FINANCIAL INCLUSION, MICROCREDIT AND PERFORMANCE OF SMALL AND MEDIUM SCALE ENTREPRISES IN NIGERIA

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ABSTRACT
Despite government efforts to ensure that SMEs play an important role in the Nigerian economy, the sector is still struggling to survive due to so many hindrances, among which are financial exclusion and lack of access to credit. This study is an attempt to investigate the impact of financial inclusion on the performance of small and medium scale enterprises in Nigeria using ARDL technique with data time series data from 1980 to 2022. Financial inclusion was measured by commercial bank branches, the number of rural bank branches and deposits of rural bank branches. The performance of SMEs was proxied by the output of retail and wholesale trade. Findings from the study revealed that a long-run relationship exists among the variables in the estimated model. The results of the Error Correction Mechanism (ECM) within the framework of the ARDL show that there is a positive and statistically significant relationship between the number of commercial bank branches (NDMB) and the output of SMEs (SMEQ) in Nigeria in the long run period. The relationship between the number of rural bank branches (NRBB) and the output of SMEs (SMEQ) was found to be positive and statistically significant at a five per cent significant level. The study therefore recommends that the Central Bank of Nigeria should deepen its pressure on commercial banks through special directive with the aim of promoting financial inclusion through the expansion of microfinance banks branches in rural areas.

Keywords: Financial Inclusion, Small and medium term enterprises, Microcredit, Enhancing Financial Innovation and Access (EFInA) etc.
JEL Codes: G21, G32, O16, L26, L31

1. INTRODUCTION

Globally, the activities of small and medium scale enterprises (SMEs) are reckoned as fundamental contributors to economic growth and development of economies (Eni, *et.al.* 2022). This is so because the development of the SMEs sub-sector is regarded as a catalyst for accelerating the rate of economic growth and development in an economy. Sanusi (2003) states that small and medium scale enterprises in the developing countries are important agents of

economic transformation as their activities account for more than 50 percent of total gross domestic product and they are also veritable source of innovation, technological development, supply of both human capital and raw materials to larger businesses and entrepreneurial development. In this regard, Palmarudi and Agussalim (2013) held that small and medium scale enterprise are the main generators of employment opportunities and primary and secondary incomes for many households in the developing countries.

Narrowing the conversation to Nigeria, plethora of evidence has shown also that small and medium scale enterprises have played a crucial role in the process of economic growth and development. Olaitan (2006) and Oni, Oni & Ormin (2012) state that small and medium scale enterprises provide significant employment opportunities for the greater proportion of the Nigerian population. SMEDAN (2006) states that small and medium enterprises in Nigeria account for over 75 percent of employment in the country. Furthermore, small and medium scale enterprises provide the raw materials needed by the manufacturing sector hence vehicle for industrialization. Its role in the local supply of raw materials has twin positive effects of cost–saving to the manufacturing firms as well as moderation of tendency of balance of payment deficit (Oni & Ormin, 2012).

Khan (2011) enumerated the benefits of financial inclusion to include improvement of the lives of the poor and the disadvantaged, increasing economic activities and employment opportunities of the rural households, increased savings arising from higher disposable income, acting as monetary fuel for economic growth, etc. The study further holds that financial inclusion can both improve the efficiency of intermediation between savings and investments and facilitate change in the deepening of the financial system Obafemi *et.al* (2016). Furthermore, promoting financial inclusion, in the wider context of economic inclusion, can improve financial conditions and uplift the living standard of the poor and the disadvantaged (Khan, 2011). According to the CBN (2012), access to financial services mobilizes greater household savings (enabling such persons to invest in themselves and families), leverages capital for investments and expands the class of entrepreneurs. Financial inclusion offers incremental and complementary solutions to tackle poverty, promote inclusive development and achieve the UN Sustainable (Millennium) Development Goals (MDGs). It aims at drawing the unbanked population into the formal financial services net so they have the needed opportunity to access the whole gamut of appropriate financial services.

Despite government effort to ensure that SMEs play an important role in the Nigerian economy, the sector is still struggling to survive due to so many hindrances, among which are financial exclusion. A survey carried out by Enhancing Financial Innovation and Access (EFInA, 2016) found that about 40.1 million adult Nigerians, representing 41.6 percent of the adult population were financially excluded in 2016. Further analysis has revealed that 55.1 percent of the excluded population were women, 61.4 percent of the excluded population were within the ages of 18 and 35 years, 34.0 percent had no formal education, and 80.4 percent resided in rural areas (EFInA, 2016). In 2018, about 63.2 per cent of the Nigerian adult population were financially included, while 36.8 percent is financially excluded. Similarly, Banked population is up from 36.9m in 2016 to 39.5m in 2018 (EFInA, 2018), and 54.5million in 2022 (CBN, 2022).

The number of depositors with commercial banks from the period of bank consolidation has increased marginally, averaging 386 per 1,000 adults between 2007 and 2010; a figure that rose to 624 between 2011 and 2015, and 1108 between 2016 and 2021 (WDI, 2022). The number of automated teller machines (ATMs) per 100,000 adults has also increased. It increases on the average from 6 to 14 per 100,000 adults between 2005-2010, and 2011-2015 respectively. It further increases to 17 per 100,000 adults between 2016 and 2021 (WDI, 2022), and has continued to demonstrate resilience to maintain an upward trajectory.

