

**CREDIT AND AGRICULTURAL PRODUCTIVITY AMONG FARMERS IN
GWARZO LOCAL GOVERNMENT AREA OF KANO STATE, NIGERIA**

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**A RESEARCH SUBMITTED TO THE COLLEGE OF ECONOMICS AND
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DECLARATION

I hereby declare that this thesis is my original work and the topic has never been submitted to any university or institution of higher learning for an academic award.

Signature.....

Date 03-07-2019

HAMIDAN BELLO HARRIS

APPROVAL

This research report has been submitted for examination with my supervisors consent

Dr Byamukama E


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Signed


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Date

DEDICATION

I dedicated this work to Almighty Allah for giving me the opportunity to proceed with my academic activities up to this stage of learning. I believe many are willing to attain but could not make it because of one reason or the other.

ALHAMDULILLAH ALA KULLI –HAL

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LIST OF ACRONYMS

SC THEORY	Structural Change Theory
FGN	Federal Government of Nigeria
ACGSF	Agricultural Credit Guarantee Schemes Found
TFP	Total Factor of Production
NACB	Nigerian Agricultural Cooperative Bank
MDG	Millennium Development Goal
SSA	Sub- Sahara Africa
RosCAS	Rotation Saving and Credit Association
BOA	Bank of Agriculture
OLS	Ordinary Least Square
ACSS	Agricultural Credit Support Scheme
CACS	Commercial Agriculture Credit Scheme
NIC	New Industrial Country
GPD	Growth Domestic Productivity
CBN	Central Bank of Nigeria
OECD	Organisation for Economic Cooperation and Development
IFAD	International Fund for Agricultural Development
ACGSF	Agricultural Credit Guaranty Scheme
USA	United State of America
SNU	Standard Nutrition Unit

TABLE OF CONTENTS

DECLARATION	i
APPROVAL	ii
DEDICATION	iii
ACKNOWLEDGMENTS	iv
LIST OF ACRONYMS	v
TABLE OF CONTENTS	vi
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF APPENDIX	xi
ABSTRACT	xii
CHAPTER ONE	1
INTRODUCTION	1
1.0 Introduction	1
1.1 Background to the Study.....	1
1.1.1 Historical Perspective.....	1
1.1.2 Theoretical Perspective.....	3
1.1.3 Conceptual Perspective.....	3
1.1.4 Contextual Perspective	5
1.2 Statement of the Problem.....	5
1.3 Purpose of the Study	6
1.4 Specific Objectives	6
1.5 Research Questions.....	7
1.6 Research Hypotheses	7
1.7 Scope of the Study	7
1.7.1 Geographical Scope.....	7
1.7.2 Content Scope	7

1.7.3	Time Scope.....	8
1.8	Significance of the Study	8
1.9	Definition of Key Terms.....	8
CHAPTER TWO		11
LITERATURE REVIEW.....		11
2.0	Introduction	11
2.1	Theoretical Review.....	11
2.2	Conceptual Framework.....	13
2.3	Review of Related Literature	13
2.2.1	Access to Agricultural Credit and Agricultural Productivity	19
2.2.2	Level of Agricultural Productivity in relation to agricultural credit among Farmers	22
2.2.3	Relationship between Utilisation of Agricultural Credit and productivity among farmers.....	27
2.3	Research Gap.....	29
CHAPTER THREE.....		31
METHODOLOGY		31
3.0	Introduction	31
3.1	Study Area.....	31
3.2	Topography	31
3.3	Research Design	32
3.4	Target Population of the study	32
3.5	Sample Size.....	32
3.6	Sampling Technique	32
3.7	Data Collection Procedure	33
3.8	Data Collection Instruments.....	33

3.8.1	Validity of the Instrument.....	33
3.8.2	Reliability of Instrument.....	34
3.9	Data Analysis Technique	34
3.9.1	Ethical Considerations.....	34
CHAPTER FOUR.....		35
DATA PRESENTATION, ANALYSIS AND INTERPRETATION		35
4.0	Introduction	35
4.1	Data Presentation and Analysis.....	35
CHAPTER FIVE		46
SUMMARY, CONCLUSION AND RECOMMENDATIONS		46
5.0	Introduction.....	46
5.2	Conclusion	47
5.3	Recommendations	49
5.4	Areas for further research	50
5.5	Contribution to Knowledge	50
5.5	Limitations of the Study	51
REFERENCES		52
APPENDICES.....		60
APPENDIX 1: RESEARCH QUESTIONNAIRE		60
APPENDIX 2: GWARZO LOCAL GOVERNMENT AREA MAP.....		65

LIST OF TABLES

Table 4.1: Showing Demographic Characteristics of the Respondents.....	35
Table 4.2: Occupation Characteristics of the Respondents.....	37
Table 4.3: Access to Agricultural Credit by the Farmers	39
Table 4.4: Level of Agricultural Productivity of the Farmers.....	40
Table 4.5: Comparison of Farmers' Productivity across 3 years	42
Table 4.6: Determining of Utilization of Agricultural Credits on Farmers' Productivity	43
Table 4.7: PLCC results for relationship between access to credits and the level of farmers' productivity (Correlations).....	45

LIST OF FIGURES

Figure 1: Conceptual Framework**Error! Bookmark not defined.**

LIST OF APPENDIX

Appendix 1: Research Questionnaire.....60

Appendix 2: Gwarzo Local Government Area Map.....65

ABSTRACT

This study focused on Credit and Agricultural Productivity among farmers in Gwarzo Local Government Area, of Kano State, Nigeria. The study was guided by the Structural Change Theory formulated by W. Arthur Lewis in 1950s. The study had the following as objectives : to determine the relationship between access to agricultural credit and farmers productivity; to determine the level of agricultural productivity in relation to agricultural credit and to determine the relationship between utilisation of agricultural credit and the level of agricultural productivity among farmers in Gwarzo local government area of Kano State Nigeria. Besides, the study opted for a Descriptive survey design approach with a target Population of 1000 respondents consisting of 850 local farmers and 150 members of Farmers Association operating in the area. The sample size of 285 was obtained by using the Slovine's formula. Closed ended questionnaire, structured individual interview and focused group discussions were the instrument of data collection used. Data was analysed using Descriptive Statistics, Pearson Linear Correlation Coefficient as well as Content Analysis. Based on the findings from the study, it was revealed that, farm land are personally owned by the farmers, thus, leading to difficulties in harvesting the entire land due to unavailability of sufficient funding. Equally, it has been discovered that lack of access to agricultural credit has negative consequences on the level of productivity among farmers. In some instances where the farmers have access to the credit, it has been discovered that there is adequate utilisation of the facility. However, the study recommends that, there is the need for more intervention from agricultural financial institutions to complement the ones currently in operation. It is also recommended that such agricultural financial institutions should have direct connection with the rural farmers for easy access, supervision and control of the facility for improved utilisation and increase in agricultural productivity among farmers.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This chapter consists of background of the study, problem statement, purpose, objectives, research questions, hypothesis, scope and significance of the study.

1.1 Background to the Study

Background to this study encompasses four perspectives namely; historical, theoretical, conceptual and contextual perspectives.

1.1.1 Historical Perspective

Harun (2006) postulates that “globally, agricultural credit has been identified as a major input for development of agricultural output and in covering financial gap for farmers and to increase their productivity”. He further indicated that, agricultural credit/ loanable funds play a fundamental role in determining access to the needed input that facilitate farming and other extensive agricultural practices which ultimately transform into Increased output. Increased agricultural output establishes a forward linkage (multiplier effect) in terms of development to other sectors as well as higher income and better quality of life for the rural poor. Hazell statement Platteau (2008) cited example in Brazil, where he mentioned that, through its agricultural financial incentives, the country’s status changed from undeveloped status to that of newly industrialized country (NIC).

On the part of Africa a number of studies such as Ansari, Gerasim and Mahdavinia (2009)Salami *et al* (20 10) as cited in (Salami &Arawomo, 2013) have documented the problems of the agricultural sector in African countries. Aside the problem of poor access to modern technology by the peasant farmers, the major obstacle of agricultural development commonly identified by the above studies among others is low investment or finance. Now at this juncture one can clearly observe the effect of farmers not having access to credit for the fact that, it was identified as lasting injury to agricultural development.

According to Salami and Arawomi (2013) access to credit facilities has been identified as a direct solution to increasing investment in agriculture. In Africa credit is a crucial factor in agricultural production and in many cases may be a limiting factor in small holder agriculture.

In Nigeria, the mainstay of the economy before the 1970s was the agricultural sector (Osuntogun, 1997) in Udoka, Mbat and Duke, (2016). Osuntogun as cited in Udoka *et al.*, further explained that during this period, the structure of the Nigerian economy was largely agrarian in nature with agriculture, solid minerals and other metals forming the bedrock of the economy. Agricultural commodities were also the major export earner for the country. Nigeria was a key exporter of rubber, cotton, groundnut, palm oil, cocoa and palm kernel amounting into three per cent and four per cent in the 50s and 60s respectively of the annual rates of output growth for food and agricultural crops (Osuntogun, 1997) in (Udoka *et al.*, 2016). Owing to this fact, the sector was later neglected because of several reasons, the advent of crude oil among others which serves as the major export revenue and causing its contributions to the GDP dropped drastically. Although, according to Osuntogun as cited in Udoka *et al* agriculture as at 1960 was the largest economic activity that contributed 50.2 per cent of the GDP. Apart from the emergence of crude oil, the issue of finance was identified as the major factor hindering the agricultural production in Nigeria. For this reason various programmes, policies as well as institutions have been established with the aim of providing easy finance to the sector. Commercial Banks were at the forefront for this purpose. One of the major inputs identified over the years in the development of the Nigerian agricultural sector has been the agricultural credit (CBN, 2005) as cited in (Udoka *et al.*, 2016). In view of that most of the policies promulgated by the federal government of Nigeria on disbursement of agricultural credit were done through commercial banks and the trends has continued over the years

According to Udoka *et al.*,(2016), the Nigerian agricultural sector received increased credit from the commercial banks up to about N7 million in 1970 representing 1.99 per cent of the N37.4 million credits. The sector had continued to receive increased amount of credit up to 1995. Productivity expresses the varying relationship between agricultural output and one of the major inputs, like land or labour or capital, other complimentary factors remaining the same. It may be borne in mind that productivity is physical rather than a value concept (Dewett, 1966).

However, Fulginiti and Perrin (1998) stated that “agricultural productivity refers to the output produced by a given level of input(s) in the agricultural sector of a given economy”. But Olayide and Heady (1982) believe that “productivity measures the amount produced by a

target group (country, industry, sector, farm or almost any target group) given a set of resources and inputs of farm production.

However, beginning from 2000, the share of credit to agriculture though was increasing in absolute terms, started to decline relatively (Udoka et al., 2016). But based on Udoka *et al.* The trend moves in a fluctuation manner, whereby in 2014 agricultural credit rose again from N343,696.80 million in 2013 to N478,911.78 million representing 3.7 per cent of commercial banks total credit.

1.1.2 Theoretical Perspective

The theory that underpinned this study was Structural Change Theory, formulated by Nobel laureate W .Arthur Lewis in 1950s. The theory focuses on the mechanism by which underdeveloped economies can transform their domestic economic structures from a heavy emphasis on traditional subsistence agriculture to a more modern and more advanced agricultural practice through heavy financial support in order to attain industrial breakthrough. The extended version of the theory added that the full benefit of agricultural development cannot be realised unless government support systems are created, that provide the necessary incentives, economic opportunities and most importantly access to needed credit and inputs to enable small farmer to expand their output and raise their productivity. Other reform or strategies are likely to be ineffective and perhaps even counterproductive unless there are corresponding structural changes that improve productivity example bank loans, provision of seed improve, fertilizer distribution, technical and educational extension service, public service, public credit agencies, and rural transport and feeder roads.

