

MICROFINANCE BANKS AND AGRICULTURAL DEVELOPMENT IN NIGERIA

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ABSTRACT

The study examined the contributions of microfinance banks (MFB) to the development of the agricultural sector in Nigeria. The period of the study spanned from 1990 to 2020. The major objective was to determine the contributions of microfinance banks to the development of the agricultural sector in Nigeria while the specific objectives sought to determine the effects of loans disbursed by micro-finance banks, interest rate on the loans, microfinance banks density and agricultural credit guarantee scheme fund (ACGSF) on agricultural output in Nigeria. The variables used were agricultural loans, interest rate, microfinance banks density, agric credit guarantee scheme fund and agricultural sector contribution to GDP as proxy for agricultural sector development. The Error Correction Model technique was used in analyzing the data while the t-statistic was used in testing the hypotheses formulated. The findings revealed that in the short run, agricultural credit guarantee scheme as well as loans disbursement to the microfinance banks were all positive and significant in growing the agricultural output. The coefficient of the error correction model was rightly negatively signed and significant. It showed that the speed of adjustment from short run disequilibrium to equilibrium was corrected at the rate of 22.5% annually. It was concluded that the agricultural sector has only benefitted from the increasing number of active microfinance banks in Nigeria but in terms of the deep penetration of the loans they grant to the sector, it remains largely insignificant. The study recommended that the Microfinance banks should evolve and sustain a credit policy that ensures that a good percentage of their loans go for the development of rural agriculture. Also, the CBN should ensure that activities of MFBs in credit disbursement are strictly regulated and monitored.

Keywords: *Agricultural development, Agricultural credit guarantee scheme, Error Correction Model. Loans disbursement, Microfinance banks*

1. INTRODUCTION

Prior to the establishment of microfinance banks in Nigeria, there were traditional institutions that were involved in micro financing. These institutions were primarily concerned with the provision of micro-credit to their borrowers. However, these funds were insufficient in more than one way and could not meet the needs of their borrowers; hence, the need for an alternative source of finance. This development led to the conversion of community banks to microfinance banks.

The first banking legislation was enacted in 1952 and referred to as 1952 Banking Ordinance. This was followed by the Banking Act of 1969, Banks and other Financial Institutions Act (BOFIA, 1991) and subsequent amendments (CBN, 2005a). However, the legal background to the establishment of microfinance banking system in Nigeria was derived from section 28, sub-section (1)(b) of the CBN Act 24 of 1991 (as amended) and section 56-60(a) of the Banks and other Financial Institutions Act (BOFIA) 25 of 1991 (CBN, 2005b). The Central Bank of Nigeria (CBN), being the apex regulatory and supervisory body in the banking sector justified the

establishment of Microfinance banking system in Nigeria through the statutory authority from the relevant laws as mentioned here earlier. The CBN later issued a circular reference OFIC/DO/CIR/Vol.1/450 on February 3, 2006, addressed to all chairmen, directors and managers of community banks at the time on the requirements and procedures for the conversion of community banks to microfinance. This gave further impetus to the prevalence of microfinance banks in Nigeria as we have it today.

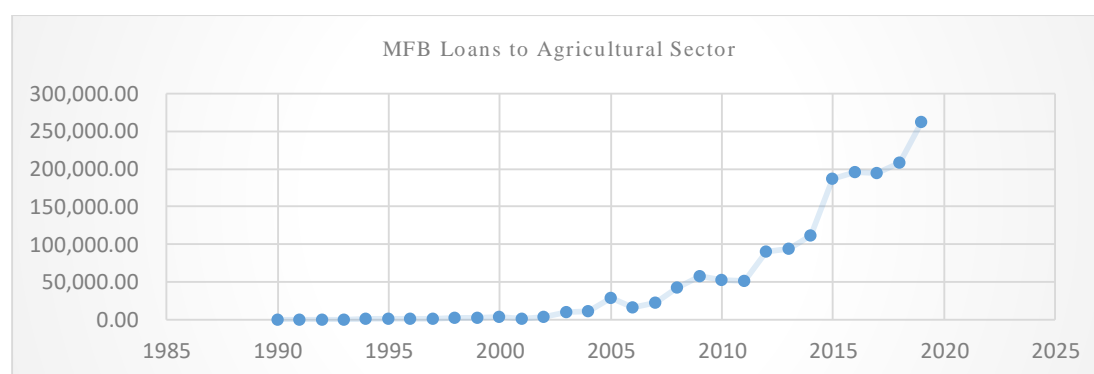
The informal financial institutions generally have limited outreach due primarily to paucity of loanable funds. In order to enhance the flow of financial services to Nigerian rural areas, Government has, in the past, initiated a series of publicly-financed micro/rural credit programmes and policies targeted at the poor. Notable among such programmes were the Rural Banking Programme, sectoral allocation of credits, a concessionary interest rate, and the Agricultural Credit Guarantee Scheme (ACGS). The Agricultural Credit Guarantee Scheme (ACGS) provided guarantees against inherent risks in agricultural lending. This measure however, could

not achieve the intended objectives because agriculture being both labour and capital-intensive venture requires huge capital outlay.

