The R-squared value of 0.283790 indicates that the model explains about 28.38% of the variation in real gross domestic product. The adjusted R-squared value of -0.089885 suggests potential overfitting, meaning the model's explanatory power does not improve with the addition of more variables. The F-statistic of 0.759458, with a probability of 0.683227, is insignificant, indicating that the overall model is not statistically significant. The Durbin-Watson statistic of 1.892182, which is close to 2, suggests no autocorrelation in the residuals, ensuring the independence of observations. More so, the hypothesis that H_{01} : Bank usage has no significant impact on Nigeria's economic growth is accepted given that the value of 0.4169 is greater than 5 percent level of significance. This implies that the bank usage does not have a significant impact on real gross domestic product. While the hypothesis that stated H_{02} : Bank accessibility do not have a significant impact on Nigeria's economic growth is accepted given the value of 0.0847 is greater than 5 percent level of significance. This implies that bank accessibility does not have a significant impact on real gross domestic product. In contrast the hypothesis that stated H_{03} : Bank proximity have no significant impact on Nigeria's economic growth is rejected given the value of 0.0000 is less than 5 percent level of significance. This implies that bank proximity has a significant impact on real gross domestic product in Nigeria.

The hypothesis that stated H_{04} : Financial literacy does not have a significant impact on Nigeria's economic growth is accepted given that the value of 0.1393 is greater than the 5 percent level of significance. This implies that financial literacy does not have a significant impact on real gross domestic product in Nigeria. On the other hand, the hypothesis that stated H_{05} : Interest rates have no significant impact on Nigeria's economic growth is accepted given that the value of 0.2507 is greater than the 5 percent level of significance. This implies that the interest rates do not have a significant impact on real gross domestic product in Nigeria.

Post-Estimation Checks (ARDL Diagnostic Test)

The results from the ARDL diagnostic checks captured in Table 7 are crucial for validating the robustness and reliability of the regression model that investigates the impact of financial inclusion on economic growth in Nigeria. These post-estimation tests assess various assumptions underlying the ARDL regression analysis, ensuring that the model's inferences are statistically sound.

Table 7: Results of DOLS Diagnostic Checks

Tests		Outcomes	
		Coefficient	Probability
Breusch-Godfrey-Serial-Correlation Test	F-stat.	1.084495	0.3563
Heteroscedasticity-Breusch-Pagan-Godfrey Test	F-stat.	0.759458	0.6832
Normality Test	Jarque-Bera	1.519084	0.467881

Source: Author's Computation Using EViews-12 (2024)

Table 7 is the Breusch-Godfrey Serial Correlation LM Test checks for autocorrelation in the residuals of the regression model. Autocorrelation occurs when residuals are not independent of each other, which can lead to inefficient estimators and biased standard errors. The outcome of this test, with an F-statistic of 1.084495 and a probability of 0.3563, suggests that there is no significant serial correlation in the model. A high p-value indicates that the study fails to reject the null hypothesis of no serial correlation, thus confirming that the residuals of the model are independent across time, which is a desirable property in time series analysis. Also, the Heteroscedasticity Breusch-Pagan-Godfrey Test is used to detect the presence of heteroscedasticity, a condition where the variance of the errors is not constant across all levels of the independent variables. Heteroscedasticity can render the standard errors inaccurate, leading to unreliable hypothesis tests. The test yields an F-statistic of 0.759458 with a probability of 0.6832, indicating that there is no significant evidence of heteroscedasticity within the model. This means that the variance of the error terms is constant, allowing for confidence in the estimated standard errors and the statistical tests that rely on them.

Finally, the Normality Test, specifically the Jarque-Bera test, is employed to determine whether the residuals of the model are normally distributed. The normality of residuals is an important assumption, as it underpins the validity of various statistical tests, including the t-tests on the estimated coefficients and the F-test on the overall model. The Jarque-Bera statistic is 1.519084 with a probability of 0.467881, which indicates that the residuals are normally distributed. With a high p-value, the null hypothesis that the residuals are normal cannot be rejected, satisfying another critical assumption of the classical linear regression model.