1.1.3 Conceptual Perspective

Access to finance is the ability of individual or enterprises to attain financial service, including credit, deposit, payment, insurance and other risk management service (Porteous, 2005). In order to mechanise and improve agricultural activities which ultimately enhance food sufficiency, increase farmers income, provide essential raw materials for the local agro-based industries, the agricultural sector has to be well financed and farmers financial strengths well boosted through increased access to agricultural credits and loans. Certainly, bulk of farmers' population who contribute significantly to the Gross Domestic Product of Nigeria are peasant farmers majority of whom happen to be poor rural dwellers who deserve increased access to agricultural credits especially from financial institutions established by

the federal government specifically to finance agricultural development through agricultural credits grants to farmers.

Agricultural credit is defined as the term applied to fund borrowed by individual farm business, and others for use in producing, storing, processing and marketing crops and livestock products (international encyclopaedia of the social sciences, 1968).

Abe (1981) postulates that “agricultural credit incorporates all loans and advances granted to borrowers to finance and service production activities relating to agriculture fisheries and forestry and also for the processing, marketing, storage and distribution of products resulting from those activities”.

Agricultural credit can be defined as the way that a Farmer can have money from outside in order to finance this agricultural productivity credit is source for a farmer to have a loan or borrow a money for improve his productivity by make his Agricultural third sector in a modern way(Corporate Document Repository,2007).

In this study credit was measured by number of loans in a given Period/frequency and average loan amount/volume relative to (CGAP, 2009). Access to credit has been measured by the value of the amount borrowed and frequency of the access to credit.

On the other hand the concept of productivity according to Pandit (1965) can be defined as the output per unit of input. The art of securing an increase in output from the same input or of getting the same output from a smaller input.”Pandit further suggests that an increase in productivity, whether in industry or agriculture, is generally the result of a more efficient use of some or all the factors of production, viz. land labour and capital. More so, Shafi (1984) argued that “agricultural productivity may be defined as the “ratio of index of Local agricultural output to the index of total input used in farm production”

As productivity is the volume measure of production (output) divided by the volume measures of inputs.

1.1.4 Contextual Perspective

Awotide, Abdoulay, Alene, and Manyong (2015) Posits that “improving the production capacity of agriculture in developing countries like Nigeria through productivity increase is an important policy goal, especially in Nigeria where agriculture represents an important sector in the economy. And their results show that majority of the farmers are still in their productive age, cultivating an average of 2.59 hectare of farm land, most of which is on rented farmland. Credit is obtained mostly for agricultural and non-agricultural purposes”.

1.2 Statement of the Problem

Accessibility to agricultural credits by majority of Nigerian farmers especially the small scale farmers in many rural areas is not encouraging. Specifically, in many agricultural areas of Kano state, such as Kura, Bagwai, Garun Malam and Gwarzo Local Government Areas, small scale farmers narrate their ordeals due to inaccessibility to agricultural credit from government established agricultural financial institutions. Many factors might be responsible for the farmers’ inability to access such loans among which is ignorance, lack of proper awareness, poverty, discrimination by the financial institutions etc. Besides, non-compliance to some of the conditions governing the allocation of such loans by the farmers as well as their failure to appropriately repay back accessed loans might also compound the farmers’ dilemma (Takwa, 2018). These leads to financial constraints, uncultivated lands, lack of access to basic agricultural inputs required for increased productivity such as mechanised farming methods, improved seeds, fertilizers, insecticides, pesticides, labour costs etc.

Consequently, farmers’ productivity was significantly affected resulting in reduced rate of farm cultivation as well as reduced crop yields after every farming season. Further compounding this problem were occurrences of natural disasters especially floods and locusts and quale birds’ infestation. Furthermore, the ever increasing prices of farm inputs especially fertilizers, insecticides, pesticides and labour costs add to the farmers’ decreased productivity as many of them were poor to afford such basic agricultural inputs. According to a World Bank Development Report, (2015) currently in Nigeria, a large percentage of farmers’ especially the rural farmers are poor and the level of poverty has been exacerbated by the decline in agricultural output as well as income inequality. Despite concerted efforts made by farmers to access agricultural loans through the establishment of Farmers Associations following an initiative by the Kano state government of setting up a committee in 2014 through the state Ministry of Agriculture and local governments’ Departments of Agriculture

to work out modalities on how to boost rural farmers access to agricultural loans especially from government established agricultural financial institutions across the state, agricultural loans are still a mirage to many peasant farmers, (Oni, 2013).

It is against this backdrop this study argues that, despite the volume and number of researcher works and literature reviewed, none has adequately addressed the topic understudy. Thus, the study was conducted in order to establish the relationship between agricultural credits and the level of productivity as well as the approach towards utilization of the agricultural loans and how this determines the level of productivity in Gwarzo LGA in particular and Kano state in general with a view to proffer solution to the existing problems.

1.3 Purpose of the Study

The purpose of this study was to analyse the relationship of credit on the agricultural productivity in Gwarzo local government area of Kano State.

1.4 Specific Objectives

The study has the following specific objectives:

1. To examine the relationship between access to credit and agricultural productivity in Gwarzo local government of Kano state Nigeria.
2. To determine the level of agricultural productivity in relation to agricultural credit among the farmers in Gwarzo Local Government Kano State.
3. To find out the relationship between utilization of agricultural credit and productivity among farmers in Gwarzo Local Government Kano State Nigeria.

1.5 Research Questions

1. What is the relationship between access to credit and agricultural productivity in Gwarzo local government of Kano state Nigeria?
2. What is the level of agricultural productivity in relation to agricultural credit among the farmers in Gwarzo Local Government Kano State?
3. What is the relationship between utilization of agricultural credit and productivity among farmers in Gwarzo Local Government Kano State Nigeria?

1.6 Research Hypotheses

- Ho 1: There is no significant relationship between access to credit and agricultural productivity in Gwarzo local government of Kano state Nigeria.
- Ho 2: There is no relationship between credit and agricultural productivity among the farmers in Gwarzo Local Government Kano State?
- Ho 3: There is no significant relationship between Utilization of agricultural credit and farmer's productivity in Gwarzo Local Government Kano State Nigeria?

1.7 Scope of the Study

The scope of the study was divided into three parts viz; geographical scope, theoretical scope and content scope.

1.7.1 Geographical Scope

Gwarzo is one of the 44 local Government Areas of Kano state Nigeria, It was created by 1979 local Government reform. Gwarzo town is the Headquarters of Gwarzo local Government, It has an area of 393km² with a population of 183.187 as at 2006 National census, most of the people in the area depend on agricultural activities, the research was confined to Nasarawa, Dankendi, Unguwar Makera, Gangara and Menika village in Gwarzo Local Government area. The rationale behind that, was because most of the habitants are farmers.

1.7.2 Content Scope

This study focussed on determining the utilization of credit and agricultural productivity among the farmers in Gwarzo Local Government Kano State Nigeria. Credit is the independent variable (IV) measured with Access to Credit, Utilization of Credit, Determinant

of Agricultural productivity. Agricultural productivity on the other hand, is the independent variable (DV) measured using Farm Land, Yield and Equipment.

1.7.3 Time Scope

The study was conducted using primary data 2000 - 2018.

1.8 Significance of the Study

The study has immense benefit to policy makers, in dissemination of relevant information regarding the issues of this sector which helps them prioritize different areas and earmark necessary resources accordingly. This, in turn, may help to achieve efficiency as well as technical efficiency and realize the long term economic goals. This study also provides a platform upon which the policy makers can decide to exploit the potentialities of the agricultural sector in order to strengthen the export, assist the industrial sector and accelerate the overall economic growth with a higher level of technical efficiency. Lastly but not the least, the results of this study will be of immense help to future researchers who will make their own investigation into this subject area.

1.9 Definition of Key Terms

Agricultural Credit

It has been identified as a major input for development of agricultural and in covering financial gap for farmers and to increase their productivity” (Abe, 1981).

Agricultural Productivity

Dewett (1966), explains “Agricultural Productivity expresses the varying relationship between agricultural output and one of the major inputs, like land or labour or capital, other Complimentary factors remaining the same, it may be born in mind that productivity is physical rather than a value concept. However, agricultural productivity is referred to as the output produced by a given level of input(s) in the agricultural sector of a given economy.

Land

Land connotes different things to different people. In a broader context, land refers to the atmosphere, the soil and the underlying geology, the hydrology and the plants on, above and below a specific area of the earth's surface. It also includes the historical facts of the past and present human activities as well as the animals within an area. This further takes into

cognisance significant influence of these historical facts and their significant impact on the present and future uses of the land by man. Other more important components and overlapping concepts of land use can be identified by looking at land as “space, three-dimensional, unchangeable and fixed in quantity; land as nature, defined in terms of natural or man-made ecosystems influenced by natural processes; land as a gene resource; land as a production factor, together with labour and capital; land as a consumer good or commodity as a support for highways, buildings; land as a source of pleasure and recreation; land as location in modern economy and politics; and finally, the related legal and economic connotation of land as capital” (Baulkwill, 1972).

Farmer

A farmer is a person who is engaged in farming for commercial or personal benefit. Generally speaking, farmers in most cases engage into farming business to generate profit (Kumaraveloo et.al, 2018).

Input

Agricultural input can be defined as the increased in the use of modern techniques and methods inputs such as hybrid seeds, mineral fertilizer, herbicide, and pesticide in African agriculture. It also analyses the potential of this intensification to accelerate productivity growth and tests the effectiveness of two policies, input subsidies and land reforms, in promoting it and consequently in increasing crop yield. Similarly, it involves “harnessing strategic complementarities among agricultural technologies by adopting them simultaneously rather than sequentially” (Kumaraveloo et.al, 2018). Furthermore, it involves the process of measuring the ratio of agricultural outputs to agricultural inputs.

Output

Agricultural output can be defined as the market value of final output, which excludes intermediate products such as corn feed used in the meat industry. This output value involves comparing many different aspects of inputs such as labour and land. Agricultural output therefore refers to the whole process of measuring what is termed as total factor productivity (TFP). This method of measuring agricultural output relates an index of agricultural inputs to an index of outputs (Cain, 1970).

Labour

The term labour in the agricultural context refers to all service performed “on a farm, in the employment of any person, in connection with cultivating the soil, or in connection with raising or harvesting any agricultural or horticultural commodity, including the raising, rearing, feeding, caring for, training, and management of livestock, bees, poultry, and fur-bearing animals, and wildlife” (Cain, 1970). Cain further elaborated that it also involve the employment of the owner or tenant or other operator of a farm in connection with the operation, management, conservation, improvement, or maintenance of such farm and its tools and equipment, or in salvaging timber or clearing land of bush and other debris left by a hurricane, if the major part of such service is performed on a farm (Cain, 1970).

Capital

The term capital refers to the explosion of different types of supposed capital in recent times, which include human capital and social capital. It also connotes different meaning, involving a more traditional interpretation of capital as money investable or invested in business. This meaning continues to make meaning in business circles today. Contrarily, Adam Smith cited in Paul A. Samuelson and William D. Nordhaus (2004), treated physical assets, machines and people as ‘capital’ and this different usage has dominated economics interpretation of capital for a long period of time.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviewed literature according to the objectives of the study, and the theory that has underpinned the study.

2.1 Theoretical Review

2.1.1 Structural Change Theory

The theory that underpinned this study was Structural Change Theory. This theory was formulated by Nobel laureate W. Arthur Lewis in the mid 1950's and latter modified, formalised and extended. The theory focused on the mechanism by which underdeveloped economies can transform their domestic economic structures from a heavy emphasis on traditional substance agriculture to a more modern and more advanced agricultural practice through heavy financial support in order to attain industrial breakthrough. Other reforms or strategies are likely to be ineffective and perhaps even counterproductive unless there are corresponding structural changes that control productivity, example bank loans, fertilizer distribution, technical and educational extension service, public credit agencies, the rural transport which include provision of feeder roads.

