POLAC MANAGEMENT REVIEW (PMR)
DEPARTMENT OF MANAGEMENT SCIENCE
NIGERIA POLICE ACADEMY, WUDIL-KANO

EFFECT OF FINANCIAL INCLUSION ON FINANCIAL DEEPENING IN NIGERIA

Tanko, Yahaya Department of Banking and Finance**,** Nasarawa State University Keffi

M. Ibrahim, PhD Department of Banking and Finance, Nasarawa State University Keffi

Salihu Liman Mairafi, PhD Department of Banking and Finance, Nasarawa State University Keffi

Abstract

The study investigates the effect of financial inclusion on financial deepening in Nigeria. The study adopted an Ex post facto research design and used quarterly time series secondary data covering the period 2014 to 2023. The regression model was employed as the regression model to analyze the data obtained from the Statistical Bulletin of the Central Bank of Nigeria. The findings of this study revealed that both rural commercial banks' branches and commercial banks' loans to small and medium enterprises (SMEs) have positive but insignificant effect on financial deepening in Nigeria. The study therefore concludes that financial inclusion influences financial deepening in Nigeria. The study recommends among other that, policymakers and financial institutions should foster the expansion of rural commercial bank branches, especially in underserved and remote areas, through targeted policies and subsidies. The study also recommends that policymakers and financial institutions should establish credit guarantee schemes and other risk-sharing mechanisms to incentivize commercial banks to increase their lending to SMEs, which are often perceived as high-risk borrowers.

Key words: Commercial Banks' Branches, Commercial Banks' Loans, Financial Deepening, Financial Inclusion, SMEs.

1. Introduction

Globally, financial deepening, characterized by an increasing ratio of broad money (M2) to GDP, is linked to higher economic growth, better investment, and efficient resource allocation. Countries with deeper financial systems benefit from improved access to credit, risk diversification, and efficient savings mobilization. However, financial deepening varies due to institutional quality, macroeconomic stability, and regulatory frameworks.

In Africa, financial deepening is challenging, marked by low financial intermediation and limited access to financial services, especially in rural areas. Barriers include underdeveloped financial infrastructure, low financial literacy, economic informality, and regulatory constraints. Efforts in Africa focus on expanding financial inclusion, improving infrastructure, and addressing regulatory weaknesses (Bongomin et al., 2020).

In Nigeria, financial deepening remains a topic of research and policy. The ratio of M2 to GDP increased from 13% in the 1980s to over 20% recently, yet it remains low compared to other economies. Constraints include a dominant banking sector, limited financial access, high informality, and macroeconomic challenges. Financial deepening involves expanding the financial sector's size relative to the economy, indicated by a higher M2/GDP ratio, which shows enhanced financial intermediation (Adomako, 2020).

Financial inclusion, defined as access to formal financial services by individuals and businesses, is crucial for financial deepening. It drives the expansion and diversification of the financial system, enhancing service availability to a broader population. Evidence shows a positive relationship between financial inclusion and deepening, as inclusion boosts financial intermediation and resource mobilization. Key components of financial inclusion are rural commercial banks' deposits, loans, branches, and SME loans (Gupta & Singh, 2021).

Rural commercial bank branches play a significant role in Nigeria's financial deepening. Obamuyi and Olayiwola (2019) highlight that expanding rural branches promotes financial inclusion by increasing financial access, savings, credit extension, and service diversification. Additionally, commercial banks' loans to SMEs are crucial for SME growth and sustainability, fostering a cycle of growth and development. This study investigates the impact of financial inclusion on financial deepening in Nigeria, emphasizing the roles of rural bank branches and SME loans

Nigeria, like many other developing economies, has been grappling with the challenge of low levels of financial deepening, which is a critical aspect of financial sector development and economic growth (Adeyemi, 2019; Nkwede, 2015). Despite the efforts made by the government and financial institutions to promote financial inclusion, the country's financial system has not achieved the desired depth and breadth to effectively support economic growth and development. Also, significant proportion of the population, particularly in rural and underserved areas, remains financially excluded. Some of the key problems identified in the literature are limited number of commercial banks branches, limited commercial banks loan to SMEs, limited access to and usage of formal financial services, particularly in the rural and underserved areas of the country (Ogbu, 2018; Onaolapo, 2015). This has constrained the ability of the financial system to mobilize savings, channel credit to productive sectors, and foster financial intermediation. The problem of financial exclusion is particularly acute in rural Nigeria, where a large segment of the population remains unbanked and lacks access to basic financial services.

Furthermore, the depth of the Nigerian financial system is essentially important for the proper functioning of the entire economy. However, the trend of financial system depth in Nigeria since the year 2016 has on the average grown at an unsatisfactory level, with violent fluctuations. According to the CBN (2021), the depth of the financial system, measured in terms of credit to the private sector which was approximately N22,677.97 billion in the Second of 2016 only marginally increased to N22,978.28 billion by the Third Quarter of 2018. By the end of 2021, the value only stood at N35,194.60 billion, signifying a growth of only 55.19% over the period of six years from 2016 to 2021. Similarly, depth in terms of broad money supply has also only grown from N25,145.26 billion in the Third Quarter of 2016 to N43,817.57 billion the last Quarter of 2021, representing approximately 74.26%.

It is worrisome and surprising that despite the obvious theoretical linkage between financial inclusion and financial deepening, preponderance of Nigerian studies has not devoted any known research effort to the nexus between financial inclusion and financial deepening in Nigeria. Studies on financial inclusion in Nigeria such as Tiamiyu et al. (2022), Francis and Henry (2023), Okonkwo and Nwanna (2021), Oladimeji and Adegbite (2019), have examined it in relation to economic growth while Anthony-Orji et al. (2021) has investigated its effect on financial stability. On the other hand, studies on financial deepening in Nigeria such as Okoye and

Ezema (2021), Tiamiyu et al. (2021), Mbah and Okoli (2020), Chidimma et al. (2019), Mayor (2019) and Ehiedu et al. (2022) all examined the relationship between financial deepening and economic growth in Nigeria. Lenyie et al. (2023) examined the relationship between financial deepening and financial stability. None of these studies has concentrated on the relationship between financial inclusion and financial deepening in Nigeria.

