Financial Inclusion in the Agricultural Sector in Nigeria: An Index of Penetration

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ABSTRACT

This study investigated financial inclusion in the agricultural sector in Nigeria. The study utilized survey data generated from 600 recovered questionnaires which were administered to farmers in both rural and urban locations in Nigeria. The study developed adequacy gap index and timeliness gap index to measure the penetration gap index theory of financial inclusion through the application of the pecking order theory. The adequacy and timeliness gap indices revealed that the different formal lending agencies were unable to meet the credit needs of these small scale farmers hence, credit was inadequately and untimely provided to small scale farmers because they depend on rain-fed agriculture. The penetration gap index revealed that the penetration of financial inclusion in agricultural sector is still shallow in Nigeria. It was recommended among others that government should intensify the efforts to meet the credit needs of farmers (adequacy and timeliness) to ensure the penetration of financial inclusion.

Keywords: Financial Inclusion, Agricultural Sector, Adequacy Gap Index, Timeliness Gap Index, Penetration Index
JEL Classifications: A1, B1, B41, D2, D3, G, H3

1. INTRODUCTION

Financial inclusion has assumed increasing recognition across the globe among policy makers, researchers and development oriented agencies. Its importance derives from the promise it holds as a tool for economic development, particularly in the areas of poverty reduction, employment generation, wealth creation and improving welfare and general standard of living (Central Bank of Nigeria - CBN, 2015).

In Nigeria, Enhancing Financial Innovation and Access – EFInA (2008) report revealed that about 53.0% of adults were excluded from financial services. For EFInA (2008) as quoted in CBN (2015), the global pursuit of financial inclusion as a vehicle for economic development had a positive effect in Nigeria as the exclusion rate reduced from 53.0% in 2008 to 46.3% in 2010. Encouraged by the positive development, the Central Bank of Nigeria in collaboration with stakeholders launched the National Financial Inclusion Strategy on 23rd October, 2012 aimed at further reducing the exclusion rate to 20% by 2020. Specifically, adult

Nigerians with access to payment services is to increase from 21.6% in 2010 to 70% in 2020, while those with access to savings should increase from 24.0% to 60%; and Credit from 2% to 40%, Insurance from 1% to 40% and Pensions from 5% to 40%, within the same period (CBN, 2015).

CBN (2015) were of the view that the implementation of the Strategy is impacting positively on the rate of access to financial services. As a result of this, the adult exclusion rate reduced from 46.3% in 2010 to 39.7% in 2012. All the geopolitical zones in Nigeria equally recorded improvements with exclusion rate declining between 2010 and 2012 as follows: North-East, 68.3% to 59.5%, North-West, 68.1% to 63.8%, North-Central, 44.2% to 32.4%, South-East, 31.9% to 25.6%, South-West, 33.1% to 24.8% and South-South, 36.4% to 30.1% CBN (2015).

However, small scale farmers are responsible for about 95% of the total food production in Nigeria. These small scale farmers have poor capital base and are faced with risks and uncertainties inherent in agriculture, which affect the level of adoption of

new technology that have the potential of increasing agricultural productivity. Agricultural production is risky because farmer's realizations always deviate from expected returns and frequency of occurrence of variation continues to increase yearly (Essen and McCurdy, 1994).

Farmers in Nigeria, face a lot of constraints. The non-availability of credit is the most limiting factor of all the constraints. Lack of credit and/or inadequate credit is generally recognized as one of the major constraints not only in expanding production but also, in modernizing agriculture in Nigeria. Even when the credit is available through bank loans and other agencies, access becomes difficult. Obtaining such loans/credit by farmers may linger on until the farming season is over and there is only one farming season (rainy season) in the country. Irrigation farming is not popular in the Nigeria due to land tenure system and inadequate finance available to these poor farmers hence, agriculture in Nigeria are majorly rain-fed. This leads to loan/credit access one of the limiting constraint to agricultural production. Thus, the objective of this study is to examine whether financial inclusion of small scale farmers in Nigeria meet the adequacy and timeliness criteria of access to finance.

1.1. Overview of Financial Inclusion Gap between Men and Women in 2014, Nigeria and SSA

In Table 1 the absolute (Abs.) gap refers to the difference in percentage points between the male and the female values of the respective indicators; the relative (Rel.) gender gap indicates the percentage by which the female inclusion needs to increase to eliminate the difference. Table 1 indicates that in Nigeria, the difference in percentage points of the male values of the respective indicators is greater than that of the females as indicated by the absolute (Abs) gap. This gap can be seen to me wider in Nigeria compared to other developing Sub-Sahara African (SSA) countries. The relative (Rel.) gender gap also indicates that a lot of percentage increases in female financial inclusion are needed in order to eliminate the difference in Nigeria. This difference is also wider in Nigeria compared to other developing SSA countries.