Other institutional arrangements were the establishment of the Nigerian Agricultural and Co-operative Bank Limited (NACB), the National Directorate of Employment (NDE), the Nigerian Agricultural Insurance Corporation (NAIC), the Peoples Bank of Nigeria (PBN), the Community Banks (CBs), and the Family Economic Advancement Programme (FEAP). In 2000, Government merged the NACB with the PBN and FEAP to form the Nigerian Agricultural Cooperative and Rural Development Bank Limited (NACRDB) to enhance the provision of finance to the agricultural sector. It also created the National Poverty Eradication Programme (NAPEP) with the mandate of providing financial services to alleviate poverty. Despite these measures, it became increasingly

evident that such governmental policies failed to grant financial access to those most in need (i.e. the rural poor) and that the programs were largely unsustainable.

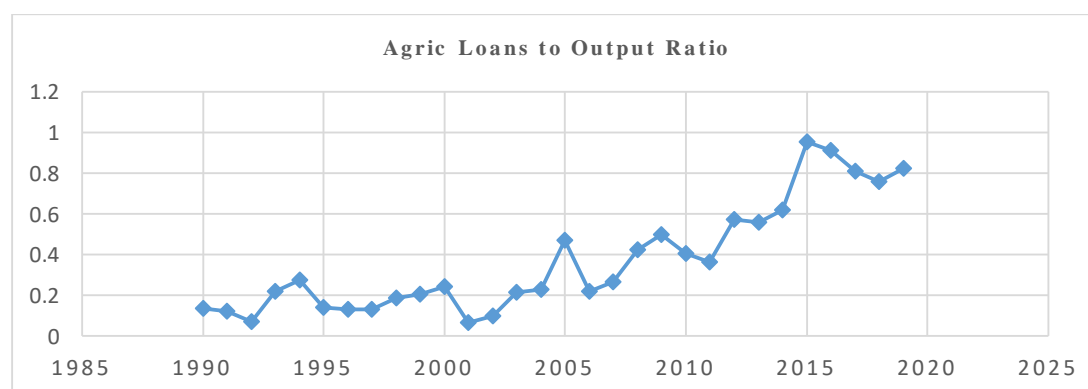
Although Microfinance banks are distinguished from other financial institutions as they are renowned for their offer of small loans and advances and also the simplicity in their operations; Microfinance is very important in agriculture and this fact cannot be overlooked in the sense that, it is the bedrock upon which increased food production rests i.e. adequate finance to improve on their agricultural production. As part of government concerted effort to revive the agricultural sector, the government encouraged microfinance banks to aid the financing of the sector. Over the years, they have been offering loans and advances to assist rural and medium scale farmers. The figure below shows the loans disbursed by microfinance banks over the years



Source: Central Bank of Nigeria Statistical Bulletin 2020 edition (Computed by the Researchers)

The figure above shows that microfinance bank loans to the agricultural sector has steadily risen from N1.2bn in 1994 to more than N50bn in 2010 reaching N262bn as at end of 2020. This shows that the efforts of microfinance banks in providing

liquidity to the agricultural sector has seen appreciable progress over the years. The second figure below shows agricultural output in relation to agricultural loans:



Source: Central Bank of Nigeria Statistical Bulletin 2020 edition (Computed by the Researchers)

The figure above shows that agricultural loans to output ratio was only 0.14 by 1990 and the figure grew slightly to 0.24 in 2000. It recorded an all-time high of 0.95 in 2015 and fell to 0.82 by end of 2020. Evidently, loans to output ratio has been on an average of 0.5 since the 1990s to the present time and

this clearly indicates that microfinance banks efforts in revamping the agricultural sector via loans seems not to be having the much needed impact as they haven't recorded convincingly positive result as seen in the figure above. Despite the surreptitious increase in the number of microfinance banks in Nigeria and

loans and advances offered, it would seem there hasn't been any significant increase in the level of agricultural productivity. For example, microfinance banks in Nigeria grew from a mere 66 in 1991 to about 909 by end of 2020 which is indicative of a rapid increase in the number of microfinance banks in the country. This begs the question whether the number of reporting microfinance banks are adequate and offer sufficient financing to raise the level of agricultural productivity in Nigeria?

Furthermore, can microfinance banks contribute significantly to the growth and development of the agricultural sector in Nigeria? As a result of the above questions, this study seeks to investigate the contribution of microfinance banks to the agricultural sector in Nigeria.

1.1 Objectives of the Study

The primary objective of this study is to determine the contribution of microfinance banks to the development of the agricultural sector in Nigeria. The specific objectives include to:

- i. establish the relationship between loans disbursed by micro-finance banks and agricultural sector output;
- ii. determine if interest rate on agricultural loans by microfinance banks has affected growth of the agricultural sector in Nigeria;
- iii. determine if microfinance banks density has significantly affected agricultural sector growth in Nigeria;
- iv. ascertain the extent to which agricultural credit guarantee scheme fund (ACGSF) has been affected agricultural sector output in Nigeria.

The following hypotheses were formulated for this study and they are stated in terms of the null hypotheses as follows:

- H₀₁:** There is no significant relationship between loans disbursed by micro-finance banks and agricultural sector's output in Nigeria.
- H₀₂:** There is no significant relationship between interest rate on agricultural loans by microfinance banks on the growth of the agricultural sector in Nigeria.
- H₀₃:** There is no significant relationship between microfinance banks density and agricultural sector growth in Nigeria.
- H₀₄:** Agricultural Credit Guarantee Scheme Fund (ACGSF) has no significant relationship with agricultural sector output in Nigeria.