Discussion of Findings

The influence of financial inclusion on Nigeria's economic growth was the main topic of the report. According to the research's precise objectives, bank usage in Nigeria has a

negative and negligible effect on real gross domestic product; this suggests that reducing bank usage will raise real gross domestic product. This outcome is consistent with the research conducted by Ukoh & Okeke (2023), who looked at the role of financial inclusion in Nigeria's economic progress. Conversely, bank accessibility in Nigeria shows a positive but negligible effect on real gross domestic product, suggesting that improving bank accessibility will raise real gross domestic product. This result was consistent with research by Afolabi (2020), who looked into how inclusive growth in Nigeria was impacted by financial inclusion. Along these lines, Gebrehiwot & Makina (2019) examined the determinants of proximity to a bank branch across 27 African countries and found that proximity to a bank branch is significantly and positively related to its lagged value, GDP per capita, and mobile infrastructure, and negatively related to government borrowing. Additionally, the variable of bank proximity shows a positive and significant impact on the real gross domestic product, suggesting that an increase in bank proximity will considerably increase the real gross domestic product.

Similarly, in Nigeria, financial literacy has a positive but negligible effect on real gross domestic product; that is, while financial literacy rises, the increase is not substantial. Additionally, the research supported the findings of Ebimobowei & Tebepah's (2023) study, which found favorable and substantial correlations between a number of financial inclusion metrics. A fall in interest rates is likely to result in an increase in Nigeria's real gross domestic product, as the variable interest rate exhibits a negative and statistically significant association with real gross domestic product. The findings of Afolabi (2020), who examined the impact of financial inclusion on inclusive growth in Nigeria and found that interest rates obstruct inclusive growth, were likewise consistent with this outcome.

Conclusion and Recommendations

Based on the ARDL results, the analysis concluded that the sole independent variable that positively and statistically significantly affects Real Gross Domestic Product is bank proximity. This shows that increasing bank closeness is advantageous for the RGDP's long-term growth. Other factors that don't appear to have a major long-term impact on economic growth include interest rates, bank usage, bank accessibility, and financial literacy. As a result, the following policies are suggested in this paper:

- i. Taking into account the detrimental effects of bank usage, the Central Bank of Nigeria, through deposit money banks, should educate the public about the advantages of bank usage and improve engagement and efficient use of bank services to prevent the detrimental effects on Nigeria's economic growth.
- ii. The Central Bank of Nigeria should strengthen the policy on bank accessibility through the deposit money banks and concentrate on extending the reach of banking infrastructure, mobile banking, and financial services in the rural areas.
 - ii. Additionally, the positive and negligible impact of bank accessibility on economic growth in Nigeria demonstrates that bank accessibility can be used to improve economic growth in Nigeria.
- iii. In order to boost the impact of economic growth in Nigeria, the Central Bank of Nigeria should also use technology to lower physical barriers to banking services

- and foster the opening of more bank branches and ATMs, particularly in rural and remote areas.
- iv. Furthermore, the Nigerian Central Bank ought to launch a rural banking program with the goal of teaching the populace about money management, investing, savings, and how to use banking services to boost the country's economy.
 - v. Finally, the Nigerian Central Bank, along with the deposit money banks, need to maintain single-digit interest rates at all times in order to promote investment and other forms of economic activity that contribute to the country's economic expansion.

