**AN EXAMINATION OF IMPACT OF BANK OF AGRICULTURE CREDITS ON AGRICULTURAL SECTOR PERFORMANCE IN NIGERIA**

**A RESEACH PROJECT**

**BY**

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**REG. No. U14/MSS/ECO/052**

**BEING A PROJECT SUBMITTED TO THE FACULTY OF**

**MANAGEMENT AND SOCIAL SCIENCES IN PARTIAL**

**FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF (B.SC) HONS DEGREE OF GODFREY OKOYE UNIVERSITY**

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 **MAY, 2018.**

 **CERTIFIFICATION**

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**DEDICATION**

 **TO**

 **H.R.H. IGWE CRESCENT OKAFOR**

**FOR**

**HIS LOVE, CARE**

**AND**

**CONTRIBUTIONS TOWARDS MY LIFE AND ACADEMICS**

**YOU GAVE ME THE FOOTING I NEED IN LIFE.**

 **THIS WORK IS DEDICATED TO YOU!**

**AKNOWLEDEMENT**

My sincere appreciation goes to God almighty.

 People are the essential factors in the success of this project. Some are behind the curtain and some are full-stage actors. But in summation everyone complemented in a way for me to achieve this.

 This is my humble way to etch their names on the marble of my success.

 My Supervisor, My guide, Oluchukwu Anowor, he waved off the dust from my thought building process. In the class, you always gave me challenges that got me attracted to your intellectual wealth, thanks for your invaluable additions to my mental structure.

 My Head of Department George Chisom Okorie, Dr.Pius Eze, Prof. Akubuilo, Prof. Onah, Odo, Michael Nwanji. You have sewed much in me; I will surely make you proud someday.

 H.R.H Igwe Crescent .O. Okafor, I remain eternally grateful for the very important foundation you gave to me in life. On that foundation I have been building. Thanks

 My brother Aninwagu Nickolas (Golden Nick) I remain grateful to your support in my academics.

 To my friends Israel Ndubuisi, Ekwem Chukwuebuka, Nwangwu Nnaemeka a.k.a Major, Jeff a.k.a Papa J, Kingsley Roger’s jnr your kind gestures are wonderful.

To my beloved course mates I say thank you for being part of my life.

**ABSTRACT**

The study attempted to examine the impact of deposit money bank credit or loans on agricultural sector performance in Nigeria between1982 -2016. The study examined the effect of deposit money bank credits on crop production in Nigeria, to find out the impact of deposit money bank credits on livestock production in Nigeria, to ascertain the extent to which deposit money bank credits has affected the overall agricultural sector in Nigeria. This research adopted the econometric method of ordinary least square (OLS) techniques of multiple regressions as the main analytic tool. This study obtained data from secondary sources mainly the Central Bank of Nigeria (CBN) statistical bulletin, National Bureau of statistics (NBS) the CBN’s annual reports and financial statement. From our findings the result revealed positive and insignificant impact of interest rate on agricultural output. The result also established a positive and significant relationship between bank loan advances and livestock, production. The general conclusion is that a deposit money bank credit is paramount in promoting agricultural sector.

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**CHAPTER ONE**

**INTRODUCTION**

**1.1 Background to the Study**

Finance is the wheel on which every production activity anchors. The activities of the financial institution especially the banks, determine the economic progress and or retardation of a given nation. The banks are noted for playing the role of financial intermediation, which involves channeling funds from the surplus unit to the deficit unit of economy, thus transferring bank deposits into loans or credits.

The role of deposit money bank loans in economic growth and development can be recognized in the sense that various economic units use to meet their operational needs. For example, in the agricultural sector firm’s bank loans to purchase machinery and equipment buying seeds, fertilizers, erect various kinds of farm buildings (Adeniyi, 2006).

While highlighting the role of deposit money bank loans, Ademu (2006) explained that credit can be used to prevent an economic activity from total collapse in the event of natural disaster, such as flood, drought, disease, or fire. The banking sector is at the centre of making these credits available by mobilizing surplus funds from servers who have no immediate need of such fund and thus channel it in form of loans to investors who have brilliant ideas on how to create additional wealth in the economy but lack the necessary capital to execute their ideas.

According to the CBN (2007), credit or loans to the core private sector by the deposit money banks grew by 98.7%. Outstanding credit to agriculture, solid minerals, export, and manufacturing in 2007 stood at 3.1%, 10.2%, 1.4% and 10.1% respectively. Credit flows to the core private sector in 2007 amounted to N2, 289.2 billion. Adekanye (1986) noted that in making credit available to the productive sectors such as agriculture, manufacturing, real estate or housing etc, banks render a great deal of service as production will be increased, capital investment expended and higher standard of living realized.

Agricultural credit access has important role it plays in the context of agricultural and rural development in Nigeria. Rahji and Adeoti (2010) noted that some 70% of the population lives in the rural areas with their main source of livelihood being agriculture. Therefore, credit constants to farm household impose high cost on the society in the areas pf rural unemployment, poverty, and distortion s of production activities. Swinnen and Gow (1999) pointed out that access to agricultural credit has been severally constrained the productivity of agriculture in the developing countries. This is because of the imperfect and costly information problems encountered in the financial markets.

Tawose (2012) observed that the rapid growth of industrial production has increased the demand for bank credit on the part of industrial firms. He noted that financial institutions such as bank of agriculture and merchant banks have increasingly been proving finances for industries, some of which are manage by rapidly growing number of indigenous entrepreneurs.

Indeed, under the credit guideline being prescribed by the CBN, the banks have been encouraged to reallocate credit or loans and re-channel it to the productive sector, thereby boosting their level of productivity and performance as well as increase the growth and development of the domestic economy. It is against this background that this study examines the impact of bank of agriculture loans on agricultural sector performance in Nigeria from the period of 1982 to 2016.

**1.2 Statement of the Problem**

As pointed out earlier, loans or credit facilities of bank of agriculture are the life blood of any given economy. This is because credits available to the productive sector like agriculture go a long way stimulating growth and boost the domestic economy. Where bank loans or credits are insufficient to cater for the needs of this sector, the domestic economy that is private sector led is doomed to failure.

In Nigeria, it will be recalled that bank of agriculture credit guidelines of the government through its agency, Central Bank of Nigeria (CBN), the productive sector especially agriculture have suffered lack of access to credits for production purposes. For example, Yunus (2011) observed that lack of access to bank credit on the part of the poor was the key constraints on their economic progress. Rahji and Adeoti (2010) also asserted that banks perceive agricultural credit as risky and seek to channel credit to less risky sectors. The bank credit constraints to farmers and other investors impose such problems as reduction in the level of output, reduction in national income, level of unemployment, poverty, income inequality etc.

Following these eminent problems associated with poor or inadequate deposit money bank loans or credit access to agricultural sector, this study seeks to address such questions as: what factors are responsible for credit access to the agricultural sector of the economy? What impact has it on the various economic problems of unemployment, poverty, low level of national income, lower output, and inequality? What are the responses to these problems in Nigeria?

**1.3 Objective of the Study**

The main objective of this study is to examine the impact of bank of agriculture credits on the agricultural sector performance in Nigeria. Specifically, this study seeks to achieve the following objectives:

1. To examine the effect of bank of agriculture credits on crop production in Nigeria;
2. To find out the impact of bank of agriculture credits on livestock production in Nigeria; and
3. To discover the extent to which bank of agriculture credits has affected the overall agricultural sector in Nigeria.

**1.4 Significance of the Study**

Available literature revealed that the level of productivity is a direct function of capital and most of the loan to the productive sectors of the economy comes from the banks. There are insufficient studies carried out the deposit money bank loans on the agricultural sector of the development nations including Nigeria. The need to carry out this study becomes imperative as it bridges this apparent gap in the literature.

The finding of this study is of great importance to the industrialists, farmers, government and other researchers as it will establish the relationship existing between bank of agriculture loans and the agricultural sector performance in the country.

Finally, the study adds and contributes to the existing body of knowledge in economic literature.

**1.5 Research Hypotheses**

This study intends to test the following hypotheses:

**HO1:** There is no significant relationship between bank of agriculture loans and crop production in Nigeria

**HO2:** There is no significant relationship between bank of agriculture loans and livestock production in Nigeria

**HO3:** there is no significant relationship between bank of agriculture loans and overall agricultural sector production in Nigeria

**1.6 Scope of the Study**

This study seeks to examine the impact of deposit money bank loans on the agricultural sector of the economy. Also, the study covers how the deposit money bank loans or credits to the productive sector affect the overall performance of the Nigerian economy. The study spans between the periods of 1982 to 2016.

**1.7 Organization of the Study**

Organization is the structural pattern of the study. This is organized in five chapters. Chapter one considered the introduction which covers background of the study, statement of the problem, objectives of the study, significance, hypotheses and scope of study.

In chapter two, we considered the review of related literature on the issues of deposit money bank loans or credit and agricultural sector performance. Also, theoretical and empirical literatures were presented here.

Chapter three presented the method of study, which involves the research design, data required and sources, method of data collection, and technique of data analysis as well as models specifications.

Chapter four considered the presentation of data and analysis as well as the discussion of findings. Chapter five focused on the summary, conclusion and recommendations.

**CHAPTER TWO**

**LITERATURE REVIEW**

**2.1 Theoretical Literature**

 Agricultural credit is expected to play a critical role in agricultural development (Duong and Izumida, 2002). Farm credit has for long been identified as a major input in the development of the agricultural sector in Nigeria. The decline in the contribution of the sector to the Nigeria economy has been attributed to the lack of a formal national credit policy and paucity of credit institutions, which can assist farmers among other things. The provision of this input is important because credit or loan-able fund (capital) is viewed as more than just another resource such as labour, land, equipment and raw materials. It determines access to all of the resources on which farmers depend (Shephard, 1979).

