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This is to certify that this thesis carried out by **ADENIJI, Samson Oluwafemi** is accepted in partial fulfilment of requirements of the award of Master of Science (M.Sc.) degree in the Department of Accounting, Faculty of Social and Management Sciences, Bowen University, Iwo, Osun State.

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**CERTIFICATION**

This research work has been carefully read and certified as meeting the requirement for the award of Master of Science (M.Sc.) Degree in Accounting from Bowen University, Iwo, Osun State.

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**DECLARATION**

I, ADENIJI, Samson Oluwafemi, hereby declare that this thesis titled Diversification of Revenue Sources and Agricultural Activities in Nigeria was a research work written by me and has never

been presented before in previous application for a degree. All the materials consulted in the course of this research work were all duly acknowledged in the References

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ADENIJI, Samson Oluwafemi Date

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ADENIJI, Samson Oluwafemi Date

**DEDICATION**

This thesis is dedicated to the KING OF KINGS and THE ROCK OF AGES. The Lord who has been my strength, shield and buckler all this while is worthy of my praise and thanksgiving.

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**ABSTRACT**

The broad objective of this research was to investigate the relationship between the revenue sources and the agricultural activities in Nigeria. However, the specific objectives are to determine the effects of agricultural indices on the Revenue from Agricultural Output (RAQ)

Secondary data were used. The data were collected from Food and Agriculture Organization (FAO), Central Bank of Nigeria (CBN). National Bureau of Statistics (NBS), Nigerian Meteorological Agency (NIMET), Zenith Economic Quarterly, International Journals of Accounting, Economics and Agriculture. The econometric method of unit root and co-integration were employed to estimate the relationship between the examined variables while Ordinary Least Square Method was used to run the regression.

The result revealed that Price of Agricultural Commodities (PAC= 0.8003), Average Total Rainfall (ATR= -0.1601), Agricultural Cultivable Land (ACL= 0.6413) and Agricultural Finance (AGF= 0.0955). All the explanatory variables except ATR indicate positive coefficient which means there is direct correlation to Revenue from Agricultural Output (RAQ) and probability values of all the independent variables (PAC= 0.0000 < 0.05, ATR= 0.0279 < 0.05, ACL= 0.0227 < 0.05 and AGF= 0.000 < 0.05) revealed that they are statistically significant and related to RAQ. Hence, agricultural indices (Adj. R-squared= 83%) and probability of F statistics (0.0000 < 0.05) jointly explain the variation in Revenue from Agricultural Output in Nigeria.

The study therefore, concluded that Price of Agricultural Commodities, Average Total Rainfall, Agricultural Cultivable Land and Agricultural Financing significantly influence Revenue from Agricultural Output (RAQ) in Nigeria.

**CHAPTER ONE**

**INTRODUCTION**

* 1. **Background to the Study**

The term diversification according to (Siegel and Johnson, 1995) refers to the process of changing the level of revenue diversity and selecting assets to minimize the risk of over concentration on a particular revenue source. Also, according to (Suyderhand, 1994) diversification could be viewed as a structure that avoids the imbalanced use of given revenue sources at the cost of other revenue sources. However, a diversified revenue structure can be described as relying on multiple or a variety of revenue sources.

Revenue generation is very important to the survival of any economy but lack of it could lead to the collapse of the economy. Following the relevance of revenue to the development of any nation the need to consider how to boost the revenue basis through a strategic economic approach of diversification is greatly important. In the light of this reality, boosting agricultural output will not only provide alternative source of revenue but also sustain the growth and development economically. Agriculture is also a dominant economic activity in Nigeria as about 90% of the country’s 923 million square kilometers of land is arable, with about 40% being cultivated and only about 10% is properly cultivated (Zenith Economic Quarterly, 2014).

There is an overwhelming consensus that reviving Nigeria’s agricultural and manufacturing sectors remain the most potent strategy for diversifying the country’s import dependent and mono-product economy. Perhaps the resultant effect of most manufacturing industries which have either closed down or operate far below full capacity on other economic sectors affect the revenue generation greatly. According to Nigerian Association of Chamber of Commerce, Industry, Mines and Agriculture (NACCIMA), at least 800 companies closed shop in Nigeria within the last decade owing largely to harsh and unfavourable operating environment, poor power supply, heavy dependence on imported inputs, high cost of production and unhealthy competition (Zenith Economic Quarterly, 2016).