1.2. Policy Thrust of Financial Inclusion in Nigeria

The Central Bank of Nigeria in collaboration with stakeholders launched the National Financial Inclusion Strategy on 23rd October, 2012.The major policy thrusts of the National Financial Inclusion Strategy among others include:
a. Reducing further the exclusion rate of adults from financial services to 20% by 2020.
b. Increasing the number of adult Nigerians with access to payment services from 21.6% in 2010 to 70% in 2020.
c. Increasing those with access to savings from 24.0% to 60% by 2020.

d. Increasing those with access to credit from 2% to 40%, insurance from 1% to 40% and pensions from 5% to 40% by 2020.
e. The channels for delivering the above financial services were targeted to improve, with deposit money (DMBs) bank branches targeted to increase from 6.8 units per 100,000 adults in 2010 to 7.6 units per 100,000 adults in 2020.
f. Microfinance bank (MFBs) branches to increase from 2.9 units to 5.5 units; ATMs from 11.8 units to 203.6 units, POSs from 13.3 units to 850 units, Mobile agents from 0 to 62 units, all per 100,000 adults between 2010 and 2020.

The major tools for driving the Strategy as released by the Central Bank of Nigeria (CBN) on the framework include the following:
i. Agent banking.
ii. Know your customer requirements.
iii. MSME development fund.
iv. Financial literacy.
v. Mobile money operation.

However, the CBN is working on the framework for consumer protection and has set up a Financial Inclusion Secretariat to coordinate the implementation of the Strategy.

2. LITERATURE REVIEW

The literature review of this study is divided into two viz.; theoretical literature and empirical literature. Sub-section 2.1.1 deals with theoretical literature while 2.1.2 takes care of empirical literature.

2.1. Theoretical Literature

The theoretical literature is further divided into two name; theories of financial inclusion and theories of financial exclusion. While theories of financial inclusion are taken care of under sub-section 2.1.1.1, theories of financial exclusion are seen under sub-section 2.1.1.2.

2.1.1. Theories of financial inclusion
2.1.1.1. The pecking order theory
The pecking order theory was first suggested by Donaldson (1961). It was later modified by Myers and Majluf (1984), and later popularized by Matemilola and Bany-Ariffin (2011). The theory states that the manner in which enterprises cover their financing deficits does not depend on the current levels of debt, they always prefer internal funds to external funds and debt to equity. For Myers and Majluf (1984), enterprises prefer internal financing when available, and if external financing is required,

Table 1: Financial inclusion gap between men and women in 2014, Nigeria and SSA

Financial inclusion	Nigeria				Sub-Saharan Africa (developing)			
	Female	Male	Abs. Gap	Rel. Gap (%)	Female	Male	Abs. Gap	Rel. Gap (%)
% Account at a financial institution	33.6	54.3	20.7	61.8	25.1	32.7	7.6	30.2
% Saved at a financial institution	21.4	32.5	11.1	51.7	13.5	18.4	4.9	36.1
% Borrowed from a financial institution	4.1	6.4	2.3	54.5	5.7	6.9	1.1	19.4
% Debit card used in the past year	9.1	19.0	9.9	108.7	7.1	10.2	3.0	42.6
% Mobile account	2.1	2.5	0.4	21.3	10.3	12.8	2.5	24.5

Source: Global Findex (2014)

debt is preferred over equity. The theory has a specific preference order for capital to finance enterprises. Therefore, as a result of information asymmetry between enterprises and potential investors, enterprises would always prefer retained earnings to debt, short-term debt over long-term debt and debt over equity.

2.1.1.2. The theory of inclusive growth

This theory states that inclusive growth in the economy can only be achieved when all the weaker sectors of the society, including agriculture and small scale industries, are nurtured and brought on par with other sectors of the society in terms of economic development. The major development challenge is to make the growth inclusive. Development economists have often been for a long time interested in the relationship between financial inclusion and economic growth, especially in the period which is known as the era of the Washington Consensus. According to the theory, a growing gross domestic product (GDP) is an evidence of a society, getting its collective act together for progress. As its economy grows, a society becomes more strongly organised, more compactly interwoven. Therefore, a sustained high growth is better and sustained high growth with inclusiveness is best for all. Policies for inclusive growth are vital components of majority of government strategies for sustainable growth. Inclusiveness is an essential ingredient of any successful growth strategy(Commission on Growth and Development, 2008).