2. LITERATURE/THEORETICAL UNDERPINNING

2.1.1 Meaning of Microfinance

Microfinance refers to the entire flexible structures and processes by which financial services are delivered to micro-entrepreneurs as well as the poor and low income population on a sustainable basis. It

recognized poor and micro entrepreneurs who are excluded denied access to financial services on account of their inability to provide tangible assets collateral for credit facilities (Jamil, 2008). Microfinance can be seen as a supply of loans, savings and other financial services to the poor. It is the practice of delivery those services in a sustainable manner so that, poor households will have access to financial services so that they can build sustainable micro-enterprise while micro-enterprise is a business that is independently owned and operated by its owners and does not meet certain standards size which in most cases operated as informal business. Currently microfinance banks are of two forms, as all licensed community banks in Nigeria that met CBN guidelines have been transformed to microfinance Bank. According to Babajide (2012), the two forms of microfinance Banks (MFBS) exist:

- i. **Microfinance Banks (MFBS) Licensed to Operate as a Unit:** These are hitherto community Banks licensed to operate branches and cash centre subject to meeting the prescribed prudential requirements and availability of free funds of opening branches/cash centre. The minimum paid-up capital for this category of banks is #20 million for each branch. The branching should be gradual within a council local before it spreads to other local council and state.
- ii. **Microfinance Banks Licensed to Operate in a State:** These are MFBS licensed to operate in all part of the state at once without recourse to gradual coverage (spread) as in unit MFBS. Branches are opened subject to meeting the prescribed prudential requirements and availability of free funds. The minimum paid-up capital for this category of banks is #1 billion. About 600 community banks have migrated to microfinance banks by January 1st 2008 and there are several others that have been licensed to operate (CBN, 2006).

2.1.2 Meaning of Agriculture and Agricultural Sector

Agriculture is the use of cultivated plants or animals to produce products for sustaining or enhancing life (Chait, 2019). Chait (2019) went further to note that people use many agricultural products every day ranging from clothes to paper to flowers and even ethanol for automobiles produced by agriculture. Agriculture deals with the cultivation of land for crop production and rearing of animals for the use of man and also for the feed of animals (livestock).

Agriculture has several other sub-sectors like crop production, livestock, forestry and fishing. These are collectively known as agricultural sector in the sense that every agricultural activity falls into one of these sub-categories. The agricultural sector provides job

opportunities and raw materials for many agro-allied industries (Adeoti, 2010).

The largest driver of the agricultural sector is crop production which accounts for up to 91.6% of the sector's output in 2020 with a quarterly growth which stood at 44.12% in the last quarter of 2020 (CBN, 2020). In Nigeria, agriculture is the mainstay of the economy employing more than 90% of the total labor force of the country (NBS, 2019).

2.1.3 Relationship between Micro Finance Banks and Agricultural Sector Development in Nigeria

In spite of growing urbanization, Nigeria is known to be predominantly rural in nature and majority of population is dependent directly or indirectly on agriculture for their livelihood. Credit delivery is perhaps one of the most important roles of microfinance banks, as the loans extended are used to expand existing businesses and in some cases to start new ones. Ketu (2018) observed that Microfinance banks have disbursed more than two hundred billion micro-credits to over 13,000 farmers across the country to empower their productive capacities. Statistics from the National Bureau of Statistics (2019) shows that about 60 percent of the poor people in Nigeria live in the rural areas and 80 percent of them are farmers and artisans. Therefore, rural dwellers are empowered through microfinance loans and services, and hence small scale agricultural practice and micro-enterprises is developed.

Umar (2018) noted that microfinance banks in Nigeria extend credits and other services to many rural enterprises and hence generate employment in areas such as blacksmithing, goldsmithing, watch repairing, bicycle repair, basket weaving, barbing palm wine tapping, cloth weaving, dye, food selling, carpentry, bricklaying, pot-making, leather works and drumming. Most of these areas are agric-related and as such, microfinance banks make efforts to develop these rural dwellers in their preferred areas through the granting of loans for their expansion.

However, Adewumi et al (2013) noted that one major challenge faced by the microfinance banks in Nigeria is the lack of rural branches, a situation which impedes outreach to widely-dispersed customers. Umar (2018) did an analysis of microfinance banks'

density and found that out of the over 900 microfinance banks spread across the country, only about less than 10% of them are located in rural areas. Also, regulatory bottlenecks, dishonest farmers, harsh economic realities etc. are some other issues confronting microfinance banks in their efforts to grow the agricultural sector in Nigeria.

2.2 Theoretical Review

Financial Intermediation Hypothesis

According to Organisation of Economic Cooperation and Development (OECD, 2001), financial intermediation is a productive activity in which an institutional unit incurs liabilities on its own account for the purpose of acquiring financial assets by engaging in financial transactions on the market. The role of financial intermediaries is to channel funds from lenders to borrowers by intermediating between them. For decades, financial intermediation has been a subject of study at both the macro-level, and the micro level. At the macro-level, the significance of financial intermediation cannot be over-emphasised. However, there are mixed feelings about this. While some argue that it facilitate the efficiency of the financial system (Gromb and Vayanos, 2010), others have also argued that it is passive in nature and serves as a conduit through which monetary policy is effected (Benston and Smith, 2005) and contracts, not available in the financial market, are implemented (Holmstrom and Tirole, 2018). At micro-level, studies have shown that financial intermediation stimulates the restructuring and liquidation of distressed firms (Araujo and Minetti, 2007), as well as eliminating the inefficiencies associated with the absence of inter-temporal smoothing, as a result of incomplete market (Allen and Gale, 2017).