Furthermore, different patterns can be associated with lower than average GDP growth and should be eschewed. The importance of structural transformation in a particular direction was argued by the structural change theories, which originated in the 1960s mainly with the work of Lewis (1954), some scholars like Chenery (1960), and Kuznets (1971). More recent literature includes Product Space of Hidalgo et al. (2007), Matsuyama (2008), and McMillan and Rodrik (2011), who also kindly provided the data.

First, such fundamental contribution to the SC theory is the dual economy of Sir Arthur Lewis. Lewis (1954) described the basic model of two-sector economy, presenting the classical dichotomy between traditional such as subsistent agriculture which was used in developing countries (agriculture in the rural areas) and modern agriculture practices by developed countries (industry in the urban areas). (Second part for the repetition). Importance of structural change for economic development is stressed by many authors.

More recently, McMillan & Rodrik (2011) have argued against the beneficial aspects of structural change from the 1990s onwards, mainly due to globalization. Structural change in terms of different composition of the total output originates both from within and between productivity growths since production shares are defined as labour productivity multiplied by total labour force in given sector. For these reasons many countries (especially in Africa) experienced growth-suffocating structural transformation from the year 1990 onwards, even though the within labour productivity increased rapidly.

According to Chenery (1960) argued that “countries develop on differing trajectories, which are specific to each country. He advocated strong relationship between industrial growth and total output of the economy. Besides this, he was one of the first to employ econometric methods to identify the determinants of structural change, specifically within the industrial sector. He claimed that the patterns that countries follow on their way to higher income are closely related to their size, geographical location, and abundance of natural resources”.

Importance of structural change for economic development is stressed by many authors. (Kuznets 1971); notes that “some structural changes, not only in economic but also in social institutions and beliefs, are required, without which modern economic growth would be impossible. ” Likewise, (Chenery *et al.* 1979) view economic development “asset of interrelated changes in the structure of an economy that are required for its continued growth.” Structural change then can become by itself a source of economic development when production factors move from low to high productivity sectors.

Besides the above-mentioned, many others have notably contributed to the field of structural change; Wood & Mayer (2001) for example have argued that “Africa will never follow the Asian path of fast manufacturing growth. Given its low level of education and stock of natural wealth, it should rather increase absolute level of exports by building up on its natural resources and develop processing industry”.

Its long-run development path should thus resemble more “land-abundant America than land scarce Asia”. Imbs and Wacziarg (2003) described the gradual changes in sector concentration in the economy. At very low stage of development, countries display very narrow concentration into few sectors (agriculture, mining). As they start to grow, they tend to diversify and spread their economic activity more equally across sectors. Even later on the development path, these countries begin to specialize and concentration again increases.

Although, the countries might share similarities in terms of aggregate demand (disregarding the differences springing from different cultural background and demography) the supply side usually differs country by country. Such distinctions might be compensated for by foreign trade. Therefore country with large comparative advantage in agriculture may keep the production factors in the primary sector and yet achieve high GDP growth rates without increasing the manufacturing production. If we generalize this possible difference also to other sectors, “we should not expect to find uniform patterns of growth in all countries”(Chenery 1960).

2.2 Conceptual Framework

Credit (IV)

- Access to Credit
- Utilization of Credit
- Level of Agricultural Productivity

Agricultural Productivity (DV)

- Farm Land
- Yields
- Equipment



Source: Extracted by the Researcher (2019)

The framework indicates that the model consists of two variables; the explanatory variables are amount borrowed and government policy while the explained variable is agricultural output.

2.3 Review of Related Literature

Agriculture forms the backbone of any meaningful economic development in the developing countries and this explains why credit facilities should be made available and accessible to the rural areas in order to raise productivity (Adera, 1995). Access to credit by the poor farmer enable them to obtain new machinery, improved seed fertilizers and other necessary inputs needed to expand the scale of production (Akwai-Sakyi, 2013). Likewise, Yu (2008) posits that beyond the ability to procure farm equipment, agricultural inputs, modern technologies and irrigation systems, smallholder farmers are able to obtain the needed storage facilities.

Beyond increase in productivity and income, access to credit affords rural households the opportunity to improve their social well-being especially in the area of health and education (Miller and Ladman, 1983).

limited access to financial services, and that the main source of finance for the majority of rural women in Edo state is their contribution to the savings/market associations”.

However, EFIN A (2008) postulates that “24 per cent of the adult population in Nigeria has access to informal financial services while 53 per cent are financially excluded”. In the same vein, Kashuliza, Hella, Magayane and Mvena (1998) argued that “formal financial services refer to all transaction, loans, and deposits that take place outside the regulated monetary system and this includes the activities of intermediaries such as relatives and friends, traders, and money lenders”. Based on this and going by the report of EFIN A it indicated that 24 percent of the adult population in Nigeria source their credit from relatives, friends, traders and money lenders. Although it is wise in one way for the fact that collateral might not be necessary in some case but the sensitive part of it is the high interest rates which can be imposed by some of these informal group.

As noted by Okojie *et al.*, (2010) and Anyanwu (2004) that “one of the principal characteristics of informal credit is the higher interest rates imposed on loans relative to those by the formal banking sector”. But this applies more to the informal credit institution (money lenders). Credit from cooperative societies generally attracts interest rates of less than 10 percent, while for some informal institutions such as rotating saving and credit association (RoSCAs) no interest is charged.

Claessens, 2006 and Bamford, (1997) opined that ‘Access to credit depends on the ability of the business to meet credit terms set by commercial banks. Therefore improved access to more financial capital can help firms expand more and maintain financial stability, leading to improved financial stability’

Access to Credit and Agricultural Productivity forms the backbone of any meaningful economic development in the developing countries and this explains why credit facilities should be made available and accessible to the rural areas in order to raise productivity (Adera, 1995). In an attempt to explain the importance of access to credit by the poor farmers Akwai-Sakyi (2015) said “access to credit by the poor farmer enable them to obtain new machinery, improved seed fertilizers and other necessary inputs needed to expand the scale of production. Furthermore, Yu (2008) also noted that “beyond the ability to procure farm

equipment, agricultural inputs, modern technologies and irrigation systems, smallholder farmers are able to obtain the needed storage facilities.

On the other hand Miller and Ladman (1983) opined that “access to credit goes beyond increase in productivity and income, but accords rural households the opportunity to improve their social well-being especially in the area of health and education”. The importance of access to credit in agricultural production cannot be overemphasised. But, Carter and Weibe (1990) postulates that “Farmers need both ex-ante and ex-post access to capital. Ex-ante capital access is required in order to finance vital production costs such as labour and purchase inputs which needed to be paid ex-ante, that is, prior to the actual realization of production. On the other hand, access to capital after the realization of the production process, that is ex-post capital access, is of particular importance when there is no insurance as it’s often the case in low income agrarian economies. Thus, in case of annual fluctuation in production, ex-post access to capital is highly essential for the stabilization of households’ consumption from year to year”.

Okojie *et al.* (2010), argued that “lack of bank accounts, collateral, and information regarding the procedure for accessing credits from banks limit rural women’s access to credit from formal institutions”. Also, Adejobi and Atobatele (2008) suggested that “loan default could limit access to credit”. While Agnet (2004) opined that “the complex mechanism of commercial banking is least understood by the small-scale farmers, and thus, limits their access”.

Meanwhile Rahji and Fakayode (2009) blamed that “limitation on imperfect and costly information problems encountered in the financial markets; credit rationing policy; and banks’ perception of agricultural credit as a highly risky venture”; while Philip *et al* (2009) stated that “high interest rate and the short-term nature of loans with fixed repayment periods do not suit annual cropping., and thus constitute a hindrance to credit access”. Furthermore, Adegbite (2009), cited in Ezike (1984), Nweke and Onyia (2001), and Kodieche (2002), stated that “financial lending Institutions in Nigeria often shy away from giving loans to farmers because of the high cost of administering such loans and the perceived high default rates among farmers. This implies that access to credit may not have a direct impact on productivity, but it could have a positive and significant indirect impact through its positive

influence on agricultural technologies adoption, increased capital for farm investment, hired labour, and improved household welfare through improved health care and better nutrition”.

In addition, Feder *et al.* (1990) posits that “credit allows farmers to satisfy the cash needs induced by the production cycle which characterize agriculture; land preparation, planting, cultivation, and harvesting are typically done over a period of several months in which very little cash revenue is earned, while expenditure on materials, purchased inputs, and consumption need to be made in cash”.

More importantly, Freeman *et al.* (1998) lamented that “farmers’ access to credit is also very crucial in the sense that it can facilitate the levels of input use closer to their potential levels when capital is not a constraint, consequently leading to higher levels of output per farm and productivity, given fixed resources such as land. This implies that the marginal contribution of credit brings input levels closer to the optimal levels, thereby increasing output and productivity”

Additionally, access to credit is also considered to be an important tool for smoothing consumption and promoting production especially for poor households. This means that access to credit can significantly increase the ability of households with no or few savings to meet their financial needs for agricultural inputs; especially those that are highly necessary for weed, pest, and disease control and productive investments. Furthermore, easy availability and access to credit enables farmers and entrepreneurs to diversify by undertaking new investment.(Awotide, *et al.*, 2015; Conning and Udry, 2005; Armendariz and Morduch, 2005; Robinson, 2001 *et al.*, Zeller 1997).

Onumah (2003) opined that “Rural borrowers in particular are not an attractive proposition for formal financial institutes because they cannot meet the minimum requirements and are perceived as high risk borrowers”. In a review of the literature carried out by Badiru (2010), debated that “many other reasons were provided for the lack of access to credit by the farmers from the formal sources. For instance, Agnet (2004) opined that “the complex mechanism of commercial banking is least understood by small-scale farmers and this limits their access”.

However, it is noted that, the Federal Government of Nigeria (FGN) established credit schemes such as the Agricultural Credit Guarantee Scheme (ACGS) in 1977 and the Agricultural Credit Support Scheme (ACSS) to ensure farmers’ access to agricultural credit.

The ACGS fund was set up with the sole purpose of providing a 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”.

Furthermore, Boucher *et al.* (2008) viewed that “Lack of access to credit can be a function of both demand and supply. On the supply side, banks may find it very risky and expensive to provide credit to rural smallholders, thus rationing the supply of credit or making available contracts that may be too expensive or too demanding on collateral. On the demand side, apart from the situations where farmers may not have adequate collateral, even in situations where credit is available, farmers may find it too risky to borrow. Access is measured by number of loans in a given period/frequency and average loan amount/volume relative to per capita income”.

In addition to that Access to rural credit has the capacity to raise the level of the national income distribution of the country (Miller, 1977). This assertion is informed by the perspective that bulk of the people in the country are engaged in the area of agriculture and therefore, if farmers are able to secure such financial support then it may go a long way to improve their economic contributions to the country. IFAD (2007) contends that during off farming seasons or after poor harvest, access to credit could raise the income status of the low income rural households. Again, they further add that in situations of income disparities between smallholder farmers and large holder farmers, credit may be used as a tool to bridge such a poverty-widening gap.

According to Ahmad (2010), argues that “access to credit enables poor rural farmers to venture into new areas of economic activities, broaden their sources of capital and manage shocks and stress that are bound to occur. He further stated the poor farming household majority of who are impoverished have to develop the habit of saving, obtaining loans for production and transferring cash”.

Similarly, according to Oyateye (1980), believes that “position is no different as he states that the persistent case of low productivity resulting in low income and saving capacity could only be offset when the poor rural farmer is guaranteed to a credit facility. He added that credit improves the capacity of the smallholder farmer to have access to labour” .Never the less,

Claessens, (2006) and Bamford, (1997) all lamented that "Poor income households could lift above the poverty line provided they could reliably have access to a number of micro-finance activities in order to strengthen their asset building capacity".