Agricultural sector is situated within the framework of the rural economy and the financial markets. A key feature of the sector is the dominance of smallholding farm families, rural households, agricultural households, or farm households. They cultivate less than 5 hectares. Hence, they look significant individually but collectively they form the foundation on which the nation’s economy rests (Falusi, 1995). Agricultural household models (Singh et al; 1986; Sadoulet and de Janvry, 1995) suggest that farm credit is not only necessitated by the limitation of self-finance, but also by uncertainty pertaining to the level of farm inputs and output and the time lag between inputs and output (Duong and Izumida, 2002). The farm household is typically located in an environment characterized by a number of market failures. A frequent cause of market failure is limited access to working capital / credit (Duong and Izumida, 2002). According to Swinnen and Gow (1999), access to agricultural credit has been severely constrained in developing countries. This is because of the imperfect and costly information problems encountered in the financial markets. Such problems are known to be particularly important in agriculture (Stiglitz, 1993).

Theoretical models infer that the development of the financial sector is essential for economic growth, but there is no consensus yet over the direction of causality. This is because economists sharply disagree about the role of the financial sector in economic growth (Afangideh, 2010). Schumpeter (1912), Mckinnon (1973), Fry (1988), Pagano (1993) and Levine (2004) among others, on the one hand, and Lucas (1988), Greenwood and Jovanovic (1990) and Arestis and Demetriades (1991), on the other hand corroborate this assertion. Financial institutions help mobilize savings and provide payments services that facilitate the exchange of goods and services. In addition, they produce and process information about investors and investment projects to enable efficient allocation of funds; to monitor investments and apply corporate governance after those funds are allocated; and to help diversify, transform, and manage risk (World Bank, 2008). When they work well, financial institutions and markets provide opportunities for all market participants to take advantage of the best investments by channeling funds to their most productive uses, hence boosting growth, improving income distribution, and reducing poverty. A well-functioning system needs broad access, as well as depth access to finance: lack of finance is often the critical element underlying persistent income inequality, as well as slower growth (especially in the agricultural sector) (World Bank, 2008). Though still far from conclusive, the bulk of evidence suggests that developing the financial sector and improving access to finance are likely not only to accelerate economic growth, but also to reduce income inequality and poverty.

**2.2 The Concept of Bank Credit.**

 Credit is the extension of money from the lender to the borrower. Spencer (1977) noted that credit implies a promise by one party to pay another for money borrowed or goods and services received. Credit cannot be divorced from the banking sector as banks serve as a conduit for funds to be received in form of deposits from the surplus units of the economy and passed on to the deficit units who need funds for productive purposes. Banks are therefore debtors to the depositors of funds and creditors to the borrowers of funds. Bank credit is the borrowing capacity provided to an individual, government, firm or organization by the banking system in the form of loans. According to CBN (2003), the amount of loans and advances given by the banking sector to economic agents constitute bank credit. Bank credit is often accompanied with some collateral that helps to ensure the repayment of the loan in the event of default. Credit channels savings into productive investment thereby encouraging economic growth. Thus, the availability of credit allows the role of intermediation to be carried out, which is important for the growth of the economy. The total domestic bank credit can be divided in to two: credit to the private sector and credit to the public sector. Thus, for this paper, we adopt the definition of credit given by CBN (2003), which is defined above.

**2.3 Bank Credit and the Nigerian Economy.**

Since its inception, the banking system has been providing credit to the Nigerian economy. In order to examine the role of bank credit to the economy, the aggregate bank credit to the economy is used to estimate its impact growth, which is peroxide by gross domestic product (GDP). This credit is classified into credit to the public sector (government) and credit to the private sector. This section presents and examines credit to these sectors from 1992 to 2008 with a view of assessing its impact on the growth of the Nigerian economy. Data on aggregate domestic credit of deposit money banks reveal that between 1993 and 1994, credit to the economy grew from 64.5 per cent to 67.3 per cent. Between 1995 and 2008, credit to economy fluctuated as follows with 24.1% in 1995, 34.7% in 1996, 25.9% in 1997, 14.8% in 1998, 55.7% in 1999, 42.1% in 2000, 32.7% in 2001, 37.9% in 2002, 15.3% in 2003, 38.4% in 2004, 20.5% in 2005, 40.2% in 2006, 86.1% in 2007 and 45.7% in 2008. The highest growth rate was recorded in 2007, which could be attributed to the gains on post-consolidation of Nigerian Banks, CBN (2010).

**2.4 Agricultural Credit and Finance**

For agricultural practice to be meaningful, one of the enabling factors is addressed by availability of adequate credit to finance agricultural production. The agricultural lending market in any country is made up of the participating financial institutions and units that can effectively lend resources to facilitate the production of farm produce, crops and livestock. These markets are primarily made up of deposit money banks (DMBs) and other financial institutions (Comptrollers Handbook 1998) firms and individuals. However, the market also includes specialized institutions such as Nigeria Agricultural Cooperative and Rural Development Bank (NACRDB), which is the principal institution involved in agricultural financing in Nigeria. The banks have been playing prominent role and will continue to do so under a package of incentives. The life insurance companies can find useful avenues to invest their long-term funds by buying equipments for hire. The informal financial market which includes the cooperatives, family and friends who can also make funds available to interested farmers will continue to be active as before. The informal financial market had grown out of the financial assistance that farmers received from their different groups (Udry 1993; Steel et al. 1997). The size of the borrower is of great importance in negotiating the terms and cost of credit and very few farmers are large. In the days of sectoral allocation, the agricultural sector was favoured and banks complied because of penalties (which some preferred to pay than to comply), however this is no longer so under deregulation. Gurdenson et al. (2005) believe that this represents a cost in agricultural delivery, which in the Nigerian environment farmers cannot avail themselves of available credit. Since the Nigerian banker is not oriented toward development financing, the Government must incen-tivize the process. For the lenders in the market, the most significant risk is credit, which has been noted, could arise from a number of factors ranging from bad harvest to poor market prices. However, underwriting or guarantee can adequately address this. Other risks faced by lending in this market are liquidity, price, strategic and interest rate risks.

According to the CBN (2000), the face of the agrarian culture of Nigerians has changed somewhat to reflect a dwindling of interest of the youth in the sector in addition to the perennial problem of lack of fertilizer to improve crop yields. A dualistic structure reflecting the large scale as well as peasant farmers cultivate for commercial and subsistence purposes. The peasant farmer dominates the landscape and very little of Nigeria agricultural output is produced using modern methods (CBN 2003). With different types of ecological belts, farming can be easily practiced from the dense rainforest belt of the south to the sudan savannah of the north. The agricultural output that is food in Nigeria as grouped by IFPRI (2003), and in no order of importance are: cassava, yams, rice, vegetables, beef, millet, groundnut, sorghum, cotton, and maize. Nevertheless, rice is the most consumed. Though some of the staples can be cultivated with mechanization, this is constrained by the smallholder land methods and inadequate finance. Finance can be made available to the farmer who has sufficient cultivable land to enable the mechanization of the process, as it is increasingly becoming clearer that the smallholder farmer may not have sufficient land to maximize the use of credit when made available. (Equally, lenders are opposed to assisting small landholders, as a result of cost of credit appraisal.) Most of the credit to the farmer could be for a period of less than one year for arable crops which fits well into the Nigerian banks’ desired portfolio. From 1978 to 1989 with sectoral credit allocation to the agricultural sector in place, the result was a consistent increase in the lending portfolios of banks to the agricultural sector. This has now been lost to the financial system deregulation as agricultural lending is considered more risky, problematic and unprofitable relative to other sectors. Bank credits to this sector in nominal terms, over the years have increased from about N 230 million (then about $233 million) in 1978 to over N 262 billion ($2.23 billion) in 2005, but then food imports cost have equally increased (CBN 2007). For bank credit to be effective there must be soft landing for both the bank and the farmer in terms of cost and tenor. Ojo (2002) discusses the ineffective role of the erstwhile community banks in financing agriculture, having been transformed in 2007 to microfinance banks. Though Olaitan (2006) believes that this would enhance agricultural lending, this might not be so in the long-term given the attitude of this group of institutions over the years.

**2.5 Types of Agricultural Credit Programs in Nigeria**

Credit can be obtained for agricultural purposes from formal and informal sources. The informal type of agricultural credit refers to credit from moneylenders, friends, relatives and the like. Whenever small farmers need emergency loans or small investment funds, they often resort to moneylenders. The rates charged on such loans are very high. It can reach 10 per cent a month or even one per cent a day. Borrowers are normally unable to pay back debt contracted in this manner. They end up having to give up their small land holdings, agricultural produce, and sometimes household goods and personal savings of their family. Although several farmers still rely on informal sources of credit, the focus of credit impact assessment is on the formal sector. This is not surprising because unlike in the formal system, there are considerable built-in mechanisms in the informal system which ensures effectiveness of operations. The various credit programs which often require assessment are within the public –sector domain.