Despite the various funding policies and packages instituted by the government like the Entrepreneurship development Centers, Market money etc. small and medium scale enterprises (SMEs) subsector have continued to suffer from financial exclusion. This has limited their contributions to the growth and development of the Nigerian economy. Ease of access to affordable finance by small and medium scale enterprises is still a serious problem in spite of government's effort at promoting financial inclusion in Nigeria.

Many studies have been carried out on the impact of financial inclusion on the growth and performance of small and medium scale enterprises in Nigeria, with varying conclusions. Among them are Imoughele and Ismaila (2014), Ibor, Offiong and Mendie (2017), Abdulrahman and Olofin (2017), Eton, Mwosi, Okello-Obura, Eton *et, al*. (2021), Ogidi and Pam (2021). An examination of these studies have shown that most of the studies were conducted using primary data based on cross sectional analysis within the firm level and geographical-specific consideration. The desire to add value have necessitated a different approach aimed at ascertaining the impact of financial inclusion on the performance of small and medium scale enterprises.

2. LITERATURE REVIEW

2.1 Conceptual issues

Financial inclusion

The concept of financial inclusion has been defined in various ways but with a unified point of saying that it has to do with making it easier to access financial services, particularly for the poor and other vulnerable groups. According to Nwanko and Nwanko (2014), the traditional idea of financial inclusion is the provision of access to and usage of diverse, convenient and affordable financial services. World Bank (2012) describes financial inclusion as the range, quality and availability of financial services to the underserved and financially excluded. According to Financial Action Task Force (FATF 2011), financial inclusion is about providing access to an adequate range of safe, convenient and affordable financial services to the disadvantaged and other vulnerable groups, including low income, rural and undocumented persons, who have been underserved or excluded from the formal financial sector. On the other hand, it is about making a broader range of financial services available to individuals who currently only have access to basic financial products. Centre for Financial Inclusion (2013) also described financial inclusion as a state in which all people who can use financial services have access to a complement of quality financial services, provided at affordable prices, in a convenient manner and with dignity for the clients.

Mahendra (2006) defines financial inclusion as the availability of banking services at an affordable rate to the large segment of the vulnerable and low-income groups. Hannig and Jansen (2010) conceptualizes financial inclusion as a policy objective of the monetary authorities which represents the evolution of financial sector policies and the embodiment of important insights into the positive impact that financial services have on the (economic) lives of the poor. Aduda and Kalunda (2012) sees financial inclusion as the process of availing an array of required financial services, at a fair price, at the right place, form and time and without any form of discrimination to all members of the society. In this study, financial inclusion was captured by financial intermediation and access to finance dimension, such as number of commercial bank branches, number of rural bank branches and deposit of rural bank branches.

Concept of small and medium scale enterprises

The concept of SMEs seems to have no universally accepted definition. This is because it tends to vary according to context, author and countries (Ayaggari *et.al,* 2003; Buckley, 1989). Although, there is no agreed consensus among policy makers and scholars concerning the level at which a business firm is regarded as being small or medium, certain characteristic features such as annual turnover sales, number of employees and value of assets have been

used to classify a business as either small or medium. The Central Bank of Nigeria, in its Monetary Policy Circular No. 22 of 1988, defines small-scale enterprises as having an annual turnover not exceeding 500,000 naira. In the 1990 budget, the federal government of Nigeria defined small-scale enterprises for purposes of commercial bank loans as those with an annual turnover of not exceeding 500,000 naira, and for Merchant Bank Loans, those enterprises with capital investments not exceeding 2 million naira (excluding cost of land) or a maximum of 5 million naira.

In this study, the output of small and medium scale enterprises, represented by output of retail and wholesale trade was used to capture small and medium scale enterprises in Nigeria.

2.2 Theoretical Literature

Endogenous growth theory

Endogenous growth theory otherwise known as the new growth theory was developed in the 1980s, by an Economist Paul Romer who put forward the argument that technological change is not just an exogenous byproduct of independent scientific developments, but as a response to criticisms leveled against the neo-classical growth model. The theory describes economic growth as being generated by factors within the production process. Strands of endogenous growth literature have produced two distinct approaches on how to incorporate human capital into models of economic growth. The first, which is due to Lucas (1990), regards the accumulation of human capital as the engine of growth. The second approach emphasizes the role of the human capital stock in the process of innovation and adoption of new technologies. In the model formulated by Lucas, human capital enters into the production function similarly to the way in which technology does in the Solow model, that is, in labour-augmenting form. Lucas proposes the following production technology:

$$Y_t = AK^{\beta}_t (u_t h_t L_t)^{1-\beta} h^{\gamma}_{a,t} \quad 2.3$$

Where Y, A, K and L are, once again, output, technology, capital and labour, while u is the fraction of an individual's time allocated to work, h is the skill level or human capital of the representative agent, and h_a is the average human capital in the economy. The level of technology, A, is assumed to be constant (so that it could in principle be dropped from the expression or subsumed within the capital term). Population growth is taken as exogenous. Setting aside the last term on the right-hand side for the moment, the most important assumption of the model concerns the law of motion according to which the human capital variable evolves over time.

