Effect of Financial Inclusion on Economic Growth in Nigeria

[1]Prof. Aliyu IDRIS
[1]Revenue Mobilisation Allocation and Fiscal Commission, Abuja, Nigeria
[2]Haruna DZUGWAHI, PhD +2348028411327, hdbirdling@gmail.com
[2]Office of the Accountant General of the Federation, Abuja, Nigeria.
+2348036129108; dr.aliyuidris@gmail.com

Abstract

The study evaluates the effect of financial inclusion on economic growth in Nigeria from 2000 to 2023. Specifically, it investigates the long-term relationship between automated teller machines (ATMs) and economic growth in Nigeria. It examines the influence of Deposit Money Bank branches on the country's economic growth. Real Gross Domestic Product (RGDP) was used as a proxy for economic growth. The number of ATMs, deposit money bank branches, and population growth rate were employed as explanatory variables. An ex post facto research design was adopted, with data from the Central Bank of Nigeria (CBN) Statistical Bulletin and the World Development Indicators (WDI) database. The Autoregressive Distributed Lag (ARDL) model was applied to analyse the relationship between the variables. The findings reveal that ATMs have a negative and insignificant effect on economic growth, whereas the availability of deposit money bank branches exerts a positive but insignificant impact. The study recommends that the Central Bank of Nigeria (CBN) improve ATM network efficiency by requiring banks to evaluate and upgrade their ATM infrastructure regularly. Additionally, the CBN should promote strategic branch establishment in rural areas to enhance financial inclusion.

Keywords: Automated Teller Machines, Deposit Money Bank Branches, Economic Growth.

1.1 Introduction

Financial inclusion has emerged as a pivotal concept in global economic discourse, drawing the attention of policymakers, researchers, and stakeholders. It refers to providing affordable, accessible, and timely financial services to individuals and businesses, particularly those underserved or excluded from formal financial systems. Financial inclusion has recently become essential for fostering economic growth, reducing poverty, and promoting shared prosperity. Access to financial services enables individuals and businesses to save, invest, and manage risks more effectively, contributing to inclusive and sustainable development.

In Nigeria, financial inclusion has become a cornerstone of economic reforms and policy initiatives aimed at improving the living standards of its citizens and achieving macroeconomic stability. However, significant gaps remain in financial access and utilisation, particularly among rural and low-income populations. The Central Bank of Nigeria (CBN) has been at the forefront of efforts to bridge these gaps, introducing

policies and initiatives such as the Financial Inclusion Strategy (FIS), which aims to achieve 95% financial inclusion by 2024. Despite these efforts, millions of Nigerians remain excluded from formal financial systems, limiting their ability to contribute to and benefit from the nation's economic growth.

This study seeks to address these gaps by examining the effect of financial inclusion on Nigeria's economic growth from 2000 to 2023. It focuses on critical financial inclusion indicators, such as the availability of Automated Teller Machines (ATMs) and Deposit Money Bank branches. It assesses their impact on economic performance as measured by Real Gross Domestic Product (RGDP). By doing so, the study aims to provide policymakers, financial institutions, and stakeholders with actionable insights into how financial inclusion can be leveraged to enhance economic growth and development in Nigeria.

1.2   Statement of the Problem

In Nigeria, the financial inclusion gap presents both challenges and opportunities. According to the Enhancing Financial Innovation and Access (EFInA) report, about 36% of Nigerian adults were unbanked as of 2020. Key barriers include lack of proximity to financial institutions, low literacy, and irregular income patterns. This exclusion is particularly pronounced in rural areas, where most of Nigeria's population resides. The absence of adequate financial services in these areas limits economic potential and undermines efforts to reduce poverty and achieve inclusive growth.

The exclusion of rural residents from accessing and using financial services significantly hinders the federal government's financial inclusion goals. According to the 2020 EFInA study, leading causes of financial exclusion include erratic income (31%), distance to banks (27%), unemployment (21%), and illiteracy (10%). In 2020, 36% of adults—approximately 38 million Nigerians—remained unbanked. Despite the Central Bank of Nigeria's (CBN) five-year plan (2019–2024) to achieve 95% financial inclusion by 2024, most excluded individuals reside in rural areas.