Financial intermediation is a process, and that such process involves three parties: the savers (surplus unit), the intermediaries (Banks and Non-banks) and the borrowers (deficit unit). Thus, the process of financial intermediation involves financial intermediaries which is an institution or individual that serves as a middleman among diverse parties in order to facilitate financial transactions. Thus, the financial intermediation process is depicted in Figure 2.1 below:

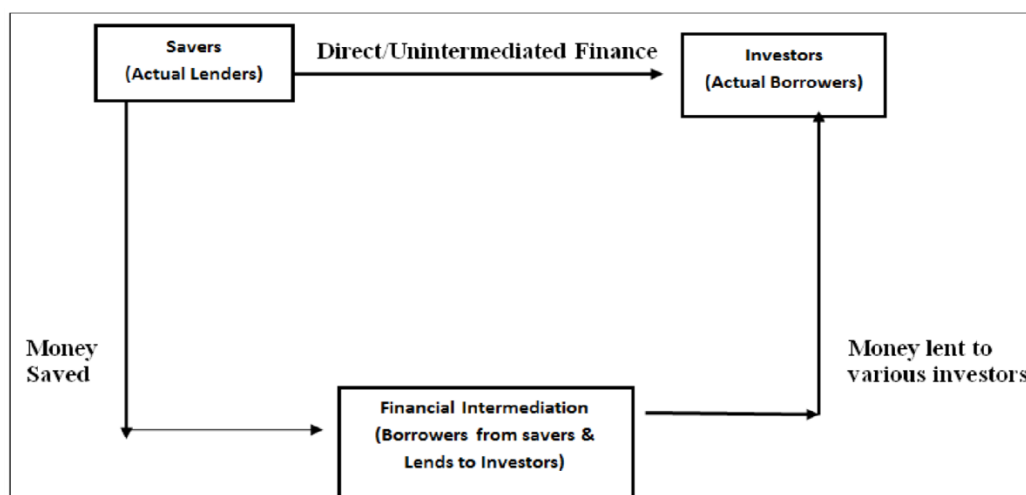


Figure 1: Financial Intermediation Flow (Source, Akinmulegun and Dare, 2009).

According to Afangideh (2016), there exists a relationship between agricultural performance and financial intermediation. For agricultural sector to grow in terms of output and productivity, it becomes paramount for the financial intermediaries to mobilise financial resources from the surplus sector for onward lending to the agricultural sector. Financial intermediaries are needed to provide the necessary funds for the agricultural sector to acquire land, mechanized farming implements, input materials and so on which invariably will lead to an increase in agricultural productivity. Financing the agricultural sector is necessary because agricultural sector has a multiplier effect on a nation's socio-economic and industrial fabric, as a strong and efficient agricultural sector would enable a country to feed its ever growing population, generate employment, earn foreign exchange and provide raw materials for industries (Ogen, 2018). It also has the potential to be the industrial and economic spring board, from which a country's development could takeoff, shape the landscape and provide environmental benefits. But the agricultural sector cannot do this without the needed funds.

2.3 Empirical Review

Dauda (2007) studied the performance of Nigeria's community banking scheme and observes that deposits generated significantly grew over the period of evaluation (1992 – 2004). The study attributes the deposit growth to improved grass root banking habit. Although their aggregate loan portfolio to agriculture and rural based real sector activities increased nominally over the period, the credit exposures are relatively much lower than their exposure to general commerce, (19.2% against 47.6%). The study remarks that this trend is counter-productive to policy efforts at boosting real sector growth and sustainable economic development in Nigeria. Olakojo and Olanipekun (2011) empirically examined the impact of microfinance bank on the Nigerian economy. They employed pooled

regression and ordinary least square econometric technique on annual time series data for the period 1992-2008. The empirical findings show that the current level of sectoral output is positively influenced by loans and advances from the banking sector. However, a sectorial analysis using OLS reveals that while loans and advances from microfinance banks positively affect output of manufacturing, building and construction, mining and quarrying sector, the same could not be established for the agricultural sector. They concluded that microfinance banking is very critical to the well-being of the economy as it does not only provide financial assistant to small and medium scale enterprises but also to the real sector of the economy, thereby fast tracking economic growth in Nigeria. Using the autoregressive distributed lag (ARDL) and error correction mechanism (ECM), Udoh (2011) finds that the relationship between public expenditure, private investment and agricultural sector growth is asymmetric. While government public expenditure boosts agro-output, the impact of private investment is insignificant. This outcome is somewhat unsurprising as private investors often view the agricultural sector as having low returns and volatile.