2.1.1.3. The finance-growth theory

The origin of the finance-growth hypothesis can be traced back to Bagehot (1873). The proponents of the finance-growth hypothesis argued that the existence of an energetic financial sector has growth-enhancing effects. Schumpeter (1911) posited that banks enable an economy to grow by providing efficient markets for funds. Goldsmith (1969), McKinnon (1973), Levine and Zervos (1996), Ndebbio (2004), among others, also emphasized the positive role of financial systems in economic growth. The finance-growth theory looked at the lack of access to finance as a critical factor responsible for persistent income inequality as well as slower growth. It posits that financial development creates a productive environment for growth through "supply leading" or "demand-following" effect. Consequently, access to safe, easy and affordable source of finance is recognized as a pre-condition for accelerating growth and reducing income disparities and poverty which creates equal opportunities, enables economically and socially excluded people to integrate better into the economy and actively contribute to development and protect themselves against economic shocks (Serrao et. al, 2012). Furthermore, the main argument of proponents of the supply leading theory was that financial markets evolve in response to increased demands for financial services from an already budding economy and as such, the development of financial markets should be a reflection of growth in other sectors of the economy.

2.1.1.4. The financial intermediation theory

Financial intermediation is seen as the extent to which financial institutions bring deficit spending units and surplus spending units together (Ndebbio, 2004). An important question that this theory tries to answer is why do investors first lend to banks who then lend to borrowers, instead of lending directly? Proponents of this theory argued that banks are able to effectively monitor borrowers and thus play the role of delegated monitoring(Diamond, 1984). Hence, the theory posits that intermediaries provide services by issuing secondary financial assets to buy primary financial assets and if an intermediary provided no services, investors who buy the secondary securities issued by the intermediary might as well purchase the primary securities directly and save the intermediary's costs. Financial market frictions can be the critical mechanism for generating persistent income inequality or poverty traps. These market frictions include information asymmetry and transaction costs that play a central role, influencing key decisions regarding human and physical capital accumulation and occupational choices. Financial inclusion attempts to reduce these market frictions. Information asymmetry is a situation where by the one party has more or better information than the other. Information asymmetry causes markets to become inefficient, since all the market participants do not have access to the information they need for their decision making processes. Examples of this problem are adverse selection, moral hazard, and information monopoly.

In adverse selection models, the ignorant party lacks information while negotiating an agreed understanding of or contract to the transaction, whereas in moral hazard the ignorant party lacks information about performance of the agreed-upon transaction or lacks the ability to retaliate for a breach of the agreement. Transaction costs if too high lead to higher pricing of products, which is one reason why financial exclusion exists. Financial inclusion initiatives are geared towards reducing the transaction costs. Thus, proponents argued that reducing financial market imperfections to expand individual opportunities creates positive, not negative, incentive effects. These models show that lack of access to finance can be the critical mechanism for generating persistent income inequality or poverty traps, as well as lower growth (Aduda and Kalunda, 2012).

2.1.2. Theories of financial exclusion

2.1.2.1. Free market model

This model, technically labeled as the "Share-holder Wealth Maximization Model explains the process of financial exclusion at the macro level. This model rests on the principle of projecting "Market" as the sole panacea for all illness of an economy. It is argued that a deregulated economy (a market economy) has an inherent tendency to move closer to "Pareto Optimum". Intervention by the policies of government will take away the economies from the path of attaining growth accompanied by the removal of all type of imbalances. In deregulated financial scenario, financial institutions indulge in stock market operations to collect fund for their functions. Most of the leading financial institutions encompassing banking institutions have embarked on placing their shares in the capital market. Besides the new generation and private banks thronging on the capital market to collect fund, nationalized commercial banks in India have also followed the suit, thanks to policy change of government in favor of disinvestment. The deregulation of the financial sector in force in India since the onset of neoliberal policies has in fact exacerbated financial exclusion(Chavan, 2008). Evidently, financial exclusion is the result of the enhanced competition triggered by globalization and deregulation.

2.1.2.2. The theory of asymmetric information

Financial exclusion is the lack of correct information about the potential borrower and lender. At a time when information technology rules the world of financial operation, financial exclusion, arising out of information asymmetry assumes significance. The information happens to be asymmetric or imperfect when one party to a product has more information than the other. When these conditions persist, many problems surface, which may adversely affect economic exchanges of financial products and in its culmination it can lead to the denial of financial products to some groups of people. In addition, sometimes it is likely that the potential borrower may misinform the lender, the banks, about their credit worthiness, which ultimately raises the loan default rate, paving the way for an escalation of financial crisis, making the financial institutions to be more vigilant in lending. This extra vigilance will finally end up with the exclusion of more people, who would otherwise be included, from the purview of financial network. It is observed that institutional arrangements in the form of banks find it difficult to break the barrier of information asymmetry especially in rural areas, which ultimately tempt the buyers to seek financial products from informal sources. Informal sellers of financial products like moneylenders, on the other hand, are quick in addressing the problem of information barrier.