In the formal setting of most developing countries, including Nigeria, deposit money banks and other specialized agencies are charged with the responsibility of providing credit to farmers. Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB) is a typical example of a specialized bank established for the purpose of advancing agricultural credit. Through this bank, agricultural lending rates are regulated by government and at times subsidized. In addition to NACRDB, Agricultural Credit Guarantee Scheme (ACGS) was introduced in 1977 to encourage the trading banks to increase their supply of agricultural credit through the provision of suitable loan guarantee. In 2005, Obasanjo administration evolve the 50 billion naira agricultural loans to farmers in which the state government were made to contribute counterpart fund for citizens of their state to participate. The government has also involved a number of institutions in the provisions of agricultural credit. For instance, Agricultural Development Projects (ADPs), the river Basin Development Authorities (RBDAs), National Directorate of Employment (NDE), and soon have implemented various forms of agricultural credit programmes. As a result of the poor financial situation of small farmers especially in terms of low income and low savings, both national and international organizations have embarked on various programs to boost the supply of agricultural credit in several developing countries. As one of her mandate, the International Fund for Agricultural Development (IFAD) ensures that credit goes to those who have been traditionally left out by credit programmes – the small farmers, landless poor and women. To identify target group for such credit programmes, ceilings are placed on land ownership and annual household income for the landless. A number of such agricultural credit programmes that have benefited from IFAD’s assistance in several developing countries are discussed below In Bangladesh, Grameen Bank embarked on such credit programmes with the sole purpose of giving the landless poor a chance to buy income-earning assets and break out of the vicious circle of “low-income, low savings and low-investment”. IFAD as part of its Small Farmers Credit Project gave support to Grameen Bank to the tune of USS$ 3.4 million in 1980, by 1984 increased the amount to US$ 23.6 million and helped the bank to achieve its five years target of setting up 500 branches. Loans are obtained by joining a group of five borrowers, who meet weekly with a Grameen Bank Officer. The groups serve as collateral for loan repayment. Initially, two members of the group are allowed to apply for a loan. The next two borrowers can apply and the fifth member depending on their repayment performance.

Furthermore, under the government’s transmigration programme, cows are given as in-kind credit to Indonesian smallholders. With the financial assistance of IFAD, International Bank for Reconstruction and Development (IBRD) and the Government of Indonesia, cattle are shipped from the inner Islands to the outer Islands, where they are scarce. Cattle serve as repayment; implying that delivery and recovery of loan under the programme are both in kind. The beneficiaries are to return two calves for every cow or bull they receive within five years of the loans. Moreover, as a way to create village funds for sustainable development in Mali, villages in Segou were asked to establish and operate a fund to be used for commercial purposes, and as security to cover debt repayment. The funds’ aim is to attract village saving and direct them towards productive investments. The nature and terms of loans are decided solely by the villagers. Credit from these funds is used by villagers for a variety of purposes such as fertilizing, vegetable gardens, improving the stock of small ruminants and so on. In an attempt to develop the fishing industry in Dominica, the Dominica Fisheries Cooperative

Society (DFCS) was given loan by IFAD to refurbish their boasts, buy spare parts, nets and outboard motor. The loan was also used to improve beaching sites to provide great security for small vessels. Also in Marigot, part of the loan is used to blast a reef to construct a small jetty to protect small boats from hurricane gales. Small co-operatives consisting of 6 to 60 men operate throughout the Island.

Furthermore, to curb erosion, the Governments of Kef and Siliana of Tunisia, IFAD provided seasonal, medium and long-term credit to the farmers for soil conservation and the improvement of rangeland. As part of agricultural credit programmes, the Agriculture Development Bank of Nepal with the financial assistance of IFAD, trained group organizers who encourage the formation of farmers’ group and arrange loans for them. The organizers help the groups to choose their activities and act as intermediaries between them and the agencies that provide loans, extension, farm supplies necessary for production and other support services. Women motivators organize women’s groups and channel loans through them to improve their economic activities. The members of the groups put aside a little money each week for the group savings scheme. These funds are deposited in the local branches of the Nepal Agricultural Development Bank, earn interest and may be borrowed by members for emergency needs. In the 1970s, subsistence farmers in Down West of Malawi group themselves into farmers clubs to pool agricultural production inputs. These clubs were used to distribute credit in 1981 when IFAD supported the Malawi Government project to increase agricultural yields and to provide credit facilities to the farmers of the Dowa West region.

From the foregoing, it is clear that directed credit programmes can be grouped into various categories in terms of purpose, loan duration, and mode of disbursement. In general, the programmes are focused on production activities, but several enterprises are often involved. For instance, credit programmes can be designed for crop production, livestock production and fish production. Credit can be provided for short-term, medium-term and long-term production activities (such as arable crop production, tree crop production and irrigation project). Marketing credit falls under short-term credit. With regards to mode of disbursement, credit programmes can grant loans in cash and in kind.

**2.6 The Agricultural Credit Guarantee Scheme Fund.**

The Agricultural Credit Guarantee Scheme Fund (ACGSF) was formed under the military government in 1977 with an initial capital base of N100 million distributed between the federal government (60% equity) and the Central Bank of Nigeria –CBN (40%). The ACGSF is exclusively managed by a board set up under the supervision of the CBN (management agent). The fund is set up with the sole purpose of providing guarantee in respect of loans granted by any bank for agricultural purposes (Central Bank of Nigeria, 1990). Nwosu et al (2010) noted that the ACGSF was formed solely with the objective of encouraging financial institutions to lend funds to those engaged in agricultural production as well as agro-processing activities with the aim of enhancing export capacity of the nation as well as for local consumption. This is solely exclusive for large scale farming (Somayina, 1981).

Most often, financial institutions require huge collateral from customers before loans are granted to them. This is detrimental to farmers’ efforts that may require such loans to enhance their production. The ACGSF is aimed at reducing this dearth by guaranteeing these farmers or other individuals involved in agricultural production when seeking for loans from the banks. In case of a breach in contract, the fund bears the liability of 75% of the amount in default, net of any amount realized by the banks in the sale of the security pledged by the customer. This has made most financial institutions interested and secured in granting loans to agricultural ventures.

Ogen (2007) posits, that the neglect of the agricultural sector and the dependence of Nigeria on a mono-cultural, crude oil based economy has not augured well for the well-being of the Nigerian economy. In a bid to address this drift, the Nigerian government from 1973 became directly involved in the commercial production of food crops. Several large scales agricultural projects specializing in the production of grains, livestock, dairies and animal feeds were established (Fasipe, 1990). Sugar factories were also established at Numan, Lafiagi and Sunti (Lawal, 1997). The Nigerian Agricultural and Cooperative Bank (NACB) were established in 1973 as part of government's effort to inject oil wealth into the agricultural sector through the provision of credit facilities to support agriculture and agro-allied businesses (Olagunju, 2000). Extant literature exists at State and national levels on the roles and impact of institutional credit agencies in the enhancement of agricultural productivity in Nigeria with divergent results. Efobi and Osabuohien (2011) have reiterated that while assessing the role of the agricultural credit guarantee scheme fund in promoting non-oil export in Nigeria, the Agricultural Credit Guarantee Scheme Fund (ACGSF) was established in 1977 with the aim of enhancing commercial banks’ loans to the agricultural sector in Nigeria with focus on agro-allied and agricultural production. However, many years down the line, the country witnessed poor participation in the international market with regard to non-oil export. Using Auto Regressive Distributed Lag (ARDL), they found, among others, that there exists a long-run relationship between the ACGSF and export, but the magnitude is minimal. It was therefore recommended, that adequate infrastructural and storage facilities which increase the shelf-life of agricultural outputs, are needed to improve non-oil exports in Nigeria. Mafimisebi, Oguntade and Mafimisebi (2008) commended the growth in authorized paidup share capital, total fund resources, maximum amount of loan obtainable by various categories of farmers, number and value of loans guaranteed, volume and value of loans fully repaid and volume and value of default claims settled by ACGSF and posit that the remarkable differences in growth rates in volume and value of loans earmarked for different sub-sectors of agriculture through the scheme fund was due to the almost neglected agricultural activities in Nigeria. While assessing partial credit guarantee schemes in developing countries, the case of the Nigerian Agricultural Credit Guarantee Scheme Fund (ACGSF), Mafimisebi, Oguntade and Mafimisebi (2008) found long-run relationship between number and volume of guaranteed loan by ACGSF and the performance of the agricultural sector. This finding shows that it is important to expand the quantum of funds available for guaranteeing agricultural loans in order to increase these two performance indicators.

Isiorhovoja and Chukwuji (2009), exploring the effects of the operations of the Agricultural Credit Guarantee Scheme Fund on cash crops using simple linear regression and autoregression model, found that cash crop output had a significant upward trend. Also, there were significant increases in the value of loans guaranteed to cash crop farmers but the number of loans showed no significant increase, suggesting that the number of cash crop farmers who have access to guaranteed loans may not be on the increase. Also, there was a general weak relationship between the values of ACGSF guaranteed loans and the output of cash crops; hence the study recommended that the Scheme should, through the deposit money banks (DMBs), foster a closer link with this category of farmers to facilitate their access to required technical services which may not have been embodied in the loan.

Adegbite, Oloruntoba and Olaoye (2008) argue that lack of credit facilities has always been a major problem of small scale farmers and other micro-entrepreneurs in Nigeria as in most developing countries worldwide and this has been attributed to the non-availability of collateral securities and inadequate information that prevented this category of people from accessing credit facilities. They assessed the performance of Ogun State Agricultural and Multi-Purpose Credit Agency (OSAMCA) in credit delivery and operation from 2004 to 2006. The assessment was conducted to evaluate the volume of loan disbursed, rate of the OSAMCA’s growth, the number of farmers empowered, as well as the general outlook in credit delivery and operations by the OSAMCA.

The study found that within the three years (2004-2006) of operation, 1,216 farmers benefited through eight different agricultural enterprises; from N73, 228,038.00 million at 12 % interest charge, at an average of N 24,409,346.00 per zone for all the enterprises, and N 60,220.43 per beneficiary; over the study period. The researchers recommended that Bank linkages and self-help Groups should be initiated to improve and sustain credit flow to the agricultural sector. In addition, they suggested the need for innovative strategies that are aimed at reducing transaction delivery cost and access to loans.