References

- Abdulhamid, N. A. (2020). Disruptive technology, mobile money, and financial mobilization in Africa: M-Pesa as Kenya's solution to global financial exclusion? *Disruptive Technologies, Innovation and Development in Africa*, 187-202. [\[HTML\]](#)
- Abdullahi, H. & Oladipo, O. (2022). The impact of banking and capital market financial inclusion on economic development in Nigeria. *Journal of Global Economics and Business*. 3(10), 91-119.
- Adegboyegun, A. E, Ademola, A. O, & Kazeem, B. L. O. (2020). Financial inclusion and economic growth in Nigeria. *The Social and Management Scientist*, 12(1), 91.
- Afolabi, J. O. (2020). Impact of financial inclusion on inclusive growth: An empirical study of Nigeria, *Asian Journal of Economics and Empirical Research*, 7(1), 8-14.
- Ajekwe, C. C. (2020). Assessment of efforts at expanding financial inclusion in Nigeria, *International Journal of Economics, Finance and Management Sciences*, 8(5), 180-187. [researchgate.net](https://www.researchgate.net)
- Aluthge, C. & Piyananda, D. (2022). *Mobile money and financial inclusion in Sri Lanka: Lessons Learnt from mobile money system in Kenya*, researchgate.net. [researchgate.net](https://www.researchgate.net)
- Amari, M. & Anis, J. (2021). Exploring the impact of socio-demographic characteristics on financial inclusion: empirical evidence from Tunisia, *International Journal of Social Economics*. [\[HTML\]](#)
- De Guimarães, J. C. F., Severo, E. A., Júnior, L. A. F., Da Costa, W. P. L. B., & Salmoria, F. T. (2020). Governance and quality of life in smart cities: Towards sustainable development goals, *Journal of Cleaner Production*, 253, 119926. [\[HTML\]](#)
- Ebimobowei, A. & Tebepah, S. F. (2023). Financial inclusion and financial performance of deposit money banks in Nigeria. *African Journal of Accounting and Financial Research*, 6(1), 116-143.

- Eze, E. & Alugbuo, J. C. (2021). *Financial inclusion and poverty reduction in Nigeria: A survey-based analysis*, GSC Advanced Research and Reviews. gsconlinepress.com
- Ezzahid, E. & Elouaourti, Z. (2021). Financial inclusion, mobile banking, informal finance and financial exclusion: micro-level evidence from Morocco, *International Journal of Social Economics*. researchgate.net
- Gebrehiwot, K. & Makina, D. (2019). *Macroeconomic determinants of financial inclusion: evidence using dynamic panel data analysis*, https://www.researchgate.net/publication/4193039_Macroeconomic_Determinants_of_Financial_Inclusion_Evidence_Using_Dynamic_Panel_Data_Analysis 3 3
- Huseynova, A. & Mazanova, O. (2021). *Short-term forecasting of gross domestic product*, Hayka. researchgate.net
- Ibrahim, M., Sule, M., Ali, S. & Achi, P. O., (2022). Relationship between financial inclusion and economic growth: the relationship between evidence from ARDL modelling, *Indonesian Journal of Business and Economics*, 5(2), 732-753.
- Ifediora, C., Kenechukwu, O. O., Eze, F. E., Samuel, M. T., Anthony, E. A., Godwin, I. I. & Josaphat, U. J. O. (2022). Financial inclusion and its impact on economic growth: Empirical evidence from sub-Saharan Africa. *Cogent Economics & Finance*, 10(1), 52-66, DOI: 10.1080/23322039.2022.2060551
- Kenechukwu, J. N. & Onyeka, A. O. (2020). An analysis of financial inclusion and economic growth in Nigeria; AN ARDL approach, *International Journal of Research and Innovation in Social Science (IJRISS)*, 4(10), 1-12.
- Kingiri, A. N. & Fu, X. (2020). *Understanding the diffusion and adoption of digital finance innovation in emerging economies: M-Pesa money mobile transfer service in Kenya*, Innovation and Development. ox.ac.uk
- Kumar, V. Y., Singh, V., & Sethi, M. (2020). Determinants of successful financial inclusion in low-income rural population, *The Indian Economic Journal*, 68(1), 82-100. sagepub.com
- Kuprianov, A. & Sudyko, E. (2022). *The contribution of the quality of goods and services to economic growth*, Available at SSRN 4062844. [\[HTML\]](#)
- Linus, E. E. & Orji, J. O., (2023). Financial inclusion and economic growth in Nigeria (1991-2021). *Asian Journal of Economics and Finance*. 5(2), 159-174. <https://DOI:10.47509/AJEF.2023.v05i02.05>

