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Financing Small and Medium Enterprises through Micro-Credit Lending in Nigeria: Environmental Consequences

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Abstract

Poor performance of Small and Medium Enterprises (SMEs) have generated lots of research interest in developing countries. While some argue that there are environmental factors that are responsible for these poor performance of this sector, others maintained that the relatively small size of the sector make it prone to abuse by operators thereby making it difficult to source external financing. Against this backdrops, this study sought to examine the effect of micro-credit lending on the SMEs financial performance in Nigeria, using aggregated time series data from 1992 to 2017 and the Ordinary Least Square (OLS) regression method for the analysis. Our findings indicate that micro-lending in the form of loans and advances impact positively on the various performance indicators such as net-profit, return on equity and return on investments. On the contrary, overdraft was found to impact negatively on return on equity of shareholders. Again, the unstable socio-political environment in Nigeria calls for serious concerns in the sector. This results draw important attention to the environmental consequences of the financing regime and therefore calls for concerted effort towards financing of SMEs sectors that are productive and progressive which will promote growth and development in Nigeria.

Keywords: Financing, environmental constraints, SMES, Micro-credit lending, Nigeria.

1. INTRODUCTION

Microcredit lending is not a new concept in finance and accounting literature. It started many years ago when money lenders were informally performing the role formal financial institutions play currently and globally. Over the years, many development methods and techniques have been created by policy-makers, international development agencies, non-governmental organizations, and others designed to lower the rate of poverty in developing nations. One of these increasingly popular approaches since 1990s consist of microfinance schemes, which makes financial services available as savings and credit opportunities to the working poor. From the year 2000, there has been a dramatic development of microfinance institutions around the world, specifically in developing countries which is relative to number of bank branches, groups, credit disbursement, number of loans, credit received, and savings-clients (Ngugi & Kerongo, 2014).

Credit-lending has been identified as a vital tool for enhancing the growth of small and Medium Enterprises (SME's) in Nigeria. About 70 percent of the Nigeria populations are alleged to have been engaged in the informal sector, mainly, agricultural production. But the cost of administering large number of very small loans without adequate security is considered by Deposit Money Banks (DMBs) to be prohibitive. As a result, poor people are successfully being denied access to formal credit. (Central Bank of Nigeria, CBN, 2011). Small and Medium Enterprises (SMEs) are considered to be the engine room for growth and development of any economy constituting the majority of business activities in any emerging economy, like Nigeria. Ashamu (2014) noted that SMEs manifests in many ways, like employment generation; rural development; economic growth; industrialization; and better utilization of local resources. Furthermore, Haruna (2007) maintained that the formation of micro-credit institution is rooted and dates back to centuries as traditional lending systems such as "Esusu" which are good examples of microfinance schemes. To him access to credit were created and regulated by these institutions for the rural poor. These institutions also place commitment on them for proper utilization and complete repayment of loans at commercial rates in due time. In Nigeria, oil contribute about 70 per cent of government revenue, this suggests that when there is an increase in oil prices, government will have additional money to run the economy and save part of it. Such surpluses saved are circulated mostly for development of the rural areas, encourage poverty eradication programmes and to support micro-finance development. The economic recession that the country has been experiencing for some years now, as indicated in Business Day Newspaper and cited in the Journal of Association of National Accountant of Nigeria (2015:16) shows that over reliance on oil for revenue have exposed the economy to unprecedented macro-economic uncertainty resulting from the effects of external shocks from oil prices. This economic down-turn entails that, economic growth is expected to fall; government and private consumption expenditures will in the same way fall. Similarly, real GDP growth rate had slowed to 2.2 per cent and population growth rate increased to 2.5 per cent while unemployment and inflation rate have been soaring since 2009 to date.

In line with this development, one of the responses to the challenges of development in emerging economies like Nigeria is to restructure the entire system and encourage entrepreneurship development through provision of micro-credit. The structure, processes and product of microfinance schemes should be designed to meet the needs of a large percentage of economically active population who were excluded by banks and other formal financial institutions. Government through her vision 20:20:20 programme actually came up with undoubtedly consolidated empowerment program called the National Economic and Empowerment Development Strategy (NEEDS) and other reforms which imperatively led to the recognition given to the development of SME's. Previous researchers have pointed out the need for successive administration in Nigeria to build on this frame work and follow it to its logical conclusion.

Thus, Nigeria had also taken more vigorous step by including entrepreneurial studies in the academic curriculum of her educational system at all levels. Policy makers believe that such decision will instil entrepreneurial spirit in the mind of people so as to equip them for wealth creation through small scale enterprises since success in entrepreneurship is likely to result in the growth of small and medium-enterprise (Fasua, 2006). Hence, for sustainable growth and development to take place, Federal, State and Local governments must recognize that the financial empowerment of the people through small and medium scale enterprises is very crucial to the development of the country's economy. Despite the overwhelming importance of micro-credit lending to the growth of SME's in other parts of the world, little attention has been paid on this issue in Nigeria. This underscores the importance of the study. The research findings and recommendations are to be of a great benefit to numerous groups which includes; government and policy-makers, microfinance bank operators; small and medium scale operators and technical assistance providers. The study is of immense benefits to future researchers and to existing body of literature on micro-credit and SME's performance in Nigeria

2. REVIEW OF RELATED LITERATURE

Many studies have evaluated the importance of micro-financing to SME's development both in developing and developed countries. These studies have each been differentiated by differences in research settings, definition of both the dependent and independent variables, measuring procedures and data collection method as well as differences in analytical method. See for instance, Idowu (2009) who found that significant number of the SME's benefitted from the MFIs loans. Phuong (2012) investigated factors which determines SMEs access to credit in Vietnam. Using World Bank Enterprise Survey data of small and medium enterprises as determinants of SME credit availability. Oladejo and Ruqaiyat (2016) investigated the contribution of microfinance banks (MFBs) to the performance of small and medium enterprises (SMEs) in the North West zone of Nigeria, using a survey approach. Data was collected using questionnaire schedules. The method of Paired Student's t – test was used for the analysis. The result showed that huge proportion of

the recipients of microfinance banks loans reported high positive impact of microfinance bank loans on their performances and most of the MFBs lack adequate capital and low patronage**.** The study recommended that government should make direct fund available to microfinance banks for lending to SMEs at little or no interest rate, government should also create enabling environments that involve adequate passage of distribution and exhibition of SMEs' products microfinance banks and SMEs should be given tax relief for ten-year period to guarantee their rapid development and economic growth of the country.