Research on financial inclusion has highlighted its potential to improve income levels, reduce poverty, and foster economic growth (Omar, 2020; Sarma, 2010). However, empirical studies on the relationship between financial inclusion and macroeconomic stability in Nigeria remain sparse. Moreover, earlier studies, such as those by Samuel Stephen Wakdok (2016) and Yahaya (2020), focus on earlier periods (1989–2018) and do not capture recent economic developments or data. While financial inclusion has been extensively studied in the context of poverty alleviation, income inequality, and financial stability, the specific relationship between financial inclusion and economic growth in Nigeria requires further investigation. Existing studies often focus on earlier periods or lack empirical evidence to capture recent economic developments and the dynamic impact of financial inclusion on the Nigerian economy.

This research aims to fill these gaps by examining the influence of financial inclusion on Nigeria's economic growth from 2000 to 2023, offering updated insights and policy recommendations to address existing barriers.

1.3   Objectives of the Study

Effect of Financial Inclusion on Economic Growth in Nigeria

The general objective is to evaluate the effect of financial inclusion on economic growth in Nigeria, while the specific objectives of the study are as follows:

i.   To assess how the number of automated teller machines (ATMs) affects Nigeria's economic growth.
ii. To evaluate how the number of Deposit Money bank branches impacts Nigeria's economic growth.

2.0   Review of Related Literature

Conceptual Issues

Through the Central Bank of Nigeria (CBN), Nigeria launched the National Financial Inclusion Strategy (NFIS) in 2012 with a target of achieving 80% financial inclusion by 2020. The NFIS promoted initiatives such as the expansion of microfinance banks, the adoption of cashless policies, and the rise of agency banking to reach underserved populations. However, the NFIS fell short of its target due to illiteracy, irregular income, inadequate documentation, and lack of financial access points. By 2020, according to the EFInA 2020 report, only 64% of Nigerian adults had access to financial services, leaving 36% (about 38 million adults) unbanked.

The COVID-19 pandemic significantly disrupted Nigeria's financial inclusion progress. Economic activities slowed, crude oil prices plummeted, and many individuals lost their income sources. According to Tolu Oyekan (2021), Nigeria's unemployment rate rose to 27.1%, while inflation increased, reducing people's purchasing power. These economic shocks further deepened financial exclusion, particularly among the rural and vulnerable populations who faced barriers such as affinity for cash, high transaction fees, and lack of awareness about digital financial services.

Empirical studies highlight the role of financial inclusion in reducing poverty and economic inequality. According to Omar and Inaba (2020), financial inclusion is a crucial component of social inclusion, providing opportunities for marginalised groups to access credit, savings, and other financial services that promote economic empowerment. By extending financial services to underprivileged communities, financial inclusion contributes to poverty alleviation and narrows income disparities.

2.2 Empirical Framework

Financial inclusion has been extensively studied, with numerous scholars emphasising its role in poverty alleviation, income equality, and economic development. Nations with higher financial inclusion rates often exhibit greater productivity and economic growth (Khan, 2011; Khan, 2012). Financial inclusion enhances access to and utilisation of financial services, increasing income levels, reducing poverty, and improving productivity, especially among marginalised groups (King, 2012a&b; Onaolapo, 2015).

Scholars such as Khan (2011) and Onaolapo (2015) have highlighted the positive relationship between financial inclusion and economic growth, using countries where increased access to credit and savings mechanisms has stimulated economic activity. Conversely, financial exclusion has been shown to perpetuate income inequality, limit opportunities for wealth creation, and hinder national development.

Other studies highlight the potential of financial inclusion to promote macroeconomic stability and welfare (Kim, 2016; Oz-Yalaman, 2019). On the supply side, underdeveloped financial systems may restrict access to credit for investment, while demand-side issues like poverty limit the desire to save and invest (Chhikara & Kodan, 2011). Recent user-focused studies suggest that financial inclusion can reduce income inequality and poverty through enhanced access to financial services (Bruhn & Love, 2012; Demirgüç-Kunt & Klapper, 2012).