2.3. Empirical Literature

Nkwede (2015) investigated the influence of financial inclusion on the growth of African economy, using Nigeria as a case study. Extrapolated time series financial inclusion data from Nigeria, covering the period of 1981 to 2013 were used in the analysis. The multiple regression models anchored on Ordinary Least Square technique was adopted in estimating the contributions of the variables. While controlling for other macroeconomic exogenous variables; the results indicated that financial inclusion has significant negative impact on the growth of Nigeria economy over the years. The study therefore attributed the result to high level of financial exclusion of bankable adult citizens in Nigeria in particular and Africa in general. The study however suggested more inclusive financial system in Nigeria (and Africa) with focus on the rural populace because "growth is good, sustained high growth is better and sustained high growth with financial inclusiveness is best of all" especially in the developing economy.

Nwankwo and Nwankwo (2014) examined the sustainability of financial inclusion to rural dwellers in Nigeria using descriptive study and content analysis. The study found that the sustainability of financial inclusion to rural dwellers in Nigeria remained the mainstream for economic growth in any country. Moreover, it was also found by the study that the economy cannot grow fast without proper implementation of financial inclusion to rural areas in Nigeria. The study therefore recommended that the promotion of collaboration between DMBs, MFBs and communication services providers for enhanced intermediation of financial services should be encouraged; there is need to educate rural dwellers on the importance of banking as it would facilitate the success of CBN financial inclusion policy and that since some of the rural dwellers preferred to keep money under their pillows at home, there should be proper enlightenment to change their orientation on financial inclusion in Nigeria.

Babajide et al. (2014) tried to ascertain the impact of flow of FDI on economic development of host African countries characterized with low income per capita. Panel data was utilized for 39 African countries, 20 of which were low income countries. The results indicated that FDI had significant impact on economic development of host African countries, by enhancing development of host sector and reducing gradually dependence on foreign capital, which resulted in increased income per capita, better education, living standards and wellbeing of the host economies. The study however recommended that government of host economies should guide the sector of FDI inflow, and ensure policies are in place to enhance domestic investment development in such sectors. This will gradually bring about closure of existing proactive factors and hence economic development.

Michael (2016) examined whether increased access to financial services by farmers can bring about sustainable development in Nigeria merits attention. In response, the study adopted survey research design to obtain and analyse the perception of 105 farmers in Ogun State, Nigeria on the subject. It was found by the study that financial inclusion in the Nigerian agriculture sector can be used to achieve sustainable development. The study however recommended the siting of more financial institutions in rural areas and financial discipline, amongst others, as measures to achieve financial inclusion in the agricultural sector.

Mbutor and Uba (2013) examined the impact of financial inclusion on monetary policy in Nigeria between 1980 and 2012. Hence, using descriptive statistics and log-linear model based on OLS, the result of the study indicated the notion that growing financial inclusion would improve the effectiveness of monetary policy. However, the coefficient of the number of bank branches has the wrong sign and this is explained by the fact that, in opening branches, banks mainly pursue profits but not financial inclusion which is a policy objective, so that there are clusters of branches which are under-utilized while numerous locations which are considered not favourable for balance sheets are under-branched.

Onaolapo (2015) examined the effects of financial inclusion on the economic growth of Nigeria between the period 1982 and 2012. Data for the study were collected mainly from secondary sources such as Statistical Bulletins of the Central Bank of Nigeria (CBN), Federal Office of Statistics (FOS) and World Bank. The data employed were bank parametric as Branch Network, Loan to Rural Area, Demand Deposit, Liquidity Ratio, Capital adequacy, and GDP. Extracted data spanning about 30-year period; 1982 to 2012 were related using the Ordinary Least Square (OLS) method. From the results of the study, it was found that Loan to Rural Areas (LRA), Agricultural Guaranty Fund (ACGSF) and per capital income (PCI) were all significant at 5% level. Financial deepening (FDI) and broad money (FD2) also significantly influenced Economic Growth. Deposits from rural areas (DRA) as surrogate for financial inclusion is influenced by loans to rural areas (LRA) and small scale enterprise (LSSE) as surrogates for financial intermediation. Moreover, the overall results of the regression analysis indicated that inclusive Bank financial activities greatly influenced poverty reduction but marginally determined national economic growth and financial intermediation through enhanced

bank branch networks, loan to rural areas, and loan to small scale enterprise given about 50% relatedness between variables on either sides of the equations. The study therefore recommended that there is need to create deposit and borrowing windows at affordable cost to the poor and to the income group erstwhile tagged the "un-bankable."