Jean and Jaya (2016) investigated the effects of village savings and loan associations on the growth of Small and medium enterprises in Rwanda. The major objective is to analyze the effect of credit- loans, training and advice on investment and capital formation on SME growth in Kayonza district. Method of sampling was used and population size of 884 was obtained through questionnaire. Descriptive analysis was used to analyze the data obtained. The findings indicate that Kayonza district has got various credit and loan services, which includes; training and advice on investment services, capital formation (savings) services. These services positively influence the SME growth in Kayonza District in Rwanda.

Robison and Victor (2015) studied the role of finance on the growth of small and medium enterprises (SMEs) in Edo State Nigeria. The method of survey research was adopted and a total of 122 respondents formed the sample which was randomly selected through structured questionnaire. Data generated from the questionnaire were analysed using mean and standard deviation. The findings revealed that SMEs growth was hindered as result of inability to access funds from financial institutions. Robin *et al.*, (2015) studied the effect of micro-credit on the poverty of borrowers using microfinance loans on the poverty levels of borrowers and readily large sample available management information system data from two leading microfinance institutions (MFIs) namely SV Credit Line Private Limited (SVCL) and Alalay Sa Kaunlaran, Incorporated (ASKI) based in India and the Philippines respectively. The study also used an unbalanced panel data set of more than 600,000 borrowers with data on the progress out of Poverty Index (PPI) and applied fixed-effects regression analysis to study the influence of microfinance on the poverty of micro-credit borrowers at individual level, and pooled OLS to understand factors associated with client's poverty, the progress out of poverty index, from more than one million poverty records spanning for more than four years. The result suggests that microfinance loans have a small positive and significant effect on poverty reduction among micro-credit borrowers. Chijoriga (2000) evaluated the performance and financial sustainability of MFIs in terms of organizational strength, client outreach, operational and financial performance in Tanzania. Using a random sampling method, 28 MFIs and 194 MSEs were selected in Dar es Salaam, Arusha, Morogoro, Mbeya and Zanzibar regions. The findings revealed that the overall performance of MFIs in Tanzania is very poor and only few have clear objectives. Also, most MFIs lack participatory ownership and many are donor driven. The MFI operational performance indicates low loan repayment rate.

Quaye (2011) studied the effect of micro-credit institutions (MFIs) on the growth of SME's in Kumasi, Ghana, using qualitative and quantitative primary data and method of questionnaire and descriptive statistics, random sampling of 150 entrepreneurs, were analysed. The study revealed that about 72 percent of the total population of SMEs in the Kumasi Metropolis is at their Micro stages since they employ less than six people in their businesses, also the sector is hugely dominated by commerce at about 93 per cent, which is basically buying and selling. He maintained that MFIs have positive effect on SMEs growth in Ghana. Mbaluka (2013) studied the effect of microfinance institutions of growth and development of SME's. The objectives; includes to find out the role of MFIs in financing, provision of financial literacy, development of management skills and facilitating market networking among SME's in Machakos town, Nairobi Kenya, using a survey design and questionnaire. Data was gathered from managers of MFI institutions as well as SME's within Machakos town. Also, using stratified sampling method to select 66 SME's and five microfinance institutions to participate in the study. Quantitative data analysis was undertaken to generate both descriptive and inferential statistics. The findings indicated that microfinance institutions provide a series of products and service that include small-scale business accounts, business management training, marketing services and financial literacy skills. Rasak (2012) studied the SMEs as a factor for development, growth and sustenance of the Nigerian economy. The major objective of the study is to examine the links among individuals, groups and agencies like banks, government and cooperative societies. The method sampling technique was used to obtain quantitative and qualitative data from fifty SMEs respondents in Amuwo, Odofin local government of Lagos State. Also, network theory and descriptive statistics was used for the analysis. The research findings indicate that government and other financial institutions have not done enough for the development of SMEs and the need for government and MFIs to increase the provision of credits such as soft loans to sectors of SMEs in the state.

Solomon (2016) examined if microfinance credit facilities contribute to the growth of the SME sector in the Cape Coast Metropolis of Ghana. The method of descriptive design and quantitative analysis was used. Simple random sampling technique was used to obtain sample of 357 respondents for the study. The study revealed that most of the SMEs in the Cape Coast Metropolis have obtained microfinance credit facilities prompting a significant difference in growth of the SMEs before and after receiving microfinance credit facilities. The study also discovered that strict repayment terms, shorter repayment period, higher interest rate as well as small loan amounts were the major challenges that confronted the SMEs in the use of microfinance credit facilities to grow their businesses in the Cape Coast metropolis, Ghana. The study recommended that government should build an enabling environment for financial institutions and other government agencies to advance more of these facilities to people in the SME sector.