Nigeria is no longer a major exporter of cocoa, cotton, groundnuts, rubber and palm oil due to the continuous decline in the agricultural output as a result of critical indices such as appropriate pricing for agricultural commodities, average total rainfall, value of agricultural cultivable land and agricultural financing that are significantly relevant for the enhancement of agricultural productive capacity despite huge investments in this sector which among others include the establishment of River Basins and Rural Development Authorities, the Agricultural Development Programmes (ADP) (funded jointly by the World Bank and the federating Units in Nigeria) and more than 20 Agricultural Research Institutes. Over the years, especially between 1970 and 2014 modest programmes were evolved: the Operation Feed the Nation between 1977 – 1979, Green Revolution of 1979 – 1983, Structural Adjustment Programme initiated in 1986 with its concomitant effects on the economy and most recently after the return to democracy in 1999, Agricultural Development Programmes between 2002- 2006, prominent among them was the cassava projects (cassava flour, cassava bread) and much attention given to the sector. In 2007, 7 points agenda also placed emphasis on food security and vision 20-2020. Also, in 2011 – 2015 the agricultural value chain through the Agricultural Transformation Agenda (ATA). Despite all these strides made including the establishment of various universities of agriculture, specialized agricultural institutions (monotechnics) and increase in the faculties of agriculture of other conventional universities and indeed erudite scholars in the field of agriculture, yet agriculture has failed to keep pace with Nigeria’s rapid population growth in line with Malthusian theory of population that population explosion in the world will be greatly unmatched by the decelerating rate of agriculture as we know that humanity without agriculture is vain. Nigeria once an exporter of food now relies on importing food to sustain its growing population what a shame! (Muhammad and Atte, 2006).

Agriculture was once the major foreign exchange earner and contributor to Gross Domestic Product (GDP) dated back to pre-oil discovery. It is a known fact across the globe that the speed of development depends on the resource mobilization especially from non-oil sectors such as agriculture, solid minerals, manufacturing, services industries, Construction among others, (Adegoke, 1991). Difficulties mostly associated with the market forces of demand and supply all over the world among the oil producing countries and consuming countries often accounted for the dwindling earnings from the oil sector (Akorbloe, 1994). Following this manifestation there is need for strategies and policies for diversification of the revenue base is a must for Nigeria to move from being a consuming nation to a producing nation especially through increased agricultural output.

The non-oil export comprises mainly agriculture, solid minerals, manufacturing, entertainment, tourism, sport, Construction and others. The main interest of the colonial master was the exportation of raw materials needed for their home industries. The Nigerian economy until today is still dependent on primary products both as foreign exchange earner and contributor to Gross Domestic Product (GDP). The major agricultural export commodities in Nigeria include cocoa, coffee, cotton, groundnut oil, palm kernel, soya, beans, ginger, rubber, benin-seed and pepper (CBN, 1998). However, various agricultural reforms and policies makers are working round the clock to ensure that other commodities that are being demanded in the world market such as cassava and cassava products, banana, plantain, wheat, mango, tomato, pepper, pawpaw and yam which hitherto were not given proper attention are now promotionally enhanced. For instance, Ogbomoso mango, Yam floor from Saki, Kaimo, Markurdi and Tarraba, Ikire plantain chips, ‘akara’Ogbomoso, Garri from Egba, Ijebu, Iwo and Oyo. Palm oil from Benin, Anambra, Delta and Owerri, Cattle from Sokoto, Borno, Adamawa, Irish potato, carrot, cucumba all from Plateau and Groundnut from Niger, Katcha rice, Bida rice, Dass rice, Ilesha rice, Ekiti rice and Ofada rice just to sample a few can be better promoted, preserved and processed for export. Nigeria has potential capacities to feed the entire Africa and make whopping sum of money from such external transactions if her capacities are adequately enhanced and the vast expanse of uncultivated land resources are put to use. Thus Nigeria is endowed with human, material and natural resources yet suffering amidst abundant resources. Despite all these vast endowment, Nigeria still spends as much as 1 billion naira per day to import rice from Thailand, China and other countries as the second consumer of rice in the world, even descending herself so low to the level of importing tooth pick (Oji-Okoro, 2011).