 Adeniji and Joshua (2008) examined the activities of the Nigeria Agricultural Cooperative and Rural Development Bank (NACRBD) with a view to determining the amount of loan disbursed compared to amount of loan applied for, the nature of loan repayment performance of beneficiaries of NACRDB credit loan, lapses associated with loan to disbursement and repayment schedules and impact of proper supervision on loan recovery. Data for the study were collected through questionnaires; and a total of fifty (50) beneficiaries of NACRDB credit scheme were selected randomly from the study areas. From the evaluation of loan schemes, it was found that there was short fall when comparing the amount of loan applied for; to the actual amount disbursed to beneficiaries loans were not timely granted. Some sincere seekers were unable to benefit from the credit scheme partially due to lack of adequate financing of NACRDB by the apex bank (Central Bank of Nigeria); the efficiency of methods employed by the bank as regards loan supervision was scored low as a result of low rate of loan recovery, which will not augur well for both farmers and banks, if contribution to the development agricultural sector of the economy was to be sustained. The study recommended that loans should be disbursed on time to farmers as at when due so that they can make use of it for agricultural production.

 Interestingly, the figure also exhibits the fact that the ACGSF value was on a higher trend in the democratic government era than in the military government era. This probably will be to the fact that the democratic era was more concerned in development than in power ‘cannibalism’. Hence, the government is focused on increasing the capital base of the scheme so as to meet the needs of the recipient. Although this is not a claim of the debate for preference Nigerian democratic government to military government, but it is an argument to support the trend ACGSF exhibited over time. The decline in the value of ACGSF during 2005-2006 can be traced to the bank recapitalization exercise which was mandated in 2004 but was affected in December 2005. Most banks during this period were most importantly concerned about meeting up with the N25 billion minimum capital bases. The impact of credit on agricultural production may be evaluated in a normative or behavioristic framework or both depending on whether the research focus is ex ante or ex post. In a normative framework, programming models could be employed to assess what ought to be the impact of bank credit on agricultural output. In a behavioristic framework, what is of analytical interest is the assessment of what has been the impact of variation in farm capital investment, especially bank credit induced investments, on farm production and this could be accomplished according to Olagunju and Adeyemo (2007) through the application of production function models. This study will employ the latter framework in studying the impact of bank credit allocation to output growth of the agricultural sector in Nigeria.

**2.7 Bank Sector Credit and Agricultural Output.**

 Essang et al (1974) define a deposit money bank as a monetary institution owned by either government or private businessmen for the purpose of profit. In pursuit of the profit, the bank undertakes a number of functions. One of these functions is the acceptance of deposits from the public, these deposit are in turn given as credit to trade industry, agriculture etc. which lead to more production and employment (see Stephen and Osagie, 1985; Ekezie, 1997; Ijaiya and Abudulraheem, 2000).

To Aryeety (1996) credit is the amount extended out with a future date of payment. The NDIC prudential guide lines of 1990 however, provides a wider definition of credit, and this includes aggregate of all loans, advances, overdrafts, commercial papers, Bankers acceptance, bills discounted. Leases and guarantee (NDIC, 1990).

Muftau (2003), on the other hand, defines agricultural credit as credit granted to farm and ranch operators to assist in planting and harvesting crops to support the feeding and care of livestock. Credit to agricultural sector could take the form of an overdraft, short-term, medium-term or long-term depending on the purpose and gestation period of the project. Such credits granted to framers to purchase inputs are paid directly to the suppliers who must furnish the bank with evidence of delivery. This is done to avert diversion of fund, which is common with Nigeria Farmers (See Adekanye, 1986: Nzotta, 1999).

Discussing the importance of credit to agricultural sector, Nzotta (1999) posited that it reactivates, expands or modernizes all types of agricultural enterprise which are considered economically feasible and desirable to the achievement of stated economic goals of self-sufficiency in agricultural production.

While Qureshi, et al (1996) reported that such credit removes financial constraints faced by farmer, as it provides incentives to adopt new technologies that would otherwise be more slowly accepted. Thus, the availability of credit enables farmers to switch quickly to new technologies which enable the achievement of a rapid productivity and growth.

According to Ijere (1996) “Credit can be considered from its ability to energize or motivate other factors of production. For example, it can make the latent, potential or under-used capacities functional. He further said that credit act as a catalyst that activates the engine of growth enabling it to mobilize its inherent potentials and to advance in the planned or expected direction. It follows, therefore, that the greater the influx of capital, the more the propensity of the economy to move in its given path.

As summarized by Fosu (1992) Amin (1996), Umoh (2003) “Credit thus constitutes the power or key to unlock latent talents, abilities, vision and opportunities, which in turn act as the mover of economic development.

Contributing to the argument about deposit money bank Credit and agricultural output, wells (1970) confirms that deposit money bank credit contributions to economic development by enhancing production and productivity and thus higher income and better quality life for people.

Agricultural credit in Nigeria dates back to the 1930s but organized credit to farmers did not start until 1972 when the Nigeria Agricultural and Cooperative Bank (NACB) were established (Ajakaiye. 1984). He further said that agriculture is the largest sector of Nigerian economy, though its contribution to the Gross Domestic Product (GDP) has declined from 67% in 1950 to 18% in 1980.

According to the Federal Ministry of agriculture publication (1980), 58% of farming- related borrowings were obtained from family and friends; 24% from professional private money lenders, 15% from merchant and only 3% from deposit money banks and other institutional sources.

As Garba (2000) noted, they are grossly, inadequate and unsatisfactory for the credit needs of the farmers. Thus, there is the need for lager credit sources.

**2.8 Empirical Literature**

Zuberi (1989) estimated production function for institutional credit and agricultural development in Pakistan and concludes that the impact of institutional credit comes through financing of seed and fertilizer and that the role of financing fixed investments was found insignificant.

Khandaker and Binswager (1989) estimated the effect of institutional credit on agricultural output, investment, fertilizer demand, farm-nonfarm employment and real wage using district-level panel data from India. In India special credit programs were launched after the nationalization of commercial banks in 1969 to support the country's green revolution in agriculture. An important policy question thus emerges: to what extent low-interest institutional credit has helped increase private investment and output in Indian agriculture and consequently rural employment and wage.

A panel data analysis is used to estimate the output and input effect as well as wage effect of formal credit. The numbers of branches of lending agencies are determined by the financial intermediaries and thus exogenous to farmer demand for credit. They can, therefore, be used as instruments to identify the aggregate supply of formal credit from its demand. These instruments also help solve the simultaneity between the credit supply, output supply, input demand and wage equations. By using panel data we circumvent the unobserved variable problem that could otherwise produce inconsistent estimates in cross-section data analysis.

Econometric estimates suggest that formal credit plays an important role in fertilizer demand, private fixed investment, crop output, farm-nonfarm employment and agricultural real wage in India. A 10 percent increase in formal credit supply increases fertilizer use by almost 3 percent. A similar percentage increase in the supply of institutional credit spurs a 4 percent increase in private investment in irrigation pumps, 5 percent each in draft animals, 6 percent in milk animals, and about 7 percent in small stocks. In contrast, a 10 percent increase in formal credit supply increases aggregate crop output by only 0.2 percent. Compared to the credit effect of investment and fertilizer demand, the crop output effect appears fairly small. Since increased fertilizer consumption induced by formal credit can explain more than the credit effect of output, it appears; therefore, that additional capital investment has worked more for substituting agricultural labor than for increasing crop output. Thus, a 10 percent increase in the formal credit has reduced agricultural employment by 0.4 percent. However, institutional credit has a modest positive effect on agricultural real wage. This is because it has created more jobs in the rural nonfarm activities than it has subtracted in agriculture. For example, a 10 percent increase in formal credit increases rural nonfarm employment by almost 18 percent and agricultural real wage by 0.4 percent.

Formal credit expansion in rural India, therefore, has had a major effect on rural nonfarm sector and a modest effect in agriculture despite the considerable directed policy to increase formal credit supply for agriculture. Finally, the results do not vary substantially whether one uses the number of deposit money bank branches or volume of lending (rural or agricultural) as a measure of growth of rural financial intermediation.

Anthony et al (2009) analyzed the trends and pattern of institutional credit supply to agriculture during pre-and post-financial reforms along with their determinants. It then compared the effects of reform policies on access to institutional credits in Nigerian agricultural sector before and after the reforms (1978 -1985; and 1986 -2009). Relying mainly on time series data from CBN and NBS, it used ordinary least squares method (linear, semi-log and double log) to model the determinants of banking sector lending to the agricultural sector during the review period. The models were subjected to several econometric tests before accepting one. Chow test was used to verify the presence of structural change in the selected equation before and after the reforms. Results indicated an exponentially increasing trend of agricultural credit supply in the economy after the reform began. Econometric analysis shows that stock market capitalization, interest rate and immediate past volume of credit guaranteed by ACGSF significantly influenced the quantity of institutional credit supplied to the agricultural sector over the period in review. There was a significant difference between the credit supply function during the pre-reform and post reform periods. It was recommended that government must consider interest rate regulation as a veritable tool for making credit accessible to farmers at affordable levels; increase fund allocation to ACGSF; boost monitoring capacity of CBN on banks generally and strengthen the microfinance banks to be more responsive to agricultural credit needs.

Qureshi and Shah (1992) did a critical review of rural credit policy in Pakistan. The study observed that institutional credit affects agricultural output through financing of capital investment. The study also found that the responsiveness of agricultural output is larger to institutional credit than that of output to fertilizer.

Iqubal, Ahmed and Abass (2003) studied the impact of institutional credit on agricultural production in Pakistan, the study found that institutional credit The share of production loans in total loan advanced has been increasing during 1980-81 to 1986-87 and after mid 1990’s. It shows multiple shifts in credit policy from loans for fixed capital to advances for operational capital during the study period. The OLS estimates of the production function revealed that institutional credit affects agricultural production positively. Water availability at the farm gate, labor, and cropping intensity are the other important variables that affect agricultural output positively. However, the shocks like floods, cotton leaf curl virus (CLCV), and drought have caused significant decline in agricultural output during certain years

Olangunju and Adeyemo (2007) investigated the extent to which Small Holder Loan Scheme (SHLS) has been able to meet the credit need of the resource poor and improve their farm production. The study evaluated the production efficiency of farmers participating in the credit scheme and determined the effects of credit utilization on traditional farming in the southwestern Nigeria. A multi-stage sampling technique was used to collect primary data using structured questionnaire from 216 beneficiaries from the selected financial institutions in the study area. Data were analyzed using descriptive statistics, multiple regressions and chow test.