And because there are no diminishing returns to the acquisition of skills, human capital can grow without bound, thereby generating endogenous growth. The properties of the steady state in the Lucas model depend on whether there are external effects of human capital, which is the case if $\gamma \neq 0$. In that case, the term h in the production function therefore affects output. And because there are no diminishing returns to the acquisition of skills, human capital can grow without bound, thereby generating endogenous growth.

The endogenous growth theory highlights the fact that if productivity is to increase, the labour force must be provided with more resources continuously. Resources in this case include physical capital (i.e. basic infrastructures such as efficient transport systems and steady electricity supply), human capital and knowledge capital (technology). Consequently, human capital with physical capital are key elements of the nation's wealth. The former is considered to be an independent factor of production that is indispensable to achieve high and sustainable economic growth rates.

Endogenous growth theory has been subjected to many criticisms. First, growth is neither steady nor balanced. It is irregular and the composition of output shifts significantly both in the early stages of industrialization and in the mature stages of post-industrial society. Second, endogenous growth theory is built up on the basis of methodological individualism in

which agents optimize or otherwise engage in activity according to more or less arbitrary behavioral patterns. Such an approach precludes the endogeneity of social forces, structures and relations, whether these be economic or otherwise, unless derived from aggregation over individuals.

Financial liberalization thesis

The financial liberalization thesis was propounded by McKinnon (1973) and Shaw (1973) to demonstrate how liberalized financial system can spur economic growth. A well-developed financial sector is a pre-condition for economic growth. Mckinnon (1973) and Shaw (1973) argued that a well-developed financial sector minimizes transaction and monitoring costs and asymmetric information; thus there is improvement in financial intermediation. The theory of financial liberalization is based on the premise that the higher the real rate of interest, the greater the degree of financial deepening, the more saving there will be, and 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 (Thirlwall 2005).

The central idea of McKinnon and Shaw is that financial markets should be liberalized and credit allocation determined by free market. By so doing, real interest rate will adjust to its equilibrium levels and low yielding projects will be eliminated. This will increase the overall efficiency of investment, savings and total real supply of credit. This in turn induces significant level of investment which leads to improvement in economic growth and development, including growth and development of the telecommunication sector. Thus, the development of financial system enhances efficient credit allocation and financial inclusion, which in turn ensures access to financial services by small and medium scale enterprises (SMEs). Several criticisms have been levelled against the financial liberalization thesis. The formal theoretical critique focused on the informal financial markets. Critics have argued that the resultant increase in interest rate in the official market decreases the quantity of finance available to firms because it draws resources out of the unorganized market. Furthermore, the McKinnon-Shaw theory has also been criticized because it is based on the unrealistic assumption of perfect competition in financial markets. Critics argued that the banking sector departs from perfect competition in at least two respects. Thirdly, banking sectors are rather oligopolistic, and the result of financial liberalization could very well be decrease in loans and the increase in the real interest rate are higher magnitudes than that under perfect competition.

Supply–leading hypothesis

The supply –leading hypothesis was propounded by Patrick (1966). The Supply-leading hypothesis can be described as a financial-lead hypothesis. It postulates that the existence of financial institutions and the supply of their financial assets, liabilities and related financial services is in advance of demand for them. This would provide efficient allocation of resources from surplus units to deficit units, thereby leading the other economic sectors in their growth process" (Patrick, 1966). Thus, in the supply-leading hypothesis, the financial sector precedes and induces real growth by channeling scarce resources from small savers to large investors according to the relative rate of return (Odhiambo, 2004).

In line with the supply-leading theoretical postulation, the creation of the rural banking scheme arising from the Pious Okigbo's financial Review Committee in Nigeria (1976) was a direct response to the supply leading finance theory and the scheme was adopted by government to decongest the urban centers of banks and promote the development of banking habits, culture and service in rural areas. Thus, by taking financial services to the rural and other vulnerable people, the rural population can have access to financial services as well as financial resources for investment in micro small and medium scale enterprises (MSMEs). Meanwhile, Critics of the supply leading finance theory argued that viable projects in the urban center that needs such funds to establish have starved of funds leading to the underutilization of potentials/resources.

Demand-following hypothesis

The demand-following hypothesis was propounded by Robinson (1952). The demand-following hypothesis opined that it is the development of the real sector of the economy that accelerates financial development. According to the theory, as the real sector grows, the increasing demand for financial services stimulates the financial sector (Gurley & Shaw, 1967). Specifically, the theory states that the growth within the economy results in increase in the demand for financial services and this subsequently motivates financial development. The demand following finance theory explains the existence of financial institutions and their being established in urban centers where the demand for their services is high and are already intact or exist. This is in view of the fact that most financial institutions are sited in urban areas or semi-urban areas where there already exists the demand for financial services. And for these financial institutions to function effectively, they should be demand driven and not supply leading. This implies that locating deposit money banks in the areas where there is already demand for financial services provides opportunity for the patronage of these banks by operators of small and medium scale enterprises (SMEs). The increase in access to financial services and financial resources makes it possible for operators of small and medium scale enterprises (SMEs) to have access to financial resources for investment in their businesses.