On the other hand, acquisition of such credit has proved to be difficult due to credit terms that are perceived to be unfavourable. However, in Uganda collateral is up to a tune of 150% of the loan, the repayment period is as short as 24 months, and interest rates range from 23% to 30% per month. 2002. then, strengthens in assessing the credit worthiness of borrowers, banks apply standard and stringent requirements to determine the performance of the business and the ability to repay the loans. Suppliers of credit may also choose to offer high interest rates and credit rationing that would leave significant numbers of potential borrowers without access to credit (Stiglitz and Weiss, 1981). But, Nakiyingi, (2010) posits that "Need for the poor rural households to achieve food security. Credit was measured by amount borrowed/volume and frequency of access/number of times credit was received in a given period"

2.2.1 Access to Agricultural Credit and Agricultural Productivity

Ogunofowora, Essang and Olayide (1972) postulated that "agricultural credit enhances productivity and promotes standard of living by breaking vicious cycle of poverty of small scale farmers. They further reported that credit is not only needed for farming purposes but also for family and consumption expenses especially during the off season period. Credit is defined as the ability to obtain title to and receive goods for use in the present, although payment is differed to a further date". In the same vein, Adegeye and Dittoh (1985), described agricultural credit as "a process of obtaining control over the use of money and services in the present in exchange for a promise to repay at a future date".

Duong & Izumida, (2002) opted that "agricultural credit plays a critical role in agricultural development 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". But Rahji, (2010) argued that. "the provision of credit or loanable fund (capital) is viewed as more than just another resource such as labour, land, equipment and raw materials" More so, Shepherd, (1979) believes that "It determines access to all of the other resources which farmers require. Agricultural practice requires money for the purchase

of various factors of production including land. There are two main sources of agricultural financing; formal and informal sources”

According to Nchouji (2007), “the formal sources are organized and guided by law with effort on the part of the government, examples are Bank of Agriculture (BOA), commercial banks, supervised agricultural credit, cooperative societies and government agencies. Informal sources include friends, relatives, money leaders, saving societies and traditional groups. These sources are meant to facilitate and increase agricultural production. Though farmers may patronize these sources, but the implication involved is the provision of collaterals and other necessary requirement before obtaining those credit facilities”.

Oladeebo (2003) reported that “years of farming experience with credit use and level of education were the major factors that positively and significantly influenced the amount of loan obtained by farmers. Agricultural credit access has particular salience in the context of agricultural and rural development in Nigeria. Some 70% approximately of the population live in the rural areas with their main source of livelihood being agriculture”.

Kohansal and Mansoori, (2009), showed that “the growth rate of investment in the agricultural sector is less than that of the other economic sector. Therefore, financing agriculture is one of the most important factors to develop rural areas in developing countries”

Rahji, (2010) opined that “credit accessibility is important for improvement of quality and quantity of farm products, so that it can increase farmer’s income and reduce rural migration. Credit constraints to farm households thus impose high cost on the society. This is in terms of rural unemployment, rural poverty, and distortion of production and liquidation of assets. Governments in both developed and developing countries attempt to overcome these problems by subsidizing credit, setting up Agricultural Credit Guarantee Fund Schemes (e.g. ACGFS in Nigeria, 1977) and specialized Agricultural Credit Bank (e. g NACB, 1973 now BOA, 2010) and stimulating institutional innovations in the financial system (e.g. People’s Bank, Community Bank, Rural Banking Schemes, etc.)”.

Baffoe *et al.* (2015) analysed responses from 109 farm households of borrowers and non-borrowers concluded that the difference in productivity of borrowers and non-borrowers was statistically significant. The increase in productivity was attributed to the technical efficiency of borrowers.

According to Odoemenem and Obinne (2010), “there is very limited access to modern improved technologies and their general circumstance does not always merit tangible investments in capital, inputs and labour. Agricultural technology for the smallholder farmer must help minimize the drudgery or irksomeness of farm chores. It should be labour-saving, labour-enhancing and labour-enlarging”.

Haji, (2008), argued that “increased productivity in agriculture has a number of advantages. Firstly, it increases the flow of resources from one sector to the other, thereby enhancing economic growth. Secondly, a higher level of agricultural productivity results in lower food prices that increase consumers’ welfare. Thirdly, productivity growth improves the competitive position of a country’s agricultural sector”.

Some scholars are of the view that, agricultural growth may reduce poverty through direct effects on farm productivity, incomes, and employment. It may also generate indirect impacts on the welfare of rural households through the growth linkage with the non-farm sector as well as through its impacts on food prices. There have been arguments that the poor typically spend a high share of their income on staple food; therefore, they benefit from a decline in the price of staple food induced by agricultural productivity improvement.(Adeoti and Sinh, 2009; Bezemer and Headey, 2008; Byerlee et al., 2005; Popli, 2010 ;).

Tripathi *et al.* (2008), argued that “an improvement in not only labour but also capital and land productivity can improve agricultural productivity. Their results indicated that output elasticity of land was 1.98, labour 1.06 and capital 0.15 and when added up they gave a sum greater than one. This meant that labour and land inputs had positive and significant influence on agricultural productivity growth”.

Venkatensan and Kampen, (1998) stated that “the growth in agricultural production in Sub Saharan Africa in the past was achieved by expanding the amount of land cultivated, but today there is little scope for increasing the area under cultivation. Further increase in agricultural production in the area could be achieved only by increasing the productivity of land and labour”.

Wiebe *et al.* (2001) posits that “an expected increase in output from improved infrastructure and price policies were difficult to quantify, but such improvements were probably prerequisites to make possible the increases in productivity from the use of conventional inputs and research”. The study concluded that education of rural labour force

and agricultural research is needed to improve the future prospects for productivity growth in SSA.

2.2.2 Level of Agricultural Productivity in relation to agricultural credit among Farmers

Productivity is perceived as a ratio of a volume measure of output to a volume measure of input use” (Organisation for Economic Co-operation and Development, 2001) (OECD). At its most fundamental level, productivity measures the amount produced by a target group (country, industry, sector, farm or almost any target group) given a set of resources and inputs.

Dewett (1966), explains “Productivity expresses the varying relationship between agricultural output and one of the major inputs, like land or labour or capital, other Complimentary factors remaining the same, it may be born in mind that productivity is physical rather than a value concept. However, agricultural productivity is referred to as the output produced by a given level of input(s) in the agricultural sector of a given economy”. (Fulginiti and Perrin 1998). Postulates that,” it can also be defined as “the ratio of the value of total farm outputs to the value of total inputs used in Productivity”. But OECD (2001) viewed that, “It can also be defined as a ratio of a volume measure of output to a volume measure of input use” At its most fundamental level, productivity measures the amount produced by a target group (country, industry, sector, farm or almost any target group) given a set of resources and inputs (Olayide and Heady 1982).

According to Pandit (1965), asserts that ”Productivity is defined in economics as the output per unit of input... the art of securing an increase in output from the some input or of getting the same outputs from a smaller input.”

Shafi, (1984) opined that, “Agricultural productivity may be defined as the “ratio of index of local agricultural output to the index of total input used in farm production”. It is, therefore, a measure of efficiency with which inputs are utilized in production, if other things being equal. Agricultural productivity here refers to the returns from arable land or cultivable land unit. Kawagoe and others have used a method of Production function approach for measuring agricultural productivity among different countries (Kawagoe et al. 1985). Jorgenson *et al.* (1987) used a cost function approach for each major sector of the US economy to estimate rates of sectorial productivity growth and concluded that productivity growth has been more rapid in agriculture than in other sectors. Lewis et al. (1988) used a production function

approach to calculate productivity growth rates for agriculture and for the remainder of the Australian economy (industry plus service) and concluded that the rate of productivity growth in agriculture had been higher than for the remainder of the economy.

Agricultural productivity is frequently associated with the attitude towards work, thrift, industriousness and aspirations for a high standard of living (Singh and Dhillon, 2000). Vanloon, Patil and Hugar in (2005) developed an indicator for measuring crop productivity by using primary product yield or conventional yield. Goksel and Ozden (2007) have applied the TFP with Cobb-Douglas production function in agriculture to analyse the agricultural productivity in Turkey. Dharmasiri (2009) has attempted to measure the agricultural productivity in Sri Lanka by using Cobb-Douglas Function. These are some of the methods for measuring agricultural productivity. They have devised different formulae with different components. Each model has different data requirements and is suitable for addressing different questions and has strengths and weaknesses.

According to Huntington and Valkendburg (1952), considered land productivity on the basis of acre yields of eight crops raised vary widely in Europe for each crop, The average Yield per acre for Europe as a whole was taken as an index of 100, and the specific yield in each country was calculated accordingly, Stamp (1952), adopted Kendall's ranking coefficient by selecting twenty country and nine crops. The countries were placed in order of output per acre for each crop. The places occupied by each country in respect to the selected crops were then averaged, and from these averages, the ranking coefficient of agricultural efficiency of each country was obtained. If a country was at the top of every list, it would have a ranking coefficient of one and if it were at the bottom of every list. It would have a ranking coefficient equal to the total number of countries concerned.

Meanwhile, Shafi (1967 and 1969), applied Stamp's Standard nutrition Unit technique for measuring the efficiency of agriculture in India He has considered the district as the areal unit, and has selected all the food crops grown in India Noort (1967), considered Net total productivity, (being the relationship between the net product and factor input) as a method for the measurement of field productivity and also to assess comparison, in time or in space the purpose of this measure is to account changes in labour and capital inputs in agriculture.

Stamp (1958), has taken calorific value of form production in measuring the agricultural productivity He calculated the Standard Nutrition Unit (SNU) by converting all the food production per acre in calories. The British Medical association has carried out an exhaustive

enquiry based on all available sources and published a table to show the caloric intake among adults from 2,100 a day for a woman in sedentary occupation to 4,250 for a man engaged in active manual work. For children the desirable intake is calculated at 800 a day for infants under one year to 3,400 for teenage boy.

Productivity improvements are often entirely attributed to efficiency gains, but this is often incorrect. For example, Ludena (2010), estimates that “agricultural productivity gains over the period 1961-2007 in Latin America and the Caribbean have been exclusively driven by technological change, while efficiency changes have actually been negative over the period”. These approximations arise from the lack of a clear understanding of what is technical efficiency, how it differs from technological change and how it is connected to productivity.

The average of the different categories worked out at 2,540 Calories a day, taking into consideration the age structure of the population and the range of occupations. The weight and height of the people living under the climatic conditions of north western Europe, The average is 2,460 calories a day or about 9,00,000 calories per year, Making allowance for a loss of 10 per cent in harvesting, cooking and food preparation the figure of 10,00,000 calories a year in terms of farm production may be accepted.

According to Kelly *et al.* (1996), “an agricultural holding reaches economic efficiency when the marginal value of the inputs is equal to their respective unit costs: if the marginal value is higher, the holding can earn higher profits by producing more, thereby becoming more efficient. If the marginal value is lower, the farm should reduce its production to increase its profits.”

Antwi (1997) lamented that “labour is normally measured in man-days, man hours or in value terms. Labour availability is another often-mentioned variable affecting the level of farmers’ decisions concerning the adoption of new agricultural products or inputs. Most empirical studies are found that the estimated coefficient for labour was positive and statistically significant, which implies that labour increases the level of production and productivity”. This means that the larger the family size with effective members, the more labour is available for farming operations, thus increasing the production of farmers. On contrast, over utilization of labour input is negatively affects farm production, Tijani (2006), and Tchale and Sauer (2007). ‘Labour costs are the sum of wages and benefits paid to hired labour and the imputed wage bill for unpaid family and owner labour’.