Moreover, financial inclusion may contribute to economic stability by improving capital allocation and fostering non-financial enterprises (Klapper et al., 2006). At the household and trim business level, increased financial access can enhance macroeconomic and financial system stability (Cull et al., 2012).

According to Abubakar et al. (2020) and Queen Maxima (2020), financial inclusion enhances education, empowers individuals, improves family income, and expands access to healthcare and nutrition. Mbutor and Uba (2013) highlight that it provides low-income groups affordable access to financial resources, contrasting financial exclusion. Umaru (2014) defines it as the ability of all economic agents to access financial services for productive use, fostering growth and development.

The Centre for Financial Inclusion (2010) views financial inclusion as providing quality financial services to underserved groups like the poor, disabled, and rural populations. Mehrotra et al. (2009) emphasise its accessibility as a quasi-public good, ensuring individuals can easily open bank accounts and obtain credit. Chong and Chan (2010) argue that equitable financial systems empower marginalised groups, enabling inclusive economic growth. Sinclair et al. (2019) stress the need for financial knowledge and capabilities, while Grant (2020) advocates eliminating barriers to ensure affordable financial services for all. Gretta (2017) found financial inclusion essential for economic growth in the BRICS and MENA regions, driven by financial literacy and intermediaries.

Using OLS analysis, Okoye et al. (2017) showed that financial inclusion, measured by loan-to-deposit ratios and financial deepening indicators, enhanced economic growth in Nigeria (1986–2015). However, credit to the private sector had limited impact, requiring improved monetary policies. Onaolapo (2015) analysed data from 1982–2012 and revealed that financial inclusion significantly reduced poverty, though loans to rural areas and small businesses had minimal impact.

2.3   Theoretical Framework

This paper's theoretical framework is grounded in the Finance-Growth Nexus Theory, which was extensively developed by Patrick (1966) and further expanded upon by Ross Levine, Loayza, and Beck (2000). This theory establishes a bidirectional relationship between financial sector development and economic growth, highlighting mutual interdependence. The Finance-Growth Nexus Theory posits that a well-functioning financial system is crucial in supporting and stimulating economic growth. It does so by:

  i.   Mobilising savings: Financial institutions aggregate savings from households and businesses, making capital available for productive investment.
  ii. Facilitating investment: Financial systems enhance investment opportunities and entrepreneurial activities by channelling funds to the most productive sectors and projects.
  iii. Improving capital allocation: Financial systems ensure the efficient allocation of resources to sectors with higher returns through mechanisms such as credit provision, risk assessment, and market monitoring.

According to Patrick (1966), this relationship can manifest in two ways:

  i.   Supply-leading hypothesis: Financial sector development leads to economic growth by providing the necessary infrastructure and resources to foster economic activities.
  ii. Demand-following hypothesis: Economic growth stimulates financial sector development by creating a higher demand for financial services as economic activities expand.

Ross Levine et al. (2000) reinforced this theory by providing empirical evidence that financial development positively impacts long-term economic growth. They emphasised that financial institutions and markets reduce transaction costs, facilitate risk diversification, and provide access to credit, thus enhancing economic productivity.

Moreover, as the economy grows, the demand for financial services deepens and diversifies, leading to the expansion and sophistication of the financial sector. This two-way relationship creates a feedback loop in which financial development fosters economic growth, which, in turn, fuels the further advancement of the financial sector.

In essence, the Finance-Growth Nexus Theory underscores the critical role of financial systems in driving economic development while recognising that economic growth stimulates innovation and expansion within the financial sector. This dynamic relationship remains central

to understanding the interplay between financial inclusion, financial development, and sustainable economic growth.

3.0 Methodology
3.1 Research Design

This study adopts a quantitative research design to examine the Effect of Financial Inclusion on Economic Growth in Nigeria. The design is appropriate as it allows for using measurable data to analyse the relationship between financial inclusion indicators and economic growth. The study will employ an ex post facto research approach using secondary data. This is because the study relies on historical data and does not manipulate variables but observes their relationships.