2.3 Empirical literature

Significant studies have been conducted on the relationship between financial inclusion and the performance of small and medium scale enterprises. Imoughele and Ismaila (2014) investigated empirically the impact of rural bank loan on the growth of small and medium scale enterprises (SMEs) in Nigeria from 1986 to 2012. Their study employed the Autoregressive Distributed Lag (ARDL) technique of estimation within the framework of cointegration analysis and error correction modelling. Results revealed financial inclusion, represented by rural bank loan has a positive and significant effect on the growth of small and medium scale enterprises in Nigeria. The result also showed that commercial bank deposit from rural areas has positive significant effect on small and medium scale enterprise in Nigeria. The finding of the study appears contestable with significant aspects of the critics channeled to the appropriateness of the proxy of financial inclusion.

Otiato (2016) investigated the impact of financial inclusion on the performance of small and medium enterprises in Nairobi City County. The study sampled 30 small and medium scale enterprises out of the total of 236 small and medium scale enterprises (SMEs) in the Nairobi city. Data collected were analyzed using descriptive and inferential statistics such as simple tables and percentages and regression analysis. The results revealed that there was a positive relationship between financial inclusion and the performance of small and medium scale enterprises (SMEs). The finding of this foreign study is similar to Ibor, Offiong & Mendie (2017) and Adejoh (2020) who based on study of impact of financial inclusion on the performance of micro, small and medium enterprises (MSMEs) in Nigeria also found that has positive and significant impact on the operations and growth of micro, small and medium enterprises (MSMEs) in Nigeria.

Abdulrahman and Olofin (2017) examined the role of financial inclusion on the relationship between Small and Medium Scale Enterprises (SMEs) and inclusive growth in Nigeria using a Fully Modified Ordinary Least Square ((FMOLS) and the Ordinary Least Square (OLS) methods with data spanning from 1990 to 2015. The results of the study showed that small and medium scale enterprises (SMEs) have a positive and statistical relationship with inclusive growth, while domestic credit, domestic savings, insurance and finance, agricultural loans, credit to private sectors contributed negatively to inclusive growth, except deposit of rural commercial banks, financial sector development and rural infrastructures, rural loans. The results also showed that agricultural loan, insurance and finance, rural loans, domestic savings and credit to private sectors when interacted with small and medium scale enterprises (SMEs)

promoted inclusive growth, while the interaction of small and medium scale enterprises (SMEs) with domestic credit, rural deposit, and financial sectors failed to promote inclusive growth in Nigeria.

Eton, Mwosi, Okello-Obura, Turyehebwa and Uwonda (2021) carried out empirical investigation on the effect of financial inclusion on the growth of small and medium scale enterprises in selected districts in Lango region of Uganda. A total of 320 out of 1900 population of small and medium scale enterprises were sampled using simple random sampling technique. Analysis of data was carried out using the correlation and regression analysis. Result of the analysis showed that financial inclusion is significant in supporting the growth of small and medium scale enterprises in the study area. This study consistently agrees with the view of Abdulrahman and Olofin (2017) even as the technique deployed and area of the study appears different.

Ogidi and Pam (2021) examined the impact of financial inclusion on the growth of small and medium scale enterprises in Plateau State, Nigeria. A total of 150 small and medium scale enterprises was sampled using simple random sampling technique. Data collected was analyzed using the Chi-Square statistic. The results show that financial inclusion contributed positively to the growth of small and medium scale enterprises in Plateau state, Nigeria. The study concluded that financial inclusion plays an irreplaceable role in the growth of small and medium scale enterprises in Nigeria.

Anga, Sakanko and Abdullahi (2021) investigated the effect of financial inclusion on small and medium scale enterprises (SMEs) in Nigeria from 1990 to 2019. The study employed the ordinary least squares (OLS) as the estimation technique. The result revealed that financial inclusion (deposit/savings and access to banks) has a positive and statistically significant effect on small and medium enterprises in the study period. However, access to credit has a significant and negative effect on the growth of small and medium enterprises in Nigeria. At variance with other studies on financial inclusion is the revelation based on surgical empirical evidence that access to credit impacted negatively on SMEs; an important variable that other studies failed to include in their studies.

Efan, Basana and Ottemoesoe (2022) examined the impact of financial inclusion on the growth of micro, small and medium scale enterprises in Indonesia. The variables used in this study are financial inclusion, micro, small and medium scale enterprises and the use of fintech e-payment as moderating variables. The results revealed that financial inclusion has a significant relationship with the growth and performance of micro, small and medium scale enterprises. The result though represents value addition to literature (with the addition of variable Fintech) showed that fintech variable does not have a moderating effect on the relationship between financial inclusion and the performance of micro, small and medium scale enterprises.

