HOW EFFECTIVE ARE THE ACTIVITIES OF SMALL AND MEDIUM SCALE ENTERPRISES (SMES) IN POVERTY ABATEMENT IN NIGERIA?

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ABSTRACT

This study investigated the effect of small and medium scale enterprises (SMEs) operations on poverty rate in Nigeria. The Dynamic Ordinary Least Squares (DOLS) approach was used for the empirical analysis over the period of 1995 to 2022. The DOLS result revealed that both credit to SMEs and economic growth as captured by RGDP have strong positive and significant impact on poverty alleviation since their coefficients were found to be negative and statistically significant in reducing poverty rate in Nigeria. The result also revealed that SMEs asset or wealth has a negative and significant impact on poverty rate as its coefficient was found to be positive. The result also shows that huge and idle capital acquisition by SMEs can have a significant negative impact on poverty level in Nigeria. Meaning it can increase poverty level if SMEs owners are only interested in using their credits or profit to increase their income, as well as their physical assets without recourse to increase in product line and expansion of intellectual capital. Consequently, the following recommendations among others were made: first, that Nigeria government and the monetary authority should implement more channels through which SMEs can assess credit at a minimal interest rate. Also there should be monitoring apparatus that will ensure that SMEs channel these minimal interest credits to the right business that will increase their ability to lift more people out of poverty. SMEs should on their own aspire for higher productivity rather than wanting to stack profit as idle capital in banks
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Keywords: Small and Medium Enterprises, Poverty, Commercial Banks, Poverty Alleviation, SMEs Asset. JEL Classification Codes: L39, P 36, G21, I32, L25

1.0 Introduction

Following the advent of the Structural Adjustment Programme (SAP) in 1986, there has been a proliferation of small and medium-scale enterprises (SMEs) in Nigeria. Consequently, SMEs have been recognized as key drivers of Nigeria's growth, because of their viable implication for job creation which has strong implications for unemployment rate reduction and in turn alleviation of poverty. Specifically, Aremu (2010) argued that small-scale enterprises play a significant role in generating income, savings, and employment. SMEs are taken into consideration as critical for developing entrepreneurial talents and indigenous technology, which in turn generate employment opportunities in the country. It has been estimated that MSMEs contribute about 46.31% to the country's gross domestic product (GDP), account for 96.7% of businesses in Nigeria and 84% of the total employment as well as employment of about 22% of Nigeria's adult population (SMEDAN, 2021, NBS, 2021). Due to their contributions to the improvement and growth of economies, SMEs are frequently known as the "engine of growth" and catalysts for the socio-economic transformation of any nation. The diverse activities of small business firms have led to the mobilization of environmental resources, and improving the standard of living of the populace. They have played a significant role in the labor market by absorbing the increasing supply and helping to reduce the unemployment rate in Nigeria. Additionally, the sector has contributed to the development of indigenous entrepreneurs, exemplified using organizations like Innoson Group of Company, Tummy-Tummy, Chikason Group of Company, Dozy Power flow, and so on.

SMEs are recognized as catalysts for socio-economic development in any country. They serve as vehicles for achieving macroeconomic objectives, such as generating employment at a low investment cost, fostering the development of entrepreneurial capabilities and indigenous technology, mitigating rural-urban migration, utilizing local resources, and alleviating poverty. Ironically, in Nigeria, despite the widespread of SMEs and its aforementioned implications for

economic growth and poverty alleviation, the scourge of poverty has been very endemic to the extent that it has become so worrisome and a call for attention. According to Ajegi (2002), approximately 2.8 billion people are living in absolute poverty globally. Poverty in Nigeria being one of the resource-rich and largest oil-exporting countries in Africa, appears to be paradoxical as amid plenty a large proportion of her population is living in multidimensional and absolute poverty (World Bank, 1996).