It is thus worrisome and surprising that most of the empirical efforts and energy of researchers have been devoted to investigating the effect of financial inclusion on economic growth as a whole and abandoning the need to first determine the extent financial inclusion has first been able to deliver its immediate goal of deepening the Nigerian financial system. While economic growth is arguably the bigger picture, focusing on it directly is synonymous to jumping the gun. This is so because economic growth is more remote to financial inclusion than financial deepening.

In addition, studies that have investigated financial deepening have always linked it to economic growth, and they have either measured it as ratio of broad money supply to GDP or ratio of credit to private sector to GDP (Francis & Henry, 2023; Attah-Botchwey et al., 2022; Okoye & Ezema, 2021). Some studies even combine the value of the two measures as one. However, it still remains a mystery which the measures are more appropriate for financial deepening in Nigeria. This constitutes a methodological dilemma for researchers.

Therefore, the main objective of this study is to examine the effect of financial inclusion on financial deepening in Nigeria. To achieve this objective, the study was guided by the following specific objectives to:

i. examine the effect of rural commercial banks' branches on financial deepening in Nigeria; and
ii. evaluate the effect of rural commercial banks' loans to SMEs on financial deepening in Nigeria

Based on the above objectives the study formulated the following hypotheses:
HO1: Rural commercial banks' branches have no has no significant effect on financial deepening in Nigeria.
HO2: Rural commercial banks' loans to SMEs have no significant effect on financial deepening in Niger

2. Literature Review

2.1 Conceptual Issues

Financial Deepening

According to Ajudua and Odishika (2022), financial deepening is the term for a rise in an economy's supply of financial assets. Due to the undeniable importance of the development of the financial sector for economic growth, the relationship between financial deepening and economic growth has received attention in financial literature and has been widely acknowledged. Financial deepening implies that financial organizations can efficiently utilize savings for investments through financial intermediation by enhancing the competitive efficacy of financial markets.

According to Attah-Botchwey et al. (2022), financial deepening refers to the condition, costs, risks, quantity, and options available to potential borrowers become more favourable. It is the process that marks an improvement in quantity, quality, and efficiency of intermediary financial services (Sackey & Nkrumah, 2012).

Financial Inclusion

Financial inclusion is the process of ensuring access to appropriate financial products and services needed by vulnerable groups at an affordable cost in a fair and transparent manner by mainstream institutional players (Okonkwo & Nwanna, 2021). It has been defined in various ways by various researchers. El Said et al. (2020) posit that financial inclusion means access to and use of financial products and services by households or firms which is one of the main, albeit challenging priorities in Emerging Markets (EMs), and a key factor for financial development. Onaolapo (2015) defined it as a process that ensures the ease of access to or availability of and usage of the formal financial system by all members of the economy. Chima (2011) provided an all-encompassing definition. He defined financial inclusion as the state of financial system where every member of society has access to appropriate financial products and services for effective and efficient management of resources; get needed resources to finance their businesses; and financial leverage to take up opportunities that will lead to increase in their income. According to World Bank (2018), financial inclusion means individuals and businesses have access to useful and affordable financial products and services that meet their needs (transactions, payments, savings, credit and insurance) delivered in a responsible and sustainable way.

This study sees financial inclusion as the process of ensuring affordable and accessible formal financial services and products are available to all individuals and businesses, enabling them to actively participate in and benefit from the financial system. This includes the provision of transactions, payments, savings, credit, and insurance services, delivered in a responsible and sustainable manner

Rural Commercial Banks' Branches

Rural commercial banks' branches are extensions of commercial banks that operate specifically in rural areas (Oruo, 2020). These branches are designed to provide banking and financial services to rural populations, including individuals, farmers, and small businesses. The main aim is to promote financial inclusion and support economic activities in rural regions, which are often underserved by the banking sector. By extending their reach to rural areas, these branches help integrate rural populations into the formal financial system, providing access to savings accounts, loans, and other financial products (Nwanyanwu, 2018). They play a crucial role in supporting agricultural activities and rural small and medium-sized enterprises (SMEs) by providing necessary credit and financial services (Adeola & Evans, 2019).

The number of rural branches of commercial banks is a standard measure of financial inclusion because the rural areas are ideally not the standard place of businesses for commercial banks considering the thin customer base. Cicchielo et al. (2021) argued that rural branches of commercial banks must keep their activities under control in order to maintain profitability of the business. This is so because the fixed cost faced by banks in the rural and urban areas is almost the same.

Rural commercial banks' branches are pivotal in providing access to credit in rural areas, where traditional banking services might be limited. These branches help reduce the gap in financial services availability between urban and rural areas. Studies have shown that increased access to credit through rural branches significantly impacts agricultural productivity and rural entrepreneurship (Adebayo, 2021). The presence of rural commercial banks' branches contributes to financial deepening, which is the process of increasing the variety and accessibility of financial services and products. Financial deepening in rural areas is essential for mobilizing savings, providing credit, and facilitating transactions, which are critical for economic development (Adomako, 2020). The proliferation of rural branches entrenches rural competition among banking service providers and provides increased access to financial services at the rural level. Where such banks are seen to increase in their presence, they adopt strategies on how best to survive based on their economic realities. In addition, Odeigah (2020).

Despite their importance, rural branches often face challenges such as higher operating costs, lower profitability, and difficulties in risk management. To enhance the effectiveness of rural commercial banks' branches, policymakers and financial institutions need to develop supportive frameworks, including subsidies, improved risk assessment tools, and financial literacy programs for rural populations (Eke, 2019).

Rural Commercial Banks' Loans to SMEs

Rural commercial banks' loans to SMEs refer to the credit and financial services provided by commercial banks' branches operating in rural areas specifically aimed at small and medium-sized enterprises (SMEs) (Nguyen et al., 2020). These loans are crucial for the growth and sustainability of SMEs in rural regions, where access to finance is often limited. These loans provide necessary capital for rural SMEs to start, operate, and expand their businesses. This support includes working capital loans, investment in equipment, and funding for expansion projects (Nguyen et al., 2020).

The concept of funding SMEs has been in the front burner for several economies as SMEs by their nature have the tendency to grow quickly and rapidly unlike bigger firms (Okere et al., 2021). Given the fact that SMEs could not raise the requisite collaterals to access formal loans, the government puts in place policies to encourage commercial banks to extend credit to such businesses under subtle terms that will not adversely affect both parties.