Mustapha-Jaji & Adesina-Uthman (2023) sought to ascertain whether migrants' remittances have increased financial inclusion tremendously over the past year. The study employed secondary data which were analyzed using the auto-regressive distributed lag estimation techniques. Thus, The study concluded that migrants' remittance played an important role in enhancing financial inclusion in Nigeria. Consequently, the study recommended the need for increase expansion of bank branches in the remote and rural regions of the country. Balkisu, Ali, & Idowu (2025) investigated the impact of financial inclusion, corruption and political instability on the economic growth of Nigeria using ARDL method of analysis. The findings revealed that financial inclusion and literacy level enhance economic growth in Nigeria whereas political instability dampens growth outcomes. Corruption was found to impede financial inclusion efforts both in the long run and short run, though it is insignificant in the long run but significant in the short run. The study above other things recommended the promotion of Financial Inclusion through technological innovations Policies, Stabilizing the

political environment and improving literacy with Financial Education through targeted financial education. Ibrahim, *et.al* (2025) veered into women- centered financial inclusion cum SMEs unlike other writers by investigating the Impact of Capacity Building on the Performance of Women Entrepreneurs in Nigeria using Partial Least Squares Structural Equation Modelling (PLS-SEM). Specifically, it examines the effects of financial inclusion strategies, networking skills, on the performance of women entrepreneurs in the FCT. The study adopted a causal survey research design, targeting all women entrepreneurs actively conducting businesses within the six area council of Abuja using primary data. The study found a positive and statistically significant effect of financial inclusion strategies, networking skills, managerial abilities, and entrepreneurial knowledge, on the performance of women entrepreneurs in the FCT.

The summarized review of previous studies showed the novelty with the inclusion of access to credit, Fintech Operation variable and the deployment of Fully Modified Ordinary Least Square ((FMOLS) on studies pertaining to financial inclusion and performance of small and medium scale enterprises in Nigeria. Most of the studies showed positive significant impact of financial inclusion on growth of SMEs with the exception of Anga, Sakanko and Abdullahi (2021) that found that access to credit impacted negatively on growth of SMEs in the light of financial inclusion. A careful review of these studies showed that technique of analysis gap, variable gap and time-span gap exist as most of previous studies were conducted using primary with data prior to 2024; a lacuna this study is poised to fill using an extrapolated value of data series (within the ARDL framework) by way of value addition to literature. This study equally intend to boost the explanatory potency of the model with introduction of control variable like human capital, Number of commercial bank branches, number of rural bank branches, Deposit of rural branches of commercial banks and inflation rate which were visibly lacking in previous literature reviewed.

3.RESEARCH METHODOLOGY

3.1 Research design and model specification.

This study adopts the ex-post facto research design with data obtained from World development indicator, statistical bulletin, National Bureau of statistic. The model for this study is anchored on an eclectic theoretical approach; which implies an integration of endogenous growth theory, the supply leading theory and the demand-following theory with slight modification and addition of relevant (control) variable so as to improve the explanatory potency of the model.

From the theoretical postulations, the empirical model for the relationship between financial inclusion and growth of small and medium scale enterprises is specified and expressed as:

$$SMEQ = f(NDMB, NRBB, DRBB, GDI, HUC, INF) \qquad 3.1$$

The econometric model of equation 3.1 in a semi-log form can be expressed as follows.

$$LOG(SMEQ) = \alpha_0 + \alpha_1 LOG(NDMB) + \alpha_2 NRBB + \alpha_3 LOG(DRBB) + \alpha_4 LOG(GDI) + \alpha_5 LOG(HUC) + \alpha_6 INF + U_t$$

The ARDL and ECM for industrial output exchange rate model are specified thus below;

$$\Delta lnNDMB_t = \beta_0 + \sum_{k=1}^{n} \beta_1 \Delta lnNDMB_{t-k} + \sum_{k=1}^{n} \beta_2 \Delta lnNRBB_{t-k} + \sum_{k=1}^{n} \beta_3 \Delta lnDRBB_{t-k} + \sum_{k=1}^{n} \beta_4 \Delta lnGDI_{t-k} + \sum_{k=1}^{n} \beta_5 \Delta lnHUC_{t-k} + \sum_{k=1}^{n} \beta_6 \Delta lnINF_{t-k} + \alpha_1 lnNDMB_{t-1} + \alpha_2 lnINF_{t-1} + \varepsilon_1 \dots\dots\dots\dots\dots\dots$$

$$\Delta lnNDMB_t = \alpha_0 + \sum_{k=1}^{n} \alpha_1 \Delta lnNDMB_{t-1} + \sum_{k=1}^{n} \alpha_2 \Delta lnNRBB_{t-1} + \sum_{k=1}^{n} \alpha_3 \Delta lnDRBB_{t-1} + \sum_{k=1}^{n} \alpha_4 \Delta lnGDI_{t-1} + \sum_{k=1}^{n} \alpha_5 \Delta lnHUC_{t-1} + \sum_{k=1}^{n} \alpha_5 \Delta lnINF_{t-1} + \theta ECM_{t-1} + \varepsilon_1 \quad 3.2$$

Where: α_0 to α_6 are the parameters to be estimated and U_1 is the error term. The theoretical expectations about the signs of the parameters are as follows: $\alpha_1>0$, $\alpha_2>0$, $\alpha_3>0$, $\alpha_4>0$, $\alpha_5>0$, $\alpha_6<0$.

