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Private Sector Microcredit Programmes, Financial Inclusion and Sectoral Entrepreneurship: Evidence and Insights From Nigeria

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ABSTRACT

Given the growing interest in microcredit operations, especially in the developing economies and the need to investigate the varied interrelationships between sectoral microcredit operations and economic growth of nations, this study examines the nature and direction of causal relationships that prevail between classified sectoral microcredit allocations and sectorally classified entrepreneurship contributions to Nigeria's economic growth. Secondary data were sourced from Central Bank of Nigeria covering the period 1992 to 2011. Augmented Dickey-Fuller and Unit Root and the Standard Granger Causality techniques were employed in processing the data. The results of the study show that the time series variables are stationary. Out of the five classified sectors of economic activity – agriculture/forestry, other mining/quarrying, manufacturing/food processing, real estate/construction and transport/commerce, significant unidirectional causality only prevails in the other mining/quarrying sector with causality running from contributions of other mining/quarrying in Nigeria's GDP to microcredit allocations to that sector. The rest other sectors failed the causality test at 0.05 level, although transport/commerce sector records a near significance level of 0.055. The study concludes that: (i) In the sectors where microcredit operations have become significant and/or near significant, they only function to service rather than promote entrepreneurial activities, (ii) For majority of the sectors, entrepreneurship ventures are largely independent of microcredit institution's operations. Consequently, the study recommends diversified product development and intensified marketing of microfinance service products on the part of the participating institutions. Further recommended is that the government should, through all legal and institutional means, strengthen the enforcement of credit contracts in general and microcredit operations in particular. This measure is justified in order to minimize the incidence of delinquent credit exposures, guarantee continued microcredit operations and long run survival of microcredit operating institutions in Nigeria.

Key Words: Microcredits Allocation, Financial Inclusion, Sectoral Entrepreneurship.

1.   INTRODUCTION:

Since the publication of lead studies of Schumpeter (1934), Goldsmith (1969), Shaw (1973, 1976) and Mckinnon (1973), the subject of exact nature of empirical relationships and contributions of the financial sector to economic progress of nations has continued to enjoy significant level of attention at both academic and policy levels. Anchoring on the efficiency of the intermediation functions of the financial sector, these studies generally allude to the fact that financial institutions function to advance economic growth through increased savings mobilization, reduction of information and transaction costs as well as efficient allocation and investment of financial resources in the needy sectors of the economy. These studies contend that financial market development is a pre-condition for economic growth and that the level of sophistication of domestic financial sector could serve as a reliable indicator of a nation's economic growth.

At policy level, Adeyemi (2007) observes that the Nigerian government has substantially pursued the primary objective of facilitating conditions for the creation and sustenance of microcredit institutions in order to improve on credit availability to the enterprising/active poor at relatively lower costs and convenience thereby, achieving financial inclusion. The aim is to widen the possible range of employment opportunities and improve on the contributions of the active poor to national economic growth. Within the purview of this study, microfinance is conceived as the provision of a full range of financial services – micro credits, micro savings, micro lease, funds transfer, and also, insurance and advisory services to the active and entrepreneurial poor, who ordinarily, are deemed ineligible to access conventional deposit money banks' services, in order to advance their economic, employment and financial status and ultimately, become gainfully self employed. Equally, microcredit within the framework of this study implies a relatively small amount of credit facility, availed a micro entrepreneur and/or group of micro entrepreneurs (group lending), by operating microcredit institutions often without a charge on

any preferred or combined set of securities, but predicated on anticipated (future) streams of cash flows, (Agene 2011). Of significant relevance also, is the concept of financial inclusion – one of the fundamental objectives of microfinance policy. Within the purview of this paper, it implies unrestricted provision of a recognized range of financial services at affordable costs to all existing and potential customers among the active poor. Financial inclusion is dimensioned as follows; (i) comprehensiveness, (ii) unhindered access by all, (iii) affordability and easy access and (iv) existence of sustainable financial institutions, (Ehigiamusoe, 2011). Against this background, the Nigerian government, dating back to the colonial administration, created certain financial schemes starting with the promulgation of the Co-operative Societies Ordinance of 1939. The ordinance partly represents a move by the colonial administration to address the often perceived stringent credit requirements of then existing commercial banks. The stringent requirements were reflective of their usual high-risk perception of micro enterprises and also, the perceived high cost of administering such largely spread or scattered micro credits.