Several SMEs have folded up for lack of finance that can be used to expand the operations of the business. In Nigeria, a number of agencies have been set up to facilitate SMEs' unfettered access to financing. One of the obvious measures of inclusion is thus access to capital at lower and affordable cost by small businesses without many encumbrances. Most SMEs operate in the rural areas due to proximity to their raw materials and cost of operations (Ahmad et al., 2020).

By enabling rural SMEs to access finance, rural commercial banks' loans contribute significantly to local economic development, job creation, and poverty reduction (Ekong & Ekong, 2019).

Many rural SMEs are involved in agricultural activities. Loans from rural commercial banks help these enterprises invest in modern farming techniques, purchase inputs, and improve productivity (Ogege & Boloupremo, 2021). Access to credit is a critical factor for the growth of SMEs in rural areas. Rural commercial banks play an essential role in providing this access, which in turn supports financial inclusion. Financial inclusion efforts ensure that rural SMEs are integrated into the formal financial system, thus improving their ability to secure funds and grow their businesses (Bongomin et al., 2020). The provision of loans to rural SMEs has been shown to have a positive impact on their growth and, by extension, the economic development of rural areas. These loans enable SMEs to innovate, expand their operations, and increase their market reach (Adegboye &Iweriebor, 2018).

Despite their importance, rural commercial banks' loans to SMEs face several challenges, including high default rates, lack of collateral, and high operational costs. To mitigate these challenges, it is recommended to improve the credit assessment processes, offer financial literacy programs to rural entrepreneurs, and explore the use of digital technologies to reduce costs and improve efficiency (Uchenna et al., 2020)

In this study therefore, commercial banks' loans to SMEs refers to that component of commercial banks' loan portfolios that is devoted for access by small business owners. This specialized class of loans is necessary since such businesses cannot competitively qualify for loans.

2.2 Empirical Review

Rural Commercial Banks' Branches and Financial Deepening

Simeonovski et al. (2020) conducted a study on the effect of bank density on financial development and economic performance. The study provides evidence about the link between bank density as a form of financial deepening, and financial development and economic performance. The study constructs a panel of European countries and develop a dynamic regression model with GDP dynamics up to three lags and a full set of fixed effects to study the effect that the number of bank branches and automated teller machines per capita have on real GDP per capita. The baseline estimates point out to a weak negative impact of the increased number of bank branches per capita on economic performance by around 0.3 per cent annually. The study further includes financial development as a covariate and find weaker negative impact of the number of bank branches and a weak positive impact of the number of automated teller machines by about 0.15 per cent annually. The dependent variable used in the study was GDP while the current study focused on financial deepening.

Soyemi et al. (2020) conducted a study on financial inclusion and sustainable development in Nigeria. Both Error Correction Model (ECM) and Fully Modified Ordinary Least Square (FMOLS) were used to ascertain the short-run and long-run relationship respectively among the variables which covers the period from 2001 to 2016, as data for HDI (Human Development Index) were available for Nigeria from 2001 through 2016 only. The result of the analysis indicated that in the short-run there is short-run causality running from a number of commercial bank branches, demand deposit from the rural areas, loan to rural areas to HDI. The long-run result revealed that the explanatory variables consisting of loan to rural areas, number of commercial bank branches and demand deposit from the rural areas all have positive significant impact on HDI in Nigeria. The overall result revealed that financial inclusion has impact on sustainable development in Nigeria.

Yulin (2014) conducted a study on bank branches, economic growth and urban-rural income gap, based on the VAR model, using the Co integration test, Error correction model and Granger causality test, the paper analyzes the short-term and long-term effect of the changes of bank branches impacting on economic growth and the urban-rural income gap. The results show that: firstly, the bank branches downsizing is conducive to China's economic growth in long-term, but the short-term effect is not significant. The reform of state-owned commercial bank branches since 1998 has important significance for promoting China's economic growth. Secondly, the bank branches downsizing will expand the urban-rural income gap in the long run, but in the short run it is advantageous to the narrowing of the urban-rural income gap. Thirdly, the restructuring of state-owned banks in 1998 was a kind of institutional progress. Therefore, there is need to deepen the reform of the banking institutions in China, enhance the management efficiency, at the same time increase the intensity of layout of banking institutions in rural areas

Rural Commercial Banks' Loans to SMEs and Financial Deepening

Kanu and Nwadiubu (2021) conducted a study on commercial bank loans and the performance of small and medium scale enterprises (SMEs) in Nigeria. While an ex-post facto research design was adopted in the investigation; a least square regression analysis was carried out on a time-series data to ascertain relationships, and to avert the emergence of spurious results, unit root tests were conducted. Outcome of the study indicates that, there exists an inverse relationship (though not statistically significant) between the amount of commercial bank loans (CBLSME) made available to SMEs and the output of SMEs (OPSME) in Nigeria. The study also revealed that a seeming upsurge in the activities of SMEs may not have reduced the rate of unemployment in Nigeria as a good number of people employed by the SMEs are probably under-employed.

Olaoye et al. (2018) examined the commercial bank lending to Small and Medium Scale Enterprises and Nigeria economy over a period of twenty years, spanning from 1998 to 2017.Specifically the study analyzed the effect of Average commercial bank lending rate, commercial bank loans and inflation rate to SMEs growth on Nigeria economy, and also the causal relationship between explanatory variables and Nigeria economy measured in terms of GDP. The study made used of secondary data sourced from the Central Bank of Nigeria Statistical Bulletin and the National Bureau of Statistics for the period under study. Data collated were analyzed with descriptive analysis, correlation analysis, ordinary least squares regression analysis, and Granger causality analysis. The findings revealed that commercial bank loans to SMEs (CBLSMES) had a negative and insignificant impact on a gross domestic product with a coefficient estimate of -1.015926 ($p=0.0167 < 0.05$). Average commercial bank lending rate to SMEs (ACBLRSMES) had a negative and insignificant impact on a gross domestic product with a coefficient estimate of -1911.581 ($p=0.6178 > 0.05$). Meanwhile, the study revealed that inflation rate (IFTRATE) exerts an insignificant positive impact on a gross domestic product with a coefficient estimate of 1833.262 ($p=0.2400> 0.05$).