The study showed that the after margin beneficiaries are on the average, endowed with relatively more farm resources than their before margin counterparts. When the level of the resources of the latter were expressed as percentage of those of the former, land stood at 60%, hired labour 30%, family labour 48%, fixed capital 20% and modern material inputs stood at 27%. The marginal value productivity of area cultivated and local material inputs are higher for before merging beneficiaries than for after merging beneficiaries. The foregoing is an indication of basic differences in the production behavior of the two set of farmers and thus can be concluded that the after merging beneficiaries are more technically efficient than the before merging beneficiaries.

Akram, Hussein, Sabir and Hussain (2008) estimated the impact of Agricultural credit on growth and poverty in Pakistan. The short run elasticity of agricultural credit with respect to GDP was 0.031 and long elasticity was 0.162. However, the short run elasticity of agriculture credit with respect to agricultural GDP was 0.13. The results further explained that elasticity of agricultural credit with respect to poverty -0.35 percent and -0.27 percent in the short run and long run respectively. The short run elasticity of agricultural respect to rural poverty was - 0.30 per cent. The use of fertilizer has strong effect in reducing poverty in the short run because the balanced use of fertilizer increase productivity and it also serves as a land augmenting factor of production. The result of the study showed that agriculture credit has positive impact on agriculture gross domestic product and reducing poverty over time. Nevertheless, the large majority of farmers were several constraints in obtaining agricultural credit through institutional sources.

Saleh, Varmazyari and Moslemzadeh (2008) investigated the potential of investments in Agricultural sector in Iran. The study describes the placement of agricultural sector in Iranian economy, considers the trend of investment in agricultural sector over the period of 1963 – 2004, emphasizing on development programs in country. It also evaluates the capability of investment procuring in this sector comparing with other economic sectors in the country. In addition, obstacles of investment in agricultural sector such as inflation and other factors are examined. Results showed that capital productivity in agricultural sector is high and this sector has potentials for extension of investments. However, capital per capita in agricultural sector is lower than other economic sectors. In addition, findings of this study confirmed a significant negative relationship between capital per capita in agricultural sector and capital productivity in the sector which indicates inappropriate capital allocation in the sector. It is recommended that the investments especially infrastructural investments are extended. Moreover, reformation of the structure of the agricultural production market and more emphasis on appropriate feasibility studies of projects in the agricultural sector were also recommended.

Sharif, Salehi and Alipour (2009) aims to examine the relationship between financial market development and agricultural sector in Iran. The study attempts to answer these questions empirically and try to shed some light on the roles of financial development as well as other conditional variables in agricultural sector. The results of this study showed that this financial market plays a very important role in developing agricultural sector in Iran. However, the results also indicated that there is still some weakness in the role of the financial market. The authors come to conclusion that for improving this vital sector in Iran the weakness should be removed or at least reduced as early as possible.

Rahdji and Fakoyode (2009) tried to identify the determinants influencing Commercial banks decision to ration agricultural credit in South-Western, Nigeria. Data for the analysis were sourced from the agricultural credit transactions of the banks. Evidence from the multinomial logic model estimated shows that the borrowers are heterogeneous. Farm size, previous income, enterprise type, coop membership, household net-worth and agricultural commercialization level are positive and significantly associated with the classification of the two groups relative to the reference group. The significant variables affect both the probability of classification and the utility of the banks in their decision making. The partial elasticities of farm size are elastic at 1.5380, 1.2796, and 1.0065 for the groups as classified. The quasi elasticities for the household net-worth and agricultural commercialization variables are all elastic for all the groups. The quasielasticity for the income variable for the first group is elastic at 1.4278 and for the second group at 1.2551. This variable is inelastic for the reference group. It is recommended that Banks borrowing decisions must be group specific and not general. There is also the need to find an innovative way of meeting the need of the rejected group in terms of Micro finance arrangements. The blanket policy approach will not lead to the desired results of easy access to agricultural production credit by the resource poor farm households in Nigeria. For example, the average % of agricultural loan to total commercial bank loan in 1970-1976 is 2.99%, but rose to 14.52% between 1991 and 1997. This is very low when compared to the average in 1998 (9.96%). The magnitude began to fall continuously from 1999 (9.36%) to 2.15% in 2007. This leaves the wonder on how impactful the ACGSF guarantee scheme has been in enhancing the disbursement of loans to the agricultural sector by commercial banks in Nigeria. Taking a look at the ACGSF, the fund has guaranteed several sums for agricultural related outfit. For example from inception, there has been tremendous increase in the number of loans guaranteed by the scheme from 341 loans (N11.28million) in the first year of operation in 1978 to 3,571 loans (N 218.60 million) as at 2006 (Nwosu et al, 2010).

Other incentive put forward by the scheme to achieve its objectives includes the increase in the limit of the guarantee granted to individuals and corporate bodies. For example, the limit granted to individuals was increased from N5, 000 to N20, 000 for individuals without collateral required. With collateral, the limit of the guarantee was increased from N100,000 to N500,000. For corporate bodies and corporative societies, the guarantee limit was increased from N1 million to N5 million. The above measures were geared towards the development of the agricultural sector. Furthermore, the ACGSF enforces the attainment of its objective by mandating deposit money banks to set aside a fraction (10%) of their profit before tax to farmers as loans and more so have a certain percentage of their branches set up in rural areas. This will enable effective reach to the target audience/beneficiaries. The Central Bank in Nigeria is supposed to ensure and enforce the compliance of the banks to these stipulations. Success story was accounted from these stipulations. These include that as at 2004, 11 out of 25 universal banks in the country are already participating in this scheme, while 669 eligible micro credit institutions have joined the scheme. Despite all these, the loan to the agricultural sector by deposit money banks still remains minute. The question that comes to mind is whether the declining share of agricultural loan from deposit money banks can be traceable to the challenges that encumbered ACGSF.

Sohail et al (1991) on the relationship between bank credits and agricultural outputs in Pakistan, they found out that a statistical significant relationship existed between bank credit in Pakistan and the agricultural outputs.

Moreover, Yaron et al (1997) also argued that directed credit programmes were associated with the adoption of modern technologies such as green-houses in Morocco and tube wells in North West Bangladesh and these innovations were associated with increase in production gains in the agricultural sector (see also Ijaiya and Abdulraheem 2000).

May (1970) report that countries that emphasized the agricultural sector ended up with faster industrial growth than those that focused on industries alone. Hence, agriculture may therefore be the fastest road to industrialization.

Emmanuel (2008) carried out a study on the impact of macroeconomics environment on agricultural sector growth in Nigeria. The macroeconomic policies included in the model are:- credits to the agricultural sector, nominal interest rates on the loan, exchange rate, world prices of agricultural produce, foreign private invest-government expenditure and inflation rate. Using multiple regression analytical technique (ordinary least square), he discovered that nominal interest rate is positively related to the index of agricultural production. This implies that at higher nominal interest rate, more credit facilities are made available to the operators of the Nigerian agricultural sector, but at lower nominal interest rate, credit facilities are no more widely available. The index of agricultural output is also positively related to world prices of Nigeria major agricultural commodities.

This implies that better world prices enhance agricultural output growth in Nigeria. Similarly, the index of agricultural production was positively related to government expenditure on agriculture. Moreover, it was discovered that the index of agricultural production is negatively related to the level of inflation, implying that as inflation becomes high, and the index of agricultural production declines. He thus recommends that macroeconomic policies that enhance favorable exchange rates make agricultural credit widely available at low interest rate, reduce the rate of inflation; increase foreign private investment in agriculture would not fortify government investment in the sector but would be invaluable in supporting agricultural output growth in Nigeria.

**CHAPTER THREE**

**METHOD OF STUDY**

This section considered the procedures that adopted in conducting the study. Specifically, it featured the research design, method of data collection, technique of data analysis, and models specification.

**3.1 Research Design**

Research design according to Amadi (2002) is scheme or a blueprint for collecting data prior to the study. It is usually formulated by the researcher to find answers to research questions and to achieve the objectives of the study (Felix and Anaele, 2006). In view of this, we adopted econometric design in conducting this research.

**3.2 Method of Data Collection**

The study obtained data from secondary sources mainly the Central Bank of Nigeria (CBN) Statistical Bulletin, National Bureau of Statistics (NBS), the CBN’s Annual reports and financial statement.

**3.3 Technique of Data Analysis**

The study adopted the econometric method of ordinary least square (OLS) of multiple regressions as the main analytic tool. The method is employed because its estimates posses the properties of best, linear, unbiased and efficient estimator (BLUE). The following tests of significance were conducted.

1. The R2-test was used to establish the goodness of fit of the model.
2. The T-test was used to test for the significance of the parameter estimates.
3. The F-test was used to test for the significance of the overall model.
4. The DW-test was used to test for the presence of auto correlation.

(ii) However, an econometric software package called E-views was used to facilitate the estimation processes.

**3.4 Models Specification**

(i) Variables of the model.

 (a) Dependent variables

**Crop Production:** This is defined as the contribution of crop to the gross domestic product of Nigeria.

**Livestock Production:** This is defined as the contribution of the livestock to the gross domestic product of Nigeria.

**Agricultural Sector Performance:** This is defined as the overall contribution of the agricultural sector to the gross domestic product of Nigeria.

**Independent Variable:**

**Bank credit allocation to agriculture:** This is defined as the bank credit allocation to the agricultural sector for the purpose of improving the performance of the sector and encouraging growth and development of the economy. It is expected to show a positive relationship with agricultural sector performance.