Adeyemi (2007) as well as Agene (2011) observe that further public policy attempts at improving the enterprising poor's access to micro credits could be traced to the establishment of development finance institutions and agencies by the government. These institutions include the Nigeria Agricultural, Co-operative and Rural Development Bank, in 1973, with responsibility for provision of agricultural and rural-based credit facilities nation wide, as well as the Agricultural Credit Guarantee Scheme fund of 1978 for mitigation of varied forms of agricultural risks which farmers are exposed to. At state level, various individual state-supervised microcredit schemes came on board, while the federal government also, anchored the establishment, funding and management of the people's bank which came on stream in 1989 for diversified rural and small scale credit needs of the enterprising poor. Even the established private sector-led commercial banks through the Rural Banking Scheme of 1982 to 1991, were made to bear part of the cost of microcredit development and integration of the active poor into the organized financial system. Olashore (1983) observes that all the existing and participating commercial banks were compelled to open specified number of rural branches on periodic basis and also, ensure prioritized allocation of credits to micro and rural-based ventures within their operating environment .These also, served as preconditions for approval of requests for establishment of urban branches as well as avoidance of statutory sanctions within the period.

With adoption of the Structural Adjustment Programme (SAP) in 1986 which aimed at liberalization and speedy transformation of the Nigerian economy into a market-led economy, minimization of state controls took the center stage of policy formulation and emphasis. By 1992, mandatory sectoral allocations of credits were abolished along with other direct credit control measures. However, for continuity of microcredit framework and alleviation of the active poor, the government initiated the community banking programme, anchored on community ownership of such category of microcredit institutions with relatively lower capital base requirements. They were expected to effectively intermediate within the immediate environments thus, facilitating savings mobilization and credit allocation to deserving micro ventures. Unfortunately as noted by Dauda (2007), the community banking scheme operators significantly derailed by towing the lending pattern of commercial banks. They unfortunately, largely preferred to allocate relatively more credits to short term self-liquidating general commerce ventures even outside their operating enclaves.

With continued poor credit management in most of the operating community banks, Nnamdi and Nwakanma (2011) observe that the government had to introduce reform measures in the community banking system. Following Central Bank directives, all surviving community banks were directed by 31st Dec. 2006, to transform to microfinance banks in addition to meeting enhanced capital base requirements. These measures were to enhance their operational efficiency and shock absorption capacity. The focus, still remained financial inclusion of the active poor preferably, through group based banking and lending strategies. It has previously been observed that Nigeria has implemented several policies crafted to address active poor's financial inclusion. World Bank (1990) and (1993) assert that citizens are classified as poor and/or active poor if their periodic income and/or consumption fall below US $370 and US $275 respectively. Various living index surveys by Federal Bureau of Statistics in Nigeria still suggest prevalence of poverty among the populace going by above World Bank standards.

Remarkably, Yunus (2003), Helms (2006) as well as Adeyemi (2007) largely argue that microcredit finance anchors on the rational premise that the relatively lower quantum of credit needs of the active poor are not availed by existing and established financial institutions. This is because of the active poor's inability to meet the

conventional banks' stringent credit standards. This shortcoming consequently exposes the active poor to other informal financial sector exploitative arrangements with consequent erosion of their profit margins, thereby, keeping them perpetually poor. While acknowledging the widely held view that finance significantly aids economic growth as evidenced by several studies including Nwakanma, Nnamdi and Omojefe (2014 a), we deem it necessary to assert that only few empirical studies to the best of our knowledge as demonstrated by Rousseau and Wachtel (2002, 2011) and Nuno (2012), tend to suggest that rapid expansion in credit does lead to disincentives to save and invest with ultimate consequence of financial crisis.

However, we argue that irrespective of the variations and conflicting opinions emanating from various studies on the nature of exact relationship between financial institutions' credits and economic growth of nations, there is presently, a growing quantum of interest in micro credit financing inspite of the relatively low volume of empirical literature on the subject. While our objective in this study is to contribute to the growing body of knowledge empirically, there is nonetheless, a fundamental need to explore in the context of Nigeria's economy, the extent to which microfinance institutions through the instrument of micro credits, function to lead, support and/or re-enforce entrepreneurship in classified sectors of Nigeria's economy using recent data. The above key issues therefore, constitute the core problem of this study.