3.2 Data Collection

Secondary data will be collected from reliable sources such as:

- Central Bank of Nigeria (CBN) Statistical Bulletins
- National Bureau of Statistics (NBS) reports
- World Bank Development Indicators (WDI)
- Federal Ministry of Finance publications

3.3 Model Specification

This research was structured to assess the effect of financial inclusion on economic growth in Nigeria. Real Gross Domestic Product is the Dependent Variable, while the number of bank branches and ATMs are independent variables, and Population growth rate is the control variable. This study employed a single regression model and used the econometric procedure for estimation. The model is specified as;

Functional relationship

RGDP = f(BRCH, ATM, PGR) …………………………….………….................1

However, the econometric form of the model is specified as;

$RGDP_t = \beta0_t + \beta1 BRCH_t + \beta2 ATM_t + \beta3 PGR_t + \mu_t$……………………………..2

Where:

RGDP	= Real Gross Domestic Product
BRCH	= Number of Bank Branches
ATM	= Number of ATMs
PGR	= Population Growth Rate
β0	= Intercept
β1, β2, β3	= Coefficient of the parameter estimates
μ_t	= Error Term

3.4   RESULTS AND DISCUSSIONS

Table 1: Summary of Descriptive Statistics

	RGDP	BRCH	ATM	PGR
Mean	55157.89	4.917340	10.11167	2.607591
Std. Dev.	16797.47	0.826328	6.851667	0.128130
Skewness	-0.419912	0.755342	-0.458733	-0.556230
Kurtosis	1.696208	2.190377	1.503816	1.835187
Jarque-Bera	2.405179	2.937656	3.080312	2.594358
Probability	0.300415	0.230195	0.214348	0.273302
Observations	24	24	24	24

Source: Researcher's Compilation (2024) Employing E-Views 12

Descriptive statistics are used to describe the basic features of the data in a study. Table 1 shows that the mean value of RGDP is the highest at 55157.89, while PGR has the lowest mean value at 2.607591. The result also reveals that RGDP has the highest standard deviation of 16797.47, while PGR has the lowest standard deviation of 0.128130. All variables' values (except BRCH) have a negative skewness, implying that the distribution's mass has a short left tail. RGDP, ATM, and PGR all showed kurtosis, which is less than 3, meaning they are platykurtic (fat or short-tailed) and have fewer extreme outliers than the normal distribution. While BRCH has a kurtosis value greater than 3, it is leptokurtic (slim or long-tailed). The Jarque-Bera test also shows that all the variables are generally distributed as their probability values are more significant than 0.05 at a 5% significance level.

Table 2: Summary of Unit Root Test Results

Variable	ADF Test Statistics	5% critical value	P-Value	Order of integration	Remark
RGDP	-5.313874	-2.998064	0.0003	I(0)	Stationary
BRCH	-3.267364	-3.004861	0.0293	I(1)	Stationary
ATM	-2.310529	-1.957204	0.0232	I(1)	Stationary
PGR	-3.871381	-3.710482	0.0378	I(1)	Stationary

Source: Researcher's Computation (2024) Employing E-Views 12

The result above shows RGDP to be stationary at levels (i.e. integrated of order zero). In contrast, the other variables (BRCH, ATM, and PGR) are all found to be stationary at the first difference (i.e. integrated of order one).

Table 3: Summary of Bounds Test

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	11.92646	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Researcher's Computation (2024) Employing E-Views 12

The results in Table 3 revealed that the computed F-statistics value of 11.92646 was more significant than the upper bound critical value of 3.67 at a 5% confidence level. Based on this, it can be inferred that the variables are co-integrated, and as such, there is a long-run equilibrium relationship between the variables of interest.