He further suggests that increases in productivity, Whether in industry or agriculture, is generally the result of a more efficient use of some or all the factors of production, viz. land labour and capital Saxon incorporates the productivity as a physical relationship between output and the input which gives rise to that output.

Shafi, (1984) argued that “Agricultural productivity may be defined as the “ratio of index of local agricultural output to the index of total input used in farm production. Agricultural production used for the calculation of productivity should include the production of the crops grown on the same land during the reference period whether it is one cropping season or one year”. This is important because, in practice, farmers often grow more than one crop on the same plot over a year; they may grow a mixture of crops on the same plot at the same time or rotate the crops grown on the plot over the season.

Furthermore, Kelly *et al.* (1996) stressed that “one of the reasons behind the tendency to underestimate output and yields in developing countries is the lack of accounting of crops grown in mixture or in sequence and the lack of appraisal of by-products, which may be sold, consumed by the household or used in the production of other products. It is, therefore, essential that all crops are included in the measurement of productivity, especially in developing regions where these practices are common”.

Ellis (1993) argued that “small farms in terms of land size are more productive than large farms and his recommendation that agricultural development strategy based on the promotion of small rather than large farms can serve both growth and income distribution objectives. Empirical studies have also arrived on the same conclusion”. But still there are also counter arguments which says large farms perform better than the small one.

According to Chang *et al.* (2010), “labour productivity in China increased by 4.13% whilst that of the United States was 7.16% during 1987-1994. In general, land productivity is higher in less developed countries as compared to developed countries due to land reform. It must be noted that, growth in agricultural productivity depends primarily on technological change, improved input use efficiency and conservation of natural resources”.

In fact, scholars opined that, it depends crucially upon investments in agricultural research, extension and human capital. In recent years, many attempts have been made to Agricultural growth in order to reduce poverty through direct effects on farm productivity, incomes, and employment. It may also generate indirect impacts on the welfare of rural households through the growth linkage with the non-farm sector as well as through its impacts on food prices

there have been arguments that the poor typically spend a high share of their income on staple food; therefore, they benefit from a decline in the price of staple food induced by agricultural productivity improvement. (Adeoti and Sinh, 2009; Bezemer and Headey, 2008; Byerlee *et al.*, 2005; Popli, 2010 ;).

To determine how to promote agricultural productivity growth to achieve sustainable food security. A study looked at the role of investment, both in physical and human capital in maintaining and increasing agricultural productivity. By using TFP and partial factor productivity functions they found that, the only way to promote agricultural productivity was through improving labour productivity. Due to the improvement in labour productivity, the agricultural output growth for these countries has remained positive from the period of 1961 to 1994 (Chang *et al.* 2001).

Byerlee, Diao and Jackson (2005), Winters, McCulloch and McKay (2004), and Bezemer and Headey (2008), argued that “interaction of productivity growth, farm income, employment, and food prices could lead to a pro-poor outcome depending on two key conditions. Firstly, agricultural productivity per unit of labour must increase to raise farm income, but agricultural productivity per unit of land must increase at a faster rate than that of labour in order to raise employment and rural wages. Secondly, increased total factor productivity (TFP) in agriculture must result in a decrease in real food prices, but the TFP must increase faster than food prices decrease for farm profitability to rise and for poor consumers to benefit from lower food prices’.

Porter, (2001) and Blunck, (2006) believes that, “the standard of living or household wealth in most nations is determined by productivity with which a nation’s human capital and natural resources are deployed and the output of the economy per unit of labour and/or capital employed”.

Fufa and Hassan (2003), Alene and Hassan (2003), Tijani (2006), and Mushunjeet *al.* (2005). All opined that “the factors that influence the production function include: fertilizer, labour inputs, cultivated land area or farm size, seeds, animal and tractor power etc.”.

Mensah (1986), as stated by Antwi (1997), argued that “ the causes of labour shortages in less developed countries is largely due to the migration of labour from rural to urban areas”.

But, Nehring *et al.*, (2003). lamented that “Land in agricultural production is quite heterogeneous in terms of soil size, soil type, associated soil characteristics and other

productivity-related factors within developing countries. Failing to account for these differences would lead to a biased measure of the land input as well as productivity levels”.

The recent literature suggests that land has a major influence on production since its estimated coefficient is positive in most studies; for instance, Mushunje et al. (2003) study on relative technical efficiency of cotton farmers in Manicaland Province of Zimbabwe, find positive coefficients in land significant at all levels. Fufa and Hassan (2003) also find that the estimated coefficient of land is positive and significant. This shows that the positive influence of land on agricultural production. Most literatures show a positive relationship with output. However, producing farm outputs in uneconomic region or zone found to negative correlation with output, Chirwa's (2003).

Opara, (2011). Postulates that “international Food Policy Research Institute, in its Nigeria Strategy Support Programme document says that the average smallholder farmer in Nigeria does not have access to sufficient fertilizer for one hectare. Yields require a combination of education through extension services, access to appropriate and timely inputs as well as access to finance to purchase inputs”.

On the other hand, International Fund for Agricultural Development (IFAD) (2009), observes that “a number of negative factors that militate against high productivity in small scale farming in Nigeria include: (i) a large proportion of small-scale agriculture is uncompetitive, and is neither profit-/business- oriented nor sustainable; (ii) there is a vicious circle of low productivity and income, total shortages of cash, and limited investments or input availability/use; and (iii) the lack of market access and of credible processing and trading outlets also hinders improvements in or expansion of production. For example, an effective distribution system is needed to give smallholders access to fertilizer at affordable prices and help them remain competitive”. The existing seed and planting material industries are underdeveloped, and supplies are often of substandard quality.

2.2.3 Relationship between Utilisation of Agricultural Credit and productivity among farmers,

A number of empirical studies have been conducted to study the relationship between accesses to credit and agricultural productivity. In their studies to establish the relationship between access to credit and agricultural productivity in Ghana, Baffoe *et al.* (2015) analysed responses from 109 farm households of borrowers and non-borrowers concluded that the

difference in productivity of borrowers and borrowers was statistically significant. The increase in productivity was attributed to the technical efficiency of borrowers.

In his analysis of the “Impact of agricultural credit on farm productivity” using the quintile regression and Stochastic Frontier Analysis techniques and responses from 654 farmers sampled from Mekong Delta region of Pakistan, Duy (2012) revealed that the rice yield and technical efficiency of farmers increased tremendously because of access to credit, educational levels of farmers and high level of technology. His study also showed that rice production was positively affected by the use of formal credit rather than informal credit.

According to Dong et al. (2010), without credit facilities, the education and capabilities of rural farmers cannot be fully utilised. Using the endogenous switching regression model to analyse responses from 511 households in Heilongjiang province of Northeast China, they indicated that productivity and income of credit unconstrained farmers are higher than credit constrained farmers. A study conducted by Kinkingninhoun *et al.* (2010) to determine the effect of agricultural credit participation on farmers' productivity revealed that agricultural credit has a positive significant effect on rice yield. The results revealed that credit users had 157.2 kg per hectare of paddy more than non-credit users. A similar conclusion was drawn by Diagne (2002) in his analysis of the impact of agricultural credit on farmers' output and yield. The results of his analysis concluded that agricultural credit has a significant positive impact on agricultural productivity.

The Nuru Kenya (NK) was a credit program which supplied participating farmers with farm inputs loan, among other benefits. The basic objective of the program was to improve agricultural productivity and food security among small holder farmers in Kenya. Analysing data from 467 participants and 506 non-participants, the results of Paris' (2014) work showed that the maize yield of the participating households improved to 765kg per acre as compared to 693kg per acre of the non-participating households. The conclusion of his research, however, showed no statistical difference between participants and non-participants of the credit program.

Nosiru (2010) undertook a research to determine the relationship between microcredit program participation and productivity of small holder farmers. The findings of this work revealed a significant difference between productivity of the participating farmers and nonparticipation farmers. He concluded that the participation of small holder farmers in micro credit programs could improve their livelihoods. Nzomo and Muturi (2004) studied the relationship between agricultural credit participation and productivity in Kenya. The analysis

of data collected from 123 small holder farmers randomly selected from a cross-sectional data revealed that agricultural credit has the potential to increase income and productivity of farmers. In Tanzania, Girabi and Mwakaje (2013) studied the impact of micro credit participation on agricultural productivity of small holder farmers. Using data collected from a random sample 98 credit participants and non-participants; they concluded that participants in the micro credit program recorded higher crop productivity than the nonparticipants. Findings from the above studies have largely concluded that increasing agricultural producer's access to credit has a significant and positive impact on productivity.

2.3 Research Gap

From the literature reviewed it can be stated that most of the authors failed to emphasise and address the issue on the importance and impact of technological advancement and how it can be considered for the development of agricultural activities in most poor countries where the majority of the farmers are poor sustenance farmers and agricultural activities are still labour intensive such that big farm sizes do not lead to high produce after each and every farming season. It is worth to note that, technological advancement is a vital mechanism by which underdeveloped economies can transform their domestic economic structures from a heavy emphasis on traditional substance agriculture to a more modern and more advanced agricultural practice through heavy financial support in order to attain industrial breakthrough.

However, the researcher is optimistic that a large number of agricultural productivity increases more in developed countries compared to less developed countries, more especially African countries. The assumption was due to high investment in research and development, capital land, labour, and improvement in the use of inputs such as fertilizer, as well as machinery and others. But Chang *et al.* (2010), postulates that "labour productivity in China increased by 4.13% whilst that of the United States was 7.16% during 1987-1994. It must be noted that, growth in agricultural productivity depends primarily on technological change, improved input use efficiency and conservation of natural resources". In the same vein, Odoemenem and Obinne (2010), argued that "there is very limited access to modern improved technologies and their general circumstance does not always merit tangible investments in capital, inputs and labour. Agricultural technology for the smallholder farmer must help minimize the drudgery or irksomeness of farm chores. It should be labour-saving, labour-enhancing and labour-enlarging".

Therefore, considering the above facts, this study is aimed to address this content gap by assessing the current status of access to credit and agricultural productivity with particular emphasis on technological inputs among farmers in Gwarzo Local Government Area of Kano state, Nigeria.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter discusses the methods by which the study was undertaken. It include the brief geography of the study area, research design used, study population, sampling method, data collection methods, research instruments, data analysis technique. Because the study deals with agricultural issues, detail geography of Gwarzo L.G.A has been provided.

3.1 Study Area

Gwarzo is one of the 44 local Government Areas of Kano state Nigeria. It was created by 1979 local Government reform. Gwarzo town is the Headquarters of Gwarzo local Government, It has an area of 393km² with a population of 183.187 as at 2006 National census, most of the people in the area depend on agricultural activities, the research was confined to Nasarawa, Dankendi, Unguwar Makera, Gangara and Menika village in Gwarzo Local Government area. The rationale behind that, was because most of it inhabitants are farmers.

In Gwarzo, the wet season is oppressive and mostly cloudy, the dry season is partly cloudy, and it is hot year round. Over the course of the year, the temperature typically varies from 53°F to 99°F and is rarely below 48°F or above 104°F (www.climatedata.org). The map shows the area of Gwarzo LGA in Kano state, Nigeria (See Appendix 2).

From October 25 to April 11. The least rain falls around January 1, with an average total accumulation of 0.0 inches.

3.2 Topography

The topography within 2 miles of Gwarzo contains only modest variations in elevation, with a maximum elevation change of 148 feet and an average elevation above sea level of 1,906 feet. Within 10 miles also contains only modest variations in elevation (453 feet). Within 50 miles contains only modest variations in elevation (1,083 feet). The area within 2 miles of Gwarzo is covered by cropland (86%), within 10 miles by cropland (66%) and grassland (14%), and within 50 miles by cropland (72%) and grassland (11%).