Where:

SMEQ = output of small and medium scale enterprises, represented by output of retail and wholesale trade in Nigeria, measured by SMEs/GDP ratio.

GDI = Gross Domestic Investment shows the reflects the amount spent on capital goods like machinery, buildings, and infrastructure made within a country's economy over a specific period, typically a year. GDI is proxied by gross fixed capital formation in Nigeria, measured in billion naira.

HUC = Human capital refers to the knowledge, skills and experience that can be sufficiently translated into productivity.

Human capital is represented by adult literacy rate in Nigeria measured in percentage.

NDMB = Number of commercial bank branches in Nigeria.

NRBB = Number of rural bank branches in Nigeria.

DRBB = Deposit of rural branches of commercial banks in Nigeria in billion naira.

INF = Inflation rate could defined as persistent rise in price of goods and services within a given fiscal year. This variable was introduced as a control and more importantly to account for the value of credit.

4. RESULT AND DISCUSSION OF FINDINGS

4.1 Presentation post estimation test

Lag length selection

The efficiency and validity of an error correction model depends on the lag structure. The study used VAR lag order selection criteria to determine the lag lengths. The study employed the Akaike Information Criterion (AIC) and Schwarz Criterion (SC) and the result shows four optimal lag length for the two models as shown in table 1. In order to reduce the possibility of underestimation whilst maximizing the likelihood of recovering the true lag (Venus, 2004), the study used four as the maximum lag lengths for the study.

Table 1: Optimal lag selection criteria for the models

Endogenous variables: SMEQ NDMB NRBB DRBB GDI HUC INFLA

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1562.211	NA	2.10e+26	80.47235	80.77094	80.57948
1	-1284.151	442.0435	1.73e+21	68.72570	71.11440	69.58275
2	-1243.392	50.16476	3.39e+21	69.14832	73.62714	70.75528
3	-1172.691	61.63720	2.37e+21	68.03542	74.60436	70.39230
4	-1001.254	87.91627*	3.16e+19*	61.75662*	70.41567*	64.86341*
Endogenous variables: SMEQ LSME LRBB LMFB GDI HUC INFLA						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1701.790	NA	2.69e+29	87.63028	87.92887	87.73741
1	-1469.912	368.6269	2.37e+25	78.25191	80.64061	79.10896
2	-1411.970	71.31336	1.93e+25	77.79334	82.27216	79.40030
3	-1310.319	88.61870	2.75e+24	75.09330	81.66223	77.45017
4	-1025.639	145.9900*	1.10e+20*	63.00712*	71.66617*	66.11391*

Source: Researchers' computation (2023), using E-Views 9.

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Unit root test results

The Augmented Dickey Fuller and the Philip-Perron unit root tests were conducted to examine the stationarity condition of the variables. As indicated in table 2, NRBB and INFLA were stationary at levels in both ADF and PP; GDI was stationary at level in ADF but at first difference in PP. In other words, the variables are integrated of order zero (i.e., I (0)). However, all other variables were stationary after first differencing using both ADF and PP. The aforementioned variables are therefore integrated of order one i.e., they are I (1).

Where some of the variables are I (0) while others are I (1) one suggests the problem of unit root in the equations. It becomes imperative to perform co-integration tests to determine the presence of equilibrium relationship amongst the variables in each equation. The study adopts the ARDL bound testing technique for co-integration, as the variables are integrated of diverse orders (i.e., order zero and order one).

Table 2: ADF and Philip-Perron unit root test results

Variables	ADF Level	1st Difference	Order of integration	Level	PP 1st Difference	Order of integration
SMEQ	-1.575155	3.528714**	I(1)	-1.606493	-3.440193	I(1)
NDMB	0.581486	-5.101116**	I(1)	0.439431	-5.009795**	I(1)
NRBB	-3.006265**	-	I(0)	-4.354484**	-	I(0)
DRBB	-2.029226	-4.940068**	I(1)	-1.696844	-4.961815**	I(1)
GDI	-3.753188**	-	I(0)	-2.154566	-5.324408**	I(1)
HUC	-1.219615	-6.869975**	I(1)	-1.195329	-6.864160**	I(1)
INFLA	-3.135036**	-	I(0)	2.999018**	-12.58937**	I(0)
LSME	-1.917078	-7.893005**	I(1)	-1.761507**	-8.003427**	I(1)

Source: Researcher's computation (2023), using E-Views 9.

Note: Mackinnon critical values for ADF at 1, 5 and 10% levels are -3.60, -2.93 and -2.60respectively, and for PP are 3.59, 2.93 and 2.60, respectively. ** means significant at 5% level.

Co-integration test results

From the bound testing result reported in Table 3, long run relationship exists amongst the variables in all the estimated equations, given that the values of the F-statistic are greater than the critical values at five per cent level in both the upper and the lower bounds. Therefore, the null hypothesis of absence of co-integration is rejected, while the study proceeds to estimate the long run coefficients of each of the equations.