The findings of this study will not only provide an empirical platform for appreciation of the nature of casual relationships that prevail between micro credits disbursed in classified sectors of entrepreneurial activity and the contributions of those sectors to Nigeria's economic growth, but also provide basis for policy actions that will enhance management and utilization of micro credits in Nigeria. Having provided an overview of the subject, the rest of this study is divided into four main parts. The second part offers the theoretical framework and review of related literature while the third part presents the organization of data and methodology. The fourth part presents the analyses and results, while the fifth and last section provides the discussions, conclusions and policy recommendations.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW:

Based on the beneficial roles of financial institutions in the economy, there is a significant level of consensus at both policy and academic levels that microfinance organizations largely function to leverage the active and enterprising poor. For enhanced clarity of purpose, this section is subdivided as follows;

2.1 Theoretical Considerations:

The earlier studies of Mckinnon (1973) and Shaw (1973) clearly articulate the supply-leading functions of the financial sector inclusive of microfinance institutions. This occurs through credit provision which substantially, supports and advances employment generation, output growth and poverty alleviation with respect to the enterprising poor. Patrick (1976) provides later, an enhanced evaluation of financial sector's role in a dual capacity, exhibiting both demand-following and supply-leading (contemporaneous) roles in the economic growth process. In a similar manner, Shaw (1976) also, advocates support for financial liberalization as opposed to repressive financial policy measures thus, facilitating the most enabling environment for the financial sector to maximize its contributions to economic growth.

Of substantial theoretical relevance to the subject of this study are the Gap, Exigency and Catalyst theses. Nwankwo (1985) argues that the increasing policy interest in development finance operations is a consequence of the funding gap created by conventional banking institutions' negligence of micro ventures. The study also, demonstrates that the exigency thesis anchors primarily on the perceived urgent need by various governments to initiate financial empowerment actions which will not only jump-start their economic growth process but also accelerate same. Further, the catalyst thesis heavily views the financial sector as possessing the inherent capacity to link fund suppliers with efficient fund users and in that process, catalyze and eventually speed up economic growth process of nations even at the micro level.

A clear cut approach to lending practice is an important and fundamental characteristic of any given financing structure. Bhole (2006) identifies two possible theoretical and practical approaches to banking credit. At one extreme is the liquidation approach which provides basis for real bills doctrine or commercial loan theory whereby, assets of the borrower are looked at as security for a loan, thereby, emphasizing short term, self-liquidating exposures. On the other extreme however, is the going concern approach, which lays emphasis on the

borrower's capacity to repay the credit facility out of future streams of cash flows rather than capacity to provide asset backed securities. Microfinance credit operations ideally, emphasize the later approach – going concern.

2.2   Microfinance Operations: Global Perspective:

The origins of microfinance banking operations date back to the era of Franciscan Monks who pioneered the community based pawnshops in the 15th century and also, the founders of the European Credit Union Movement in the 19th century, (Agene, 2011). Irrespective of these early correlates, significant foundations for modern microfinance operations are largely traced to Dr. Muhammad Yunus – "banker to the poor" in Bangladesh, who founded the Grameen Bank.

Yunus (2003, 2008) contend that if objectively funded, microfinance functions to alleviate poverty. Objective funding presupposes the provision and timing of the right amount of credit required for micro ventures at obviously, non-exploitative rates. To this extent, the study contends that the active poor only require relatively small amounts of credit for their basic and required inputs. These inputs necessarily, do not need to be secured (asset backed) if properly managed on group lending or individual basis. This measure would obviously avert the stringent credit requirements of conventional banks as well as the exploitative credit terms usually dictated by local money lenders, all of which perpetually, impoverish the active poor.

Adeyemi (2007) observes that governments in several developing economies have articulated one programme or the other in order to address the desired improvements in the financial conditions of the active poor. However, the study remarks that most of these government efforts have largely failed and that even the efforts of social entrepreneurs have also attained limited success. On the other hand, the study argues that conventional deposit money banks largely view microfinance ventures as an appreciable form of social responsibility. Some of these global efforts include the establishment of Bank for Agricultural Cooperatives in Thailand and Bank Rakyat in Indonesia. Other representative non-governmental efforts include Opportunity International in Colombia, which commenced lending operations in 1971, ACCION International which commenced disbursement of micro credits in 1973, as well as the Grameen Bank in Bangladesh which commenced operations in 1976 etc.