Adepetun (2016) looked at how to achieve full financial inclusion in Nigeria using Etisalat Nigeria as a case study. Using descriptive statistics, the study found that the factors that could lead to full financial inclusion among others include; interoperability of standards for money exchange across operators, agents and products; agent/merchant distribution network that accepts and processes clients' transactions; technology platform or avenue by which digital financial services were being provided to target the customers and product variety which addresses key pain points and creates value in the community. More so, the results also showed that only 12% were doing mobile banking while online banking has just 18% of the population. The study therefore recommended for a strategic approach that involves the collaboration of all stakeholders. There must be regulatory interventions in place to foster the right conditions for increased collaboration. The banks must see and work towards the greater need for client-centric and digital mind set to increase customer base and deposits while reducing cost to acquire and serve.

3. METHODOLOGY

3.1. Theoretical Framework
The theoretical framework of this study is housed by the pecking order theory of financial inclusion which was first suggested by Donaldson (1961), later modified by Myers and Majluf (1984), and later popularized by Matemilola and Bany-Ariffin (2011). The theory posits that the manner in which enterprises cover their financing deficits does not depend on the current levels of debt; they always prefer internal funds to external funds and debt to equity. The theory is of the view that enterprises prefer internal financing when available, and if external financing is required, debt is preferred over equity. The theory has a specific preference order for capital to finance enterprises, in this case, small scale farmers. Farmers will prefer to be financed adequately and on time to enable them utilize the finance during the farming (rainy) season.

3.2 Model Specification
Financial needs of small scale farmers entail providing adequate and timely finance to farmers. The financial needs of farmers are measured with two indices namely; the adequate gap index and the timeliness gap index. These two indices measure the penetration index of the financial inclusion (Ugbor, 1998).

Therefore, the model specification of this study adopts the adequacy gap index and the timeliness gap index in order to analyze the objective of the study which tries to examine financial inclusion of small scale farmers in Nigeria meet the adequacy and timeliness criteria of access to finance.

Adequacy gap index measures the credit adequacy of small scale farmers. That is, it measures the capacity and the ability to supply

credit demanded by small scale farmers based on emergency events in steady-state conditions. If no gap exists between the credit needs (adequacy) of small scale farmers and credit granted by the lending agencies (that is; between the demand and supply periods), then the credit gap index will be zero. It implies then that the credit is adequately provided to the small scale farmers. If gap exist between the credit needs and credit granted by the lending agencies, it implies that credit is inadequately provided. This can be given in equation (1) below:

$$\text{Adequacy gap index: } Agi = \frac{An\text{-}Ag}{An} \qquad (1)$$

where;
Adequacy gap index is $0 \le Agi \le 1$
Agi = Adequacy gap index
An = the amount of credit needed by the small scale farmer
Ag = the amount of credit granted to the small scale farmer by the lending agencies

Timeliness gap index measures the timeliness of credit received by small scale farmers. If no time lag exists between when application was made and when it was received by the small scale farmer, then the lag index will be zero. However, if time lag exists, it implies that timeliness of credit was not met and the index will be more than zero but <1, since short term credit duration is within a year. This can be seen here under in equation (2):

$$\text{Timeliness gap index: } Tgi = \frac{Tn - Tr}{Tn} \qquad (2)$$

where;
Timeliness gap index is $0 \le Tgi \le 1$
Tgi = Timeliness gap index
Tn = when credit was needed by the small scale farmers
Tr = when credit was received by the small scale farmers

The penetration gap index is measured by a combination of adequacy gap and timeliness gap indices. If the credits given to small scale farmers are adequately and timely given to them, it means it has penetrated or that there is high penetration of the credits to small scale farmers. If the two (adequacy and timeliness indices) are met then, the penetration index is very high but if one of them is met, the penetration index is not met. This means that for the penetration objective to be achieved, the two conditions (adequacy and timeliness) must be met. This can be given in equation (3) below:

$$\text{Penetration gap index: } Pgi = Agi + Tgi \qquad (3)$$

where;
Penetration gap index (Pgi) is $0 \le Pgi \le 1$
Tgi = Timeliness gap index
Agi = Adequacy gap index

If Pgi = 0, there is very high degree of penetration. It means that those who required capital were given it at the time they required them and the amount they needed. If Pgi > 0 but < 1, it means penetration is not met. When Pgi = 1, then there is no penetration at all.

3.3. The Study Area

Nigeria is one the countries in Africa, bordering Benin in the west, Chad and Cameroon in the east, and Niger in the north. Its coast in the south lies on the Gulf of Guinea in the Atlantic Ocean. It is divided into six geopolitical zones and comprises 36 states and the Federal Capital Territory, where the capital, Abuja is located. The geopolitical zones are: North-Central, North-East, North-West, South-East, South-South and South-West.