Babajide (2012) studied the effects of micro financing on micro and small enterprises (SMEs) in South West Nigeria using Diagnostic Test Kaplan-Meier Estimate, Hazard Model and Multiple Regression Analysis. The study indicates that microfinance enhances survival of small business in South West Nigeria; that microfinance does not enhance growth and expansion capacity of MSEs in Nigeria; that microfinance impacts significantly on the level of productivity of SMEs operators in South West Nigeria and that the provision of non-financial service by microfinance institutions enhances the performance of micro and small

Obansa and Maduekwe (2013) studied agricultural financing and economic growth In Nigeria''. Their paper employed secondary data and some

econometric techniques such as Ordinary Least Square (OLS); Augmented Dickey-Fuller (ADF) unit root test; Granger Causality test. The results of the various models used suggest that there is bidirectional causality between economic growth and agriculture financing; and there is bidirectional causality between economic growth and agricultural growth. It further suggests that productivity of investment will be more appropriately financed with foreign direct private loan, share capital, foreign direct investment and development stocks. And also capital-output ratio will be more appropriately financed with multilateral loan, domestic savings, Treasury bill, official development assistant, foreign direct investment and development stock. It is recommended that maintenance of credible macroeconomic policies that is pro-investment; and debt-equity swap option are necessary for a agricultural-led economic growth.

In a related study by Osabohien et al (2018) on 'Agro-financing and food production in Nigeria' examined how agro-financing impacts on food production in Nigeria supporting Goal 2 of the 2030 Sustainable Development Goals (SDGs) which aims to "end hunger, achieve food security, improve nutrition, and promote sustainable agriculture". The study covered the period 1981–2018 using annual data sourced from the World Development Indicators (WDI) of the World Bank, Central Bank of Nigeria (CBN) Statistical Bulletin. The Johansen and the Canonical Cointegration approaches were employed and findings reveal that agro-financing is statistically significant in explaining the level of food production in Nigeria. The result implies that a 1% increase in farmers' access to agricultural finance is associated with an increase in food production by 0.002%–0.006% depending on the model specification. This result aligns with the 'a priori' expectations as it is expected that more agro-funding at low-interest rates motivates farmers to secure high-yield seedlings, machinery and other farm implements, organic inputs that positively impact on total agricultural yield, leading to more food production. Therefore, recommended that more funding be allocated to the agrarian sector with less stringent credit conditions, and more arable land be allotted for farming purposes amongst others.

Murad, Bein and Ebosetale (2013) studied the impact of microfinance institution in economic growth of a country with Nigeria in focus. Their study employed the multiple regression analysis given that the data were cross-sectional and time series in nature. Secondary data of all commercial banks were extracted from the Central Bank of Nigeria statistical Bulletin and Annual Reports. Data used in this model are time series secondary data for the period 1992 to 2012. The findings of the study show that microfinance loans have a significant positive impact on the short run economic performance in Nigeria. Microfinance loans enhanced consumption per capita

in short run with an impressive coefficient, although these bank loans do not have a significant impact on economic growth in the long run. Microfinance investment however, has a significant impact on economic performance in Nigeria in the long run. Although micro finance loans are relevant in growth process in Nigeria, other measures such as boosting agricultural production and taking appropriate steps to enhance per capita income are equally important in boosting the Nigerian economic growth. They recommended that, microfinance institutions should loan to improve consumption in the short run, while the long run goal should be to improve investment and other capital accumulation.

Likewise, Ayeomoni and Aladejana (2016) used the autoregressive distributed lag (ARDL) model and error correction mechanism (ECM) to show that there exist both long-run and short-run relationships between agricultural credit and economic growth. Other control variables used in the investigation revealed that while the inflation rate shows a negative relationship, private domestic investment and the real exchange rate have shown a positive relationship. The study concludes that dynamic factors like agro-financing, real exchange rate, real interest rate, private domestic investment and inflation rate determine economic growth.

Valli, Kufre & Ochoche (2017) investigates the relationship between credit to agriculture and agricultural output in Nigeria by means of nonlinear autoregressive distributed lag (NARDL) model using a time series data. Results show no evidence of asymmetry in the impact of credit to output growth in the agricultural sector (positive and negative changes) in the short-run, but different equilibrium relationships exist in the long run. The dynamic adjustments show that the cumulative agricultural output growth is mostly attracted by the impact of the positive changes in credit to agriculture with a lag of four quarters of the prediction horizon

Oyinbo and Zibah (2018) in their study on 'Agricultural Production and Economic Growth in Nigeria: Implication for Rural Poverty Alleviation' sought out to provide empirical evidence on the relationship between agricultural production and the growth of Nigerian economy with focus on poverty reduction. Time series data were employed in this research and the analyses of the data were done using unit root tests and the bounds (ARDL) testing approach to cointegration. The result of the data analysis indicated that agricultural production was significant in influencing the favourable trend of economic growth in Nigeria. It recommended that pro poor policies should be designed for alleviating rural poverty through increased investments in agricultural development by the public and private sector.

Nwude and Chikezie (2018) studied microfinance activities on rural economic growth and savings in Nigeria for the period 2000–2015. Secondary data on

microfinance deposit, loans and advances, rural savings and GDP were used. The ordinary least square regression was used as the technique of analysis and the findings showed that the introduction of micro finance banking in Nigeria have not contributed to agricultural productivity, but had assisted in increasing rural savings habits in Nigeria.