The rate of poverty in Nigeria has continued to experience an all-time high value, for instance, the poverty rate in Nigeria was seen to have risen from 28.1% in 1980 to 70.6% in 2007 (National Bureau of Statistics 2008). This has continued although with some few declines between the periods of 2008 to 2022 the lowest rate was 60.1 in 2013. Specifically, in 2022 going by the poverty threshold set at 1.90 U.S. dollars per day, about 88.4 million people were seen to have lived in extreme poverty in Nigeria. This figure represented an increase from the previous year when approximately 86.7 million people were living in such conditions. This alarming trend of the high rate of poverty has been a major concern as successive Nigerian governments have sought to address it and as such implemented various poverty alleviation programs amongst which are; Operation Feed the Nation (OFN) in 1979, the Green Revolution (GR) in 1980, the National Directorate for Employment (NDE) in 1986, the Directorate for Food, Roads and Rural Infrastructure (DFRRI) in 1987, the Family Support Program (FSP) in 1994, the Family Economic Advancement Program (FEAP) in 1998, People's Bank in 1989, Community Banks in 1990, the National Economic Empowerment and Development Strategy (NEEDS) in 2004, the Community Action Programme for Poverty Alleviation (CAPPA) in 1996, the National Poverty Eradication Programme (NAPEP) in 2001, and the Agricultural Transformation Agenda (2011-2015). Seven-point agenda, MDGs (millennium Development Goals), and the ongoing Sustainable Development Goals (SDGs).

Despite these programs, poverty has been prevalent in Nigeria as a large proportion of the population is found to be living below the threshold as set by the World Bank, faced with a high rate of illiteracy, poor health conditions, high rate of infant and maternal mortality rate to mention but a few. According to the 2020 UNDP report, Nigeria ranked 103rd out of 116 countries in the human poverty index (HPI) value, with an HPI value of 36. This indicates that poverty remains predominant in the country.

Apart from the aforementioned programs, a large proportion of Nigerians have moved into the informal sector in search of survival and this has increased the activity of small and medium-scale enterprises (SMEs).

SMEs, as incubators of entrepreneurship, are often driven by individual creativity and innovation. Research has it that a large proportion of the poor are involved in businesses such as dressmaking, vulcanizing, car repairs, petty trading, carpentry, car washes, dry cleaning, food selling/restaurants, etc. (Adeokun, Adedoyin, & Adereti, 2002). However, SMEs have also been said to have encountered challenges such as limited access to finance, inadequate infrastructure, and a challenging business environment which may have hindered their ability to create the required employment that is required to reduce the poverty rate (Nwakeze & Iheanacho 2017). Sequel to the above, this study seeks to empirically examine the impact of SMEs operations on the poverty level in Nigeria. The SMEs operation was proxy by access to credit/finance and SMEs capital/asset-based.

2.0 Literature Review

2.1 Theoretical literature

The theories that support the relationship between SMEs and poverty are the Basic Need Theory, the Capability Approach Theory, and the Structural Functionalism Theory and so on.

This study therefore centers on the capability approach theory as developed by Sen (1980). This theory suggests that poverty is not just about a lack of material resources, but also about the inability to access opportunities and capabilities that enable individuals to achieve a fulfilling life. In other words, poverty is more than not having enough money, but also about being denied the ability to live a dignified life. According to the capability approach, the focus should not just be on providing individuals with material resources, but also on enabling them to develop the necessary skills and capabilities to access opportunities and achieve their full potential. In the context of small and medium-sized enterprises (SMEs) and poverty alleviation in Nigeria, the capability approach is particularly relevant since it highlights the need for

policymakers to focus on providing education and training programs that will enable entrepreneurs to create and grow successful businesses to enhance their capabilities. By adopting a holistic approach that takes into account the capabilities and opportunities of entrepreneurs, policymakers can help to promote poverty alleviation in Nigeria and enable individuals to achieve their full potential.

2.2 Empirical literature

There have been mixed findings on the discourse of SMEs operations (as proxied by the access to credit and their asset base) and its implication for poverty reduction. While some studies think that loans to SMEs can act as a panacea to alleviating poverty via the employment creation and capital formation others believe that SMEs activities may not have a positive significant impact on poverty alleviation going by the enormous challenges that they are faced with. From the descriptive statistics approach front, Ogujiuba & Anyanwu (1998) explored the income effects of SMEs on poverty alleviation. The researchers found that SMEs played a vital role in increasing household income and improving the living standards of individuals. They observed that SMEs contributed to poverty reduction by providing income-generating opportunities for entrepreneurs and employees alike. The study highlighted the importance of supporting and promoting SMEs to enhance their contribution to poverty alleviation. Oyekanmi (2000) examined the relationship between SMEs and poverty alleviation in Nigeria. The study found that SMEs had the potential to alleviate poverty in Nigeria, but that there were several challenges facing SMEs, including lack of access to credit, inadequate infrastructure, and unstable government policies. The study recommended that the government should address these challenges by providing SMEs with access to credit, improving infrastructure, and creating a stable policy environment.