**ii. The Model**

Thus, from the explanations above, the model were specified as follows:

**Model I: Crop Production Model**

CRP = f( BLA, INT) ………………………………..(1)

 The mathematical form of the model can express into the OLS from as follows:

CRP = ao+a1 BLA + a2INT + U

 a1>0

Where: CRP = Crop production

 BlA = Bank loan Advances

 ao = Intercept or constant term

 a1 = Co-efficient of the explanatory variable

 U = Error term

**Model II: Livestock Production Model**

LSP=f(BLA,INT)…………………………………………………………..(2)

 The mathematical form of the model can be expressed in the PLS form as follows:

LSP = ao+a1 BLA + a2INT + U

 B1 > o

Where: LSP = Livestock Production

All variables and parameters are as previously interpreted

**Model III: Agricultural Sector Performance Model**

ASP= f(BLA,INT)……………………………………………………….(iii)

 The mathematical form of the model can be expressed in the OLS form as follows:

ASP = ao+a1 BLA + a2INT + U

 C1> o

ASP = Agricultural output

**CHAPTER FOUR**

**4.1 PRESENTATION AND ANALYSIS OF RESEARCH FINDINGS**

In this chapter, the results of the Ordinary Least Square (OLS) regression models are presented. The analyses of the results involve subjecting the parameter estimates of the models to various theoretical (a priori expectations), statistical first order test and econometric second order tests to determine their reliability or robustness. Three OLS models were estimated: model 1 was estimated to examine the effect of deposit money bank loans or credits on crop production; model 2 was estimated to find out the impact of deposit money bank loans or credit on livestock production while model 3 was estimated to ascertain the extent to which deposit money bank loans or credits have affected the overall agricultural sector in Nigeria.

 **4.2 Analysis of Unit Root and Co-Integration Results of** **Model I**

We employ Augmented Dickey-Fuller (ADF) test. The results are shown in the table below.

**Table 4.1**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Variable at level form** | **Variable at difference form** | **Order of integration** |
| **Variable**  | **ADF Stat.** | **Lag** | **5%** | **ADF Stat.** | **Lag** | **5%** |  |
|  In(CRP) | -1.258542 | 1 | -2.9527 | -5.694723 | 1 |

|  |
| --- |
| -2.9558 |

 | 1 (1) |
| In(BLA) | -0.359075 | 1 | -2.9527 | -3.532197 | 1 | -2.9558 | 1 (1) |
| INT | -2.288227 | 1 |

|  |
| --- |
| -2.9527 |

 | -6.081919 | 1 |

|  |
| --- |
| -2.9558 |

 | 1 (1) |
| RESIDUAL | -3.008556 | 1 |

|  |
| --- |
| -1.9514 |

 | NA | NA | NA | 1 (0) |

The results show that all the variables are integrated of order one 1(1) (differenced once to attain stationarity).In other words, all the variables have unit roots, but stationary after being differenced. This is because the ADF statistics for each of the variables are less than the critical levels at 5%. In other words, the null hypothesis for unit root is accepted for all the variables at the level form. On the other hand, the ADF statistics for each of the variables when differenced are higher than their critical values at 5% which implies that the null hypothesis of unit root is rejected.

However, though the variables are not stationary, there is tendency of long-run relationship between the dependent variable and the independent variables. Thus, we proceeded to examine their long-run equilibrium relationship using co-integration ADF (CADF) test after which we examined the adjustment to short-run discrepancies when co-integration was established. As already shown in table 4.1 above, the error term (residual) is stationary at its level form. This implies that there exists a long-run relationship between dependent and independent variables.

Examination of the effect of deposit money bank loans or credits on crop production

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable**  | **Coefficient**  | **Std. Error** | **t-stat.** |
| Constant  | 9.836260 | 0.073783 | 133.3141 |
| In(BLA) | 0.140494 | 0.004817 | 29.16572 |
| INT | 0.015735 | 0.002812 | 5.595466 |

R2 = 0.963965 F-stat. = 428.0165 d-w =1.149207

**4.3 Evaluation Based On Economic Criteria**

The OLS regression applied the Log-Linear Model in order to determine the relative change in the dependent variable from a relative change in each of the explanatory variables.

The result has established a positive and significant relationship between bank loan advances and crop production. This has been found to be consistent with the theory.

The result also revealed a positive and significant impact between interest rate and crop production. This has been found to be inconsistent with the theory which could be as a result of nature of the rate of interest charged on crop production in Nigeria.

**4.3.1 Summary of the Signs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable**  | **Expected Sign** | **Realized Sign** | **Remark**  |
| In (BLA) | Positive  | Positive  | Conforms  |
| INT | Negative | Positive | Does not conform |

**4.4 Evaluation Based On Statistical Criteria**

**Coefficient of Determination (R2)**

This measures the goodness of fit of the regression model. It shows how the variation in the dependent is explained by explanatory variables, from the table, R2 = 0.963965. This implies that about 96% variation in crop production is explained by the explanatory variables.

**Student t-Test**

This tests the explanatory power of the Independent variables; the result shows that the variable bank loan advances has a significant impact on crop production. This is because its absolute t-statistic of 29.16572 is greater than the critical t-statistics of 2.042 at 5% level of significance. The coefficient of BLA which is 0.140494 shows that as log of bank loan advances increases by one percent, crop production rises by 0.140494 percent. Again, the variable interest rate has a significant impact on crop production. This is because its absolute t-statistic of 5.595466 is greater than the critical t-statistics of 2.042 at 5% level of significance. The coefficient of INT which is 0.015735 shows that as income increases by one unit, crop production rises by 0.015735percent.

**F-Statistic**

The F-statistic is used to determine the overall significance of the entire variable in the model. The calculated f-statistic is 428.0165 and is greater than the critical f-value of 8.62. This implies that the entire variables joined together are significantly different from zero.

**4.5 Evaluation Based On Econometric Criteria**

The econometric criteria are applied to check the reliability of the parameter estimates. To do that, we apply the following test: autocorrelation, normality, heteroscedasticity co-integration test, stationarity test and multicollinearity.

**Autocorrelation Test**

This test whether the error are correlated with one another. To do that, we apply the Durbin Watson‘d’ test with the hypothesis as below.

From the Durbin Watson table, the estimated d\* is 1.149 while the dl is 1.153 at 0.01 level of significance (0<d <dl => 0 < 1.149 < 1.153) which falls under the rejection region. However, Heteroscedasticity and autocorrelation consistent H AC standard errors would be used to correct this for the existence of autocorrelation.

**Heteroscedasticity Test**

This test is conducted to check if errors have constant variance or not. The null hypothesis is that the errors are homoscedastic (no heteroscedasticity). Note that this test follows chi-square distribution. We compare the estimated chi-square statistics with the critical chi-square statistics. From the result obtained χ2 Cal = 2.7559 is less than χ2 critical of 20.95 which is statistically insignificant and therefore do not reject the null hypothesis of homoscedasticity.

**Normality Test**

This test is to know if the error term is normally distributed. The null hypothesis is that the error term follows normal distribution from our result the Jarque Bera statistic of 1.747 which is less than the critical chi-square of 5.99 under 2 df. This, we accept the null hypothesis which implies the errors do follow normal distribution.

**Multicollinearity Test**

This test was carried out through the use of correlation matrix. It suggests that if the pair wise correlation coefficient between two regressors is high, say in excess of 0.8, then multicollinearity is a serious problem (Gujarati, 2009). The correlation matrix as shown in the appendice; from the result, the existence of collinearity cannot be found among the explanatory variable. Thus, we can conclude that multicollinearity is not a serious problem in the model since the highest value is 0.76.

**ANALYSIS OF UNIT ROOT AND CO-INTEGRATION RESULT** **MODEL II**

From the table, at level form, the variables are not stationary but at a difference from the variables are stationary at their appropriate order of integration to indicate that the mean, variable and autocovariance are constant over time.

**Stationary Test for Model II**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Variable at level form** | **Variable at difference form** | **Order of integration** |
| **Variable**  | **ADF Stat.** | **Lag** | **5%** | **ADF Stat.** | **Lag** | **5%** |  |
| In (LSP) | -2.124892 | 1 | -2.9499 | -7.981055 | 1 | -2.9527 | I (1) |
| In (BLA) | -0.359075 | 1 | -2.9527 | -3.532197 | 1 | -2.9558 | I (1) |
| INT | -2.288227 | 1 | -2.9527 | -6.081919 | 1 | -2.9558 | I (1) |
| (RESIDUAL) | -3.588171 | 1 |

|  |
| --- |
| -1.9514 |

 | NA | NA | NA | I (0) |

The result shows that all the variable are integrated of order one 1(1) (differenced once to attain stationarity) meaning that they all have unit roots in their level form but stationary after being differenced this is because the ADF statistics for each of the variables are less than the critical levels at 5%. Thus, we proceed to examine their long-run equilibrium relationship using co-integration ADF (ADF) test after which we will examine that adjustment to short-run discrepancies if co-integration is established. As already shown in table 4.1 above, the error term (residual) is stationary at its level form. This implies that there exists a long-run relationship.

Examination of the impact of commercial bank loans or credit on livestock production

|  |  |  |  |
| --- | --- | --- | --- |
| **Explanatory Variable**  | **Coefficient**  | **Std. Error** | **t-statistic** |
| CONSTANT | -1.078173 | 1.879237 | -0.573729 |
| In(BLA) | 0.540235 | 0.122691 | 4.403213 |
| INT | 0.229022 | 0.071624 | 3.197569 |

R2 =0.455585 f-stat. = 13.38936

D-w =1.143299

**4.2 Evaluation Based On Economic Criteria**

The OLS regression applied the Log-Linear Model in order to determine the relative change in the dependent variable from a relative change in each of the explanatory variables.

The result has established a positive and significant relationship between bank loan advances and livestock production. This has been found to be consistent with the theory.