Medugu, Musa & Abalis (2019) empirically examined the impact of Commercial Banks' credit on Agricultural output in Nigeria, covering the period 1980 to 2018. Annual time series data was employed, which was sourced from Central Bank (CBN) publications such as Statistical Bulletins and Bullions, and National Bureau of Statistics (NBS) publications. Stationary test was conducted on variables to ascertain whether they have unit roots. It was discovered that they were all stationary at first difference. Co integration test however, revealed that long run relationship exists among the variables, also ECM model result showed that the model returns to short run equilibrium after an exogenous shock, with speed of adjustment of negative one (- 1), this implies that 100% of all the deviations in the past will adjust to equilibrium. Ordinary least square Method was employed to estimate the relationships among the variables and the result showed positive and significant relationship exists between commercial banks' credit and Agricultural output in Nigeria

Also, to validate the above claim, in a more recent study, Osabohien et al. (2020) using the Propensity Score Matching (PSM) model on a cross-sectional data using Wave of the Living Standard Measurement Study- Integrated Survey on Agriculture (LSMS-ISA) finds that agricultural credit is statistically significant and have a positive impact on agricultural production in Nigeria. According to Osabohien et al. (2020) the implication of the result is that households with access to agricultural credit had yields thrice more than households without access to agricultural credit. Going beyond the existing empirical literature, the present study contributes not limiting by examining the agro-finance-growth nexus, yet it goes to analyse how economic growth responds to shocks from other endogenous regressors in the model.

Mikugi and Bagudu (2020) assessed the role of Nirsal Microfinance Bank in promoting Agric, Small and Medium Enterprises in Bida Metropolis. They examined the level of funding and improvement in activities of Agric, Small and Medium Enterprises SMEs and examined whether Nirsal Microfinance has contributed to job creation and employment generation through business startups and expansion in Bida Metropolis. The methodology used was both primary and secondary method. They designed Questionnaires and distributed same to entrepreneurs who enrolled into the NIRSAL-AGSMEIS loan scheme between 2019 and 2020. The questionnaire

was structured along a five point Likert scale. Secondary data were collected to support primary data using document review instrument, reviewed journals, books, and teaching manuals from internet, CBN Annual Bulletins, training and enrolment data from entrepreneurship centre Federal Polytechnic, Bida. Their findings revealed that economic activities and level of funding of SMEs have increased tremendously through Nirsal Microfinance Bank loan Scheme. They also found that most of the respondents disagreed to the fact that loans application and approval process at Nirsal Microfinance Bank are fast enough to their satisfaction. They therefore concluded that Nirsal Microfinance Bank was introduced to create jobs and enhances the skills of citizens in rural communities, access to cheaper and affordable funds by smallholder farmers and SMEs and access to credit for SMEs. Recommendations were given which include to enhance fast processing of loan application for SMEs and to also give attention to new business startups.

Iwedi, Okey-Nwala, Ibebi and Nwosi (2020) empirically x-rayed the four basic institutional funding indicators as predictor of growth of agricultural sector in Nigeria. They discovered that the variables were all stationary at first difference. Co integration test revealed that long run relationship existed among the variables. The relative statistics of the estimated model showed evidence of strong, positive and significant association between agricultural credit Guarantee Scheme and growth of agricultural sector in Nigeria. Microfinance bank credit to Agric Sector, coefficient showed a negative and also significant influence on growth of agricultural sector. Commercial bank credit to agric sector had positive and insignificant relationship with the growth of agricultural sector. The study recommended that Government should make more funds available for farmers through the agricultural credit guarantee scheme.

Previous studies have shown that research interest variables focused on interest rate and loanable funds with little empirical evidence as many works were based on qualitative approach. However, this research study seeks to close such gap by using key variables which were not looked into such as microfinance banks density, number and quantum of loans disbursed, with respect to the rate of growth and development of the agricultural sector as it concerns Nigeria as a whole. Also, the variable is updated to 2020 since there exists a time gap in the scope of the previous studies reviewed.

3. METHODOLOGY

The *ex-post-facto* research design was adopted for this study. The choice of this research design was due to the fact that the study utilized secondary data for the analysis and that the secondary data are not subject to bias or manipulation from the researcher.

The data for this study were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin (2019) Edition and the data were updated to 2020 from recent publications of the CBN. In addition, we obtained data on other variables from the National Bureau of Statistics (NBS) Annual Statistical Publications.

3.1 Model Specification

In an attempt to study the contribution of microfinance banks to the development of the agricultural sector in Nigeria, we take a cue from empirical evidence which asserts that growth or output is a function of microfinance banks input into the sector. The specification of Iwedi, *et al* (2020) is modified to suit our purpose. It is important to note here that this study expunged government expenditure on the agricultural sector as we are focusing centrally on microfinance banks' contribution to the agricultural sector. To this end, we introduce novel variables such as loan disbursement by MFBs and MFBs density, and formulate a linear relationship following the multiple linear regression model thus:

Agric Output = $f(\text{loan disbursement, Interest Rate, MFB Density, ACGSF}) \dots i$

In a functional form, the variables are connoted as:

AGO = $f(\text{LDS, INT, MFBD, ACGS}) \dots ii$

Representing the above functional equation in a multiple regression equation format, we have:

AGO_t = $\beta_0 + \beta_1 \text{LDS}_t + \beta_2 \text{INT}_t + \beta_3 \text{MFBD}_t + \beta_4 \text{ACGS}_t + \varepsilon_t \dots iii$

Where:

AGO = Agricultural Sector's Output

LDS = Loans disbursed to the Agric Sector by micro-finance banks

INT = Interest Rate on Agric Loans

MFBD = Microfinance Banks' Density (umber of MFBs in Nigeria)

ACGS = Agricultural Credit Guarantee Scheme Fund

β_0 = Intercept of the model

$\beta_1 - \beta_4$ = Unknown parameters of the model to be estimated

ε_t = Stochastic Error term at time "t"

The *a-priori* expectation of the model is such that the coefficients are positive i.e. $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$ and $\beta_4 > 0$

In this research study, the data were analyzed based on three criteria: Economic, Statistical and Econometric criteria (Egbulonu, Duru and Dim, 2018). The Economic criterion examined the econometric parameters and how they conform to economic a-priori expectation.