- Matsebula, V. & Yu, D. (2020). *An analysis of financial inclusion in South Africa*, African Review of Economics and Finance. [\[HTML\]](#)
- Mouratidis, K. (2021). *Urban planning and quality of life: A review of pathways linking the built environment to subjective well-being*, Cities. [sciencedirect.com](#).
- Obayori, J. B., & George-Anokwuru, C. C. B. (2020). Financial inclusion and economic growth in Nigeria, *Business Perspective Review*, 2(2), 46-56. DOI: <https://doi.org/10.38157/business-perspective-review.v2i2.149>
- Ogbuagu, C. N (2022). The impact of inclusive finance on economic growth in Nigeria, *International Journal of Financial Management and Economics*, 1(1), 1-11.
- Okoye, K. A., Erin, O. & Modebe, N. J. (2017). Financial inclusion as a strategy for enhanced. economic growth and development, *Journal of Internet Banking and Commerce*, 22(8), 1-14.
- Olajide, O., (2023). Banking Innovation, financial inclusion and economic growth in Nigeria, *Journal of the Knowledge Economy*, 2(3), 25-46.
- Olaniyi, E., & Olaniyi, L., (2017). A multi-sectoral study of financial inclusion and economic output in Nigeria. *Ovidius, University Annals, Economic Sciences Series*, 17(1), 1-12.
- Pradhan, R. P., Arvin, M. B., Nair, M. S., Hall, J. H., & Bennett, S. E. (2021). Sustainable economic development in India: The dynamics between financial inclusion, ICT development, and economic growth, *Technological Forecasting and Social Change*, 169, 120758. [up.ac.za](#)
- Rashdan, A. & Eissa, N. (2020). The determinants of financial inclusion in Egypt. *International Journal of Financial Research*. [academia.edu](#)
- Sakanko, M., David, J., & Onimisi, A. (2020). Advancing inclusive growth in Nigeria: The role of financial inclusion in poverty, inequality, household expenditure, and unemployment. *Indonesian Journal of Islamic Economics Research*, 2(2), 70-84. doi: <https://doi.org/10.18326/ijier.v2i2.3914>
- Samputra, P. L., & Soesilo, N. I. (2023). Evaluation of national financial inclusion strategies in non-profit institution: SME Center UI. *JEJAK: Jurnal Ekonomi dan Kebijakan*, 16(1). [unnes.ac.id](#)
- Tinta, A. A., Ouédraogo, I. M., & Al-Hassan, R. M. (2022). The micro determinants of financial inclusion and financial resilience in Africa., *African development review*, 34(2), 293-306. [researchgate.net](#)

- Tiony, O. K. (2023). The impact of digital financial services on financial inclusion in Kenya, *American Journal of Industrial and Business Management*, 13(6), 593-628. [scirp.org](https://www.scirp.org)
- Tuba, M. D., & Lawack, V. A. (2023). *Towards an international financial inclusion strategy, institutional frameworks and enforcement: setting regulatory benchmarks for the SADC countries*, In *Financial Inclusion and Digital Transformation Regulatory Practices in Selected SADC Countries: South Africa, Namibia, Botswana and Zimbabwe* (pp. 23-56). Cham: Springer International Publishing. [\[HTML\]](#)
- Ukoh, J. E. & Okeke, I. C., (2023). Effect of financial inclusion on economic development in Nigeria, *International Journal of Research Publication and Reviews*. 4(5), 5018-5027.
- Uysal, M., Berbekova, A., & Kim, H. (2020). *Designing for quality of life*, *Annals of Tourism Research*. [\[HTML\]](#)
- Wakdok, S. S (2018). The impact of financial inclusion on economic growth in Nigeria: An econometric analysis. *International Journal of Innovation and Research in Educational Sciences*, 5(2), 237-245.