The result also revealed a positive and significant impact between interest rate and livestock production. This has been found to be inconsistent with the theory which could be as a result of nature of the rate of interest charged on livestock production in Nigeria.

**4.2.2 Summary of the Signs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable**  | **Expected Sign** | **Realized Sign** | **Remark**  |
| In (BLA) | Positive  | Positive  | Conforms  |
| INT | Negative | Positive | Does not conform |

**4.3 Evaluation Based On Statistical Criteria**

**Coefficient of determination (R2)**

This measures the goodness of fit of the regression model. It shows how the variation in the dependent variable is explained by explanatory variable. Form the table, R2 = 0.455585. This implies that about 45% variation in livestock production is explained by explanatory variable.

**Student – t-Test**

This tests the explanatory power of the Independent variables; the result shows that the variable bank loan advances has a significant impact on livestock production. This is because its absolute t-statistic of 4.403213 is greater than the critical t-statistics of 2.042 at 5% level of significance. The coefficient of BLA which is 0.540235 shows that as log of bank loan advances increases by one percent, livestock rises by 0.540235 percent. Again, the variable interest rate has a significant impact on livestock production. This is because its absolute t-statistic of 3.197569 is greater than the critical t-statistics of 2.042 at 5% level of significance. The coefficient of INT which is 0.229022 shows that as income increases by one unit, livestock production rises by 0.229022 percent.

**F-Statistic**

The F-statistic is used to determine the overall significance of all the variables in the model. From the result, the calculated F-statistic is 13.38936 and is greater than the critical F-value 8.62. This implies that the entire variables joined together are significantly different from zero.

**4.4 Evaluation Based On Econometric Criteria**

**Autocorrelation Test**

This tests whether the error term are correlated with one another. To do that, we apply the Durbin Watson ‘d’ test with the hypothesis as below:

|  |  |  |
| --- | --- | --- |
| **Null Hypothesis**  | **Decision**  | **If** |
| No positive autocorrelation  | Reject  | 0 < d < d < |
| No positive autocorrelation  | No decision  | dl < d < du |
| No negative correlation  | Reject  | 4-dl < d < 4 |
| No negative correlation  | No decision  | 4 – du < d < 4 -dl |
| No autocorrelation positive or negative | Do not reject  | du < d < 4 – du |

From the Durbin Watson table, the estimated d – statistic is 1.1432while the dl is 1.153 (0 < d < dl => 0 < 1.1432 < 1.153) which falls under the rejection region, hence we reject the null hypothesis conclude the residuals are positively correlated.

**Heteroscedasticity Test**

 The test is conducted to check if errors have constant variance or not. The null hypothesis is that the errors are homoscedastic (no hetroscedasticity). Note that this test follows chi-square distribution. We compare the estimated chi-square statistics with the critical chi-square statistic.

 Since the estimated chi-square of 7.2306 is less than critical chi-square value of 20.59 (with no cross term).

 We conclude that the errors are homoscedastic and we accept the null hypothesis.

**Normality Test**

 This test is to know if the error term is normally distributed. The null hypothesis is that the error term follows normal distribution. From our result, the Jarque Bera Statistic of 2.907 is less than critical chi-square values of 5.99. Thus, we accept the null hypothesis which implies that the errors do follow normal distribution.

**Multicollinearity Test**

From the result, the existence of collinearity cannot be found among the explanatory variable. Thus, we can conclude that multicollinearity is not a serious problem in the model since the highest value is 0.53.

**Stationary Test for Model 111**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Variable at level form** | **Variable at difference form** | **Order of integration** |
| **Variable**  | **ADF Stat.** | **Lag** | **5%** | **ADF Stat.** | **Lag** | **5%** |  |
| In (ASP) | -1.596226 | 1 | -2.9527 | -5.546347 | 1 | -2.9527 | I (1) |
| In (BLA) | -0.359075 | 1 | -2.9527 | -3.532197 | 1 |

|  |
| --- |
| -2.9558 |

 | I (1) |
| INT | -2.288227 | 1 | -2.9527 | -6.081919 | 1 | -2.9558 | I (1) |
| (RESIDUAL) | -2.028024 | 1 |

|  |
| --- |
| **-1.9514** |

 | NA | NA | NA | I (0) |

 The results show that all the variables are integrated of order one 1(1) (differenced once to attain stationarity).In other words, all the variables have unit roots, but stationary after being differenced. This is because the ADF statistics for each of the variables are less than the critical levels at 5%. In other words, the null hypothesis for unit root is accepted for all the variables at the level form. On the other hand, the ADF statistics for each of the variables when differenced are higher than their critical values at 5% which implies that the null hypothesis of unit root is rejected.

 However, though the variables are not stationary, there is tendency of long-run relationship between the dependent variable and the independent variables. Thus, we proceeded to examine their long-run equilibrium relationship using co-integration ADF (CADF) test after which we examined the adjustment to short-run discrepancies when co-integration was established. As already shown in table 4.1 above, the error term (residual) is stationary at its level form. This implies that there exists a long-run relationship between dependent and independent variables.

**To examine the extent to which bank of agriculture loans or credits have affected the overall agricultural sector in Nigeria.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable**  | **Coefficient**  | **Std. Error** | **t-stat.** |
| Constant  | 3.215943 | 1.630959 | 1.971811 |
| INT | 0.110248 | 0.062161 | 1.773580 |
| In(BLA) | 0.684615 | 0.106482 | 6.429429 |

R2 = 0.570191 F-stat. = 21.22586 d-w = 0.652900

**4.3 Evaluation Based On Economic Criteria**

 The OLS regression applied the Log-Linear Model in order to determine the relative change in the dependent variable from a relative change in each of the explanatory variables.

 The result has established a positive and significant relationship between bank loan advances and agricultural output. This has been found to be consistent with the theory.

 The result also revealed a positive and insignificant impact between interest rate and agricultural output. This has been found to be inconsistent with the theory which could be as a result of nature of the rate of interest charged on agricultural sector in Nigeria.

**4.3.1 Summary of the Signs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable**  | **Expected Sign** | **Realized Sign** | **Remark**  |
| In (BLA) | Positive  | Positive  | Conforms  |
| INT | Negative | Positive | Does not conform |

**4.4 Evaluation Based On Statistical Criteria**

 **Coefficient of Determination (R2)**

This measures the goodness of fit of the regression model. It shows how the variation in the dependent is explained by explanatory variables, from the table, R2 =.0.570191. This implies that about 57 % variation in crop production is explained by the explanatory variables.

**Student t-Test**

 This tests the explanatory power of the Independent variables; the result shows that the variable bank loan advances has a significant impact on agricultural output. This is because its absolute t-statistic of 6.429429 is greater than the critical t-statistics of 2.042 at 5% level of significance. The coefficient of BLA which is 0.684615 shows that as log of bank loan advances increases by one percent, agricultural output rises by 0.684615 percent. Again, the variable interest rate has an insignificant impact on agricultural output. This is because its absolute t-statistic of 1.773580 is greater than the critical t-statistics of 2.042 at 5% level of significance. The coefficient of INT which is 1.773580 shows that as interest increases by one unit, crop production rises by 1.773580 percent.

**F-Statistic**

 The F-statistic is used to determine the overall significance of the entire variable in the model. The calculated f-statistic is 21.22586 and is greater than the critical f-value of 8.62. This implies that the entire variables joined together are significantly different from zero.

**4.5 Evaluation Based On Econometric Criteria**

 The econometric criteria are applied to check the reliability of the parameter estimates. To do that, we apply the following test: autocorrelation, normality, heteroscedasticity co-integration test, stationarity test and multicollinearity.

**Autocorrelation Test**

 This test whether the error are correlated with one another. To do that, we apply the Durbin Watson‘d’ test with the hypothesis as below.

 From the Durbin Watson table, the estimated d\* is 0.65 while the dl is 1.153 at 0.01 level of significance (0<d <dl => 0 < 0.65 < 1.153) which falls under the rejection region. However, Heteroscedasticity and autocorrelation consistent H AC standard errors would be used to correct this for the existence of autocorrelation.

**Heteroscedasticity Test**

 This test is conducted to check if errors have constant variance or not. The null hypothesis is that the errors are homoscedastic (no heteroscedasticity). Note that this test follows chi-square distribution. We compare the estimated chi-square statistics with the critical chi-square statistics. From the result obtained χ2 Cal = 9.33 is less than χ2 critical of 20.95 which is statistically insignificant and therefore do not reject the null hypothesis of homoscedasticity.

**Normality Test**

 This test is to know if the error term is normally distributed. The null hypothesis is that the error term follows normal distribution from our result the Jarque Bera statistic of 143.3 which is greater than the critical chi-square of 5.99 under 2 df. This, we reject the null hypothesis which implies the errors do not follow normal distribution.

**Multicollinearity Test**

 This test was carried out through the use of correlation matrix. It suggests that if the pair wise correlation coefficient between two regressors is high, say in excess of 0.8, then multicollinearity is a serious problem (Gujarati, 2009). The correlation matrix as shown in the appendix; from the result, the existence of collinearity cannot be found among the explanatory variable. Thus, we can conclude that multicollinearity is not a serious problem in the model since the highest value is 0.72.

**CHAPTER FIVE**

**5.0 SUMMARY, POLICY RECOMENDATIONS AND**                 **CONCLUSION**

**5.1 Summary**

 In this study, we set out to empirically examine the Impact of Bank of Loans or Credits on the Agricultural Sector Performance in Nigeria between 1982 and 2016. The study was conducted to determine the extent to which bank of agriculture credit or loan contributes to crop production, livestock production and agricultural sector as a whole.