TABLE 3
Co-integration test results

			5% critical value		
Equations	**K**	**F-Stat**	**I (0)**	**I (1)**	**Outcome**
SMEQ (NDMB, NRBB, DRBB, GDI, HUC, INFLA)	6	5.682.45	3.61		Co-integration
SMEQ (LSME, LRBB, LMFM, GDI, HUC, INFLA)	6	10.52	2.45	3.61	Co-integration

Note: K =number of parameters

Source: Researcher's computation (2023), using E-Views 9.

ANALYSIS OF ECONOMETRIC RESULTS

TABLE 4
Long run coefficients of financial inclusion-SMEs growth equation
Dependent variable: SMEQ

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NDMB	3.743065	0.415358	9.011658	0.0001
NRBB	3.251718	1.057548	3.074771	0.0028
DRBB	-0.876833	11.163123	-0.078547	0.9399
GDI	11.727362	79.861209	0.146847	0.8881
HUC	-56.816619	110.836568	-0.512616	0.6265
INFLA	-20.090863	23.593223	-0.851552	0.4271
C	-3139.29947	10193.24187	-0.307979	0.7685

The long run equation of financial inclusion and SMEs growth is reported in table 4. From the results and in consonance with theoretical expectations, a positive relationship exists between number of commercial bank branches (NDMB) and output of SMEs (SMEQ) in Nigeria. The value of the coefficient of 3.74 implies that an increase in the number of commercial bank branches by 1 percent will result to an increase in output of SMEs by 3.75 percent. The p-value indicates that the number of commercial bank branches is statistically significant with a value of 0.0001. This simply means that the spread in the number of commercial bank branches will significantly enhance financial inclusion in Nigeria in the long run. The relationship between number of rural bank branches (NRBB) and output of SMEs (SMEQ) is positive and statistically significant. Hence, a 1 percent increase in the number of rural banks branches will lead to 3.25 percent increase in output of SMEs in the long run, ceteris paribus. The p-value shows that the variable is statistically significant with a value of 0.0028. According to the result, an increase in deposit of rural branches of commercial banks (DRBB) has a negative and insignificant long run relationship with SMEs output. The magnitude of the coefficient shows that a 1 percent increase in deposit of rural branches of commercial banks in the long run will lead to about 0.87 percent decrease in the output of SMEs. The relationship between gross domestic investment (GDI) and output of SMEs is positive and statistically insignificant. Hence, a 1 percent rise in gross domestic investment will lead to 11.72 percent increase in output of SMEs in the long run, ceteris paribus. The p-value shows that the variable is statistically insignificant. A negative and insignificant relationship exists between human capital (HUC) and output of SMEs. A 1 percent rise in human capital will lead to about 56.81 percent decrease in output of SMEs in the long run. The p-value shows that the variable has no significant impact on the output of SMEs. The nexus between inflation rate and output of SMEs is negative and insignificant, which is consistent with theory.

TABLE 5: **Short run coefficients of financial inclusion-SMEs growth equation**
Dependent variable: D(SMEQ)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(NDMB)	-0.443802	0.520263	-0.853034	0.4118
D(NDMB(-1))	-1.752042	0.583381	-3.003257	0.0120
D(NDMB(-2))	2.493795	0.962089	2.592062	0.0250
D(NRBB)	-10.454419	7.040627	-1.484871	0.1657
D(NRBB(-1))	-2.373019	6.652032	-0.356736	0.7280
D(NRBB(-2))	7.699455	8.818688	0.873084	0.4013
D(NRBB(-3))	7.929403	3.925466	-1.609879	0.1357
D(DRBB)	-7.162548	7.996023	-0.895764	0.3896
D(DRBB(-1))	7.623857	5.845537	1.304218	0.2188
D(DRBB(-2))	-14.077139	6.553200	-2.148132	0.0548
D(DRBB(-3))	-21.500747	8.355420	-2.573269	0.0259
D(GDI)	12.067140	54.417147	0.221753	0.8286
D(GDI(-1))	9.287917	59.353495	0.156485	0.8785
D(GDI(-2))	-34.714641	60.628382	-0.572581	0.5784
D(GDI(-3))	68.588479	48.158189	1.424233	0.1821
D(HUC)	-154.40695	43.866700	-3.519913	0.0048
D(HUC(-1))	4.791044	41.104017	0.116559	0.9093
D(HUC(-2))	55.662885	59.251959	0.939427	0.3677
D(HUC(-3))	-55.942249	60.439531	-0.925590	0.3745
D(INFLA)	0.058380	10.542476	0.005538	0.9957
CointEq(-1)	-0.636460	0.258155	-2.659100	0.0217
R-squared	0.810890			
Adjusted R-squared	0.766560			
F-statistic	16.47610	Durbin-Watson stat		2.161997
Prob(F-statistic)	0.000046			