Akpan and Nneji (2015) investigated the contribution of microfinance banks to the development of SMEs in Nigeria. Their major objective is to determine the effect of financial services of MFBs on the growth of SMEs and the impact of non-financial

services of MFBs on performance of SMEs. Using the method of questionnaire and sampling survey primary and secondary data were obtained from both SMEs and MFBs operators. Method of ordinary least square regression technique was used for the analysis. The study confirms that loan size, loan duration (financial variables), and networking meetings and cross guarantee-ship (non-financial variables) was found to have a positive impact on SMEs. Furthermore, the study also confirmed the positive contributions of MFBs towards promoting SMEs performance and growth in Nigeria. The growth level of the SMEs depends largely on the activities of MFBs operating in that vicinity their findings thus, rejected the hypothesis of no significant impact of MFBs on the growth of SMEs in Nigeria.

3. DATA AND METHODOLOGY

Secondary data extracted from Annual Statistical Bulletin and CBN financial and banking indicators were used. The CBN and Statistical Bulletin represents good sources of data considering that all MFBs operating in Nigeria are required by law to submit their annual reports to CBN to enhance proper regulation and supervision.We used a total of 948 MFB operating in Nigeria as at this periods(1992- 2017).

In order to estimate and test the hypotheses, multiple linear regression models were used. The choice of multiple linear regressions is to enable the researcher to predict the impact of various independent variables on dependent variable for the study period.

3.1 Model Specification

$Y_1 = f(X_1) = E(Y/X) = 0$ [1]

Where, Y is dependent variable, X are corresponding independent variables:

$Y_t = a_0 + b_1X_t + U_t$ [2]

Where equation [2] is a regression equation

a_0 is the intercept, b_1 = regression coefficient, U_t is error term

Therefore,

(a) Hypotheses 1

$NP_t = f(Xt) = 0$

$NP = a_0 + b_1 (loan_t) + b_2adv_t + b_3overd_t + u_t$ [3]

Where,

NP_t = *Net Profit of SME's at time (t)*

$Loan_t$ = *Loans of micro- finance bank at time (t)*

adv_t = *Advances of micro-finance bank at time (t)*

$overd_t$ = *Overdraft of micro-finance bank at time (t)*

α_0 = *intercept*

b_1, b_2, b_3 *are regression Coefficients*

U_t = *Error terms*

(b) Hypotheses 2

$RSHE_t = a_0 + b_1 loan_t + b_2 adv_t + b_3 overd_t + U_t$ [4]

Where,

RSE_t = Return on shareholder's Equity at time (t)

$loan_t$ = Loans of micro- finance banks at time (t)

adv_t = Advances of micro-finance bank at time (t)

$overd_t$ = Overdraft of micro-finance bank at time (t)

α_0 = intercept

b_1, b_2, b_3 are regression coefficient and

U_t = error term, respectively.

(c) Hypotheses 3

$rinv_t = a_0 + b_1 b_1 loan_t + b_2 adv_t + b_3 overd_t + U_t$

Where,

$rinv_t$ = Return on Investment at time (t)

$loans_t$ = loans of micro- finance banks at time (t)

adv_t = overdraft of micro-finance bank at time (t)

$overd_t$ = overdraft of micro-finance bank at time (t)

α_0 = intercept

b_1, b_2, b_3 regression coefficient and U_t is error term.

3.6 Estimating Procedures

Equation [3], [4] and [5] were estimated using ordinary least square (OLS) regression procedures to achieve the set objectives of the study. The impact of various variables on performances of SMEs is verified. Several diagnostic test are conducted including, stationarity test; test of linear auto-correlation; normality test are conducted on the data to avoid spurious regression and to enhance robust result.

4. FINDINGS

4.1 Descriptive Statistics

As indicated earlier, one of the policy objectives of establishing microfinance bank is to promote innovative, rapid and balanced growth of SMEs industries to leverage global best practices. The sector had grown over the years with about 968 microfinance banks, with over four million clients, N133 billion total saving deposits,

N151 billion loan portfolio and shareholder's fund is N181 billion as at December, 2006 (Bunmi, 2017).

To achieve the stated objectives of the study, aggregated data extracted from CBN statistical bulletin in line with the number of reported data on the variables were used in measuring SME's performance. Loans are calculated on the average lending expressed as the ratio of total amount of loans (in millions) and sectors of SME's at various year, while advances are expressed as the percentage of total loans issued. Overdraft is used as proxy for the total matching-loan issued by the reported microfinance banks. The selected performance indicators include; investment represented as return-on investment; while net profit is profitability obtained as ratios relating to investment. Share holders' fund is represented as return on equity. The data is tested statistically to ensure its reliability.

Table 1: below indicates the mean, median, standard deviation, minimum and maximum values of the variables.

Table 1: Showing Descriptive Result of the Variables

Date:08/12/17

Time: 09:22

Sample: 1992 -2015

	Advances	**Loans**	**Netprofit**	**Overdraft**	**Reinvest**	**Requity**
Mean	749.8064	4253.345	1620.915	236.3162	2884.641	20469.00
Median	266.4000	1509.361	557.1300	100.8280	2436.850	7583.750
Maximum	3733.137	21154.44	6987.430	994.6300	8959.800	91376.50
Minimum	3.400000	19.23805	11.21000	12.00000	118.4000	227.0000
Std. Dev.	978.9034	5540.970	2154.352	255.8839	2924.986	25081.78
Skewness	1.489435	1.493592	1.320303	1.481993	0.862002	1.245047
Kurtosis	4.670117	4.683559	3.359519	4.697818	2.509237	3.765557
Jarque-Bera	11.66296	11.75764	7.102052	11.66780	3.213036	6.786642
Probability	0.002934	0.002798	0.028695	0.002927	0.200585	0.033597
Sum	17995.35	102080.3	38901.97	5671.589	69231.39	491255.9
Sum Sq. Dev.	22039794	7.06E+08	1.07E+08	1505961.	1.97E+08	1.45E+10
Observations	**24**	**24**	**24**	**24**	**24**	**24**

Source: CBN Annual Statistical Bulletin, 2015

The result above is descriptive analysis of the nature of the data. Mean is the average of value of the series obtained by dividing the total value of the series by the number of observations. The mean for advances is 749.8064 while loans and net-profit are

4253.345 and 1620.915 respectively. The median is the middle value in a series which depends on the arrangement of the series. The median from the table above for loan, advances, and net-profit are 1509.361, 266.4000 and 557.1300, respectively. To understand the nature and impact of micro-lending and its impact on the respective performances of sectors of SMEs, figure 1 is the representation of the respective performances for the period 1992-2015.