From the general point of view, Ayuba and Bubairu (2015) examined the effect of banking sector credit on the growth of SMEs in Nigeria for the period spanning 1985 to 2010. They employed both descriptive statistics and the error correction model for their analysis. Their result revealed a positive and significant relationship between the banking sector credit and the growth of SMEs and other macroeconomic variables in Nigeria. Mohammed and Ab-Rahim (2019) examined the relationship between SMEs and poverty in Nigeria to view the role of youth empowerment in the nexus of SMEs and poverty. Data for the study was generated from a survey technique and a questionnaire was used to collect data from 432 SMEs owners in 8 selected Local Government Areas of Niger State, Nigeria. The Partial Least Square-Structural Equation Modelling (PLSSEM) was employed to test the hypotheses. The result showed that the SMEs activities which include: employment, innovation, human capital development, and income triggered a positive impact on the socio-economic status of the people. It also revealed that youth empowerment being the moderating variable has a positive influence on the relationship between SMEs and Multidimensional poverty. The results imply that as more youths and SMEs are empowered the possibility of eradicating poverty will be very certain in Nigeria.
Similarly, Oba and Onuoha (2013) who x-rayed the role of SMEs activities on poverty reduction in Nigeria from 2001 to 2011 using the employment route with the help of the OLS techniques found SMES proxied by the SMEs' contributions to GDP to be positive and statistically significant in explaining the level of employment and hence poverty reduction which was measured by the level of employment that stems from SMEs operation.

From the angle of Microfinance banks, Okezie, et al (2013) assess the effectiveness of microfinance banks in eradicating poverty in Nigeria, using descriptive statistics on primary data with 382 respondents for 3 Senatorial districts in Imo state. The empirical results revealed that people in the high-income class can save the poor living in rural areas. Similarly, Kamel and Jalel-Eddine (2015) examined the effect of microfinance on poverty reduction using 596 microfinance banks in 57 emerging economies from 2005 to 2011. This study employed panel data analysis, and the empirical results indicate that an economy with higher microfinance institutions' gross loan portfolio per capita tends to reduce poverty levels among the people. This thereby established that microfinance bank loans can effectively alleviate poverty in the countries in the sample. Also, Ochonogor(2020) embarked on a study on the performance of

microfinance institutions (MFIs) and their impact on promoting economic development in Nigeria using the error correction model and OLS techniques. The regression result established the existence of a long-run relationship. And also found a positive relationship between the human development index and microfinance loans. This further suggests that microfinance loan has a strong implication for poverty reduction.

Again, Ngong, Thaddeus, & Onwumere, (2021) in their study on the long-run relationship between micro financial inclusion and poverty alleviation in Nigeria for the periods of 1990 to 2018, using the Engle–Granger two-step co-integration and autoregressive distributed lag (ARDL) techniques. They employed Gross domestic product (GDP) per capita a proxy for poverty reduction, Proxy micro financial inclusion with the Number of microfinance banks, borrowers of microfinance institutions, commercial bank branches, commercial bank loans to small-scale businesses, and broad money supply ratio. Their results revealed the presence of a long-run relationship between micro-financial inclusion and poverty reduction. Recently, Nwanna and Okeke (2022) in their study on microfinance credit and poverty alleviation where they used unemployment rate, capital formation, and per capita income as proxies to check poverty reduction in the face of microfinance credit with the help of the OLS technique, found a significant relationship between microfinance credit and the dependent variables (unemployment rate, capital formation and per capita income). They therefore conclude consequent on their findings that microfinance credit can reduce poverty since it appears to be significant in driving the unemployment rate, capital formation, and per capita income.
From the SMEs wealth or asset creation angle, Asikhia (2016) examined the mediating effect of wealth creation on the SMEs-Poverty alleviating relationship. The Wealth created by firms was measured by an increase in income, increase in physical assets, investments, product line expansion, increase in working capital, and enhancement of intellectual capability. Using a survey of 581 CEOs of SMEs in selected states of Nigeria with the help of descriptive statistics and OLS technique, their result found among others that poverty alleviation is highly correlated with wealth creation, and the association was highly moderated by wealth distribution. Specifically, it was observed that Wealth created by SMEs was responsible for only a 15% variation in poverty alleviation in Nigeria. This thereby suggests that people who can acquire wealth through the operation of SMEs may not be ready to distribute it.