3.3 Research Design

The study adopted the Descriptive Survey design approach as the study involved large data. Descriptive research can be explained as a statement of affairs as they are at present with the researcher having no control over variable. Moreover, “descriptive studies may be characterised as simply the attempt to determine, describe or identify what is, while analytical research attempts to establish why it is that way or how it came to be” (Ethridge, 2004). An important characteristic of descriptive research relates to the fact that while descriptive research can employ a number of variables, only one variable is required to conduct a descriptive study. The main purpose of adopting descriptive survey design in this study is premised on the fact that it allow the researcher to describe, explain and validate research findings.

3.4 Target Population of the study

The Target population of the study was 1000 respondents consisting of 850 local commercial farmers and 150 members of Farmers Association operating in the area.

3.5 Sample Size

The Sample size of the study was 285 obtained by using the Slovene’s formula as follows:

$$N = N/1 + N (e^2)$$

$$1000/ 1+1000 (0.05)^2$$

$$1000/1+1000 (0.0025)$$

$$1000/1+2.5$$

$$1000/3.5$$

$$285$$

(Where N = Population size

$$n = \text{Sample size}$$

$$e = \text{Level of significance} = e = 0.05 = e^2 (0.05)^2 = 0.0025$$

3.6 Sampling Technique

In order to select the sample size of 285 from the target population, the Purposive, Convenient and Systematic Random Sampling techniques were used. The two former

techniques were used to select respondents from among the local commercial farmers while the latter was used to select respondents from among members of the Farmers' Association.

3.7 Data Collection Procedure

Primary data was used, to gather information from the respondents through administering questionnaires. A research Assistant who was very conversant with the area as well as many of the commercial farmers in the area was used to aid in the data collection procedure. In situations where the respondents were found to be illiterates, questions in the questionnaire were read and their views recorded. Besides, all data collection processes which lasted one month were self-administered.

3.8 Data Collection Instruments

In order to obtain primary data for the study, three different data collection methods were employed. These included a self-made closed ended questionnaire with options of "Yes and No", a structured Individual interview Guide as well as Focussed Group Discussion. The last technique was mainly used on the farmers which involved all the commercial farmers grouped into 5 different groups.

3.8.1 Validity of the Instrument

Validity refers to the degree to which results obtained from analysis of the data actually represents the phenomenon under study (Mugeda, 2009). In calculating validity, the researcher ensure that the questions were relevant in order to ensure that data collected gives meaningful and reliable results represented by variables in the study. The researcher used the following formula to establish validity of the research instrument as seen below.

Content Validity Index (CVI)

CVI = $\frac{\text{Number of questions declared valid}}{\text{Total no. of questions in the questionnaire}}$

$$\text{CVI} = \frac{24}{27} = 0.89$$

CVI > 0.70 - Therefore the instrument is valid

CVI < 0.70 Therefore the instrument is not valid

Therefore the instrument is valid since the CVI is above 0.70

3.8.2 Reliability of Instrument

To ensure the reliability of the instrument, the researcher used the **test-retest method**. The questionnaires were given to 10 people and after two weeks, the same questionnaire was given to the same people and the Cronbatch Alpha was computed using SPSS. The minimum Cronbatch Alpha coefficient of 0.75 was used to declare an instrument reliable (>0.75).

Table 5: Reliability Statistics

Cronbatch's Alpha	N of Items
.751	24

The instrument is therefore reliable since the Cronbatch's Alpha value stands at 0.751 which is above 0.75

3.9 Data Analysis Technique

Quantitative data was analysed using SPSS Version 20 using Descriptive Statistics as well Pearson Linear Correlation Coefficient to determine relationship between access to agricultural credit and level of productivity of the farmers.

3.9.1 Ethical Considerations

An Introductory Letter was collected from the University which was presented at every place necessary. Respondents' consents were sought and purpose of the study was fully explained to them. All data collected was used with utmost confidentiality and solely for the purpose it was collected. Besides, all quoted works by other scholars were properly cited and referenced in order to avoid plagiarism.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter presented quantitative analysis of data collected from questionnaire responses of respondents. The presentation was based on the specific objectives slated for the studies.

4.1 Data Presentation and Analysis

Table 4.1: Showing Demographic Characteristics of the Respondents

Variables	Frequency	Percentage
SEX		
Male	226	79.3
Female	59	20.7
Age		
20-25 years	134	12.0
26-30 years	45	15.8
31-35 years	75	26.3
36-40 years	64	22.5
41-45 years	21	7.4
46-50 years	34	12.0
Above 50 years	11	3.9
Tribe		
Fulani	93	32.6
Hausa	165	57.9
Others	27	
Religion		
Islam	260	91.2
Christianity	0	0
Others	25	8.8
Marital status		
Married	199	70.0
Single	65	22.8
Divorced	21	

Level of education		
None	145	50.9
Primary certificate	55	19.3
Secondary certificate	44	15.4
Diploma/NCE	20	7.0
Others	21	7.4
House hold size		
1-5 members	37	13.0
6-10 members	123	43.2
11-15 members	65	22.8
16-20 members	36	12.6
Above 20 members	24	8.4
Type of farm ownership		
The father	268	94.0
The mother	0	0
The family	17	6.0
Years of residence in the area		
1-5 yrs	23	8.1
6-10 yrs	12	4.2
11-15 yrs	78	27.4
16-20 yrs	56	19.7
Above 20 yrs	116	40.7
Nomadic	0	0

Source: Field Work Survey (2018)

Demographic characteristics of the respondents presented in the table above indicated that the majority of the respondents were male (79.9%) while females were represented by 20.7%. This could be attributed to the fact that, culturally in the area studied, unlike men, women do not normally engage in rigorous farming activities but are mainly engaged in household activities such as fetching water and firewood for the family use. However, they sometimes do assist men in the farms Age wise, the majority of the respondents (84.0%) were young men within the age group of 20-45 years. Hausa ethnic group was largely represented by 57.9% while the Fulani's and other ethnic groups constituted 32.6% and 9.5% respectively.

Expectedly, 91.2% of the respondents were Islamic faithful's while those respondents practicing other religions especially the *Maguzawa* was constituted 9.5%. Gwarzo LGA is home to many people who believe in a traditional religion locally known as the *Maguzawa*. As it is in many rural settings in northern Nigeria, the majority of the respondents (70.0%) were married while the singles and the divorcees were represented by 22.8% and 7.4% respectively. Educationally, bulk of the respondents (50.9%) did not possess any formal education while those possessing primary education constituted 19.3%. Those with secondary education were represented by 15.4%, diploma/NCE holders (7.0%) and others constituted 7.4%. Besides, many of the respondents (78.6%) were found to have large family sizes ranging between 6-20 members while those having family sizes of 1-5 and above 20 constituted 13.0% and 8.4% respectively. As it is the practice in many rural areas here, heads of the families who mostly happen to be the fathers own the farm lands (94.0%) while those respondents who stated that their farmlands were owned by the entire family constituted 6.0%.

Table 4.2: Occupation Characteristics of the Respondents

Variables	Frequency	Percentage
Crop Grown		
Corn	12	4.2
Millet	23	8.1
Cotton	23	8.1
Maize	24	8.4
Beans	22	7.7
Groundnut	0	0
Mixed	105	51.7
Vegetables and fruits	76	26.7
Farm Size		
< 1 Hectare	34	12.0
1-2 Hectares	33	11.6
3-4 Hectares	56	19.6
>4 Hectares	162	56.8
Type of Farming		
Subsistence Farming	193	67.7

Commercial Farming	92	32.3
Alternative occupation		
None	106	37.2
One	90	31.6
Two	89	31.2
Annual	Average	
Income (N)		
<100,000	0	0
100,000-399,000	23	8.1
400,00-699,000	78	27.4
700,000-999,000	56	19.6
1000,000	39	13.7
>1000,000	89	31.2
Have you ever accessed agricultural loan		
Yes	88	30.9
No	197	69.1

Source: Field Work Survey (2018)

From the above table, it can be seen that the respondents were of varied occupational characteristics. Depending on the nature of the soil and weather condition of the area studied, majority of the crop farmers mainly grow cereal crops where by 4.2% of them grow corn, 8.1% grow millet, 8.1% grow cotton, 8.4% grow maize while another 7.7% claim to grow beans. However, the majority of the respondents (51.7%) most often engage in mixed cropping mainly growing cereals and leguminous plants such as beans and groundnuts together. Similarly, the majority of them (56.8%) owned big farm sizes of more than 4 hectares while those owning 3-4 hectares of farmlands constituted 19.6%. Small farmlands of less than 1 hectare were owned by 12.0% of the respondents and those possessing 2-3 hectares of land were represented by 11.6% only. Crop farmers who mainly grow crops especially cotton and beans for commercial purposes were found to be the majority (53.7%) while those engaged in subsistence farming who grow crops for their family consumption were as well represented by 46.3%. With regards to their level of income, a good number of the respondents (64.5%) stated that their annual income from farming was between 700,000 to more than 1,000,000 Naira. However, despite the encouraging income they get from farming, majority of the farmers stated that, due to reasons beyond their control, they faced

financial constraints at each farming season. On whether the farmers have ever accessed any type of agricultural loan, 39.9% declared yes while 69.1% of them made it known that they had never accessed such loans.

Table 4.3: Access to Agricultural Credit by the Farmers

S/N	Variables	Yes	No	Mean	Std.
01	It is easy for you to access credit	77 (27.0)	128 (44.9)	1.81	0.771
02	You possess all the requirements to access the credit	143(51.9)	137 (48.0)	1.54	0.572
03	You obtain the credit within the time required	156 (54.7)	129 (45.2)	1.49	0.572
04	You can afford the interest involved	198 (69.5)	87 (30.5)	1.30	0.461
05	Credit repayment period, terms and conditions are convenient to you	154 (54.0)	131 (46.0)	1.46	0.499
06	It is easy for you to get the credit from the bank	140 (49.1)	145 (50.9)	1.51	0.500
07	Do you have the security to access the credit	143 (50.2)	142 (49.8)	1.50	0.501
08	The banks do increase the amount given to you	131 (46.0)	154 (54.0)	1.54	0.500
09	Yields from your farm enables you to repay credit	197 (69.1)	88 (30.9)	1.31	0.463
10	Do you get the credit at any time you so wish	190 (66.7)	95 (33.3)	1.33	0.472

Source: Field Work Survey (2018)

The table above presents questionnaire responses obtained from the respondents in order to determine the level of access to agricultural credits among small scale commercial farmers in the study location. From the table, it can be found that 50.9% of the farmers stated that it was not easy for them to access agricultural credit despite the fact that they did apply for it every year. According to them, the protocols involved in accessing such credits were very difficult. Besides, there were a lot of administrative bottle necks involved in the process and the fact

that the majority of them were not well educated further compounded the whole issue. Only 36.9% of the respondents stated that it was easy for them to access the credits.

Despite the fact that majority of the farmers claimed that it was not easy for them to access agricultural credits, 54.4% of them stated that they did possess the requirements for accessing the credit facilities. According to them some of the factors hindering them from accessing the loan facilities were unnecessary administrative bottle necks, favouritism, corruption and sectionalism. However, when applications for the credits were accepted, the farmers claimed that they got such loans within the required time (54.4%) and went further to state that majority of them were able to pay the interest rates involved (69.5%). With regards to the terms and conditions underlining the credit facilities, majority of the farmers believed that such terms and conditions were convenient for them (54.0%). Similarly, another 50.9% and 49.8% stated that it wasn't easy for them to access the credits from banks and do not possess the required security to access the credits respectively. However, the farmers stated that whenever they applied for increase in the amount of credits they applied for they did not get it (54.0%). Expectedly, the majority of the respondents also stated that with agricultural credits they were always able to make bumper harvests as a result of which they were also able to repay the loan facilities as expected.