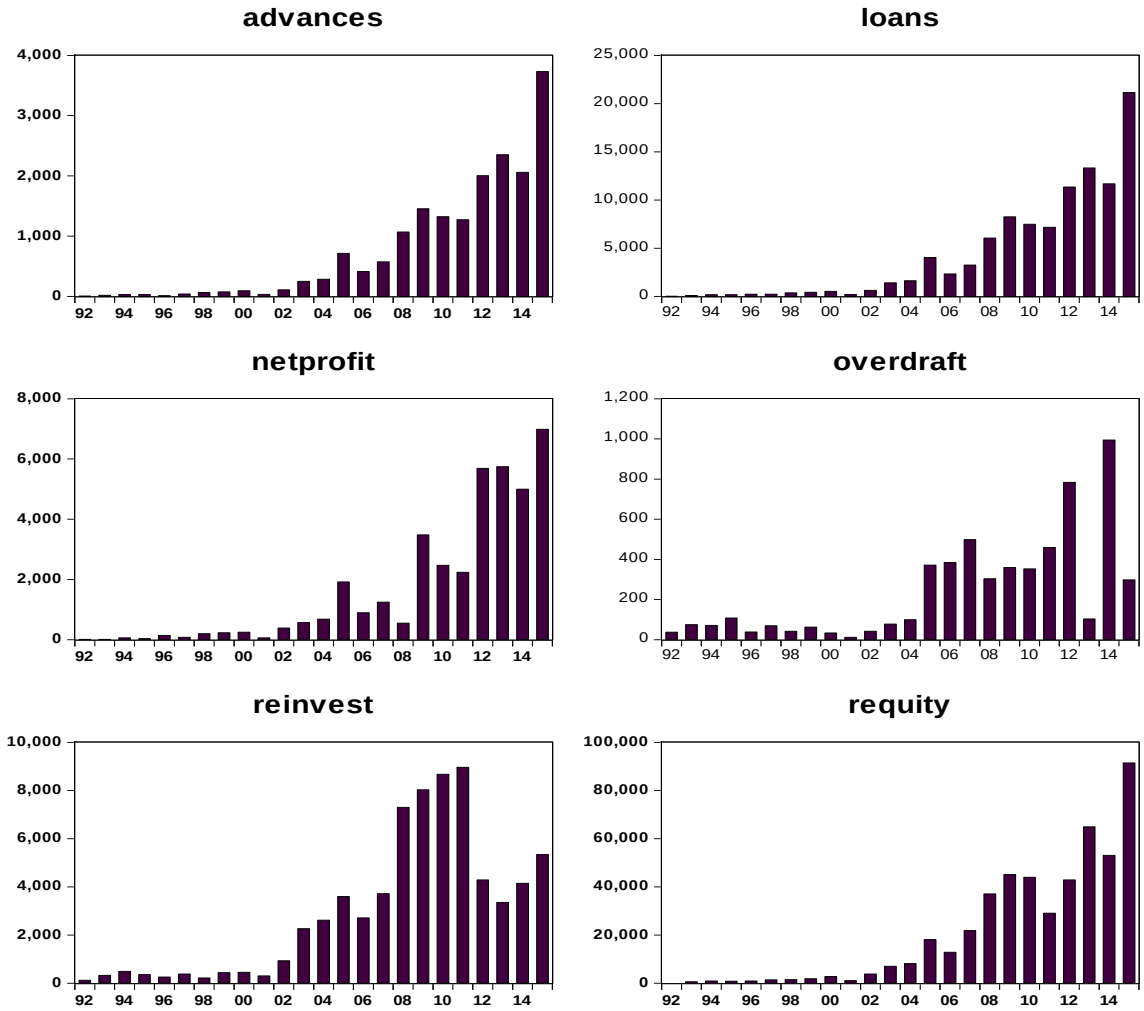

Figure 1: Showing the trend of Micro-Credit lending and the Performance Indicators
Source: CBN Annual Statistical Bulletin, 2015

There was an upward shift in trend of loans, advances, overdraft from 2004 to 2015 which resulted to the upward trend in net-profit, return on investment and return on equity, indicating that availability of loanable funds increases the performances of SMEs.

4.2 Diagnostic Tests

The assumptions of OLS estimators of the partial regression coefficients is adjudged to be the best linear unbiased estimator (BLUE), but when these assumptions are violated OLS is still the best linear unbiased estimator but it is longer efficient for inference and forecasting. The implication of violating any OLS criteria implies that the results are no longer robust for valid hypotheses test. This section explains the various diagnostics tests which includes; stationarity test, normality-test etc in line with OLS assumptions.