 Secondary data were used; the source of data included CBN Statistical Bulletin (2014), National Bureau of Statistics (NBS). In order to achieve the objectives of the study, three econometric models were formulated using the Ordinary Least Square (OLS). In the first model, crop production was regressed on, bank loan advances and interest rate, in second model, livestock production was regressed on, bank loan advances and interest rate while in the third model, agricultural output was regressed on, bank loan advances and interest rate.

 The major findings of the study are summarized below:

* The result has established a positive and significant relationship between bank loan advances and crop production.
* The result also revealed a positive and significant impact between interest rate and crop production. The implication of this result could be as a result of nature of the rate of interest charged on crop production in Nigeria.
* The result has established a positive and significant relationship between bank loan advances and livestock production.
* The result also revealed a positive and significant impact between interest rate and livestock production.
* The result has established a positive and significant relationship between bank loan advances and agricultural output.
* The result also revealed a positive and insignificant impact between interest rate and agricultural output.

**5.2 Policy Recommendations**

 Based on the following findings of this study, the following policy recommendations are suggested:

1. The empirical results of the study have revealed a positive and significant impact between interest rate and crop production. We therefore, advocate for a moderate interest rate so to improve crop production in Nigeria.
2. The government at all level should also be more committed to the enhancement of food production in Nigeria by increasing the budgetary allocation to the agricultural sector, This is urgent, given the economic situation in Nigeria.
3. The central bank of Nigeria should at all level maintain a good monetary policy that would enable the bank of agriculture issue loan for agricultural purposes.
4. The central bank of Nigeria should adequately fund agricultural sector, this can be done by increasing the grants to local governments and setup a framework to ensure that the funds are judiciously used for the specified purpose.
5. The government should checkmate this corrupt practice by ensuring the independent and empowerment of the anti-graft bodies and strictly adhering to the stipulations of the Fiscal Responsibility Act (FRA) of 2007.

**5.3 Conclusion**

In this study, we empirically examine the Impact of bank of agriculture Loans or Credits on the Agricultural Sector Performance from 1980 - 2014. From our findings, the result revealed a positive and insignificant impact between interest rate and agricultural output.

Also, the result also established a positive and significant relationship between bank loan advances and livestock production. The result has established a positive and significant relationship between bank loan advances and crop production. The general conclusion is that Deposit Money Bank Loans or Credits is paramount in promoting agricultural sector.

**References**

Ali, F., & Iraj, F. (2006). Credit risk management: a survey of practices. *Managerial Finance, 32*(3).

Andrade, F., & Thomas, L. (2004). Structural Models in Consumer Credit. *Working Paper.*

Banachewicz, K., & Lucas, A. (2007). Quintile Forecasting for Credit Risk Management Using Possibly Mis-specified Hidden Models. *Tinbergen Institute Discussion Papers.* Tinbergen Institute.

Barlow R E., P. F. (1965). *Mathematical theory of reliability. The SIAM Series in Applied Mathematics.* New-York-London-Sydney XIII, 256: John Wiley & Sons, Inc.

Bolton, C. (2009). *Logistic Regression and its Application in Credit Scoring.* Pretoria: Universiteit Van Pretoria.

C.Marrison. (2002). *Fundamentals of Risk Management.* New York: Mcmilan Press,.

CBN. (2010). *CBN Annual Banking Report.* Abuja: CBN

CBN. (2012). *Bank Supervision Annual Report.*Abuja: CBN

CBN. (2013). *Banking Industry Report.* Abuja: CBN

CBN. (2013). *Central Bank of Kenya Risk Based Supervisory Framework.* Abuja: CBN.

CBN. (2013). *Credit Survey Report.* Abuja: Central Bank of Nigeria.

CBN. (2013). *Prudential Guidelines, PG.* Abuja: CBN.

CBN. (2013). *Prudential Guidelines:Risk Classification of Assets and Provisioning.* Abuja: CBN.

CBN. (2013). *Risk Management Guidelines.* Abuja: Central Bank of Nigeria.

Chen, K., & Pan, C. (2012). An Empirical Study of Credit Risk Efficiency of Banking Industry in Taiwan,. *Web Journal of Chinese Management Review,, 1*(15), 1-16.

Cheng, C, H., & Zhang, B. (2009). *Review of the Literature on Credit Risk Modeling: Development of the Recent 10 Years.* Dalarna: Applied Statistics, Hagskolan .

CMA/AOC. (n.d.). *CAADP Pillar II:Promotion of a Portfolio of Models for the Integration of Small Scale Farmers in Agri-Food Value Chain Through Experience Sharing.* Dakar Fann, SENEGAL: NEPAD: A programme of the African Union.

D’Amico G, D. B. (2010). Semi-Markov Backward Credit Risk Migration Models: A Case Study. *International Journal of Mathematical Models and Methods in Applied Sciences, 4*(1).

D’Amico, G., Di Biase, G., Janssen, J., & Manca, R. (2009). Semi-Markov Backward Credit Risk Migration Models Compared with Markov Models. *3RD International Conference on Applied Mathematics, Simulation, Modelling* (pp. 112-115). Athens, Greece),: Wseas Press.

Dang, U. (2011). The Camel Rating System in Banking Supervision: A Case Study. *International Business Journal*.

De Juan, A. (2008). Does Bank Insolvency Matter? And How to go About it,. *World Bank Finance*.

Derban, W. B. (2005). Loan repayment performance in community development finance institutions in the UK. *Small Business Economics, 25*, 319-332.

Dominic O'Kane. (2001). *Credit Derivatives Explained: Lehman Brothers Structured Credit Research.* Europe: Lehman Brothers International.

Duffie, D. a. (2003). *Credit Risk: Pricing, Measurement, and Management.* Princeton University Press.

Francis J., J. F. (1999). *The Handbook of Credit Derivatives.* New York, NY: McGraw Hill..

G. D’Amico, G. D. (2010). Semi-Markov Backward Credit Risk Migration Models: a Case Study. *International Journal of Mathematical Models and Methods in Applied Finance, 1*(4).

G. D’Amico, J. J. (2005). Homogeneous discrete time semi-Markov reliability models for credit risk Management. *Decisions in Economics and Finance*(28), 79-93.

G. D’Amico, J. J. (2008). The dynamic behaviour of non-homogeneous single uni-reducible Markov and semi-Markov chains. *Lectures Notes in Economic and Mathematical Systems,* (pp. 195-211). Springer.

G. D’Amico, J. J. (2009). Initial and Final Backward and Forward Discrete Time Non-Homogeneous Semi-Markov Credit Risk models. *Methodology and Computing in Applied Probability,*.

G.D'Amico, G. B. (2009). Homogeneous and Non-Homogeneous Semi-Markov Backward Credit Risk Migration Models. In Financial Hedging.

Giesecke, K. (2004). Credit Risk: Models and Management. *Risk Books, 2*, 487{525.

Guglielmo D'Amico, J. J. (n.d.). Initial and Final Backward and Forward discrete time non-homogeneous semi-Markov Credit Risk Models. *International Journal of Mathematical Models and Methods in Applied Sciences*.

Guntler Loffler, P. P. (2007, July Monday). *Credit Risk Modelling Using Excel and VBA.* West Sussex, England: John Wiley & Sons Ltd. Retrieved July Monday, 2013, from http://www.cic.co.ke

Jacques Jansen, R. M. (2007). *Semi-Markov Risk Models for Insurance, Finance and Reliability.* New York: Springer Science+Business Media.

Jacques, J., & Raimondo, M. (2007). *Semi-Markov Models for Finance, Insurance and Reliability.* New York: Springer Science+ Business Media, LLC.

Kaniovski Y. M, C. P. (2007). Risk Assessment for Credit Portfolios: A Coupled Markov Chain Model. *Journal of Banking & Finance, 8*(31), 2303-2323.

Kargi, H. (2011). *Credit Risk and the Performance of Nigerian Banks.* Zaria: AhmaduBello University.

.

Kolapo T. Funso, A. R. (2012). CREDIT RISK AND COMMERCIAL BANKS’ PERFORMANCE IN NIGERIA: A PANEL MODELAPPROACH. *Australian Journal of Business and Management Research*, 31-38.

Lando, D. (2004). *Credit Risk Modeling: Theory and Applications.* Princeton University Press.

Lepus.S. (2004). *Best Practices in Credit Risk Management.* USA: SAS.

Limnios N, O. G. (2000). *Semi-Markov Processes and Reliability Modeling.* Singapore: World Scientific.

Linda, A. P. (2004). *Credit Risk Modeling of Middle Markets.* New York: Zicklin School of Business, Baruch College, CUNY.

Madhur, M., & Lyn, T. (2010). *Modelling Credit Risk in portfolios of consumer loans:Transition Matrix Model for Consumer Credit Ratings.* Southampton, UK: School of Management, University of Southampton.

McNeil, A. J. (2005). *Quantitative Risk Management: Concepts, Techniques, and Tools.* Princeton University Press.

Merton, R. (1974). On the Pricing of Corporate Debt: The Risk Structure of Interest Rates. *Journal of Finance, 29*(2), 449-470.

Michael Casey.K, S. E. (2009). Post-loan credit risk: an analysis of small business in southern Arkansas. *Competitiveness Review: An International Business Journal, 19*(4), 342-348.

Monteiro, A., Smirnov, G., & Lucas, A. (2006). Non-parametric Estimation forNon-Homogeneous Semi-Markov Processes: An Application to Credit Risk. *Tinbergen Institute Discussion Papers.* Tinbergen 29 Institute.

Munnixl, R. S. (2011). A Random Matrix Approach to Credit Risk. *Faculty of Physics, University of Duisburg-Essen, Duisburg, Germany*.

Njanike, K. (2009). The Impact of Effective Credit Risk Management on Bank Survival. *Annals of the University of Petroşani, Economics*, 173-184.

Psillaki, M. T. (2010). Evaluation of Credit Risk Based on Firm Performance. *European Journal of Operational Research, 3*(201), 873-888.