2.3 Gaps in Existing literature

From the extant literature, there appears to be several literatures on issues bordering on SMEs and their operations. However, most studies have focused on the economic growth effects of SMEs, the challenges faced by SMEs, and the Employment effect of SMEs (Odili & Ighedosa, 2014; O**k**enwa 2008; Oboro & Ighoroje, 2011; Onuge & Ibe 2009; Ogbuabor, Malaolu & Elias 2013; Ogen 2018**)**. There are also a handful of studies on the poverty alleviation effect of SMEs howbeit, most of the previous studies employed a theoretical or at best Meta-analysis approach rather than the empirical approach and those who attempted the empirical approach resorted to the use of descriptive statistics which appears to be insufficient for the drawing of critical inferences. It was also observed from extant literature that poverty was captured by employment and capital formation rather than using the poverty rate or indices which shows the actual poverty level as it were (Aremu & Adeyemi 2011; Ojo, Ajiboye & Ogunai**ke 2015**). It is against this backdrop that this study therefore see**k**s to fill the aforementioned gaps by examining the impact of SMEs operations on the poverty level of the Nigerian economy using the empirical approach as well as using their activities irrespective of the limitations that they may have been facing in that regard.

3.0 Methodology

3.1 Model Specification

The model of this study is a modified version of that of Nwanna and Okeke (2022) by using poverty rate to capture poverty level unlike that of their study which employed unemployment rate, capital formation and per capita income as proxy for poverty.

The mathematical specification for this study is the functional equation given as follows;

POV = f(LSMEs, SMEsAB, RGDP) (3.1)

Econometric Model

The generalized form of the Dynamic Ordinary least squares (DOLS) econometrics model will look thus:

$$Y_t = \alpha + \beta X_t + \sum_{i=q}^{j=r} \delta \Delta X_{t-i} + \sum_{i=q}^{j=r} \varphi \Delta X_{t+j} + \mu_t \quad (3.2)$$

Equation 3.2 is with the assumption that adding q lags and r leads of the differenced regressors soak off all the long run correlation between the error term and the independent variables. Y is the dependent variable while $\sum_{i=q}^{j=r} X$ is a vector of the explanatory variables.

The specific dynamic ordinary least squares (DOLS) with two lags and leads (q =2, and r = 2) for the regressors in their original form, in their differenced form and with their leads and lags forms which captured the nuisance variables to correct for any serial correlation and endogeniety problem is as follows:

$$\begin{aligned}
\ln POV_t = \alpha_0 + & \sum_{i=1}^{k} \alpha_1 \, lnLSMEs_t + \sum_{i=1}^{k} \alpha_2 \, lnSMEsAB_t + \sum_{i=1}^{k} \alpha_3 \, lnRGDP_t + \sum_{i=1}^{k} \alpha_4 \, \Delta lnLSMEs_t \\
& + \sum_{i=1}^{k} \alpha_5 \, \Delta lnLSMEs_{t-1} + \sum_{i=1}^{k} \alpha_6 \, \Delta lnLSMEs_{t-2} + \sum_{i=1}^{k} \alpha_7 \, \Delta lnLSMEs_{t+1} \\
& + \sum_{i=1}^{k} \alpha_8 \, \Delta lnLSMEs_{t+2} \\
& + \sum_{i=1}^{k} \sum \alpha_9 \, \Delta lnSMEsAB_t + \sum_{i=1}^{k} \alpha_{10} \Delta lnSMEsAB_{t-1} + \sum_{i=1}^{k} \alpha_{11} \, \Delta lnSMEsAB_{t-2} \\
& + \sum_{i=1}^{k} \alpha_{12} \, \Delta lnSMEsAB_{t+1} \\
& + \sum_{i=1}^{k} \alpha_{13} \, \Delta lnSMEsAB_{t+2} \\
& + \sum_{i=1}^{k} \sum_{i=1}^{k} \alpha_{14} \, \Delta lnRGDP_t \\
& + \sum_{i=1}^{k} \alpha_{15} \Delta lnRGDP_{t-1} \\
& + \sum_{i=1}^{k} \alpha_{16} \, \Delta lnRGDP_{t-2} + \sum_{i=1}^{k} \alpha_{17} \, \Delta lnRGDP_{t+1} + \sum_{i=1}^{k} \alpha_{18} \, \Delta lnRGDP_{t+2} + \mu_t
\end{aligned} \quad (3.3)$$

Where; lnPOV represents the natural logged value of poverty rate, lnLSMEs is the natural logged value of the commercial banks' loan to small and medium scale enterprises as a total loan, lnSMEsAB is the natural logged values of the aggregated capital based of SMEs in Nigeria, and LnRGDP is the natural logged value of the real gross domestic product which is a proxy for economic growth. Note the variables were logged with the intention to put all variables in the same magnitude and to capture their elasticity values.