Table 4.4: Determining Agricultural Productivity of the Farmers

S/N	Variables	Yes	No	Mean	Std.
01	Do you cultivate the whole of farm land	190 (66.7)	95 (33.3)	1.33	0.472
02	You use local manure on your farm	213 (74.7)	72 (25.3)	1.25	0.435
03	You use manufactured fertilizer on your farm	206 (72.3)	78 (27.4)	1.31	0.729
04	You use insecticides and pesticides on your farm	216 (75.8)	69 (24.2)	1.27	0.719
05	You cultivate your farm more than once in a year	157 (55.1)	128 (44.9)	1.45	0.498
06	You employ modern mechanised farming methods	161 (56.5)	124 (43.5)	1.44	0.497

07	You use local farming methods because you cannot afford mechanised farming method	193 (67.7)	92 (32.3)	1.32	0.468
08	You are unable to cultivate the whole of your farmland and instead cultivate only some parts	192 (67.4)	93 (32.6)	1.32	0.469
09	Yields from your farm after every harvest is good and encouraging	187 (65.6)	98 (34.4)	1.34	0.475
10	You do not face difficulties in selling your farm produce	183 (64.2)	102 (35.8)	1.36	0.480

Source: Field Work Survey (2018)

Furthermore, in order to determine the agricultural productivity of the commercial farmers, their responses were also sought in that respect. From the table above it can be observed that the majority of the respondents (66.7%) were of the view that with agricultural credit they were always able to cultivate the whole of their farm lands and made very encouraging harvests. As it is the tradition in this area as well as in many rural African settlements, majority of the farmers (74.7%) stated that they use local manure in their farms. Often, such local manures were obtained from animal dungs however; another 72.3% also claimed that they do also make use of chemical fertilizers on their farms. For the farmers to get good harvests and be able to repay the agricultural credits obtained, they always use insecticides and pesticides on their farms in order to eradicate insects and crop pests capable of destroying crops (75.8%). In addition, 55.1% of the farmers responded that the loan facilities enabled them to cultivate their farmlands more than once every years meaning; they also engaged in irrigation during dry seasons when they grow vegetables such as tomatoes. Another 56.5% also stated that the loan facilities made it possible for them to employ mechanised farming for better productivity which could be obtained with local farming techniques. However, 67.7% of the respondents did state that they used local farming methods and techniques in their farming activities. This could be attributed to their failure to access the agricultural credits. Besides, 67.4% of the farmers especially those who were able to access such loans before did also state that without the loan facilities they were not able to cultivate the whole of their farm lands instead they were only able to cultivate some parts of the farm lands while another 65.6% claimed that they experienced encouraging harvests with the agricultural credits. In the same vein, majority of the farmers (64.2%) stated that they did not face difficulties in selling their farm produce after every harvest.

In line with this, responses were collected from five crop farmers for comparison of the level of their productivity in farming in 2010, 2014 and 2018. Three factors were considered for the comparison viz; money spent size of farm cultivated and number of bags harvested. The table below presents the results of the comparison:

Table 4.5: Comparison of Farmers' Productivity across 3 years

Farmers	Years	Capital	Farm size	Crop yield
Farmer 1	2010	₦700,000.	7 Hectares	110 bags
	2014	₦820,000	7 Hectares	102 bags
	2018	₦1.3 m	7 Hectares	118 bags
Farmer 2	2010	₦550,000	4.5 Hectares	84 bags
	2014	₦390,000	3 Hectares	69 bags
	2018	₦410,000	3 Hectares	72 bags
Farmer 3	2010	₦956,000	7.5 Hectares	112 bags
	2014	₦1.2 m	7.5 Hectares	115 bags
	2018	₦1.6 m	7.5 Hectares	122 bags
Farmer 4	2010	₦625,000	5 Hectares	87 bags
	2014	₦512,000	4 Hectares	70 bags
	2018	₦350,000	3 Hectares	60 bags
Farmer 5	2010	₦520,000	5 Hectares	90 bags
	2014	₦500,000	5 Hectares	72 bags
	2018	₦725,000	5 Hectares	89 bags

Source: Farmer's Organisation Gwarzo Local Government Area (2018)

Data from the above table shows that in 2010, 2014 and 2018 as per our yearly comparison which cuts across three years as mentioned, indicates continuous increase in total expenses incurred across the three year period with decrease in sizes of farm cultivated as well as number of bags of crops harvested at the end of each farming season by the commercial farmers. Thus, it can be concluded that the productivity of these five farmers did not show any tangible increase in spite the increases in the amount of money spent. Many factors were cited to be the reasons for the farmers' decreasing productivity over the 3 year period. The leading factor given was poverty followed by hiking prices of insecticides and pesticides, scarcity of fertilizer, lack of access to mechanised farming methods, increase in the cost of labour as well as other farming tools. Certainly, poor commercial farmers' productivity is a catalyst for poor agricultural development that could have devastating economic

consequences on many small scale farmers as well as the nation at large because agricultural development is considered to hold the key to economic development for most developing countries including Nigeria.

Although it is belief that, agriculture is the major occupation in Nigeria, this is clear because the efforts of millions of rural farmers to contribute to the nation’s GDP through food production are handicapped by numerous factors. However, many scholars are of the view that agriculture serves as the major predominant occupation in Nigeria; which gives room for employing almost two-thirds of the active work force and contributing 40 percent of the national GDP. This assertion has been proven by Matemilola and Elegbede (2017) with a view that, “in the rural Nigeria, inadequate post-harvest technology and poor distribution of food have combined with poverty to form an almost insurmountable challenge and especially with unpredictable variations in weather conditions”. Besides, the International Fund for Agricultural Development (2012), rates Nigeria as the number one producer of yam, cassava and cowpea in the world; yet Nigeria remains a food insecure nation and relies heavily on importation of grains, livestock products, and including fish.

Table 4.6: Determining of Utilization of Agricultural Credits on Farmers’ Productivity

S/N	Variables	Yes	No	Mean	Std.
01	Utilization to credit enables farmers to cultivate more land	233 (81.1)	52 (18.2)	1.18	0.386
02	Agricultural credit helps farmers get more yields than they do now	239 (83.9)	46 (16.1)	1.16	0.368
03	Improved seeds, fertilizers and pesticides enhance more yields	234 (82.1)	51 (17.9)	1.17	0.383
04	With utilization credits, farming activities can be mechanized for more productivity	256 (89.8)	29 (10.2)	1.10	0.302
05	Credits make farming less laborious, less time consuming and more productive	246 (86.3)	39 (13.7)	1.13	0.344
06	Agricultural credit enhance farmers’ incomes	237 (83.2)	48 (16.8)	1.16	0.374
07	Agricultural credits make farmers reach their target goals	234 (82.1)	51 (17.9)	1.17	0.383
08	Farmers can be motivated with agricultural	238	47	1.16	0.371

	credits	(83.5)	(16.5)		
09	Failure to repay credits leads to bankruptcy among farmers	248	37	1.18	0.672
		(87.0)	(12.9)		
10	Farmers utilize agricultural credits for other purposes	237	48	1.17	0.375
		(83.2)	(16.8)		

Source: Field Work Survey (2018)

Observably, agricultural credits have certain effects on farming as well as the commercial farmers' productivity in a variety of ways. The table above presents the farmers responses with regards to that. Thus, 81.1% of the respondents did state that such credit facilities enable them cultivate the whole of their farm lands in order to get big harvests. The also believed that with the loan facilities they were able to get higher yields than they did before (83.9%). Similarly, the farmers also had the view that because they could afford the use of insecticides and pesticides which was made possible because of the loan facilities they obtained their farming activities were well boosted (82,1%). Mechanised farming which always resulted in good harvests than local farming methods and techniques was employed by the farmers whenever they accessed agricultural credit facilities (89.8%). According to the respondents, accessibility to agricultural credits always made farming activities less labour intensive and reduced unnecessary time wastage (86.3%). Consequently, with good harvests made possible by accessing agricultural loans 83.2% and 82.1% of the respondents stated that their incomes increased due to profits made from selling their farm produce were always able to reach targets they set for themselves respectively. In addition, 83.5% of the respondents were also of the view that, accessibility to agricultural credits could significantly motivate farmers in the area to cultivate more farm lands especially that majority of the farmers were poor but possessed big hectares of farm lands. However, 87.0% of the farmers believed that due to certain reasons, sometimes agricultural credits led to bankruptcy among the farmers. Besides, due to some reasons not mentioned by the respondents, some farmers utilize the agricultural credits they obtained for other purposes. This could be the major reason why some farmers become bankrupted.

Table 4.7: PLCC results for relationship between access to credits and the level of farmers' productivity (Correlations)

		Credit	Level of farmers' productivity
Credit	Pearson Correlation	1	.766**
	Sig. (2-tailed)		.000
	N	285	285
Level of farmers' productivity	Pearson Correlation	.766**	1
	Sig. (2-tailed)	.000	
	N	285	285

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Field Work Survey (2018)

Similarly, results of Pearson Linear Correlation Coefficient results (PLCC) indicated a very significant relationship between access to agricultural credits and the level of productivity of the farmers (.766 sig. at 0.01 2-tailed). This means that, access to credits by the farmers could significantly affect the farmers' level of productivity. Equally, the linear correlation shows that all the hypotheses have been adequately supported based on the test conducted using binary logistic regression which determines the correlational level of the three hypotheses. Thus, the correlation table is attached to objective two.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents summary made on the major findings of the study. For better understanding, the summary was done based on the objectives set for the study: to determine access to agricultural credits among the farmers, to assess productivity of the farmers as well as to assess the effects of agricultural credits on the farmers' productivity.

5.1 Summary of Findings

The research investigated the relationship between credit facility and agricultural productivity among farmers in Gwarzo local government area of Kano state, Nigeria. In this study, attempt has been made to achieve the specific objectives of the study by administering questionnaire to participants who in turn provide information that answered the research questions. Hence, based on the research findings pertaining objective one indicates that; the practice in many rural areas here, heads of the families who mostly happen to be the fathers own the farm lands (94.0%) while those respondents who stated that their farmlands were owned by the entire family constituted 6.0%. However, despite the encouraging income they get from farming, majority of the farmers stated that, due to reasons beyond their control, they faced financial constraints at each farming season. On whether the farmers have ever accessed any type of agricultural loan, 39.9% declared yes while 69.1% of them made it known that they had never accessed such loans.

In determining the level of agricultural productivity of the farmers, the findings of the study confirms that, for farmers to get good harvests and be able to repay the agricultural credits obtained, they always use insecticides and pesticides on their farms in order to eradicate insects and crop pests capable of destroying crops. In addition, the farmers responded that the loan facilities enabled them to cultivate their farmlands more than once every year using modern fertiliser and getting engaged in irrigation during dry seasons when they grow vegetables such as tomatoes, among others. Equally, it has been established that the loan facilities made it possible for them to employ mechanised farming for better productivity. Thus, 67.4% of the farmers especially those who were able to access such loans before did also state that without the loan facilities they were not able to cultivate the whole of their farm lands, instead they were only able to cultivate some parts of the farm lands.

Apparently, agricultural credits could have certain effects on farming as well as the farmers' productivity in a variety of ways. According to the respondents, accessibility to agricultural credits always made farming activities less labour intensive and reduced unnecessary time wastage. Consequently, with good harvests made possible by accessing agricultural loans, the study further confirms that their incomes increased due to profits made from selling their farm produce were always able to reach targets they set for themselves respectively. In addition, findings from the study further discovered that, accessibility to agricultural credits significantly motivate farmers in the area to cultivate more farm lands especially that majority of the farmers were poor but possessed big hectares of farm lands. However, the study finally reveals that, due to certain reasons not clearly outlined by the participants – in most cases, agricultural credits led to bankruptcy among the farmers.