Table 4: ARDL-ECM and Long-Run Results

ECM Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1))	-0.578768	0.165915	-3.488351	0.0051
D(RGDP(-2))	-0.735324	0.153351	-4.795038	0.0006
D(BRCH)	1949.926	401.3727	4.858144	0.0005
D(BRCH(-1))	-1311.024	435.6414	-3.009412	0.0119
D(PGR)	-34606.09	6779.894	-5.104224	0.0003
CointEq(-1)*	-0.094041	0.010429	-9.017580	0.0000
R-squared	0.859686	Mean dependent var		1997.491
Adjusted R-squared	0.812915	S.D. dependent var		1837.280
F-statistic	5.492871	Akaike info criterion		16.42873
Prob(F-statistic)	0.014900	Schwarz criterion		16.72716
LONG-RUN				
BRCH	39305.73	49524.25	0.793666	0.4442
ATM	-2953.616	6119.945	-0.482621	0.6388
PGR	-88337.45	102247.4	-0.863958	0.4061

Source: Researcher's Computation (2024) Employing E-Views 12

The error correction term (CointEq-1) with a coefficient value of -0.094041 is negative, less than unity, and statistically significant at 5%. This shows that once there is disequilibrium in the system, it takes an annual speed of 9.4% to restore a long-run relationship. The R-squared value of 0.859686 showed that in the short run, the explanatory variables accounted for 85.97% of changes in RGDP. The remaining 14.03% resulted from other RGDP factors not captured in the model. In addition, the F- statistics, which shows the overall significance of the model, showed that the overall result is statistically significant at 5%. This was indicated by the coefficient value of 5.492971 with an associated p-value of 0.014900. Meanwhile, the long-run result above shows that both ATM and PGR have a negative and insignificant relationship with RGDP. Also, BRCH has a positive but insignificant relationship with RGDP.

Post Estimation Tests

Table 5: Summary of Post-Estimation Tests

Test	F-Stat /Coefficient	Prob.
Normality Test	0.675193	0.7134
Serial Correlation (LM)	1.596375	0.2251
Heteroskedasticity	0.733228	0.6741

Source: Researcher's Computation (2024) Employing E-Views 12

From Table 5, the Jarque-Bera normality test shows that the residuals for this model are typically distributed at a 5% significance level, given that the probability value (0.6008) is more significant than 0.05. On the other hand, the serial correlation (LM) test shows that the model is free from serial or autocorrelation, as shown by their probability value (0.9363), which is greater than 0.05. Lastly, the result of the heteroscedasticity test shows no evidence of heteroscedasticity in the model, as evidenced by the probability value (0.9118) greater than 0.05.

Fig.2 Stability Test Result
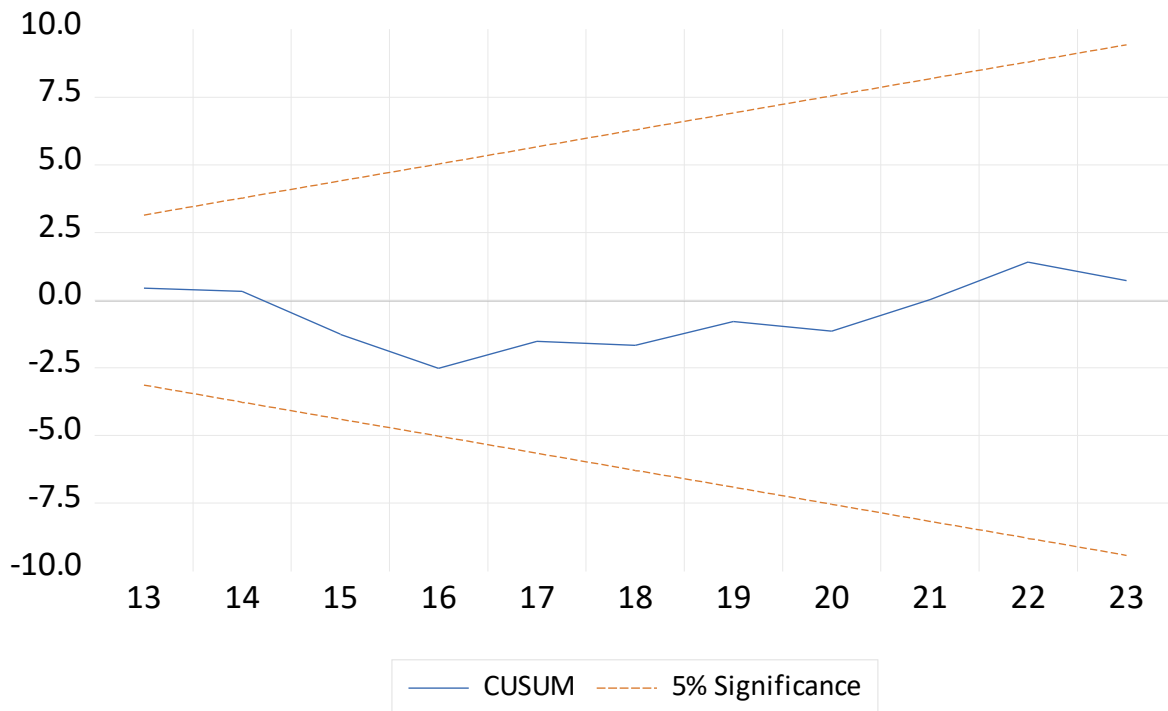
The plot above shows that the model is stable and correctly specifies the regression equation. The chart's plot lies within the critical bounds at a 5% significance level, indicating that the coefficients are constant.