4.2.1 Unit Root Tests Results

Stationarity is very important in time series regression analysis because if the series is non-stationary it could lead to nonsense or spurious regression. A series is stationary when its mean, variance and auto-covariance (at various lags) remain constant at any point of measurement, implying that they are time invariant. When a series displays the qualities stated above, it is purely random or white noise process, (Gujarati, 2009:753). When a series is non-stationary, by differencing the series it will become stationary. Table 4 to 9 are the results of the unit root test of the series. The result shows that the series is differenced stationary, meaning that they are integrated of other (1) following the results both Augmented Dicky-Fuller and Philip-Perron test results, which are statistically different from zero at 10, 5, and 1 per cent critical level. Therefore, the series has unit root and needs to be differenced to make stationary.

Table 2: Unit Root Test Result for Advances

ADF Test	**t-statistics**	**prob.**	**Philip-Perron test**	**prob.**	**Status**
Critical value	-4.163695	0.0042	-4.148016	0.0002	1(1)
10%	-3.769597		-3.163695		Stationary
5%	-3.004861		-3.769597		@1st-differencing
1%	-2.643342		-2.642242		

Source: Researcher's Computation, 2017

Table 2, above showing the result for the series (advances), which is integrated of order one. Therefore, it is a differenced stationary process. Both the ADF and Philip-Perron test reflects the same outcome, that the variable is a differenced stationary process or stationary at first difference.

Table 3: Unit Root Test Result for Loans

ADF Test	t-statistics	prob.	Philip-Perron test	prob.	Status
Critical value	-4.168691	0.0041	-4.839294	0.0002	1(1)
10%	-3.769597		-3.377000		stationary
5%	-3.004861		-3.190000		@1st-differencing
1%	-2.642242		-2.890000		

Source: Researcher's Computation, 2017

Table 3, above showing the result for the series (loans), which is integrated of order one. Therefore, it is a differenced stationary process. Both the ADF and Philip-Perron test reflects the same outcome, that the variable is a differenced stationary process or stationary at first difference.

Table 4: Unit Root Test Result for Overdraft

ADF Test	t-statistics	prob.	Philip-Perron test	prob.	Status
Critical value	-14.29761	0.0000	-15.48200	0.0002	1(1)
10%	-3.769597		-3.769597		stationary
5%	-3.004861		-3.004861		@1st-differencing
1%	-2.642242		-2.642242		

Source: Researcher's Computation, 2017

Table 4, above showing the result for the series (overdraft), which is integrated of order one. Therefore, it is a differenced stationary process. Both the ADF and Philip-Perron test reflects the same outcome, that the variable is a differenced stationary process or stationary at first difference.

Table 5: Unit Root Test Result for Net-Profit

ADF Test	t-statistics	prob.	Philip-Perron test	prob.	Status
Critical value	-5.487701	0.0042	-4.148016	0.0002	1(1)
10%	-3.788030		-3.163695		stationary
5%	-3.012363		-3.769597		@1st-differencing
1%	-2.642242		-2.643342		

Source: Researcher's Computation, 2017

Table 5 above, showing the result for the series (net-profit), which is integrated of order one. Therefore, it is a differenced stationary process. Both the ADF and Philip-Perron test reflects the same outcome, that the variable is a differenced stationary process or stationary at first difference.

Table 6: Unit Root Test Result for Re-investment

ADF Test	**t-statistics**	**prob.**	**Philip-Perron test**	**prob.**	**Status**
Critical value	-4.991632	0.0009	-3.487636	0.0184	1(1)
10%	-3.851511		-3.769597		stationary
5%	-3.029970		-3.004861		@1st-differencing
1%	-2.655194		-2.642242		

Source: Researcher's Computation, 2017

Table 6, above shows the result for the series return on investment (reinvest), which is integrated of order one. Therefore, it is a differenced stationary process. Both the ADF and Philip-Perron test reflects the same outcome, that the variable is a differenced stationary process or stationary at first difference.

Table 7: Unit Root Test Result for return on Equity

ADF Test	**t-statistics**	**prob.**	**Philip-Perron test**	**prob.**	**Status**
Critical value	-5.063678	0.0005	-5.063878	0.0001	1(1)
10%	-3.769597		-3.769597		Stationary
5%	-3.004861		-3.004861		@1st-differencing
1%	-2.642242		-2634242		

Source: Researcher's Computation, 2017

Table 7 above showing the result for the series return on equity (re-equity), which is integrated of order one. Therefore, it is a differenced stationary process. Both the ADF and Philip-Perron test reflects the same outcome, that the variable is a differenced stationary process or stationary at first difference.

4.2.2 Normality Test

The *t,* and *F* test requires that the error term must follow a normal distribution; otherwise the testing procedure will not be valid in small, or finite sample. A

histogram of residual is a simple graphic device that shows the shape of the probability density function (PDF) of a random variable (Gujarati, 2009:133). This study follows the *Jarque-Bera (JB*) test of normality to determine the nature of the sample distribution of the series. By implication the *JB* test of normal distribution for large sample, asymptotically follow the *chi-square* distribution with two degrees of freedom (*2df*).

Therefore, following the *JB* test, where, JB = n $\left[\frac{S^2}{6} + \frac{(K-3)^2)}{24}\right]$ [6]

Where, *n = sample size*, *S = skewness*, and *K = kurtosis*, for a normally distributed variable, *S = 0* and *K = 3*, the *JB* statistics is expected to be *0*. Using the estimated residuals obtained from the regression the results of the tests for normality are as follows:

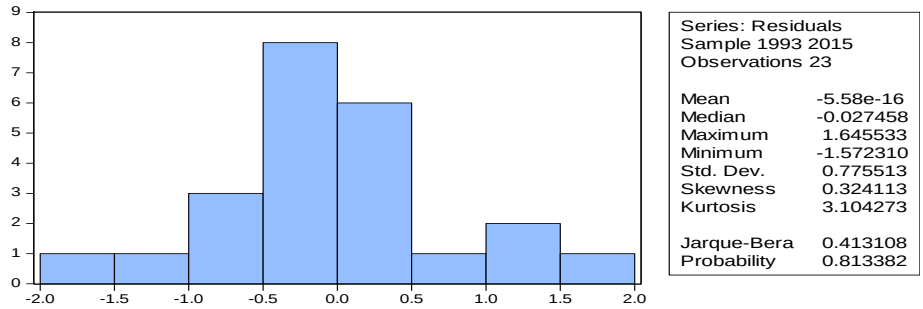

Figure 2: Showing Normality Test Result of residuals for Net-profit, Micro-credits variables
(Source: Researcher's Computation and Representation of E-View Statistical Output.)