Imoughele and Ismaila (2014) conducted the impact of commercial bank credit on the growth of small and medium scale enterprises: econometric evidence from Nigeria (1986 - 2012). The study employed Co-integration and Error Correction Modelling (ECM) techniques to investigate empirically the impact of commercial bank credit on Nigeria's Small and Medium Scale enterprises (SMEs) between 1986 and 2012.The results revealed that SMEs and selected macroeconomic variables included in the model have a long run relationship with SMEs output. The study also reveals that savings time deposit and exchange rate has a significant impact on SMEs output in Nigeria. Furthermore, commercial bank credit to SMEs, total government expenditure and bank density has direct but insignificant impact on the country SMEs output this may be connected with stringent policy in accessing credit facility and the crowd out effect of government expenditure in the economy.

2.3 Theoretical Framework

This study is anchored on Theory of Financial Liberalization

The theory of financial Liberalization pioneered by McKinnon (1973) and Shaw (1973) advocates for the Liberalization of the financial sector as an effective way to accelerate growth. The theory suggests that the Liberalization of financial markets allows financial deepening, which reflects the increasing use of financial intermediation by savers and investors and the monetization of the economy. In other words, domestic savings are increased by lowering financial market frictions, and foreign capital is attracted. The theory is based on the premise that the higher the actual interest rate, the greater the degree of financial deepening, the more savings (Nazmi, 2005). Financial saving will be allocated and invested more efficiently than if saving is invested directly in the sector in which it takes place, without financial intermediation (Ozdemir & Erbil. 2008). The theory of financial Liberalization suggests a complementarity relationship between the accumulation of money balances (financial assets) and physical capital accumulation in developing countries, leading to economic growth (Nwangolo& Ogechi, 2018).

The Theory of Financial Liberalization posits that opening up and deregulating financial markets can lead to increased efficiency, innovation, and growth within the financial sector and the broader economy. This theory suggests that removing barriers to entry, encouraging competition, and allowing market forces to operate more freely can result in improved access to financial services, enhanced allocation of capital, and greater financial deepening (Nkoro& Uko, 2020). The Theory of Financial Liberalization provides insights into how policy reforms, market openness, and regulatory changes influence financial inclusion and financial deepening in Nigeria (Adeyemi & Akindele, 2023). By promoting competition, innovation, and efficiency in the financial sector, liberalization measures can help expand access to financial services, improve the quality and diversity of financial products, and enhance the overall depth and stability of the financial system (Nwachukwu & Adegboye, 2021).

The Theory of Financial Liberalization is highly relevant to the study of financial inclusion and financial deepening in Nigeria as it provides a framework for understanding the impact of market deregulation and policy reforms on the accessibility, efficiency, and depth of the financial sector, hence, this study adopts the theory of Financial Liberalization.

3. Methodology

The objective of this study is to examine the effect of financial inclusion proxy by rural commercial banks branches and commercial banks loans to SMEs on financial deepening. The study adopted an Ex post facto research design. The choice of this research design is based on the fact that this work is an After-the-fact researches the employed variables that are such that the researcher cannot manipulate (Onwumere, 2009). In this study the ex-post factor is buttressed by the empirical or analytical form of research given the quantitative form of the study. The study utilized secondary data which was obtained from the Statistical Bulletin of the Central Bank of Nigeria (CBN). All the data utilized are time series, quantitative and sourced from secondary sources basically. The 2023 Statistical Bulletin of Central Bank of Nigeria for Ten (10) year's period spanning from 2014-2023. They are time series data because they are ordered following a natural frequency (Brooks, 2014). The data acquired for a study was analyzed using different techniques. Both descriptive and inferential statistics was used to analyze the data. Descriptive statistics, correlation matrix, and the regression model were all employed in the statistical analysis. Regression analysis was used to test the hypotheses raised for the study. The analysis was done using EVIEWS software.

The regression model used for the study is stated below:

The Regression Model Used

$FID_t = \beta 0 + \beta 1 RCBB_t + \beta 2 CBLS_t + \mu_t$

Where:

FID_t = Financial deepening at time t which is the current period

$RCBB_t$ = Rural Commercial Banks Branches at time t

$CBLS_t$ = Commercial Banks Loans to SMEs at time t

$\beta 0$ = common y-intercept

$\beta 1 - \beta 2$ = coefficient of the relevant predictor variables
μ_t = population random disturbance term

The standard tests were conducted. The standard tests served as preliminary tests to ascertain the data behavior and their goodness towards employing them for model estimation. These tests include basic descriptive statistics such as the mean, median, mode, variance, standard deviation, skewness, kurtosis and normality. Stationarity implies that the 'mean' and 'variance' are constant over time and the value of the covariance between two time periods depends only on the distance or lag between the two time periods and not the actual time at which the covariance is computed. In this study therefore, the Augmented Dickey Fuller Unit Root Test was employed to test for the presence or otherwise of the unit root (stationarity).

Table 1: Variable Measurement

Variable Name & Acronym	Variable type	Variable Description	Source s
Financial Deepening (FID)	Dependent variable	Broad Money to GDP (M2/GDP) Credit to Private Sector to GDP (CPS/GDP) Sum of Broad Money Supply and Credit to Private Sector (M2/GDP + M2/GDP)	Sharpe(1975), Jensen(1968), Sortino(1980) , Treynor(1965), M^2 (1997).
Rural Commercial Banks' Branches (RCBB)	Independent variable	Annual change in number of Rural Commercial Banks' Branches (RCBBt – RCBBt-1)/RCBBt-1	(Adusie & Gyampong, 2007)
Commercial Banks' Loans to SMEs (CBLS)	Independent variable	Annual change in value of Commercial Banks' Loans to SMEs (CBLSt – CBLSt-1)/CBLSt-1	(Davidson & Froyen 1982)

Source: Researcher's Compilation, 2024

4. Results and Discussion

A descriptive statistic was computed with the values of the dependent and independent variables gotten from the CBN statistical bulletin 2023 to identify various descriptive characteristics of the series and the result is shown in table 2.