$\alpha_1 - \alpha_3$ are the parameters of interest while, $\alpha_4 \; to \; \alpha_{18}$ are the nuisance variables parameters which soak up all forms of serial correlation and endogeniety problems should they be present.

The a priori expectations of the regressors are as follows: $\alpha_1, \alpha_2, \alpha_3 < 0$, this implies that commercial banks' loan to SMEs, SMEs asset based and RGDP are expected to influence poverty level positively, that is, they are supposed to cause a decline in the level of poverty all things being equal.

3.2 Data and Method of Analysis

This study employed time series data from Nigeria for the periods of 1995 to 2022. The data employed in this article were extracted from the National Bureau of Statistics and the Central Bank of Nigeria statistical bulletin (2022) as well as the Small and Medium Scale Enterprises Database (SMEDAN). The Dynamic ordinary least square (DOLS) method as advanced by Stock and Watson (1993) was employed for the analysis. The DOLS model is a robust single equation model that addresses the problems of endogeneity and serial correlation with the help of the leads and lags as included in the model. The choice of this technique is attributed to the following: it can be applied to variables that are integrated in order one or zero or both, its ability to deal with feedback effects without the use of instrumental variables, it can be applied in a small or large sample, the fact that applying normal OLS in the estimation of the long-run relationship of a co-integrated series will yield inconsistent and inefficient coefficients, and the fact that it does not require any theoretical basis for choosing the leads and lags to be used rather experts are required to use the general to a specific approach to expunge any unwanted lead and lag until they arrive at an appropriate number of leads and lags that can solve the endogeneity or serial correlation problems. This technique followed the three steps sequences which include; conducting the unit root test to ascertain the stationarity level of the variables, carrying out a co-integration test to assess the presence of long-run relationship among the variables, and lastly, estimating the DOLS result The appropriate post-diagnostic tests were also conducted for robustness and reliability checks.

4. Results and Discussion

4.1 Descriptive statistics.

Table 4.1 Descriptive Statistics

	POV	LSMEs	SMEsAB	RGDP
Mean	66.26661	316561.6	713672.7	46547.42
Median	69.50000	255272.4	449877.6	46012.52
Maximum	71.50000	1596489.	2818272.	71387.83
Minimum	54.10000	54144.44	107691.6	20353.20
Std. Dev.	6.151030	330008.9	780619.9	19221.70
Skewness	-1.013305	2.375057	1.582394	-0.052843
Kurtosis	2.399141	9.481915	4.423614	1.407202
Jarque-Bera	5.026698	72.65117	13.54788	2.866698
Probability	0.080997	0.000000	0.001143	0.238509
Sum	1789.198	8547163.	1256780.	19269163
Sum Sq. Dev.	983.7145	2.83E+12	9.61E+09	1.58E+13
Observations	27	27	27	27

Source: Author's Computation (2023) extracted from E-views 10 output

Table 4.1 contains the descriptive statistics of the variables employed in the study. The Poverty rate in Nigeria has maximum and minimum values of about 71.5% and 54% respectively and an average value of 66.2% (SD = 6.15) in the period of 1995 to 2022. The standard deviation of the country's poverty variable suggests a minimal variation from the mean over the period under study. The Jarque-Bera value of 5.02 and its probability value of 0.08 which appears to be greater than 0.05 shows that poverty rate data was not significant at the 5 percent level hence, it is said to be normally distributed.

Commercial banks' loan to SMEs (LSMEs) in Nigeria has maximum and minimum values of about 1596489 and 54144.44 million naira respectively. LSMEs in the sample showed an average and standard deviation as (M = 316561.6, SD = 30008.9). The SD suggests a huge variation from the mean over the period under study. SMEs values also known as its asset base in Nigeria have a maximum value of 2818272, a minimum value of 107691.6, and a mean value of 316561.6 (SD = 780619.9) which shows fast variation over time for the period under study.

The real GDP has maximum and minimum values of about 71387.83 and 20353.20 respectively.