For instance, as petroleum products are being affected by the market forces in the global market similarly, climatic condition or even human activities such as deforestation, erosion, bush burning and other vices also adversely affect agricultural output thereby resulting to dwindling the revenue sources. Hence the study investigates the impact of critical indices such as prices of agricultural commodities, average total rainfall, value of agricultural cultivable land and agricultural financing on the output of agricultural commodities and the economic growth in Nigeria in a bid to diversify the Nigerian economy away from oil sector. A good performance of an economy in terms of per capita income may therefore be attributed to a well-developed agricultural output. A major policy implication of this nature is that concerted effort should be made by policy makers to increase the level of productivity of agricultural sector in Nigeria by improving expenditure on the sector so as to boost the growth of the economy. Since agricultural sector is the major contributor to GDP in Nigeria which is capable of changing social sector indicators of the economy, policies aimed at adequate financing of agriculture by governments in order to boost its output, should result into a way forward. An Empirical Analysis of the Contribution of Agriculture to the Growth and Development of the Nigerian Economy from 1970-2014 cannot be under-estimated considering the benefits and opportunities generated in terms of foreign exchange earnings, employment generation, provision of food for man, feeds for animal and raw materials for industries, sources of revenue for both government and people among other benefits.

* 1. **Statement of the Problem**

Climatic condition and human activities such as deforestation, erosion, bush burning, climate change, corrupt practices in high places and most recently herdsmen pastoral farming adversely affect agricultural output thereby affecting the revenue source, (Zenith Economy Quarterly, 2016). The study investigates the impact of agricultural activities on the revenue sources in Nigeria.

The literatures reported that in spite of Nigeria’s rich agricultural resource endowment, there has been a gradual decline in agricultural contributions to the nation's economy. In the 1960s, agriculture accounted for more than 60 percent of total exports and ranked as the mainstay of the economy then fell to about 49 percent in the 1970s, and marginally moved to about 30 percent in the 1990s. The decline in the agricultural sector was largely due to rise in crude oil revenue in the early 1970s. Less than 50 percent of the Nigeria’s cultivable agricultural land was under-cultivated even then, smallholders and traditional farmers who use primitive and rudimentary production techniques with resultant low yields, cultivate most of these lands (Suleiman and Aminu, 2010).The smallholder farmers- peasant farmers who are constrained by many problems including those of poor access to modern inputs and credit, poor infrastructure, inadequate access to markets, land and environmental degradation, and inadequate research and extension services are the ones predominantly practicing farming. The inability to capture the financial services requirements of farmers and agribusiness owners who constitute about 70 percent of the population is inclusive. (Muhammad and Atte, 2006).

Low agricultural output has a negative effect on the Nigerian revenue generation as a whole. Several factors have been identified to enhance growth in the agricultural sector. These factors include education, prices of agricultural commodities, climatic condition such as rainfall, availability of agricultural cultivable land, input, market, infrastructure, inflation, output preservation, irrigation system, finance or credit and extension services, (Awe and Ajayi, 2009). However, this research work was embarked upon to chart a new course towards enhancing revenue diversities inherent in agricultural sector. The current budgetary allocation to agricultural sector has not shown any significant increase in the agricultural output despite several billions of naira injected into agricultural sector in the past but now we have as much as 800% increase over this, yet we can only see little development while vision 20-2020 is in a state of rest like Newton’s first law of thermodynamics (Handrich, 2002).

Resource looting and wastage is much concentrated at all levels especially among the public and civil servants who are not just most wanting but problematic and the very impediment to revenue generation. Diversification towards agriculture presents the most competitive and strategic option for Nigeria in the light of her developmental challenges occasioned by dwindling revenue generation from other economic sources.

Despite various research efforts in this area, no much attention was given to certain factors which affect the agricultural sector in no small measures and which are capable of distorting the revenue generation from these sources. These are some of the major gaps identified in some of the previous works. The current Fulani herds men that have become terrors on the Nigerian farming population is seriously begging for intervention in order not to cripple the agricultural performance thereby resulting in poor revenue generation. The effect of climate change is another setback bedeviling the agricultural sector of the economy. This happens as a result of various human and industrial activities chemical emission such as Sulphur dioxide and Carbon dioxide into the Ozone-layers this is capable of reducing the farm yield thereby reducing the revenue generation from the agricultural production. The poor storage and preservation system of Nigerian farmers accounted for several wastages from the farm to the market largely due to the perishable nature of most Nigerian agricultural products resulting from poor and non-functional marketing board this leads to glut in the farm market thereby resulting into excess supply of agricultural produce in the market above the effective demand with the attendant loss of revenue.