Discussion of Findings

This section discusses this paper's findings concerning the literature review in chapter two and explains how the findings align with the studies reviewed.

To start with, the bounds-test approach confirmed the existence of co-integration between economic growth and the explanatory variables. Meanwhile, the estimated result obtained from the Autoregressive Distributed Lag Model revealed a positive (39305.73) and insignificant (0.4442) long-run relationship between BRCH and RGDP in Nigeria. This showed that a 1% increase in BRCH increases RGDP by approximately #39305.73bn. A positive and insignificant relationship between the availability of Deposit Money Bank branches and RGDP in Nigeria suggests that while bank branches can contribute to economic growth by facilitating financial transactions and providing financial services, their impact may be limited or indirect. This positive relationship is in tandem with the work of Beck *et al. (2007), who state* that a higher density of bank branches is associated with higher economic growth.

On the other hand, the result depicted that ATM has a negative coefficient of -2953.616 and a P-value of 0.6388. This means that an average 1% increase in construction ATM decreases the RGDP in Nigeria by approximately #2953.616bn. This result conforms with the theoretical expectation. The finding that ATM availability has a negative and insignificant relationship with RGDP in Nigeria suggests that while ATMs are essential for financial inclusion and convenience, their impact on economic growth may be limited or negative under certain conditions. This outcome is inconsistent with the study by Hernandez and Jenkins (2013), which found that higher ATM penetration rates are associated with higher economic growth.

Similarly, the ARDL result showed that PGR had a negative long-run relationship with RGDP in Nigeria, which reflected a negative coefficient of -88337.45 and a P-value of 0.3344. This revealed that a 1% change in PGR reduced RGDP by #88337.45bn. A negative and insignificant relationship between the population growth rate and RGDP in Nigeria suggests that while population growth can be a source of labour supply and potential economic growth, it may not be a significant driver of economic growth in Nigeria. This could be due to several factors, such as low-quality human capital.

In Table 4, the one period lagged coefficient of the Error Correction Term (ECT-1) is negative, less than unity, and statistically significant at 5% (as captured by -0.094041 and pv of 0.0000). This means that once there is disequilibrium in the system, it will take an average (annual) speed of 9.4% to restore the long-run relationship. This finding corroborated the fact that a highly significant lagged error correction term proves the existence of a long-run relationship between the dependent and the independent variables.

CONCLUSION AND RECOMMENDATIONS

This paper investigated the effects of financial inclusion on economic growth in Nigeria. Deriving from the empirical analysis conducted, the paper, therefore, concludes that the Nigerian economy has been underperforming, and this could have a significant impact on long-term economic growth. The following recommendations are therefore proffered:

i. The Central Bank of Nigeria (CBN) is encouraged to enhance ATM network efficiency by mandating banks to assess and upgrade their ATM networks regularly. They should also enforce strict maintenance standards and downtime limits.

ii. The Federal Ministry of Education should increase investment in education, particularly at the primary and secondary levels. They should strive to promote technical and vocational education to equip the workforce with relevant skills.

iii. The Central Bank of Nigeria (CBN) should encourage banks to locate branches in rural areas strategically. Also, they should promote the use of technology to improve branch efficiency.