The mean value for the RGDP was 46547.42 naira (SD = 19221.70) for the period under consideration. The Jarque-Bera value of 2.87 and its probability value of 0.23 which appears to be greater than 0.05 shows that the dataset of RGDP was not significant at the 5 percent level hence, it is said to be normally distributed.

4.2 Correlation Coefficient Test.

The correlation matrix table shows the relationship or degree of association among the variables in the model.

Table 4.2 Correlation Matrices.

	POV	LSMEs	SMEsAB	RGDP
POV	1	0.0776	0.2334	0.4041
LSMEs	0.0776	1	0.7059	0.2302
SMEsAB	0.2334	0.7059	1	0.4341
RGDP	0.4041	0.2302	0.4341	1

Source: Author's Computation (2023) extracted from E-views 10 output

From the correlation matrix results as presented in Table 4.2, a positive and moderate correlation was found to run between the explanatory variables and the dependent variable. The result also revealed a moderate positive correlation between the independent variables. Consequently, suffice it to say that there is not likely going to be multicollinearity problem among the explanatory variables as the highest correlation between the explanatory variables was 0.70.

4.3 Unit root test.

The unit root tests are conducted for both levels and first differences of the variables of the model. The results of the unit root tests (ADF) test results are shown in Table 4.3.

Table 4.3 Unit root test

Variables	ADF test Statistic	ADF critical Values 5% level	Remark	Order of integration
POV	-5.601108	-2.986225	Stationary	I(1)
LSMES	-2.976624	-2.629906	Stationary	I(0)
SMESAB	5.099886	-2.991878	Stationary	I(1)
RGDP	-3.403773	-3.004861	Stationary	I(0)

Source: Author's Computation (2023) extracted from E-views 10 output

Based on the result in Table 4.3, the variables under study were found to be stationary at levels and first differences. Precisely Poverty rate (POV) and SMEs asset base (SMESAB) were found to be non-stationary at level but only became stationary at first difference whereas, commercial banks' loans to SMEs (LSMEs) and RGDP were both stationary at levels.

4.4 Bounds Test for Cointegration

Table 4.4 Bounds Test for Cointegration

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic:n=1000	
F-statistic	3.773213	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Author's Computation (2023) extracted from E-views 10 output.

Going by the co-integration result as presented in Table 4.4, the F-statistics of 3.773 is greater than the critical values of 2.39 and 3.38 at the 5% significance level for both the lower and upper bound respectively. Consequently, we fail to accept the null hypothesis of no levels of co-integrating relationship; hence, there is a long-run relationship between the endogenous and the exogenous variables in the model.

4.5 Dynamic Ordinary least Square (DOLS) Regression Results.

Table 4.5 DOLS Regression result POV as dependent variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNLSMEs	-1.955931	0.213272	-9.171066	0.0027
LNSMEsAB	1.483527	0.162405	9.134753	0.0028
LNRGDP	-0.638771	0.095118	-6.715540	0.0067
C	15.57605	1.509383	10.31948	0.0019
	R-squared: 0.958469 Adjusted R-Squared: 0.709283			
	F-statistic (Wald Test): 9837.049 Prob.Value(0.000) Normality Test: (0.025) Prob-value: (0.987) Serial Correlation LM: 27.51390: Prob.value (0.1336)			

Source: Author's Computation (2023) extracted from E-views 10 output.

From Table 4.5, the coefficient of determination is approximately 0.96 and the adjusted R-squared of about 0.71 after adjusting for degree of freedom. This implies that 96% of the variations in poverty level were explained by all the independent variables (LNLSMEs, LNSMEsAB and LNRGDP). This is quite a good fit as merely 4% of the systematic variation is left unexplained but captured in the model by the stochastic error term.

From the result, commercial banks' loan to SMEs (LNLSMEs) was found to have a negative and statistically significant impact (at 1% level of significance as the p-value which stood at 0.0027 was less than 0.05) on the poverty rate. This result supports the apriori expectation; the result showed explicitly that ceteris paribus, a 1% increase in the commercial banks' loan to small and medium scale enterprises in Nigeria, will translate into a reduction of poverty rate by 1.956 which is about 195.6%. This is so because as SMEs receive loans they tend to invest the funds into productive business that will require them to employ more labour who ordinarily may have little or no income source before this time. This will in no small measure pull people out of poverty and in turn, reduce the poverty rate. The coefficient of small and medium scale enterprises asset base (LNSMEsAB) was found to be positive and significant at a 1% level of significance in affecting poverty level in Nigeria judging by the probability value of 0.0028 which happens to be less than 0.05. This sign negated the apriori expectation as it implies that holding other things constant, as SMEs asset increases by 1%, it will lead to an increase in the poverty rate by 1.483 units or about 148.3%. This may be attributed to the fact that some SMEs choose to use their profit to acquire an increase in income, increase in physical assets such as buildings and vehicles that do not imply job creation, increase in product line, and expansion of production of goods and services that will increase economic activity and in turn reduce poverty.