Using the estimated residuals from the net- profit regression, the result is symmetrically distributed considering the short sample nature of the series. The *JB* value is about 0.41 and probability of obtaining this value under normality assumption is 0.81, 81 per cent value is quite high. The value of skewness and Kurtosis is 0.32 and 3.1 respectively. Therefore, we do not reject the hypothesis that the errors are normally distributed.

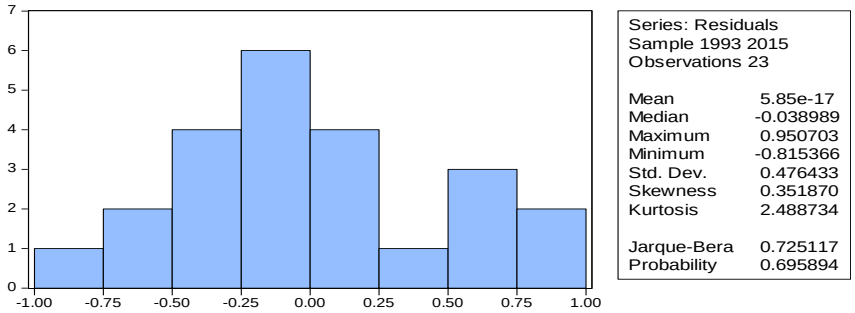

Figure 3: Showing Normality Test Result of residuals for Return on Investment & micro-lending variables
(Sources: Researcher's computation and representation of e-view statistical output)

Using the estimated residuals from the return on investment regression which seems to be symmetrically distributed considering the short sample nature of the series. The *JB* value is about 0.72 and probability of obtaining this value under normality assumption is 0.69, 69 per cent value is quite high. The value of *skewness* and *Kurtosis* is 0.35 and 2.48 respectively. Therefore, we do not reject the hypothesis that the errors are normally distributed.

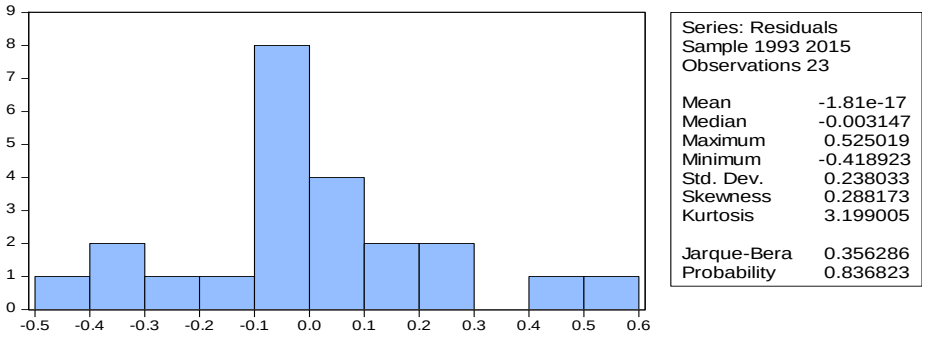

Figure 4: Showing the Normality Test of residuals for Return on Equity & Micro-lending variables

(Sources: Researcher's Computation and Representation of E-View Statistical Output)

Using the estimated residuals from the return on equity regression, it seems that the result is symmetrically distributed considering the short sample nature of the series. The *JB* value is about 0.41 and probability of obtaining this value under normality assumption is 0.84, therefore, 84 per cent value is quite high. The value of *skewness* and *Kurtosis* is 0.28 and 3.19 respectively. Therefore, we do not reject the hypothesis that the errors are normally distributed.

4.2.3 Test of Serial-Correlation

The classical model assumes that the disturbance term relating to any observation is not influenced by the disturbance relating to any other observation. Serial correlation is defined as correlation between members of the series of observation ordered in time (Gujarati, 2009). As in the case of normality test, estimation in the presence autocorrelation or serial correlation OLS estimator is still linear unbiased as well as consistent and asymptotically normally distributed, but they are no longer efficient (Gujarati, 2009:423). The study employs the method of Durbin-Watson *d* statistics to test for serial correlation. The reason for using this method is that there is no lagged dependent variable in the series and the intercept is included in the regression model.

The first order autocorrelation is stated thus,

$$\epsilon_\tau = \rho\epsilon_{\tau-1} + \mu_\tau \quad [7]$$

where ϵ_τ is the error from a regression in the current time period and $\epsilon_{\tau-1}$ is the error from the preceding time period. $\rho$is the autocorrelation coefficient. The Durbin-Watson statistic is related to the autocorrelation ρ . Approximately, the Durbin-Watson statistic equals *2 -2*ρ. If there is no autocorrelation, then ρ =0. Using Durbin-Watson statistic from the table to test for autocorrelation. The two critical values are referred to as dU (d-upper) and dL (d-lower) from the statistical table. The critical value for the test where *K =3, and n=24 are; dU =1.101 and dL = 1.656.*To test the hypothesis that H_0:$\rho \leq 0$.