Apart from providing the active poor with the opportunity to borrow funds, microfinance operations also, improve the banking habits of the active poor by enhancing their savings habits as well as their capacity to patronize financial services products. In this connection, Seibell (2000) observes that microfinance programmes have proved that the active poor are bankable as they have substantially, acquired improved savings habits, loan repayment culture and insurance service patronage. Also, the results of Quinones and Reyemi (2000) as well as Washeed (2009) provide evidence that on the average, house holds with access to micro credits have relatively attained higher income levels and also, acquired more assets relative to those without access to microfinance services.

Finally, microfinance operations have attendant benefits and costs.
In this connection, Agene (2011) identifies the following benefits:
(i) development of financial discipline and control (ii) induced capital accumulation, (iii) absence of hidden costs (iv) provision of trust and confidence and (v) easy access to financial services. The attendant costs however, include; (i) asset and liability management risk (ii) inefficiency risk (iii) system integrity risk (iv) regulatory risk (v) competition risk (vi) general macroeconomic risk and (vii) political/government risk.

2.3   Review of Previous Studies:

With increasing attention given to microfinance programmes in developing economies, there is emergence of some formal and significantly structured microcredit programmes in Nigeria, especially those eliciting private sector participation or commercial micro financing. They include Rural Banking Scheme of 1982, through Community Banking Scheme that commenced in 1992, to present Microfinance Banking Scheme which commenced on 31st Dec. 2006 with its operational idiosyncrasies. Admittedly, the bulk of existing literature on microfinance operations is inundated with descriptive studies. Empirical studies are relatively sparse, but will hopefully grow with time and increased interest in the subject. However, the studies reviewed hereunder will largely cover comments on the three arguably structured microcredit programmes – Rural, Community and Microfinance banking.

With heated controversy on the unprofitable nature of operations of then Nigerian rural bank branches, Umesi (1981) argues that rural branch operations are largely unprofitable since rural branches attend to an average of less than fifty (50) customers in a day. The bulk of the accounts are savings and salary-fed accounts of rural civil servants from which, no meaningful income are derived. These category of customers, lack the collaterals to borrow and also, appreciable knowledge of potential investment activities that the branches can catalyze for them. Responding to Umesi's claims, Ibene (1981) contends that the banks do not have rational basis to complain about the scheme. Admitting however that the scheme necessitates additional overhead and staffing problems for the participating banks, the study observes that prevalence of low business opportunities in the rural branches is a valid consequence of the fact that the bank staff would need to change their attitude to marketing and drop their arm-chair approach to banking business as it implies that they are yet to appreciate the dictates of financial services industry.

Conflicting opinions on the scheme prevailed, even among the Chief Executives of participating commercial banks. While Kuforuji (1985) argues for a moratorium on the programme in order to save the perceived counter productive effects of the programme (resource drains) on the banks, Adegbite (1985) and Akinrisimi (1986) urged the government to expand the scheme as most of their banks' rural branches were profitable and even post superior performances relative to many of their urban branches. Umoh (1984) however, evaluates the varied complaints on the scheme and finds them irreconcilable with the huge annual corporate profits posted by the banks. In recognition of the need to sustain the programme, the study recommends the application of more of the carrot than the stick in order to make the programme more palatable to the participating banks. In a comprehensive review of the community banking scheme, Dauda (2007) observes that the deposits generated over the period 1992 – 2004 grew significantly, which the study attributes to improved grass root banking culture resulting from the programme. Disappointingly, the community banking system's credit to agriculture and rural-based ventures grew nominally over the period relative to general commerce (19.2% against 47.6%), which is counter productive.

Tracing the theoretical foundations of microfinance operations to Gap thesis, Ezirim, Adebayo and Ogunbiyi (2008) evaluate the scope of operations, environmental constraints as well as the level of micro credit product development within Nigeria. The study notes that microfinance institutions have significant competitive disadvantages in terms of deposit and asset base, as well as cost effectiveness of operations compared with other established and competing deposit money banking institutions. Akinboyo (2007) examines the operational potentials of microfinance institutions in Nigeria as well as their capacity to improve the financial conditions of the active poor based on the experiences of other countries. The study calls for rapid expansion of the microfinance framework in Nigeria on the grounds that it is characteristically, a less complex financial set up with high grass root potentials. Despite policy efforts to enhance the poverty alleviation capacity of microfinance programmes, Jaiyeola (2012) only acknowledges that microfinance banking in Nigeria has facilitated financial inclusion by enhancing the active poor's access to credits. However, the study observes that the present low level of success recorded merely indicates that microfinance programme has only placed the Nigerian active poor on sustenance level, without necessarily freeing them from the shackles of poverty.