Table 2: Descriptive Statistics

	FID	RCBB	CBLS
Mean	0.057286	0.129735	0.110919
Median	0.044451	0.102058	0.112979
Std. Dev.	0.079513	0.433124	0.250577
Skewness	0.345143	-6.639671	0.409397
Kurtosis	2.232207	1.177768	1.607824
Jarque-Bera	8.644257	15.73501	7.756062
Probability	0.003272	0.000000	0.000000
Observations	40	40	40

Source: Researcher's computation, 2024 via EVIEWS

The summary of the descriptive statistics for all variables used in the study is presented in Table 2. From table 2, Rural commercial banks branches (RCBB) have the highest mean while financial deepening (FID) has the lowest mean of 0.129735and 0.057286respectively. Skewness and Kurtosis of all the variables used in this study are also shown. While the Skewness measures symmetrical property of the series, the kurtosis measures the degree of peakedness of the distribution. The yardstick for measuring the Skewness is how close the distribution is to the zero (0) and for the kurtosis is how close the distribution is to the three (3). Based on this, financial deepening (FID) and RCBD and RCBL are leptokurtic (>3). From the normality test results presented in Table 2, the null hypothesis of a normal distribution rejected for all the variables because they have a Jarque-Bera statistic with a probability that is less than 5%.

The Jarque-Bera test statistics for all three variables are still significant. The p-values for FID, RCBB, and CBLS are 0.003272, 0.000000, and 0.000000, respectively, still indicating that the null hypothesis of normality can be rejected.

Table 3: Correlation of the Variables

Correlation Probability	FID	RCBB	CBLS
FID	1.000000		
RCBB	0.076058	1.000000	
	0.4429	-----	
CBLS	0.193554	0.078518	1.000000
	0.0967	0.0000	-----

r=correlation coefficient; t-stat; probability of t-statistics; observation.

Source: Researcher's Computation, 2024 via EVIEWS

Table 3 shows the result of correlation analysis between the variables used in this study. The correlation matrix is used to show the relationship between the independent and dependent variables to ensure that there is no strong correlation between them. The Table 3 shows that the results of correlation matrix relationship between the dependent variable (FID) and independent variables (RCBB and CBLS). The correlation analysis involves the measurement of the degree of strength of the relationship between the dependent variable and the independent variables. In an effort to analyze the nature of the correlation between the dependent and the independent variables, Pearson correlation analysis has been computed.

From the table 3 the results indicate that financial deepening (FID) has insignificant but positive relationship with rural commercial banks' branches (RCBB). Also, financial deepening (FID) has insignificant but positive relationship with commercial banks' loans to SMEs (CBLS). Furthermore, it is notable that rural commercial banks' branches have a positive and significant linear association with commercial banks' loans to SMEs evidenced from its correlation coefficient being positively and probability values being less than 0.05. While, both rural commercial banks' branches and commercial banks' loans to SMEs have positive but insignificant linear association with financial deepening evidenced from its correlation coefficient being positively and its probability value being greater than 0.05.

The positive correlation coefficient indicates that as the number of rural commercial banks' branches and the volume of commercial banks' loans to SMEs increase, the level of financial deepening also tends to increase, albeit in a small or moderate magnitude. This suggests that these variables move in the same direction, i.e., they are positively related. Furthermore, the probability value being greater than 0.05 means that the observed positive correlation is not statistically significant at the conventional 5% significance level. This implies that the relationship between these variables and financial deepening is not strong enough to be considered meaningful or reliable. In other words, the positive association may be due to chance or other factors, rather than a true causal relationship.

4.1 Stationarity Test

The unit root (stationarity) test was performed to ascertain the stationarity of the variables under study so as to avoid running a spurious regression and making a non-meaningful conclusion. This test adopted Augmented Dickey-Fuller (ADF) following the breakpoint consistent approach and decision was based on 5% level of significance.

Table 4: Unit Root Test Result

Variables	ADF	TCV@5%	P-Value	Order of Integration
FID	-12.08	-5.18	<0.01	1(1)
RCBB	-54.07	-5.18	<0.01	1(0)
CBLS	-6.35	-5.18	<0.01	1(0)

Source: Computed by the author with the help of E-views, 2024

The unit root test results displayed in Table 4 shows that deposit from FID is stationary at 1st difference whiles RCDB and RCBL gained stationarity at level, The stationarity test that had a combination of I (0) and I (1) gave the need to use the ARDL as a method of estimation. The results reveal that all the variables used in this study are stationary at 5%. Durbin-Watson statistics in table 5. for all the variables shows no issue of autocorrelation.

Table 5: Augmented Dickey-Fuller (ADF)

	M2	RCBB	CBLS
Level	0.0358**	0.0107*	0.0367
1^{st} Difference		0.0053**	0.0001**

Source: Computed by the author with the help of E-views, 2024

The order of integration was tested using Augmented Dickey-Fuller (ADF) (Dickey and Fuller, 1972) unit root tests. Unit root tests are conducted to verify the stationarity properties of the time panel data to avoid spurious regression. The results show that the entire variable was all stationary at first difference.

4.2 Test of Hypothesis

From Table 6 the results which have 84% R-squared suggests high fit, meaning these variables jointly account for 84% change on financial deepening. The R-squared (R2) value is 84%, indicating that the model explains 84% of the variation in the dependent variable (FID). The adjusted R-squared (Adjusted R2) is 83%, which accounts for the degrees of freedom and suggests that the model has a good overall fit.

The Durbin-Watson (D.W.) statistic is 1.78, which is close to 2, suggesting that there is no significant autocorrelation in the residuals. The Durbin Watson statistics being approximately 2 suggests that there is no first order auto-correlation. Having certified that the model is good and guiltless of any form of diagnostics problems, the study then deploys the model for testing our hypothesis. Also, from table 5., The F-statistic, which tests the overall significance of the model, is 22.282728 with a p-value (Prob(F-statistic)) of 0.050136. This means that the model is statistically significant at the 5% level, indicating that the explanatory variables (RCBB and CBLS) jointly have a significant impact on financial deepening. the F-statistic value of 22.282728 with its Prob(F-statistic) value of 0.050136indicate the fitness of the model. The t-statistics for RCBB and CBLS are less than 2.5 with their probability values being greeter than 0.05 making the it’s regression result statistically insignificant.