Real Gross domestic product (LNRGDP) was found to also have a negative and statistically significant impact (at a 1% level of significance as the p-value which stood at 0.0067 was less than 0.05) on the poverty rate. This implies that all things being equal the higher the Real GDP the lower the poverty rate. This result is in line with economic theory. Because a high GDP will translate to an increase in aggregate demand that will trickle down to the poor. This will be the case if the growth is pro-poor.

4.6 Post Diagnostic Tests

This section reports the various post-estimation diagnostic tests that were used to ascertain the robustness as well as the validity of the estimated results. They include the Wald test, the Breusch-Godfrey Serial Correlation LM Test, the Breusch-Pagan-Godfrey heteroskedasticity test, and the normality test.

Table 4.5.1: Wald Test:

Test Statistic	Value	Df	Probability
F-statistic	9837.049	(4, 3)	0.0000
Chi-square	39348.19	4	0.0000

Source: Author's Computation (2023) extracted from E-views 10 output.

From the Wald test as presented in table 4.5.1, the F-Statistics values of 9837.049 and its

probability value of 0.000 show that the model is statistically significant and as such will conclude that the model passed the linearity and joint significant test.

Table 4.5.2: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	27.51390	Prob. F(2,1)	0.1336
Obs*R-squared	21.60734	Prob. Chi-Square(2)	0.0000

Source: Author's Computation (2023) extracted from E-views 10 output.

The Serial correlation LM Test as presented in Table 4.5.2 is estimated with a null hypothesis that states that there is no serial correlation in the model. Since the probability value of the F-Statistic which stood at 0.1336 is greater than 0.05, it implies that it is not significant at a 5% level of significance, we therefore do not have enough evidence to reject the null hypothesis as stated above. Hence, we say that this model is void of any serial correlation problem.

Table 4.5.3 Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	3.464643	Prob. F(18,3)	0.1670
Obs*R-squared	20.99026	Prob. Chi-Square(18)	0.2799
Scaled explained SS	0.363071	Prob. Chi-Square(18)	1.0000

Source: Author's Computation (2023) extracted from E-views 10 output.

Table 4.5.3 above presents the result of the Heteroskedasticity Test. The null hypothesis is that there is Heteroskedasticity problem in the model. Since the probability value of the F-Statistics which is 0.1670 is seen to be greater than 0.05 thereby implying that we cannot reject the null hypothesis of no Heteroskedasticity problem.