Okpara (2010) evaluates critical determinants of poverty among Nigeria's enterprising poor and the extent to which microfinance operations have contributed to poverty alleviation. Identifying the elements of high cost of start-up and/or business expansion, low profit margins as well as low business growth, the study applies a two-stage regression technique within a quadratic equation framework. The results indicate that in the take-off stage of microfinance operations, poverty increases though at a declining rate as microfinance credit increases. However, from year 2001 which marks the beginning of the second stage, persistent increases in micro credits significantly reduce the poverty index in Nigeria. Consequently, the study calls for establishment of microfinance banks in every Nigerian community.

Oluyumbo (2011) examines the contributions of microfinance operations to Nigeria's economic growth through the instrument of micro credits. Employing the OLS regression technique, the results reveal a weak, though positive relationship between Nigeria's Real GDP and microfinance credits. Consequently, it recommends allocation of greater proportion of micro credits to productive sectors of the economy.

Further, Sharma and Puri (2013) test the empirical relationships that pertain between India's Real GDP and microfinance operations. The results of the correlation and OLS regression analyses on data covering the period

2006/7 to 2011/12 show a high correlation coefficient of 0.96 between the study variables. Employing the Autoregressive Distributed Lag Bound and Granger Causality techniques, Nwakanma, Nnamdi and Omojefe (2014b), find a significant long run relationship between Nigeria's microcredit programmes' operations and Real GDP with causality flowing uni- directionally from Real GDP to micro credits over the period 1982 to 2011.

3. ORGANIZATION OF DATA AND METHODOLOGY:

3.1 Data and Variable Description:

Data for this study consist of the annual values of micro credits allocated to the classified sectors of microfinance operations and the values of the classified sectors' contributions to Nigeria's gross domestic product over the period 1992 to 2011 (20 years). Central Bank of Nigeria's sectoral classification of micro credit disbursements and economic activities in Nigeria was adopted. GDP at current market prices was adopted for the study. It represents the value of GDP at the market prices which purchasers pay for the goods and services they acquire or use. Principally, it represents historical prices of goods and services which agree with the historical values of disbursed micro credits.

Further, it is vital to note that the data excludes the transactions of rural branches of commercial banks for the following reasons:
(i)The rural branches of commercial banks continued and/or closed operations as commercial banks after the rural banking scheme was phased out, (ii) rural branch credits were not reported by the CBN on classified sectoral basis in the statistical bulletin, (iii) it would amount to double counting since rural branch credits were aggregated alongside their urban branch credits for the purpose of classification of their entire corporate risk assets. (iv) rural banking scheme lasted for only nine (9) financial years. Consequently, only Central Bank of Nigeria's sectorally classified microcredit reports of community and microfinance banking schemes have been adopted covering the period 1992 to 2011 and presented in table 1 below:

Table 1: Classification of Micro Credits Institutions' Credit Facilities By Sectors of Economic Activity And Sectoral Contributions To Nigeria's Gross Domestic Product, 1992 – 2011 (₦ ' m)