The short run dynamics result of financial inclusion and small and medium enterprises growth equation is as reported in table 5. From the results and in contravention of theoretical expectations, a negative relationship exists between the current and first period lag of the number of commercial bank branches (NDMB) and output of SMEs (SMEQ) in Nigeria in the short run. The values of the coefficients of -0.44 and -1.75 for current and first period lag implies that an increase in the number of commercial bank branches by 1 percent will result to a decrease in output of SMEs by 0.44 and 1.75 percent, respectively. This a priori inconsistent result might not be unconnected with unfriendly monetary policy committee stance of maintaining external pressure on foreign exchange at the expense of internal macroeconomic equilibrium especially among growth enabling indictors within the SMEs. The coefficient of the second period lag of the number of commercial bank branches is 2.49. Hence, a 1 percent increase in the second period lag of the number of commercial bank branches will lead to a rise in output of SMEs by 2.49 percent. The p-values indicate that the number of commercial bank branches is statistically significant after first and second period lags. This simply means that the spread in the number of commercial bank branches will significantly enhance financial inclusion in Nigeria in the short run and potentially in the long run too. This supposedly implies that the cascading effect of deepening spread of bank branches would increases awareness that bring about financial inclusion. The relationship between number of rural bank branches (NRBB) and output of SMEs (SMEQ) is negative and statistically insignificant at current and first period lag. Hence, a 1 percent increase in the number of rural banks branches will lead to 10.45 and 2.37 percent decrease in output of SMEs. However, the relationship between number

of rural bank branches and output of SMEs became positive after second and third period lags with coefficients of 7.69 and 7.92, respectively. According to the result, an increase in deposit of rural branches of commercial banks (DRBB) has a negative and significant short run relationship with SMEs output at current and third period lag. The magnitude of the coefficient shows that a 1 percent increase in deposit of rural branches of commercial banks in the short run will lead to about 7.16 and 21.50 percent decrease in the output of SMEs. The variable became positive after first and second period lags. It was statistically significant after second and third period lags, with p-values of 0.0548 and 0.0259, respectively. This implies that the campaign for inclusion especially in the rural certain should be deepened further so as to boost SMEs in the rural certain. The short run relationship between gross domestic investment (GDI) and output of SMEs is positive at current, first and third period lags, with coefficients of 12.06, 9.28 and 68.58, respectively. Hence, a 1 percent rise in gross domestic investment will lead to 12.06, 9.28 and 68.58 percent increase in output of SMEs in the short run. It was negative after second period lag with a coefficient of -36.71. The p-value shows that the variable is statistically insignificant. A negative and significant relationship exists between human capital (HUC) and output of SMEs at current and third period lag with coefficients of -154.40 and -55.94, respectively. It was positive after first and second period lags with coefficients of 4.79 and 55.94, respectively. The p-value shows that the variable has a significant impact on the output of SMEs at the current period. The nexus between inflation rate and output of SMEs is positive and insignificant in the short run, which is inconsistent with theory. From the long run and short run equation of financial inclusion-SMEs growth, a positive/negative and significant relationships were found between the variables of interest in Nigeria. These findings are in tandem with the views of Otiato (2016); Ibor, Offiong and Mendie (2017) and Ogidi and Pam (2021) who revealed a positive relationship between financial inclusion and the performance of small and medium scale enterprises in Nigeria.

The error correction mechanism (ECM) has the correct sign and size. The ECM coefficient of -0.636460 indicates that, it takes about 64 percent for the short run disequilibrium to adjust to the long run equilibrium within the year. The p-value of -0.0217 shows that the error correction term is statistically significant at 5 percent level of significance. The R-squared value of 0.810890 and the value of R-squared adjusted of 0.766560 indicates that about 77 percent of variation in the output of SMEs is explained by the current, first, second and third period lags of number of commercial bank branches, number of rural bank branches, deposit of rural branches of commercial banks, gross domestic investment, human capital, inflation rate and about 23 percent was unexplained which may be accounted for by other factors not included in the financial-inclusion and SMEs growth model. The F-statistic of about 16.47 shows that all the variables in the financial inclusion and SMEs growth model are together as a group statistically significant which means that the model has a good fit. The Durbin-Watson (D-W) statistic of 2.16 indicates no autocorrelation in the model. Therefore, the results can be used for economic forecast and policy simulations.

5. CONCLUSIONS AND REOMMENDATION

5.1 CONCLUSION

This study concludes that for the optimal performance of small and medium enterprises in Nigeria, the government must promote financial inclusion and oblige banks to grant microcredit to the SMEs subsector.

5.2 RECOMMENDATIONS

In line with the findings of the study, the following recommendations are made:

i. The government through the Central Bank of Nigeria should promote financial inclusion through the expansion of microfinance banks and obliging commercial banks to open branches in rural areas. This will enhance the spread of banks to the rural areas to provide finances for the growth of small and medium enterprises.

ii. The deposits of rural branches of commercial banks should be increased. This will help to provide adequate loans and advances for the growth of small and medium scale enterprises.

iii. An enabling business environment should be created for both formal and informal financial institutions to continue offering credit services to small and medium enterprises in the country. Micro finance service providers and development partners should consider including micro-insurance scheme in the micro finance package to enhance SMEs growth.

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