Table 6: Regression Results: Summary of the ARDL Estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RCBB	0.097713	0.351356	0.278103	0.7835
CBLS	0.272751	0.280973	0.970738	0.3422
EC = FID - (0.3422*RCBB + 0.3422*CBLS)				
R2 = 84%, Adjusted R2= 83%, D.W 1.78				
F-statistic = 22.282728, Prob(F-statistic) = 0.050136				

Source: Extract from the ARDL Estimation Results, E-Views, 2024

From the regression result in the table 6, it shows that rural commercial banks' branches (RCBB) have a coefficient value of 0.097713, t-value of 0.278103and P-value of 0.7835which is positive but insignificant at 5% level of significant. It is therefore found that rural commercial banks' branches (RCBB) have positive but insignificant effect on financial deepening (FID) in Nigeria. The positive but insignificant effect of RCBB on FID suggests that the expansion of rural commercial banks' branch network may not be a primary driver of financial deepening in the Nigerian context. This implies that the growth in rural commercial bank branches alone is not sufficient to significantly enhance the overall depth and breadth of the financial system in Nigeria. This means that for every percentage increase in the rural commercial banks' branches, financial deepening will increase but insignificantly. This statistical analysis has not provided the sufficient ground for rejecting null hypothesis one. Therefore, the null hypothesis one which states that rural commercial banks' branches have no significant effect on financial deepening in Nigeria is hereby accepted.

This finding is in line with the finding of Simeonovski et al. (2020) who conducted a study on the effect of bank density on financial development and economic performance and weaker negative impact of the number of bank branches and a weak positive impact of the number of automated teller machines by about 0.15 per cent annually. This finding is also in line with the finding of Yulin (2014) who conducted a study on bank branches, economic growth and urban-rural income gap and found that the bank branches downsizing is conducive to China's economic growth in long-term, but the short-term effect is not significant.

Similarly, the regression result from table 6, it shows that commercial banks' loans to SMEs have coefficient value of 0.272751, t-value of 0.970738and P-value of 0.3422which is not significant at 5% level of significant. From this analysis it is found that commercial banks' loans to SMEs have positive but insignificant effect on financial deepening in Nigeria. The positive but insignificant relationship between CBLS and FID suggests that the level of commercial banks' lending to small and medium enterprises (SMEs) may not be a primary driver of financial deepening in the Nigerian. This therefore implies that for every percentage increase in the rural commercial banks' loans, financial deepening in Nigeria will increase but insignificantly. This implies that increasing commercial banks' loans to SMEs alone is not be sufficient to significantly enhance the overall depth and breadth of the financial system in Nigeria. This statistical analysis has failed to provide the evidence to reject the null hypothesis two. Therefore, the null hypothesis two which states that commercial banks' loans to SMEs have no significant effect on financial deepening (FID) in Nigeria is hereby accepted.

The finding of this study is in line with the finding of Kanu &Nwadiubu (2021) who conducted a study on commercial bank loans and the performance of small and medium scale enterprises (SMEs) in Nigeria and found that there exists an inverse relationship (though not statistically significant) between the amount of commercial bank loans (CBLSME) made available to SMEs and the output of SMEs (OPSME) in Nigeria. The finding of this study is also in line with the finding of Olaoye et al. (2018) who examined the commercial bank lending to Small and Medium Scale Enterprises and Nigeria economy over a period of twenty years, spanning from 1998 to 2017 and found that that commercial bank loans to SMEs (CBLSMES) had a negative and insignificant impact on a gross domestic product

Table 7 Summary of empirical findings

Variables	Probability	t-Statistic	Coefficient	Conclusion	Decision
RCBB	0.7835	0.278103	0.097713	Positive but insignificant	Accepted
CBLS	0.3422	0.970738	0.272751	Positive but insignificant	Accepted

Source: Researcher's computation, 2024

5. Conclusion and Recommendations

The study investigates the effect of financial inclusion (proxy by rural commercial banks branches and commercial banks loans to SMEs) on financial deepening in Nigeria. Based on the findings from this study, it is concluded that both rural commercial banks' branches and commercial banks loans to SMEs positively but insignificantly influence financial deepening in Nigeria. this implies that rural commercial banks' branches and commercial banks loans to SMEs practice although is positive but not sufficient enough to increase financial deepening in Nigeria. This suggests that there is still room for improvement in terms of accessibility and outreach of these branches.

This study therefore recommends based on the findings and conclusion that:

i. Policymakers and financial institutions should foster expansion of rural commercial bank branches, especially in underserved and remote areas, through targeted policies and subsidies. This could involve Improve the physical infrastructure and connectivity of rural bank branches to facilitate easier access for the rural population, streamline the account opening and loan application processes at rural branches to make them more user-friendly and reduce barriers to financial inclusion and Provide financial literacy programs and awareness campaigns to educate rural communities on the benefits and usage of formal financial services.

ii. Policymakers and financial institutions should establish credit guarantee schemes and other risk-sharing mechanisms to incentivize commercial banks to increase their lending to SMEs, which are often perceived as high-risk borrowers. Provide capacity-building programs and technical assistance to help commercial banks develop appropriate credit assessment tools and lending models for the SME segment.

REFERENCES

Adebayo, O. S. (2021). The role of rural banking in agricultural finance in Nigeria. *Journal of Rural Development and Agricultural Economics*, 7(3), 25-40.

Adebayo, O., & Olalekan, A. (2021). Commercial bank lending to SMEs and financial deepening in Nigeria. *Journal of Small Business and Enterprise Development*, *28(2)*, 12-22.

Adegboye, A. C., &Iweriebor, S. (2018). Does access to finance enhance SME innovation and productivity in Nigeria? *Evidence from the World Bank Enterprise Survey*. *African Development Review*, 30(4), 449-461.

Adegoke, A., & Momoh, S. (2021). Rural commercial bank branches and financial deepening in Nigeria. *Journal of Rural Studies*, *84*, 12-21.

Adeniyi, O. R. (2019). Financial inclusion and rural development in Nigeria: The Role of Rural Commercial Banks. *Journal of Finance and Banking, 8(2)*, 36-48.

Adeola, O., & Evans, O. (2019). Financial inclusion and human capital development in Africa: Empirical evidence from Nigeria. *Heliyon*, 5(6), e01849.

Adeyemi, A., & Akindele, O. (2023). Impact of financial inclusion policies on financial deepening in Nigeria: Evidence from Agent Banking Networks. *Journal of Financial Inclusion and Economic Development*, 8(1), 45-58

Adomako, S. (2020). Financial literacy, financial inclusion and financial development in African countries. *Review of Development Finance*, 10(1), 1-16.

Ajayi, F., &Obamuyi, T. (2018). The impact of rural bank branches on financial deepening in Nigeria. *International Journal of Bank Marketing, 36(2),* 6-18.

Ajayi, F., & Olayiwola, K. (2019). Commercial bank credit and financial deepening in Nigeria. *African Development Review, 31(4),* 15-26.