In the regression result the value of d statistics for net-profit result is 2.824879. Since the calculated is greater the d-tab, that is 2.824879 > du =1.101 and dl =1.656, we do not reject the null hypothesis of no autocorrelation at a 5% significance level. Similarly, the regression result of return on investment for *d statistics* is 2.661914 which is greater than du =1.101 and dl =1.656 we also, do not reject the null hypothesis of no autocorrelation at a 5% significance level. Finally, the result for return on equity, 1.931925 though approximately is greater than *d taudu =1.101 and dl =1.656*we do not reject the null hypothesis of no autocorrelation at a 5% significance level.

4.2.4 Test of Cointegration

Two variables are said to be cointegrated if they have a long-term, or equilibrium relationship between them. If two variables are integrated of order one, that is I(1) process, regressing the residuals results to I(0) process or becomes stationary, this implies that the variables are cointegrated. This concept can also be extended to multiple regressions with *k regressors* like in our case. Applying the Engle-Granger (EG) or the Augmented Engle-Granger (AEG) test, the equation is stated thus:

$$LY_t = \beta_t + \beta_2 X_t + \mu_\tau \quad [8]$$

Where, *L* denotes logarithm. $\beta_2$is the coeffient of the dependent variables. Equation [8] is referred to as co-integrating regression and slope parameter, β_2, is non as conintegrating parameter. Equation [8] is transformed thus, reflecting the residuals.

$$\mu_\tau = LY_t - \beta_t - \beta_2 X_t \quad [9]$$

Table 8: Result of Cointegration test for Net-profit and Micro-credit variables

Date: 08/15/17 Time: 09:43
Equation: UNTITLED
Specification: NETPROFIT ADVANCES LOANS OVERDRAFT
Cointegrating equation deterministics: C
Null hypothesis: Series are not cointegrated
Automatic lag specification (lag=0 based on Schwarz Info Criterion, maxlag=4)

	Value	**Prob.***
Engle-Granger tau-statistic	-4.093796	0.1150
Engle-Granger z-statistic	-20.57403	0.0822

*MacKinnon (1996) p-values.
Warning: p-values may not be accurate for fewer than 25 observations.

Source: Researchers Computation, 2017

The Engle-Granger test result from table above indicate that the *tau-stats* of -4.093796 and normalized autocorrelation coefficient (Engle-Granger *z-stats*) of -20.57403 for net-profit and micro-lending variables rejects the null hypothesis of no cointegration (unit root in the residual at 5%) level. In addition, the *tau-stats* rejects, at 1% significant level. The evidence suggests that net-profit and micro-lending variables are cointegrated, implying a long-term equilibrium relationship but disequilibrium at the short-term.

Table 9: Result of Cointegration test for Return on Investment and Micro-credit

Cointegration Test - Engle-Granger
Date: 08/15/17 Time: 09:58
Equation: UNTITLED
Specification: REINVEST ADVANCES LOANS OVERDRAFT C
Cointegrating equation deterministics: C
Null hypothesis: Series are not cointegrated
Automatic lag specification (lag=0 based on Schwarz Info Criterion, max lag=4)

	Value	**Prob.***
Engle-Granger tau-statistic	-2.193153	0.8117
Engle-Granger z-statistic	-8.465770	0.8078

*MacKinnon (1996) p-values.
Warning: p-values may not be accurate for fewer than 25 observations.

Source: Researcher's Computation, 2017

Also, Engle-Granger test result from table above indicate that the *tau-stats* of -2.193153 and normalized autocorrelation coefficient (Engle-Granger *z-stats*) of -8.465770 for return on investment and micro-lending variables rejects the null hypothesis of no cointegration (unit root in the residual at 5%) level. In addition, the *tau-stats* rejects, at 1% significant level. The evidence suggests that net-profit and micro-lending variables are cointegrated, implying a long-term equilibrium relationship but disequilibrium at the short-term due to errors.

Table 10: Cointegration test for Return on Equity and micro-credit variables

Cointegration Test - Engle-Granger

Date: 08/15/17 Time: 10:03

Equation: UNTITLED

Specification: REQUITY ADVANCES LOANS OVERDRAFT C

Cointegrating equation deterministics: C

Null hypothesis: Series are not cointegrated

Automatic lag specification (lag=0 based on Schwarz Info Criterion, max lag=4)

	Value	**Prob.***
Engle-Granger tau-statistic	-2.857466	0.5295
Engle-Granger z-statistic	-13.05526	0.4701

*MacKinnon (1996) p-values.

Warning: p-values may not be accurate for fewer than 25 observations.

Source: Researcher's Computation, 2017

Similarly, Engle-Granger test result from table above indicate that the *tau-stats* of -2.857466 and normalized autocorrelation coefficient (Engle-Granger *z-stats*) of -13.05526 for return on equity and micro-lending variables rejects the null hypothesis of no cointegration (unit root in the residual at 5%) level. In addition, the *tau-stats* rejects, at 1% significant level. The evidence suggests that net-profit and micro-lending variables are cointegrated, implying a long-term equilibrium relationship but disequilibrium at the short-term due to short-term error.

4.3 Test of Hypotheses

The study uses the estimated regression results in table 11, 12 and 13 to test the three hypotheses. The statistical criteria used include: the coefficient of determination R^2, F-test and the t-test following the results of the estimated regression in the table below.