Nigeria is often referred to as the "Giant of Africa", owing to its large population and economy. With approximately 186 million inhabitants, Nigeria is the most populous country in Africa and the seventh most populous country in the world.

Nigeria is a multinational state and has over 500 ethnic groups, of which the three largest are the Hausa, Igbo and Yoruba. These ethnic groups speak over 500 different languages and are identified with wide variety of cultures. Nigeria is divided roughly in half between Christians, who live mostly in the southern part of the country, and Muslims, who live mostly in the north (Ake, 1996).

Nigeria is the 12th largest producer of petroleum in the world and the 8th largest exporter, and has the 10th largest proven reserves. Nigerians are mainly employed in agriculture. Agriculture used to be the principal foreign exchange earner of Nigeria before the advent of petroleum (Ake, 1996). Majority of crops produced in Nigeria among others include beans, cashew nuts, cassava, cocoa beans, groundnuts, kolanut, maize (corn), melon, millet, palm kernels, palm oil, plantains, rice, rubber, sorghum, soybeans and yams (Ake, 1996).

3.4. Data and Method of Data Collection

The data used in this study is a survey data generated from 600 recovered questionnaires which were administered to farmers in both rural and urban locations in all the six (6) geopolitical zones of Nigeria. Worthy of note here is that the study concentrated on farmers in Nigeria and a total 660 questionnaires were disseminated while 600 were recovered. For practical purposes, farmers in the 6 zones in Nigeria were considered, from which the study drew a simple random sampling of farmers after applying the multi-stage random sampling technique.

In each geopolitical zone of the country, one (1) State was randomly sampled. In each of the sampled State, five (5) agricultural intensive locations were considered. A total of thirty (30) urban and rural locations were visited with the consideration of two (2) urban agricultural intensive farming locations and three (3) rural agricultural intensive farming locations in Nigeria. In each of these five (5) locations per State, fifty (50) urban farmers and fifty (50) rural farmers were randomly selected from each of the selected location thereby, summing up to hundred (100) farmers in each State hence, making it a total of 600 farmers interviewed in all. Therefore, a total of 600 recovered geopolitical zone-based questionnaires which gave consistent reports were administered and collected from farmers and were used for analyses. The choice of these data is due to the fact that, unlike other surveys carried out previously, the questionnaires designed by this study,

provided more complete information about the variables used in the estimation of the indices of the study.

The States and geopolitical zones sampled were: Benue in the North-Central well known for the production of yam, Adamawa in the North-East well known for the production of beans, Kaduna in the North-West well known for the production of beans, Enugu in the South-East well known for the production of rice, Cross-River in the South-South well known for the production of yam, and Ondo State in the South-West well known for the production of maize.

4. RESULTS

Figure 1 shows that all the sampled respondents in each geopolitical zone in Nigeria maintained equal number of respondents, hundred (100) each. The geopolitical zones are: North-Central, North-East, North-West, South-East, South-West and South-South.

Figure 2 shows the percentage distribution of respondents by sector. It indicates that the sampled urban farmers who responded to the survey are 40% while that of the rural are 60%. This shows that in Nigeria, people tend to farm more in the rural areas than urban areas.

In Figure 3, the number of the distribution of respondents by sector is shown. It indicates that the number of sampled respondents (farmers) in the urban area is 240 while that of the rural area is 360. This also indicates that people engage in farming activities more in rural areas compared to their counterparts in the urban areas in Nigeria.

The percentage distribution of respondents by gender is shown in Figure 4. It depicts that the percentage of male farmers are greater than that of female farmers in Nigeria. Hence, while male farmers have 58%, that of the female farmers is 42%. This shows that farmers in the rural areas in Nigeria are more of males compared to their female counterparts.

In Figure 5, the number of the distribution of respondents by gender is shown. It shows that the number of sampled respondents (farmers) who are males is 348 while that of the female is 252. This agrees with Figure 4 and depicts also that the number of male farmers are greater than that of female farmers in Nigeria.

The distribution of the sources of credit amount needed and granted to small scale farmers is shown in Figure 6. In Figure 6, the blue bars represent the credit amount needed while the orange bars represent the credit amount granted. It depicts that the amount of credit granted to small scale farmers from different agencies such as the agricultural credit grant scheme (ACGS), Commercial Banks, and co-operative societies were far below their credit needs. None of the credit needs of the small scale farmers have been met by these grant agencies except for some co-operatives who will either charge higher interest or grant lesser credit to these farmers.