5.2 Conclusion

From the findings of this study, it can be concluded that access to credit on agricultural productivity has strong positive correlation based on the fact that, information sourced from the respondents indicates the level of significant relationship on the interconnectedness between the two variables. In effect, access to credits by the farmers has significant effect on the farmer's level of productivity. Further results obtained from the study guided the researchers focus in arriving at a logical conclusion to buttress the fact that accessibility to agricultural credits always made farming activities less labour intensive and reduced unnecessary time wastage. Put together, the results of these studies agreed with those of those of many other scholars.

Ogunofowora, Essang and Olayide (1972) postulated that “agricultural credit enhances productivity and promotes standard of living by breaking vicious cycle of poverty of small scale farmers. They further reported that credit is not only needed for farming purposes but also for family and consumption expenses especially during the off season period. Credit is defined as the ability to obtain title to and receive goods for use in the present, although payment is differed to a further date”. In the same vein, Adegeye and Dittoh (1985), described agricultural credit as “a process of obtaining control over the use of money and services in the present in exchange for a promise to repay at a future date”.

Duong & Izumida, (2002) opted that “agricultural credit plays a critical role in agricultural development 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". But Rahji, (2010) argued that. "the provision of credit or loanable fund (capital) is viewed as more than just another resource such as labour, land, equipment and raw materials" More so, Shepherd, (1979) believes that "It determines access to all of the other resources which farmers require. Agricultural practice requires money for the purchase of various factors of production including land. There are two main sources of agricultural financing; formal and informal sources"

Agricultural productivity is frequently associated with the attitude towards work, thrift, industriousness and aspirations for a high standard of living (Singh and Dhillon, 2000). Vanloon, Patil and Hugar in (2005) developed an indicator for measuring crop productivity by using primary product yield or conventional yield. Goksel and Ozden (2007) have applied the TFP with Cobb-Douglas production function in agriculture to analyse the agricultural productivity in Turkey. Dharmasiri (2009) has attempted to measure the agricultural productivity in Sri Lanka by using Cobb-Douglas Function. These are some of the methods for measuring agricultural productivity. They have devised different formulae with different components. Each model has different data requirements and is suitable for addressing different questions and has strengths and weaknesses.

Awotide, Abdoulay, Alene, and Manyong (2015) Posits that "improving the production capacity of agriculture in developing countries like Nigeria through productivity increase is an important policy goal, especially in Nigeria where agriculture represents an important sector in the economy. And their results show that majority of the farmers are still in their productive age, cultivating an average of 2.59 hectare of farm land, most of which is on rented farmland. Credit is obtained mostly for agricultural and non-agricultural purposes".

Accessibility to agricultural credits by majority of Nigerian farmers especially the small scale farmers in many rural areas is not encouraging. Specifically, in many agricultural areas of Kano state, such as Kura, Bagwai, Garun Malam and Gwarzo Local Government Areas, small scale farmers narrate their ordeals due to inaccessibility to agricultural credit from government established agricultural financial institutions. Many factors might be responsible for the farmers' inability to access such loans among which is ignorance, lack of proper awareness, poverty, discrimination by the financial institutions etc. Besides, non-compliance to some of the conditions governing the allocation of such loans by the farmers as well as their failure to appropriately repay back accessed loans might also compound the farmers'

dilemma (Takwa, 2018). These leads to financial constraints, uncultivated lands, lack of access to basic agricultural inputs required for increased productivity such as mechanised farming methods, improved seeds, fertilizers, insecticides, pesticides, labour costs etc.

However, findings from the study reveals that agricultural credits have certain effects on farming as well as the commercial farmers' productivity in a variety of ways. Hence, commercial level of productivity largely depends on the availability of credit, mechanised farming system, availability of insecticides and pesticides which should be made available by the respected state and federal ministries of agriculture as well as other related bodies concerned with agricultural activities.

5.3 Recommendations

From the findings made by this study as well as the conclusion drawn, the following recommendations are proffered for enhanced credit facility and improved agricultural productivity in the study location as well as other similar areas:

The study recommends that, there is need for more agricultural financial institutions to complement the ones currently in operation with the aim of boosting access to agricultural credits; also to establish agricultural financial institutions in remote rural areas in order to make them close to rural farmers.

Equally, there is urgent need for the government and other credit institutions to find the appropriate modalities of making agricultural credit accessible to commercial farmers most especially those in the rural areas.

Basic agricultural inputs such as fertilizers, improved seeds etc. should be made readily available at affordable prices to rural farmers for improved food production. More so, the idea of agricultural extension should be strengthened by governments at all levels by recruiting more agricultural extension officers who give expert advises to farmers. Professional training and long term awareness through both formal and informal methods on modern farming techniques should be given priority to shape the focus of rural farmers to boost their productivity.

The current land tenure system should be relaxed so that accessibility to land could be made easier. Poor road conditions especially those linking agricultural rural areas with other cities should be mended in order to ease transportation of farm produce from rural areas to urban

markets. Besides, government should be involved in the marketing of farm produce belonging to small scale farmers in order to encourage them produce more.

In addition, terms and conditions for obtaining credit facilities should be made easier to enable local farmers have access to the facility. This should be accompanied with modalities as well as conditions guiding against unnecessary misuse of the credit facility.

Finally, it is suggested that credit facility providers should consider periods of emergency such as flood, war and other related agricultural concerns that has severe consequences on the production capability of the farmers, with specific emphasis on those who are beneficiaries of credit facility such that, they do not bear the consequences of paying for what is beyond their power.

5.4 Areas for further research

This research which concentrated only on studying access to agricultural credits by farmers in Gwarzo LGA of Kano state was just a tip of the iceberg as far as rural farmers in Nigeria especially in Kano state are concerned. Certainly, a lot of studies have to be conducted in order to fully understand the problems and prospects of rural agriculture in Nigeria. Study in areas such as reasons for inaccessibility to agricultural credits by rural farmers, causes of low agricultural productivity by rural farmers as well as how to enhance rural farmers' awareness on agricultural credits need to be carried out. Thus, these are considered to be some of the areas for further study with respect to this work although there may be other areas that can be further explored and studied for the improvement of agricultural development in the country.

5.5 Contribution to Knowledge

It is expected that the findings of this study will contribute to existing knowledge by bringing into light the realities of commercial farmers' dilemma with regards to access to agricultural credit facility, utilisation of the facility and how best to maximise farmer's level of agricultural productivity. Also, the study helps in providing information which was hitherto not available in many studies in relation to credit and agricultural productivity among the farmers of Gwarzo local government area of Kano state. Equally, findings of the study will help institutions and organisations such as Kano State Ministry of Agriculture, Federal Ministry of Agriculture, Commercial Banks and other financial institutions dealing with agricultural credit facility. Finally, the study will be of great help to researchers conducting

studies in related topics on credit and agricultural productivity. Hence, the study can also serve as the starting point of another research work.

5.5 Limitations of the Study

During the conduct of this study, the researcher was confronted with little difficulty. However, lack of cooperation on the part of the farmers, level of literacy as well as little financial problems were confronted. The financial assistance offered to the researcher by the Gwarzo LGA did really assisted massively towards accomplishment of the study. Also, the intervention by the District Head of Gwarzo who happened to be the traditional ruler over seeing all the villages included in the study, helped the researcher greatly with respect to gaining the needed cooperation from the farmers. Thus, at last the study was accomplished successfully with tangible findings.

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APPENDICES

APPENDIX 1: RESEARCH QUESTIONNAIRE

KAMPALA INTERNATIONAL UNIVERSITY
SCHOOL OF HIGHER DEGREES AND REASERCH
COLLEGE OF ECONOMICS AND MANAGEMENT
DEPARTMENT OF ECONOMICS AND STATISTICS

RESEARCH QUESTIONNAIRE

Dear Respondents,

I am Hamidan Bello Harris a post graduate students of the College of Economics and Management, Kampala International University, Uganda. I am conducting a research on Credit and Agricultural Productivity among Farmers of Gwarzo Local Government, Kano State, Nigeria. Kindly fill in the questionnaire objectively as your responses will contribute greatly towards achieving the aim and objectives of this study. Be assured that your response will be treated with utmost confidentiality and will only be used for the purpose of this research work.

Thank you very much for your cooperation

Section I: Demographic Characteristics of the Respondents

Variables	Tick here
Gender	
Male	
Female	
20-25 yrs	
26-30 yrs	
31-35 yrs	
36-40 yrs	
41-45 yrs	
46-50 yrs	

Above 50 yrs	
Tribe	
Fulani	
Hausa	
Others	
Religion	
Islam	
Christianity	
Others	
MaritalStatus	
Married	
Single	
Divorced	
Level of Education	
None	
Primary certificate	
Secondary certificate	
Diploma/NCE	
Others	
Family Size	
1-5 members	
6-10 members	
11-15 members	
16-20 members	
Above 20 members	
Who owns the Land	
The father	
The mother	
The family	
Years of Farming Experience	
1-5 yrs	
6-10 yrs	

11-15 yrs	
16-20 yrs	
Above 20 yrs	
Nomadic	

Section 2: Occupational Characteristics of the Respondents

Variables	Tick here
Crop Grown	
Corn	
Millet	
Cotton	
Maize	
Beans	
Groundnut	
Mixed	
Vegetables and fruits	
Farm Size	
< 1 Hectare	
1-2 Hectares	
3-4 Hectares	
>4 Hectares	
Type of Farming	
Subsistence Farming	
Commercial Farming	
Alternative Occupation	
None	
One	
Two	
Yes	
No	
Annual Average Income (N)	

<100,000	
100,000-399,000	
400,00-699,000	
700,000-999,000	
1000,000	
>1000,000	
Have you ever accessed agricultural loans	
Yes	
No	

Section 3: Access to Credit

S/N	QUESTIONS	YES	NO
3.4	It is easy for you to get access to agricultural credit		
3.5	You possess all the requirements to access the loans		
3.6	You obtain the agricultural credit within the time required		
3.7	You can afford the interest involved		
3.8	Credit repayment period and terms and conditions are convenient to you		
3.9	It is very easy for you to get the loan from the bank		
3-10	Do you have reliable security guarantee to access the credit		
3.11	The banks increase the amount of credit given to you		
3.12	Yields from your farm enable you to repay the credit acquired satisfactorily		
3.13	Do you get the credit at any time you so wish		

Section 4: Level of Agricultural Productivity

S/N	QUESTIONS	YES	NO
4.1	Do you cultivate the whole of your farmland		
4.2	You use local manure on your farm		
4.3	You use manufactured fertilizer on your farm		
4.4	Do you use insecticides and pesticides on your farm		
4.5	You cultivate your farm more than once in a year		

4.6	You employ modern mechanised farming methods		
4.7	You cannot afford mechanised farming so you use local farming methods		
4.8	Due to poverty you only cultivate some portion of your farmland		
4.9	Yields after every harvest from your farm are good and encouraging		
4.10	You don't face any difficulties in selling off crops harvested from your farms		

Table 5 Utilization of Agricultural credit

S/N	Variables	Yes	No
01	Utilization to credit enables farmers to cultivate more land		
02	Agricultural credit helps farmers get more yields than they do now		
03	Improved seeds, fertilizers and pesticides enhance more yields		
04	With utilization credits, farming activities can be mechanized for more productivity		
05	Credits make farming less laborious, less time consuming and more productive		
06	Agricultural credit enhance farmers' incomes		
07	Agricultural credits make farmers reach their target goals		
08	Farmers can be motivated with agricultural credits		
09	Failure to repay credits leads to bankruptcy among farmers		
10	Farmers utilize agricultural credits for other purposes		

APPENDIX 2: GWARZO LOCAL GOVERNMENT AREA MAP



Figure 1: Map of Kano State Nigeria Showing Gwarzo LGA.