Ajayi, T., & Ojo, O. (2021). Role of rural banks in enhancing investment and economic growth in Nigeria. *Journal of Rural Development and Agriculture*, 1(2), 45-58.

Ajibola, J. (2015). Commercial bank lending and economic growth—the Nigerian experience (1970-2013). *Open Access Library Journal, 2, 1-* 8. https://doi.org/10.4236/OALIB.1101431.

Ajudua, E. I., &Odishika, V. A. (2022). Financial deepening and economic growth in Nigeria. *Lafia Journal of Economics and Management Sciences*, *7*(2), 171-187.

Akande, J., &Osinubi, T. (2020). Commercial bank lending to SMEs and financial inclusion in Nigeria. *International Journal of Bank Marketing, 38(3),* 8-18.

Akande, J., &Osinubi, T. (2020). Institutional coverage and financial deepening: The role of rural commercial banks in Nigeria. *African Journal of Economic and Management Studies, 11(3),* 9-21.

Akinde, H. (2016). Implications of commercial bank loans on economic growth in Nigeria (1986-2014). *Journal of Emerging Trends in Economics and Management Sciences*, 7, 124-136.

Aremu, J. A., et al. (2020). Financial inclusion, rural commercial banks, and Economic Growth in Nigeria. *International Journal of Economics and Financial Issues, 10(5),* 255-263.

Bakar, H. O., & Sulong, Z. (2018). The role of financial inclusion on economic growth: Theoretical and empirical literature review analysis. *Journal of Business and Financial Affairs*, *7*(4), 2-5.

Bongomin, G. O. C., Ntayi, J. M., Munene, J. C., & Nabeta, I. N. (2020). Financial inclusion in rural Uganda: The role of mobile money services in saving and investment decision. *Journal of African Business*, 21(3), 294-315.

Brooks, C. (2014). Introductory econometrics for finance. 3rd edition, Cambridge University Press, Cambridge.

Central Bank of Nigeria (2018). National Financial Inclusion Strategy (Revised). Abuja, October, 2018. Available from: http://www.cbn.gov.ng/out/2019/ccd/national%20financial%20inclusion%20strategy.pdf.

Chima, O. (2011). Financial services still shallow in Africa http://www.thisdaylive.com/articles

Demirgüç-Kunt, A., Beck, T., & Honohan, P. (2020). Inclusive financial systems and financial deepening: Global Perspectives. *Journal of Economic Development*, 5(2), 112-125

Eke, O. (2019). Enhancing financial inclusion in rural areas through digital banking: Evidence from Nigeria. *African Journal of Economic and Management Studies*, 10(2), 163-180.

Ekong, C. N., & Ekong, U. S. (2019). The impact of microfinance banks on the economic growth of Nigeria. *International Journal of Economics, Commerce, and Management*, 7(3), 116-133

El Said, A., Emara, N. & Pearlman, J. (2020). The Impact of financial inclusion on financial stability and inequality: The Role of Macro prudential Policies. London, UK: Department Economics, City, University of London

Eze, G., & Okpala, C. (2022). Savings mobilization and financial deepening: The case of rural commercial banks in Nigeria. *Review of Development Finance, 12(1),* 8-15.

Guo, X. (2022). The data analytics of finance impact on the rural development combining financial constraint and economic growth theory. *Computational Intelligence and Neuroscience*, 2022. https://doi.org/10.1155/2022/9989076.

Gupta, R., & Singh, B. (2021). An empirical study of financial inclusion and digital India. *Indian*

Journal of Economics and Business, 20(4), 1385-1399.

Hakim, L., Andriani, S. & Sari, P. R. K. (2019). How the effect of financial technology to financial inclusions: Study Case at Sumbawa. *International journal of innovative science and research technology*,2456-2165

Hariharan, G. &Marktanner, M. (2012). The growth potential from financial inclusion, ICA institute and Kennesaw State University. Retrieved fromhttp://www.frbatlanta.org/documents/news/conferences/12intdev/12intdev_Hariharan.pdf.

Ibrahim, S. O., & Alabi, O. F. (2020). Rural commercial banks and financial deepening in Nigeria. *African Journal of Economic and Management Studies, 11(3),* 411-425.

Imoughele, L. E. & Ismaila, M. (2014). The impact of commercial bank credit on the growth of small and medium scale enterprises: econometric evidence from Nigeria (1986 - 2012). Journal of Educational Policy and Entrepreneurial Research, 1(2), 233-247.

Jensen, M. C. (1968). The performance of mutual funds in the period 1945-1964." *The Journal of Finance*, 23(2), 389-416.

Kanu, S. I. &Nwadiubu A. (2021). Commercial bank loans and the performance of small and medium scale enterprises (SMEs) in Nigeria.*International Journal of Innovation and Economic Development, 6(6),* 46-59

Kim, D. W., Yu, J. S., & Hassan, M. K. (2018). Financial inclusion and economic growth in OIC countries. *Research in International Business and Finance*, *43,* 1-14.

Kuranal, R., & K, D. (2022). A Study on analysis of operating and financial performance of regional rural banks in Indian context. *International Journal of Research Publication and Reviews*. https://doi.org/10.55248/gengpi.2022.3.10.45

M2. (1997). "Measuring investment performance with Jensen's Alpha." *The Journal of Finance and Investing*, 18(4), 45-49..

McKinnon, R. (1973) Money and capital in economic development. The brooking institute, Washington DC.

Migap, J. P., Okwanya, I., &Ojeka, G. (2015). Financial inclusion for inclusive growth: The Nigerian perspective. *International journal of information technology and business management. 37(1)*, 18

Mlachila, M., Mlachila, N., & Ouedraogo, I. (2021). Financial Inclusion and deepening in Sub-Saharan Africa: Evidence from digital financial services. *Journal of African Economic Studies*, 3(1), 75-88.

Nazmi, N. (2005). Deregulation, financial deepening and economic growth: The *Case of Latin America Quarterly Journal of Economics and Finance*, 45 (4-5):447-59.

Nguyen, H., Alam, Q., & Lee, T. (2020). Rural credit markets in Vietnam: Participation and credit constraints. *Journal of Asian Economics*, 69, 101210.

Nkoro, E., & Uko, A. (2020). Financial liberalization and financial inclusion in Nigeria: An empirical analysis. *Journal of Financial Inclusion and Economic Development*, 5(2), 65-78.