Table 11: Test of Hypotheses One

Dependent Variable: D(NETPROFIT)
Method: Least Squares
Date: 08/11/17 Time: 17:26
Sample (adjusted): 1993 2015
Included observation: 23 after adjustments

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	1.276615	187.4346	0.006811	0.9946
D(LOANS)	0.328687	0.076508	4.296129	0.0003
D(ADVANCES)	1.859008	0.435691	4.266809	0.0003
D(OVERDRAFT)	5.359684	1.384289	3.871794	0.0008
0000				
R-squared	0.467771		Mean dependent var	303.3139
Adjusted R-squared	0.442427		S.D. dependent var	1115.932
S.E. of regression	833.2751		Akaike info criterion	16.37155
Sum squared resid	14581294		Schwarz criterion	16.47028
Log likelihood	-186.2728		Hannan-Quinn criter.	16.39638
F-statistic	18.45673		Durbin-Watson stat	2.824879
Prob(F-statistic)	0.000320			

Source: Researcher's Computation, 2017

Hypothesis one, two and three state that micro- credit lending granted by MFBs in the form of (loans, advances, and overdraft) do not impact significantly on the net-profit of the SMEs in Nigeria.

The regression result on table 11 indicates that *t-statistics* for loans, advances, and overdraft are 4.296129, 4.266809, and 3.871794 respectively. The p-values for obtaining these values are considerable low. The *F-statistic* of 18.45673 is highly statistically significant with low p-value of 0.000320. The coefficient of determination R^2 is 0.467771, which shows that about 47 per cents of the variation in net-profits (dependent variables) is explained by the micro-lending variables (independent variables), the unexplained variations of 53 per cents are due to other factors other than micro-credits. It's quite a good fit.

Using the student t-test conducted at 5 and 10 per cent degrees of freedom [*df*] with 21 observations, that is *n-k-3*, where n = 24 and k =3. The test of significance of the parameters is as follows:

From the t- table with 21 degree of freedom, the *t-value* at 5 and 10 per cent degrees of freedom is 1.721 and 1.323 absolute value, while the *t- calculated* are; for loans 4.296129, advances 4.266809, and 3.871794 for overdraft. Since the t- value for micro-credit variables computed is greater than t-tabulated this implies that micro-

lending to SME's is a significant variable affecting net-profit. Therefore, holding all other variables constant, a unit increase in credit lending to SME's on average, will increase net-profit by 0.32 (for loans); 1.86 (for advances) and 5.36 (for overdraft) per cent, respectively. Based on the statistical results above, we reject the null-hypothesis of no significant impact of micro-credits on net profit of SMEs in Nigeria

Diagrammatically,

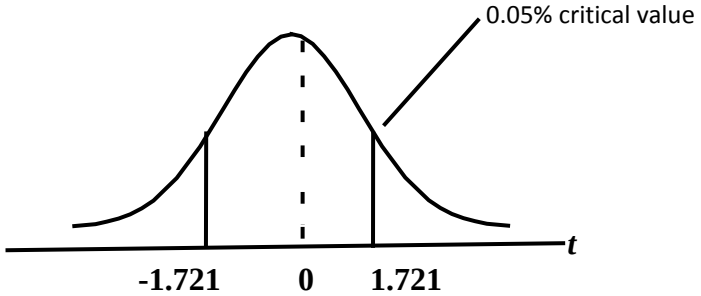

Figure 5: A Representation of Econometrics Statistical Table
(Source: Researcher's Computation, 2017)

5.0 CONCLUSION AND RECOMMENDATION

Micro-lending is the delivery or distribution of micro-credits from the surplus spending unit to the deficit spending unit for growth and development. These micro-financial services date back to centuries of traditional lending schemes. It has also been recognized as an essential tool for promoting SME's in Nigeria. The over concentration of the economy on oil revenue and cyclical fluctuations of prices of oil has inadvertently impacted seriously on both the domestic and external sector of the economy. As a result, the option available to the government is to empower the private sector to drive the economy. Thus, this empowerment came in the wake of consolidation of the banking sector; community banks were hitherto transformed to micro-finance banks and empowered to provide the needed soft loans to the SME's sectors and the poor who are effectively being denied access to formal credit.

Availability of credit facilities improves the growth of SME's and other sub-sector of the economy the country. Growth indeed cannot take place without the availability fund. This prompted the researcher's interest to ascertain the impact of micro-lending to SMEs performance, using various performance indicators.

However, despite government overwhelming programmes to improve the SME's sector, ignorance and lack of access to credit still hamper the SMEs development and its contributions to the growth of the economy. For instance, manufacturing, mining and agricultural sector still lag considerably behind in the world export map, which is a clear indication that government and credit institutions still need to do a lot more to improve the SME's sector and enhance export-driven economy.

6.4 Recommendations

Given the analysis so far, the researcher makes the following recommendations, firstly:

(a) To improve SME's sector, credit should be made available to SMEs productive sector and seek various ways to improve the unproductive areas to avoid waste of scarce resources.

(b) Micro-lending institutions performance should be constantly evaluated, improved with robust regulatory measure to enable them expand their scope of business strictly within the financial service sector. Greater interest should be vested in measuring progress toward the accomplishment of goals, through the creation of viable indicators. Indicators are the variables used to measure progress toward the set target or goals. The establishment of a coherent entry analysis, monitoring, and evaluation strategy in support of SME's or entrepreneurs should be centred on setting goals and targets by the supporting entity. Increased participation of MFBs agencies and collateral registry to make the environment aware of the need to honour commitments. Adequate provision of incentive to support outreach of MFBs to rural areas through robust partnership with Central Bank of Nigeria (CBN).

(c) Most importantly, SME's or entrepreneurs should be giving opportunity to learn how to compete effectively and productively in view of globalization, giving the Nigeria economic situations. The nagging question should be, "what will happen to Nigeria economy if eventually, the oil-well dries up"? With this question in mind, the learning opportunity, should therefore, include strategies to utilize technology, which enables them to capitalize on innovation, productive ideas leading to deepening the manufacturing sector for sustainable growth in the economy.

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