REFERENCES

Akhil, D. (2016). Financial Inclusion: Issues and challenges, International of Technology 4(2).

Banco Central Do Basil. (2010). "Report on Financial Inclusion" is a report on the financial inclusion Project in Brazil.

Bruhn, M. & Love, I. (2012). The economic impact of expanding access to finance in Mexico. In Robert C., Aslı D., & Jonathan M. eds., Banking the world: Empirical foundations of financial inclusion. MIT Press.

CBN, 2. (2003). CBN Annual Reports 1980–1994. Nigeria: CBN.

Chhikara, K.S., & Kodan, A.S. (2011). Financial inclusion, development and its determinants: An evidence of Indian State, Asian Economic Review, April 2011, Indian Institute of Economics, Hyderabad, 36–67.

Cull, R., Demirguc-Kunt, A., & Lyman, T. (2012). Financial inclusion and stability: What does research show? No. 9443. The World Bank.

Demirgüç-Kunt, A., & Klapper, L (2.012). Measuring financial inclusion: The global financial inclusion index, Washington, D.C.: World Bank http://siteresources.worldbank.org/DEC/Resources/FinInclusionBrochure FINALWEB.pdf

Demirgüç-Kunt, A., Klapper, L., Singer, D., & Van Oudheusden, P. (2018). The global index database 2017: Measuring financial inclusion and the fintech revolution. The World Bank.

EFInA, (2020). "Access to Financial Services in Nigeria Survey 2020," 2021. [Online]. Available: https://efina.org.ng/publication/access-tofinancial-services-in-nigeria-survey-2020/

European Commission (2008). Financial services provision and prevention of financial exclusion. Report by the Director General for Employment, Social Affairs and Equal Opportunities, European Commission. p.48.

Gretta, S. (2017). Financial Inclusion and Growth.The Business and Management Review.

Kama, U. & Adigun, M. (2013). Financial inclusion in Nigeria: Issues and challenges. Occasional Paper No. 45, Central Bank of Nigeria (CBN).

Khan, H.R. (2011). Financial inclusion and financial stability: Are they two sides of the same coin? The Indian Bankers Association and Indian Overseas Bank organised a conference in Chennai in November.

Khan, H. R. S. (2012). Issues and challenges in financial inclusion: policies, partnerships, processes & products, at the symposium on "financial inclusion in Indian economy" organised by the Indian Institute of Public Administration, Bhubaneswar on June 30.

Kim, J. H. (2016). A study on the effect of financial inclusion on the relationship between income inequality and economic growth. Emerging Market Finance and Trade, 52(2), 498 – 512.

King, M. (2012a). The unbanked four-fifths: Informality and barriers to banking services in Nigeria. IIIS Discussion Paper 411.

King, M. (2012b). Is mobile banking breaking the tyranny of distance to bank infrastructure? Evidence from Kenya. IIIS Discussion Paper 412.

Klapper, L., Laeven, L. & Rajan, R. (2006). Entry regulation as a barrier to entrepreneurship. Journal of Financial Economics, 82(3), 591–629.

Mbutor, O (2013). The impact of Financial Inclusion on Monetary Policy in Nigeria.Journal of Economics and International Finance. 5. 318–326. 10.5897/JEIF2013.0541.

Onaolapo, A. R. (2015). Effect of financial inclusion on the economic growth of Nigeria. International Journal of Business and Management Review. 3(8), 11-28.

Oz-Yalaman, G. (2019). Financial inclusion and tax revenue. Central Bank Review, 19, 107–113.

Reserve Bank of India (2008). Report on currency and finance. RBI.

Ross Levine, Norman Loayza, and Thorsten, B. (2000). "Financial Intermediation and Growth: Causality and Causes," Journal of Monetary Economics, vol. 46, no. 1, pp. 31–77, 2000.