Normality Test

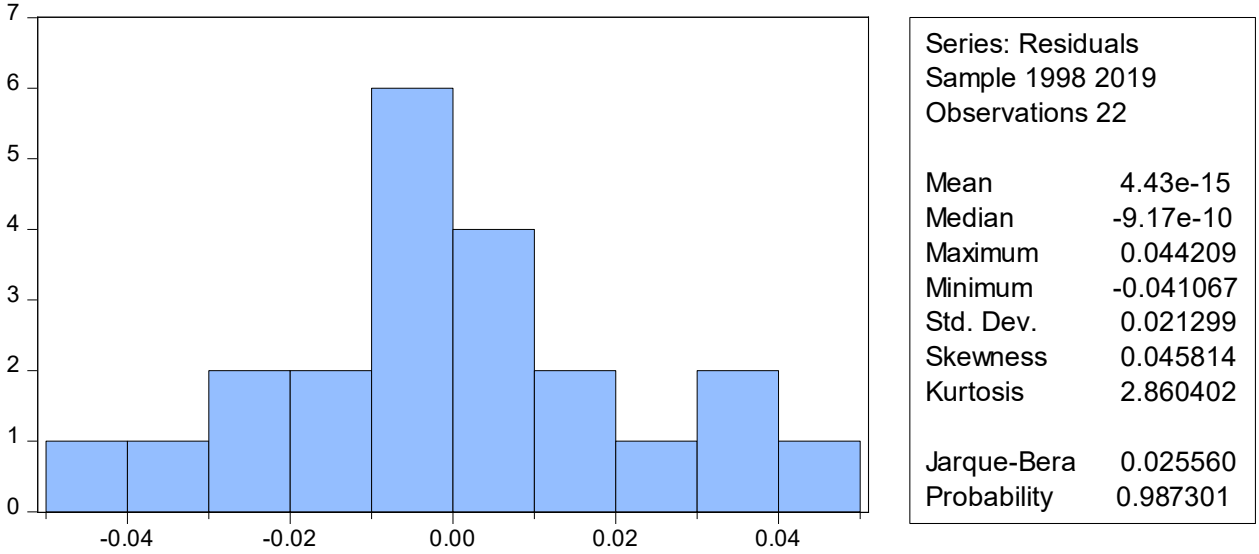

Figure 4.1: Histogram Normality Test
Source: Author's Computation (2023) extracted from E-views 10 output.

The Jarque-Bera test of normality as seen on the histogram showed that the residual series from the model was normally distributed since the probability value of the JB test was found to be 0.987 which is greater than 0.05. Thus, the null hypothesis of normal distribution of the residual series was therefore accepted.

4.7: Test of Hypothesis/Discussion of Findings

The null hypotheses of this study going by the objectives were that commercial banks' loan to SMEs has no significant impact on poverty rate as well as that there is a significant relationship between SMEs capital base and the poverty rate in Nigeria.

H_{01}: Commercial bank loans to SMEs has no significant impact on the poverty rate.

As observed from the DOLS result, LNLSMEs were found to have a negative significant impact on the poverty rate at a 1 percent level of significance going by the which is less than 0.05. Hence, we fail to accept the null hypothesis that there is no significant relationship between commercial banks' loans to SMEs and the poverty rate in Nigeria within the period under study. This result shows that loan to SMEs has a significant positive impact on the poverty rate as it was seen to trigger a reduction or alleviation of poverty rate even though the rate of reduction appears to be very minimal. This result is in tandem with the findings of (Nwanna & Okeke 2022; Ngong, et al, 2021; Ochonogor 2020; Kamel & Jalel-Eddine 2015; Okezie, Bankoli, & Ebomuche 2013; Oykanmi 2000, Ogunjinba & Anyanwu 1998).

H_{02}: SMEs Assets have no significant impact on the poverty rate.

The estimated coefficient of LNSMEsAB is positive and significant at the 1 percent level of significance based on the probability value that is less than 0.05. Therefore, we do not have enough evidence to accept the null hypothesis that the SMEs asset base does not significantly affect poverty level in Nigeria. This also shows that Huge and idle capita acquisition by SMEs can have a significant negative impact on poverty level in Nigeria. This means it can increase poverty levels if SMEs owners are only interested in using their credits or profit to increase their income, as well as their physical assets without recourse to increase in product line and expansion of intellectual capital. This finding negates that of (Asikhia 2016) who found that Wealth created by SMEs was responsible for about 15% variation in poverty alleviation in Nigeria.

5. Conclusion and Policy Recommendation.

This research investigated the effect of Small and medium-scale enterprises (SMEs) operations on poverty rate in Nigeria. The DOLS approach was used for the empirical analysis for the period of 1995 to 2022. The necessary preliminary tests such as descriptive statistics, correlation analysis, unit root test, and co-integration test were also conducted. The DOLS result revealed that both credit to SMEs and economic growth as captured by RGDP have a strong positive and significant impact on poverty alleviation since their coefficients were found to be negative and statistically significant in reducing poverty rate in Nigeria. The result also revealed SMEs asset or wealth has a negative and significant impact on the poverty rate as its coefficient was found to be positive. This also shows that huge and idle capita acquisition by SMEs can have a significant negative impact on poverty level in Nigeria. This means it can increase poverty levels if SMEs owners are only interested in using their credits or profit to increase their income, as well as their physical assets without recourse to increase in product line and expansion of intellectual capital.

Consequently, in pursuance of poverty alleviation, we hereby recommend that the Nigeria government and the monetary authority should implement more channels through which SMEs can assess credit at a minimal interest rate. Also, there should be a monitoring apparatus that will ensure that SMEs channel these minimal interest credits to the right businesses which will increase their ability to lift more people out of poverty. The government should enact laws that will guide the employment process among SMEs to encourage them to employ citizens based on their capacity. SMEs should on their own aspire for higher productivity rather than wanting to stack profits as idle capital in banks.

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