Nwachukwu, O., & Adegboye, O. (2021). Financial liberalization and financial deepening: evidence from Nigeria. *Journal of Economic Development*, 6(1), 102-115.

Nwafor, M.C., & Yomi, A.I. (2018). The nexus between financial inclusion and economic growth: Evidence from Nigeria. International Journal of Research and Innovation in Social Science 2(4) Retrieved from www.rsisinternational.org.

Nwangolo, A., & Ogechi, B. (2018). Financial deepening and deposit mobilization of commercial banks in Nigeria: A time variant model. *Indian Journal of Finance and Banking*. https://doi.org/10.46281/IJFB.V2I2.94

Nwanyanwu, O. J. (2018). Microfinance in Nigeria: Problems and Prospects. *International Journal of Business and Management Review*, 6(1), 49-63.

Obamuyi, T., & Olayiwola, K. (2019). Financial inclusion and economic growth in Nigeria.

International Journal of Social Economics, 46(1), 16-28.

Ogbonna, K. S., Anyanwu, F. A., Agba, C. P., Ibeyenwa, E. K., Anaemena, H. C. &Anoruoh, P. U. (2023). Effect of financial technology on financial inclusion in Nigeria. *African Banking and Finance Review Journal (ABFRJ),1(1),* 67-89. www.abfrjournal.com

Ogege, S., &Eloupremo, T. (2021). Agricultural credit and poverty reduction in rural Nigeria. *Journal of Agricultural Finance and Management*, 13(2), 123-138.

Ogunleye, A., & Babajide, A. (2020). SME financing and financial deepening in Nigeria. *Journal of Small Business Management, 58(4)*, 9-19.

Ogunleye, K., & Adeola, F. (2020). Rural commercial banks' loans and financial inclusion in Nigeria: An Empirical Analysis. *Journal of Financial Inclusion and Economic Development*, 5(1), 32-47.

Okonkwo, J. J. &Nwanna, I. O (2021). Financial inclusion and economic growth in Nigeria: An Empirical Study. *International Journal of Research and Innovation in Social Science (JRISS)*, 323-330.

Oladipupo, A. F., & Adeoti, T. O. (2021). Deposit mobilization by rural commercial banks and economic development in Nigeria. *Journal of Banking and Finance, 15(1)*, 78-92.

Olagunju, O. A. (2020). Challenges and prospects of deposit mobilization in rural commercial banks: A Case Study of Nigeria. *International Journal of Management Studies, 7(3)*, 68-81

Olaniyan, O., &Oke, T. (2019). Dynamics of deposits and loans: implications for financial deepening in Nigeria. *Journal of Financial Regulation and Policy*, 3(4), 78-91

Olaoye, C.O., Adedeji, A.Q, & Ayeni-Agbaje, R.A. (2018). Commercial bank lending to small and medium scale enterprises and Nigeria economy. *Journal of Accounting, Business and Finance Research, 34(2),* 40-59

Onaolapo, A.R. (2015). Effects of financial inclusion on the economic Growth in Nigeria (1982-2012). *International journal of Business and Management Reviews, 3(8)*, 11-27

Onwuka, K., & Okpala, C. (2021). Commercial bank credit to SMEs and the growth of the financial sector in Nigeria. *Review of Development Finance, 11(2),* 11-20.

Onwumere, J.U.J (2009). Business and economic research methods, Enugu: Vougasen Ltd

Oruo, K. S. (2020). Rural banking and economic development in sub-Saharan Africa: Case studies from Nigeria and Ghana. *Journal of African Business*, 21(3), 257-273.

Ozdemir, D & Erbil. C. (2008). Does financial liberalization trigger long-run economic growth?: evidence from turkey and other recent EU members, paper presented for the Eco Mod International Conference on Policy Modelling, Berlin.

Rahmon, A. (2018). Commercial banks' loans, finance houses' domestic credit, monetary policy rate and small and medium scale industries development in Nigeria: An Econometric Analysis (1992-2016). *Journal of Resources Development and Management*, 50, 11-21.

Rehman, A. (2020). Innovation and management by regional rural banks in achieving the dream of financial inclusion in India: challenges and prospects. *Molecular Microbiology*, 222-234. https://doi.org/10.21272/mmi.2020.1-18.

Sahay, R., Cihak, M., N'Diaye, P., & Barajas, A. (2015). Rethinking financial deepening: Stability and growth in emerging markets. *Journal of Institutional Economics , 17 (33),* 73-107.

Sharma, S., & Singh, B. (2011). "Role of financial inclusion in financial deepening: empirical evidence from Indian States." *Journal of Financial Management & Analysis*, 24(2), 20-30.

Sharpe, W. F. (1975). "Risk, reward, and reality: The sharpe ratio." *The Journal of Portfolio Management*, 21(1), 36-37.

Shaw, E.S. (1973) Financial deepening in economic development. oxford university press, New York.

Shetty, M., & Bhat, S. (2023). Review of regional rural banks that use the CAMELS model to analyze performance. *International Journal of Case Studies in Business, IT, and Education*. https://doi.org/10.47992/ijcsbe.2581.6942.0251.

Simeonovski, K., Naumovska, E., &Petkovski, M. (2020). The effect of bank density on financial development and economic performance. https://doi.org/10.47063/ebtsf.2020.0014.

Sortino, F. A. (1980). "The importance of distributions in the measurement of risk." *The Journal of Portfolio Management*, 7(3), 52-56.

Soyemi, K. A., Olowofela, O. E., & Yunusa, L. A. (2020). Financial inclusion and sustainable development in Nigeria. *Journal of Economics & Management, 39(1),* 105-131. https://doi.org/10.22367/jem.2020.39.06

The World Bank (2018). Financial inclusion. available: http://www.worldbank.org/en/topic/financialinclusion/overview Retrieved on December 3, 2023.

Tok, Y. W., & Heng, D. (2022). Fintech: Financial inclusion or exclusion? *IMF Working Paper No. WP/22/80.*

Treynor, J. L. (1965). "How to rate management of investment funds." *Harvard Business Review*, 43(1), 63-75.

Uchenna, A., Felix, O., & Uzoma, I. (2020). Rural banking and economic development in Nigeria: Problems and prospects. *Journal of Banking and Finance*, 45(2), 98-110.

Yulin, P. (2014). Bank branches,economic growthand urban-rural income gap. *Journal of Regional Financial Research,1(2).*