Year	Facilities to Agriculture and Forestry (FAF)	Contributions of Agriculture and Forestry to Nigeria's GDP, (CAF)	Facilities to other Mining and Quarrying (FMQ)	Contributions of other mining/ Quarrying to Nigeria's GDP CMQ)	Facilities to Manufacturing and Food/processing (FMF)	Contributions of manufacturing/food Processing to Nigeria's GDP (CMF)	Facilities to Real Estate and Construction (FRC)	Contributions of Real Estate and Construction to Nigeria (CRC)	Facilities to Transport/ Commerce (FTC)	Contributions of Transport/ Commerce to Nigeria's GDP (CTC)
1992	29.50	145,225.25	3.70	916.45	19.90	25,520.83	14.60	6109.72	45.60	70347.06
1993	123.20	231,832.67	5-70	1202.87	129.60	37,223.57	47.50	8019.10	280.00	114396.18
1994	155.40	349,244.86	32.20	1548.72	201.00	60,991.42	34.90	10,324.60	513.80	188221.14
1995	98.60	619,806.83	17.90	2067.67	124.80	101,850.25	102.60	13,784.38	575.70	320,600.17
1996	229.40	841,457.07	17.60	2406.34	155.40	128,390.25	92.70	16,042.21	695.00	417674.69
1997	367.40	953,549.37	28.50	2816.40	200.00	139,580.03	105.20	18,775.74	729.90	462,019.45
1998	962.70	1,057,584.01	31.00	3731.67	299.40	137,758.21	67.10	24,877.83	1042.70	534552.55
1999	1,007.20	1,127,693.12	27.00	4129.09	293.50	146,229.52	71.90	27,527.52	1447.80	591,879.07
2000	1,248.35	1,192,910.00	33.46	4581.76	363.77	161,091.61	89.11	30,603.92	1794.44	643823.10
2001	447.37	1,594,895.53	11.99	5990.93	130.36	182,049.37	31.94	40,744.13	643.08	772,665
2002	1,467.71	3,357,062.94	39.34	7055.66	427.69	219,471.12	104.77	47,985.41	2109.77	933116.84

200 3	3,389.27	3,624,579.4 9	90.86	8401.33	987.64	266,136.26	241.95	58905.42	4871.91	1128087
200 4	3,865.58	3,903,758.6 9	103.62	13037.93	1126.44	321,382.38	275.95	166,078.47	5556.58	1829335
200 5	9,704.91	4,773,198.3 8	260.16	17286.35	2828.03	375,167.29	692.79	215,786.12	13950.33	2,230,857
200 6	505.23	5,940,236.9 7	449.33	27261.45	491.98	429,274.54	2,554.43	250,332.27	5078.32	3,158,034.8 0
200 7	701.90	6,757,867.7 3	624.14	31,427.07	683.39	464,610.41	3,548.24	226,463.99	7054.05	3,489,764
200 8	3,354.30	7,981,397.3 2	412.40	36,158.59	2006.33	520,828.27	2,139.15	306,581.64	23962.48	3,953,511.5 4
200 9	4,736.90	9,186,306.0 5	569.70	40,557.51	2275.70	538,793.41	2,421.10	347,690.73	28314.20	4,558,259
201 0	5,102.90	10,273,651. 99	520.40	45,617.21	2172.90	564,432.99	2,257.40	393,525.92	25,975.9 0	5,162,769.9 3
201 1	4,917.10	11,590,120. 18	571.00	52,430.12	2912.50	598,280.61	1,754.80	456039.02	38275.80	5,916,501.6 1

Source: Central Bank of Nigeria, Statistical Bulletin (Various Issues)

While the contribution of each classified sector of economic activity to Nigeria's GDP serves as the relevant sectoral economic growth indicator, a good number of studies including Nuno (2012), Murty et al (2012) as well as Aliero et al (2013) have employed sectoral distribution of credits within the domestic economy to achieve valuable results. Since current microfinance banking is largely private sector driven within the Nigerian framework, it becomes expedient to assert as argued by Hussien and Demetriades (1996) that; (i) private sector credit reflects the quantity, quality as well as the financing role of financial institutions, (ii) they do not only exclude all public sector credits, but are disbursed under conditions that largely avert moral hazards. Consequently, it is contended here that the annual sectorally classified micro credits and the corresponding sectoral contributions to gross domestic product in Nigeria sufficiently, constitute reliable basis for estimation of the nature of causal relationships and directions of causality prevailing between microfinance operations and growth of sectoral economic activities in Nigeria.

3.2   Specifications of Analytical Techniques and Tests:
The key objectives of this study are to examine the nature of causal relationships and the direction of causality existing between sectorally classified micro credits and the corresponding sectoral contributions to Nigeria's GDP. For purpose of clarity, this sub-section is sub-divided as follows;

3.2.1 Stationarity Tests:
Stationarity tests seek to ascertain whether time series data intended for econometric estimates have non-stationarity properties in which case, the data have unit root properties. Gujarati and Porter (2009) and Maddala (2007) provide a general procedure for evaluation of existence of unit root or otherwise for a time series Y_t as follows;

$$\Delta Y_t = \alpha_o + \alpha_i \ Y_{t-1} + \sum_{i=1}^{n} \delta_i \ \Delta Y_{t-1} + \epsilon_i \qquad - - - - - - - - (1)$$

Where;

       Y = Variable of choice

       α_o = Intercept

       Δ = First difference operator

α_i = (for i=1 and 2) and δ_i (for i = 1, 2 ---ρ) are constant
    parameters

       Σ_i = Stationary stochastic process

ρ = Number of lagged terms chosen by Akaike information
    Criterion (AIC) to ensure that Σ_i is white noise.