The adequacy gap index is shown in Figure 7. It indicates that even as the different agricultural grant agencies such as the
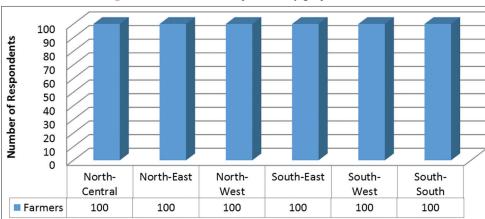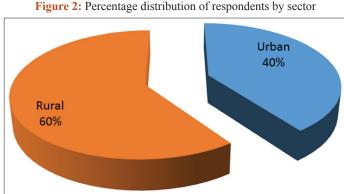
Figure 1: Distribution of respondents by geopolitical zones

Source: Author's computation from survey data (2017)

Figure 2: Percentage distribution of respondents by sector

Source: Author's computation from survey data (2017)

Figure 3: Number of distribution of respondents by sector

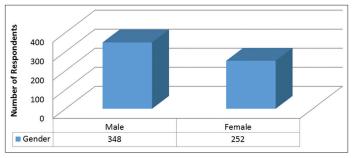Source: Author's computation from survey data (2017)

Figure 4: Percentage distribution of respondents by gender
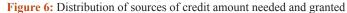

Source: Author's computation from survey data (2017)

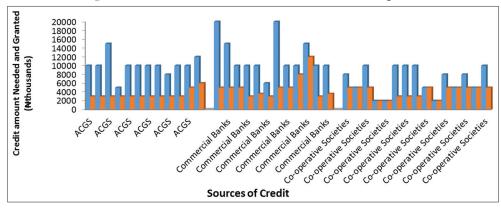**Figure 5:** Number of distribution of respondents by gender

Source: Author's computation from survey data (2017)

Agricultural Credit Grant Scheme (ACGS), Commercial Banks, and co-operative societies are unable to meet the credit needs of these small scale farmers, they (agricultural grant agencies) lack the capacity and the ability to supply credit demanded by small scale farmers based on emergency events in steady-state conditions. Therefore, since gap exist between the credit needs and credit granted by the lending agencies, it implies that credit is inadequately provided except for some co-operative societies in Nigeria who have been trying to close these gap between the credit needs (adequacy) of small scale farmers and credit granted by the lending agencies (that is; between the demand and supply periods) hence, making the adequacy gap index to be zero (0) at some points. Thus, for some co-operatives, credit is adequately
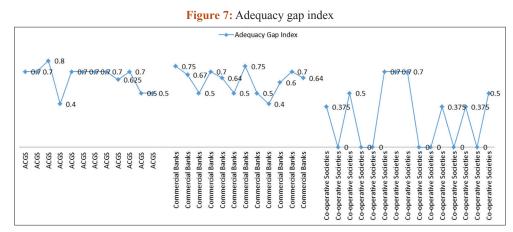
provided to the small scale farmers at some point but for other lending agencies (Agricultural Credit Grant Scheme (ACGS) and Commercial Banks), credit is inadequately provided since their adequacy gap indices are above zero (0).

Figure 8 shows the distribution of the sources of time needed and time received of loan by the small scale farmers in Nigeria. In Figure 8, the blue bars represent the time needed of loan by small scale farmers while the orange bars represent the time received of the loan. It depicts that the time of granting small scale farmers
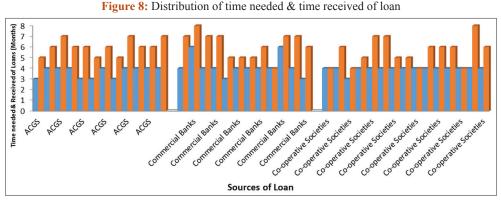
Figure 6: Distribution of sources of credit amount needed and granted

Source: Author's computation from survey data (2017)

Figure 7: Adequacy gap index

Source: Author's computation from survey data (2017)

Figure 8: Distribution of time needed & time received of loan
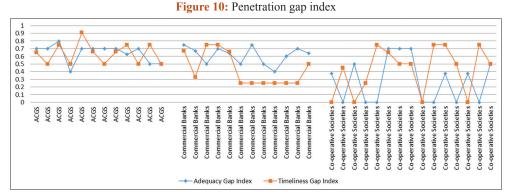

Source: Author's computation from survey data (2017)

loan from different agencies such as the Agricultural Credit Grant Scheme (ACGS), Commercial Banks, and co-operative societies always exceeds the time they needed the loan. None of the credit needs of the small scale farmers have also been met by these grant agencies with regard to the time they needed it except for some co-operatives who will either charge higher interest or grant lesser credit to these farmers in order to meet up with the farming season. Some small scale farmers apply for loan in March and end up receiving the loan in May and even up to August. Within these periods, farming (rainy) season may have gone and the farmer may end up utilizing these funds for other purposes instead of the real objective of applying for the loan.