The statistical criterion used statistical tools with the aid of E-views 9 econometric software to obtain the parameter estimates. The estimated parameters were analyzed and also discussed in line with the economic criteria.

The econometric criterion investigated the causal relationship between the variables and if there were violations of classical Econometric assumptions of no autocorrelation and heteroskedasticity. The data were interpreted after the estimation of the parameters from the E-views 9 software.

The Error Correction Model (ECM) was used in analyzing the data and estimating the model. The ECM technique is within the framework of the Ordinary Least Square multiple regression which estimates the parameters of variables that are integrated at first order (Pesaran, Shin and Smith, 2001). The estimation of the ECM model involved the test for unit root which confirmed the first difference integration of the data. This is followed by the test for long run relationship amongst the variables using the Johansen Cointegration test technique. Then the short run relationship between microfinance banks contributions and growth of the agricultural sector are shown, interpreted and discussed.

4. RESULTS/FINDINGS

4.1 Unit Root Test

The unit root test otherwise called the stationarity test is summarized in the Table 4.2 below. The test was carried out using the Augmented Dickey Fuller (ADF) unit root test approach and was carried out individually on each of the variables.

Variable	ADF Test statistics		Decision Rule	Order of Integration
	At Level	1 st Difference		
AGO	-0.6055	-4.9690	Stationary at 1 st difference	I(1)
LDS	-1.2171	-6.5076	Stationary at 1 st difference	I(1)
INT	-2.6953	-5.8567	Stationary at 1 st difference	I(1)
MFBD	-2.1441	-3.7507	Stationary at 1 st difference	I(1)
ACGS	-1.8047	-3.4785	Stationary at 1 st difference	I(1)
Critical value at 5% level = -2.9678				

Table 1: Unit Root Test Result (Source: Computed from E-Views 9.0)

The unit root test above indicates that the variables agricultural sector output (AGO), loans disbursed (LDS), interest rate on loans (INT), microfinance banks' density (MFBD) and agricultural credit guarantee scheme fund (ACGS) all achieved

stationarity at first difference, which implies that the variables are integrated of order one, I(1). This further confirms that the statistical properties of the data are constant and do not vary over the time period of study hence can be used for predictive

purposes. Thus, we have an I(1) stationary series which is very ideal for the fitting of an error

correction model upon confirmation of the cointegrating relationship amongst the variables.

4.2 Johansen Cointegration Test

Trace Statistic					Max-Eigen Statistic		
No of CE (S)	Eigen-Value	Trace stat	5% CV	Prob**	Max-Eigen stat.	5% CV	Prob**
None *	0.7154	87.489	69.818	0.0010	36.449	33.876	0.0241
At most 1 *	0.5676	51.040	47.856	0.0244	24.319	27.584	0.1239
At most 2	0.5080	26.720	29.797	0.1086	20.569	21.131	0.0598
At most 3	0.1649	6.1517	15.494	0.6776	5.2287	14.264	0.7128
At most 4	0.0313	0.9229	3.8414	0.3367	0.9229	3.8414	0.3367
None *	0.7154	87.489	69.818	0.0010	36.449	33.876	0.0241

Table 2: Johansen Cointegration Test Results

**Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

**Max-eigen value test indicates 1 cointegrating eqn(s) at the 0.05 level

The Johansen cointegration tests summarized in Table 4.3 above reveals that the Trace and Max-eigen statistics indicated two and one Cointegrating equations at the 5% level respectively. This means that there is a long-run relationship between MFB's

contribution and agricultural sector's output in Nigeria. Thus, the relationship between MFB and agricultural sector's output or growth is a long run relationship.

4.3 Estimation of the Error Correction Model (ECM)

The ECM represent the short run model and the result is summarized as follows:

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	18.72998	2.256398	8.300832	0.0000
D(LDS)	0.051967	0.031815	1.633424	0.1166
D(INT)	0.209195	0.150527	1.389754	0.1785
D(MFBD)	0.303072	0.093242	3.250381	0.0163
D(ACGS)	0.340892	0.045624	7.471787	0.0000
ECM(-1)	-0.224544	0.037504	-5.987201	0.0167
R-squared	0.931210	Mean dependent var		29.83852
Adjusted R-squared	0.915576	S.D. dependent var		0.570683
F-statistic	59.56319	Akaike info criterion		-0.568464
Prob(F-statistic)	0.000000	Durbin-Watson stat		1.166809

Table 3: Summary of ECM Result

5. DISCUSSION

The contribution of the microfinance banks to the growth of the agricultural sector in Nigeria has been studied by numerous researchers. Most of the previous studies employed mostly primary data in their analysis and it is noteworthy that the application of primary data is limited in scope as it is always delimited to a study area. However, this study went a step further to source for secondary data and applied same to the analysis and came out with very interesting findings. The output of the agricultural sector (proxied by agricultural GDP) was used as the dependent variable while loans granted to the agricultural sector by the microfinance banks in Nigeria (as captured in the CBN statistical bulletin), interest rate on MFB loans, number of MFBs in Nigeria were the independent variables of the model. The agricultural credit scheme (ACGSF) was included in the model as an intervening variables

having a huge impact on the growth of the agricultural sector and hence cannot be ignored.