From equation (1), the hypotheses to be tested are;
H_o: $\alpha_i = 0$, i.e. there is a unit root, - the time series is non-
       stationary.

H_A: $\alpha_i \neq 0$, i.e. there is no unit root, - the time series is
        stationary.

As a decision criterion, the higher the value of the Calculated Augmented Dickey-Fuller (ADF) test statistic relative to the Mckinnon's critical values in absolute terms, then the null hypothesis H_o, will be rejected. This implies the non-existence of unit root, confirms the stationarity of the time series data and also, its suitability for employment in econometric estimates.

However, if the null hypothesis fails to be rejected, then stationarity test would be conducted on further differenced variants of each of the time series data based on a modification of equation (1) above as follows;

$$\Delta^2 Y_t = \Psi \Delta Y_{t-1} + \sum_{i=2}^{\rho} \emptyset \Delta^2 Y_{t-1} + \Sigma_t \quad - - - - - - - -(2)$$

In this differenced stage, the corresponding hypotheses for testing are;

H_o: $\psi \neq O$, there is a unit root, implying that the time series is non-
     stationary.

H_o: $\psi \neq O$, there is no unit root, implying that the time series is
     stationary.

3.2.2 Granger Causality Tests:

The standard Granger test for causality was employed for this study which on generalized basis, states that if the past values of a specified variable Y significantly contribute in forecasting another variable X_{t+i}, then Y is said to Granger cause X and vice versa. The Granger test is correspondingly based on the following general regressions, (Maddala, 2007):

$$Y_t = \beta_o + \sum_{i=1}^{n} \beta_o Y_{t-i} + \sum_{i=1}^{n} \beta_i X_{t-i} + \mu_t \quad - - - - - - - (3)$$

$$X_t = \propto_o + \sum_{i=1}^{n} \propto_i X_{t-i} + \sum_{i=1}^{n} \propto_i Y_{t-i} + V_t \quad - - - - - - - (4)$$

Where;

   Y_t and X_t constitute the time series variables to be tested.

   μ_t and V_t denote the idiosyncratic terms and capture all variations in Y_t and X_t not included in the specified lagged values.

4.   PRESENTATION OF RESULTS:

4.1   Presentation of Stationarity Test Result:

Table 2 below presents the results of the stationarity (unit root) tests of the time series variables under study:

Table 2: **Results of Stationarity Tests:**

Differenced Variables	ADF - Statistic	Test Critical Values			Order of Integration	Prob.
		1%	5%	10%		
D (FAF)	- 5.815355	- 3.857386	- 3.040391	- 2.660551	1 (1)	0.0002
D (CAF)	- 4.191431	- 3.857386	- 3.040391	- 2.660551	1 (1)	0.0005
D (FMQ)	- 4.921231	- 3.857386	- 3.040391	- 2.660551	1 (1)	0.0012
D (CMQ)	- 7.505627	- 3.857386	- 3.040390	- 2.660551	1 (1)	0.0079
D (FMF)	- 4.748555	- 3.886751	- 3.052169	- 2.666593	1 (1)	0.0018
D (CMF)	- 3.967105	- 3.857386	- 3.040391	- 2.660551	1 (1)	0.0074
D (FRC)	- 3.90435	- 3.857386	- 3.040391	- 2.660551	1 (1)	0.0203
D (CRC)	- 5.186437	- 3.857386	- 3.040391	- 2.660551	1 (1)	0.0171
D (FTC)	- 4.214630	- 3.920350	- 3.065585	- 2.673459	1 (1)	0.0407
D (CTC)	- 4.896074	- 3.831511	- 3.029970	- 2.655194	1 (1)	0.0001

Source: Authors' Computations Using E-views 7.1

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4.2   Presentation of Pair wise Granger Causality Tests Results:

The results of Pair wise Granger Causality Tests are presented in table 3 below;

Table 3: **Results of Pair wise Granger Causality Tests:**

NULL HYPOTHESES	LAGS	OBS	F-STATISTICS	P-VALUE
D (CAF) does not Granger Cause D (FAF)	2	17	0.13963	0.1226
D (FAF) does not Granger Cause D (CAF)	2	17	0.08283	0.9210
D (CMQ) does not Granger Cause D (FMQ)	2	17	10.4011	0.0024
D (FMQ) does not Granger Cause D (CMQ)	2	17	0.26563	0.7711
D (CMF) does not Granger Cause D (FMF)	2	17	0.12597	0.8828
D (FMF) does not Granger Cause D (CMF)	2	17	1.40541	0.2829
D (CRC) does not Granger Cause D (FRC)	2	17	2.76716	0.1027
D (FRC) does not Granger Cause D (CRC)	2	17	0.13317	0.8766
D (CTC) does not Granger Cause D (FTC)	2	17	3.72879	0.0550
D (FTC) does not Granger Cause D (CTC)	2	17	3.30244	0.0720

Sources: Authors' Computations Using E-Views 7.1

5.0   DISCUSSIONS, CONCLUSIONS AND POLICY RECOMMENDATIONS

The results of the stationary tests confirm that the time series variables are stationary at first difference and integrated of order 1, i.e. 1 (1). On the other hand, the results of pair wise Granger Causality tests show that;

i.   Unidirectional causality is only observed at 0.05 level between contributions of other mining/ quarrying to GDP and microcredits to that sector with causality flowing from contributions of other mining/quarrying in Nigeria's GDP to micro credits facilities granted to that sector. This could probably have resulted from lending to large scale cooperative associations in involving other mining/quarrying operators in several regions of Nigeria. Cooperative bodies enjoy significant level of financial leverage from microfinance institutions which is secured on cash flow basis.

ii.   The rest four sectors largely confirm the prevalence of Schumpeterian independent hypothesis stage although the causality which runs from contributions of transport/commerce to microcredit allocations to that sector records a significance level of 0.0550 (94.50 percent confidence level). This marginally differs from the traditional critical level of 0.05 for now. Further, it confirms growing preferential allocation of credits to high and fast yielding general commerce, mass-transit commercial transportation as well as tricycle operations in Nigeria by micro finance institutions.

Irrespective of the fact that volume of empirical literature is still sparse on the nature of interrelationships and directions of causality between microcredit operations and economic growth of nations, the results of this study become more useful for the fact that they represent a sectoral perspective of the subject of microcredit financing as it relates to the Central Bank's classified sectors of entrepreneurial activities in Nigeria. In this context, these results represent an obvious improvement over the findings of Oluyombo (2011) as well as Sharma and Puri (2013). They also, provide further insights into sectoral entrepreneurship activities and microcredit operations that may shape and/or reshape policy actions with respect to each sector of classified economic activity in Nigeria.

It is important to observe that in the other mining/quarrying and transport/commerce sectors where significant and near-significant unidirectional causalities prevail respectively, the causalities principally flow from sectoral

contributions in Nigeria's GDP to microcredit allocations to those sectors. This implies a demand-following trend. From these results, it is concluded that:

  (i) For other mining/quarrying as well as transport/commerce sectors, where microcredit financing has become significant and/or near-significant, microcredit institutions only function to service rather than promote activities in these sectors,

  (ii) For the rest other sectors – agriculture/forestry, manufacturing/food processing and real estate/construction, there is still prevalence of Schumpeterian independent hypothesis state, whereby, entrepreneurial activities in those sectors are predominantly independent of microcredit operations within the economy.

In accordance with the results and conclusions reached above, it is recommended that;

(i)   Nigerian microcredit institutions should lay very high emphasis on marketing of their services and also, engage in extensive development of sector-specific microcredit and deposit products. These are necessary for them to tap into the growing sectoral business opportunities created by micro entrepreneurship. Further, it will place them in a position to meet the diversified and changing needs of micro entrepreneurship in classified sectors of the economy.

(ii)   The government should, through appropriate legal provisions and channels, ensure enforcement of credit contracts. This is hoped to minimize incidences of delinquent credits, enhance the capacity of microcredit institutions to service entrepreneurship and also, sustain their intermediating roles in the Nigeria economy.

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