Figure 9 depicts the timeliness gap index and it indicates that there have been time gap in the credit receipt of small scale farmers through the different agricultural grant agencies such as the Agricultural Credit Grant Scheme (ACGS), Commercial Banks, and co-operative societies. Some small scale farmers apply for loan in March and end up receiving the loan in May and even up to August. Within these periods, farming (rainy) season may have gone and the farmer may end up utilizing these funds for other purposes instead of the real objective of applying for the loan. These lending agencies have been unable to meet up with the credit needs of these small scale farmers on time for these farmers to utilize the fund adequately in their faming season, except for

Figure 9: Timeliness gap index

Source: Author's computation from survey data (2017)

Figure 10: Penetration gap index

Source: Author's computation from survey data (2017)

some co-operatives. Hence, since some of these indices are more than zero but <1, time lag exists and the implication here is that timeliness of credit was not met. However, for some co-operatives, there was no time lag that existed between when application was made and when it was received by the small scale farmer hence, the timeliness index maintained a zero (0) value in these cases; but for other lending agencies (Agricultural Credit Grant Scheme (ACGS) and Commercial Banks), time lag exists between when application was made and when it was received by the small scale farmer since their timeliness gap indices are above zero (0) but <1.

Penetration gap index is shown in Figure 10. It indicated that there is gap in the penetration of agricultural credit grants to small scale farmers in terms of adequacy and timeliness of these credits. The credits granted to these farmers are not always adequate for them to carry out their farming activities which will help them to have a leap from poverty. More so, the time which they receive these loans are not also convenient for them to utilize it in their agricultural activities. Some of them may apply for loan in the month of March but end up getting it in August when farming (rainy) season may have been ended. These farmers do not have the resources to engage in irrigation because of the nature of the resources involved which they do not have access to.

5. CONCLUSIONS AND RECOMMENDATION

This study attempted to examine financial inclusion in the agricultural sector in Nigeria. It was found by the study that urban farmers who responded to the survey make up about 40% while

that of the rural are 60%. The number of sampled respondents (farmers) in the urban area is 240 while that of the rural area is 360 thereby, indicating that people engage in farming activities more in rural areas compared to their counterparts in the urban areas in Nigeria. The study therefore recommends that policies aimed at increasing the number of farmers in the urban areas should be encouraged by the government. This will help to reduce urban poverty and increase economic growth and development.

Further, the percentage of male farmers was found to be greater than that of female farmers in Nigeria hence, while male farmers have 58%, that of the female farmers is 42%. This indicates that farmers in the rural areas in Nigeria are more of males compared to their female counterparts. The numbers of sampled respondents (farmers) who are males were found to be about 348 while that of the female were 252. Policies geared toward more financial inclusion of female farmers should be encouraged by the government. This will help in reducing the absolute and relative gap that exists between the males and females with respect to financial inclusion thereby, reducing food and income poverty among the population.

It was found from the adequacy gap index that the different agricultural grant agencies (Agricultural Credit Grant Scheme (ACGS), Commercial Banks, and co-operative societies) were unable to meet the credit needs of these small scale farmers, they (agricultural grant agencies) lack the capacity and the ability to supply credit demanded by small scale farmers based on emergency events in steady-state conditions thereby, implying that credit is inadequately provided to small scale farmers except for some co-operative societies in Nigeria who maintained the adequacy gap

index of zero (0) at some points. Governments should train and educate the lending agencies especially, the Agricultural Credit Grant Scheme (ACGS) and Commercial Banks on the need to provide credit adequacy to small scale farmers. This will encourage them to produce more and as a result, lead to self-sufficiency in food production of the country at large.

It was also found that the time of granting small scale farmers loan from different lending agencies (Agricultural Credit Grant Scheme (ACGS), Commercial Banks, and co-operative societies) always exceeds the time they needed the loan. Some small scale farmers apply for loan in March and end up receiving the loan in May and even up to August. Within these periods, farming (rainy) season may have gone and the farmer may end up utilizing these funds for other purposes instead of the real objective of applying for the loan. None of the credit needs of the small scale farmers have also been met by these grant agencies with regard to the time they needed it except for some co-operatives who will either charge higher interest or grant lesser credit to these farmers in order to meet up with the farming season. Government should encourage or make directives to these lending agencies to first attend to farmer's loan applications before others. They should also make the processes of obtaining the loan to be less cumbersome to these farmers.

The penetration gap index revealed that there is gap in the penetration of agricultural credit grants to small scale farmers in terms of adequacy and timeliness of these credits. The credits granted to these farmers are not always adequate for them to carry out their farming activities which will help them to have a leap from poverty. More so, the time which they receive these loans are not also convenient for them to utilize it in their agricultural activities. Government should engender a body that will carry out monitoring and evaluation of the lending agencies, the farmers and the scheme entirely, if possible on monthly basis, to see the level of penetration of the credits advanced to farmers.

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