The error correction estimates showed that loans disbursed to the agricultural sector by MFBs increased output of the agricultural sector by 0.0519 units. This means that a unit change in loans disbursed grows the agricultural sector by 0.0519 units in the short run period and the p-value of 0.1166 is an indication that the positive increase was not significant. This result tends to conform to the earlier finding of Dauda (2007) who asserted that the aggregate loan portfolio to agriculture and rural based real sector activities increased nominally but the credit exposures were relatively much lower. Similarly, Murad, et al (2013) has earlier held that although micro finance loans are relevant in growth process in Nigeria, they still fall short in other measures such as boosting agricultural production etc. Contrary to previous studies, and our study, Medugu, Musa and Abalis (2019) found that

microfinance bank credit to agricultural sector has negative but significant influence on growth of agricultural sector. The reason for the disparity in their finding may be adduced to their adoption of four basic institutional funding indicators as predictor of growth of agricultural sector in Nigeria. Again, interest rate on agricultural loans by MFBs increased output of the agricultural sector by 0.2092 units. This was also the position of Nwude and Chikezie (2018) where-in they held that interest rate has not deterred large scale farmers from accessing credit facilities from microfinance banks. Going further, microfinance banks' density also increased growth of the agricultural sector by 0.3031 units. The positive effects of both variables means that the interest rate on the agricultural loans and the number of microfinance banks in Nigeria both increased the output of the agricultural sector but the increase was only significant for microfinance banks' density. Therefore we can strongly confirm that the number of microfinance banks in Nigeria has been favorable to the agricultural sector as it is seen to enhance growth of the sector significantly in the short run analysis. Empirical back-up to this finding can be found in the work of Mikugi and Bagudu (2020) where they used primary data to ascertain that the loans disbursement by the microfinance institutions have been grossly inadequate owing to the sparse nature of microfinance institutions in some states in Nigeria.

For agricultural credit guarantee scheme fund (ACGS), the coefficient of 0.3409 in the estimates showed that a unit change in the value of loans granted under the agricultural credit guarantee scheme increases growth of the agricultural sector by 0.3409 units. The p-value of 0.000 entails that the increase was significant. Murad, Bein and Iwedi et al (2020) also found positive and significant impact of microfinance credits on economic performance in Nigeria. A more related by Osabohien et al (2013) held that agro-financing is statistically significant in explaining the level of food production in Nigeria.

The error correction coefficient is negatively signed and significant showing that there is long run convergence of the model. This implies that the model has a speed of adjustment of 22.45% in the long run. Thus, increasing microfinance banks' contribution to the agricultural sector by 22.45%, the agricultural sector would experience long run equilibrium growth, all things being equal.

The adjusted R-squared value of 0.9156 implies that about 91.56% of the variations in agricultural sector's output (AGO) are being accounted for by the microfinance banks' contributions in terms of loans, interest rate on the loans and their density. The coefficient of determination of 91.56% represents a very good fit.

The Durbin Watson value of 1.167 is closer to 2 than to 0 therefore we conclude that there is no autocorrelation in the model. This is based on the rule of thumb and hence satisfies the condition for going ahead with the model estimation with non-spurious data.

6. CONCLUSION

The study showed strong evidence that the microfinance banks have spread across the nooks and crannies of the country numbering about 916 based on the recent CBN publication in 2020. This has made the microfinance banks' density to contribute positively and significantly to the growth of the agricultural sector as the agricultural sector is the primary sector which generates the most loans which is the primary objective of microfinance banks. Other variables that concern MFBs (loans granted and interest rate) increased agricultural sector's output but not significantly. Thus, we can conclude that the agricultural sector has only benefitted from the increasing number of active microfinance banks in Nigeria but in terms of the deep penetration of the loans they grant to the sector, it remains largely insignificant as the relatively high interest rate has dissuaded active players in the agricultural sector to fully utilize their facilities to grow their agrobusinesses.

7. RECOMMENDATIONS

The following recommendations were made concerning this study and they include:

- i. Since loans disbursed to the agricultural sector by microfinance was not found to be significant, this study recommends that the Central Bank of Nigeria (CBN) should sustain a credit policy that ensures that a certain percentage of the loans of the MFBs go to the development of rural agriculture. This will make the positive effect of loans granted to the sector to be significant in the long run.
- ii. Government should regulate and monitor the activities of MFBs, and redress the constraints affecting them in the area of interest rate on loans to the agricultural sector. This has been found to have discouraged a lot of farmers from accessing agricultural loans which has the objective of agricultural expansion in the rural areas.
- iii. The CBN should ensure that loans advanced by MFBs to the grassroots are serviced at a single digit interest rate in order not to deter people with genuine business ideas.
- iv. The increase in the number of microfinance banks is a welcome development; however, majority of these banks should be strategically located in the rural areas to serve rural dwellers in areas of credit utilization with a view to equipping them

with the necessary entrepreneurial skills to establish, manage, sustain and expand their agricultural business outfits.

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