Rural- urban drift is another issue, today several Nigerian youths are no longer interested in agriculture as a vocation to earn a living due to previous failed promises thereby resorting to menial jobs in the cities such as factory works, taxi driver, ‘okada’ riding, office attendant, house servant, bakers among others this in several ways reduce the total revenue accruable from agriculture as a viable economic source of revenue and this affirms to the fact why about 50 percent of vast expanse of 923 million square kilometers of Nigerian arable lands are uncultivated and lye idle without any returns to the economy. Government policy inconsistency is also affecting agricultural sector. Over the years several policies of the government have been evoked and abolished by succeeding government on political grounds which has significantly impacted on the agriculture negatively.

**1.3 Research Questions**

The following questions were raised to investigate the relationships of the examined variables.

1. What effect will Price of Agricultural Commodities have on Revenue from Agricultural Output?
2. What impact will Average Total Rainfall have on Revenue from Agricultural Output?
3. What is the influence of Agricultural Cultivable Land on Revenue from Agricultural Output?
4. What effects will Agricultural Financing have on Revenue from Agricultural Output?

**1.4 Research Objectives**

The broad objective of this research is to investigate the relationship between revenue sources and the agricultural activities in Nigeria.

However, the specific objectives are to;

1. determine the effect of Price of Agricultural Commodities on the Revenue from Agricultural Output.
2. examine the influence of Average Total Rainfall on the Revenue from Agricultural Output
3. assess the impact of Agricultural Cultivable Land on the Revenue from Agricultural Output.
4. Investigate the effect of Agricultural Financing on the Revenue from Agricultural Output.

**1.5 Research Hypotheses**

In order to achieve the above objectives, the following propositions were empirically tested by summing up all the independent variables and denote them by Agricultural Indices.

**Hypotheses**

**Ho:**  Agricultural Indices do not significantly influence the Revenue from Agricultural Output

**Hi:**  Agricultural Indices do significantly influence the Revenue from Agricultural Output

**1.6 Justification of the Study**

In the economic and national development of Nigeria, agriculture is expected to provide adequate supply of food to the people, produce a high level of agricultural raw materials for the industries, provide feeds for the livestock, generate both formal and informal employment for the people and generate a high level of revenues to both the farmers and the government. However, despite the evidence of availability of natural resource inputs including land and water resources, ample supply of labour force which are the principal agricultural inputs. Also, in spite of huge investment into the agricultural sector of the Nigerian economy and various research conducted in this area by eminent scholars, yet no significant success have been recorded towards the transformation of the agricultural sector in the face of current economic realities due largely to inconsistency in government policies, social-economic characteristics of Nigerian farmers, poor infrastructural facilities, credit facility problem, agricultural inputs and the land tenure problem. All of these problems interact together in a synergy resulting in low agricultural production, poor revenue generation, high prices food items, inflation, underdevelopment and concomitant poverty.

This research aimed at expanding the previous literatures on revenue diversification by exploring the dynamic effect of revenue diversities through increased agricultural output. This study provides significant policy guidance and direction towards achieving stable revenue for enhanced economic growth and stability. However, the justification for this research work was contingent upon the historical background detailing the gradual neglect of the agricultural sector as a result of the oil discovery in the 1970s. Also, it updates and bridges some gaps identified in the course of reviewing some literatures as enumerated in the statement of problem in line with the current realities. The research period of 1970 to 2014 gave a detailed analysis of the contributions of agriculture to the Gross Domestic Product (GDP) from the inception of oil discovery in commercial quantity as an alternative foreign exchange with some particular reference to the 1960s as pre-dating period.

**1.7 Scope of Study**

The scope was limited to the period between 1970 and 2014 and the study examined the relationship between the revenue sources and agricultural activities in Nigeria. The Nigeria non-oil export since independence has been dominated by primary agricultural and unprocessed minerals products. There is no doubt that petroleum has contributed substantially to the export revenue of Nigeria in recent past, nevertheless, experiences in recent time as a result of fall in the price of crude oil globally and the negative implications of the global economic recession call for better exploration and enhancement of revenue from agricultural outputs.

This research work aimed strongly to advocate for greater attention by all and sundry to see agriculture as the way out to the present economic quagmire which has pushed the country into the economic tight corner. Numerous factors such as favourable government policies, finance, good education, good market, vast cultivable land, good infrastructure, irrigation system, foreign subvention and grant, research and development, modern technology, improved mechanized system, import substitute, enhanced exportation and improved inputs (seeds/breeds) will adequately enhance agricultural revenue.(Muhammad and Atte,2006).

**1.8 Plan of the Study**

This study investigates the relationship between revenue sources and the agricultural activities in Nigeria. Agriculture provides food for man, generate employment for people, raw materials for industries and returns to the farmers and government. Quantitative techniques were adopted and the study spanned through 1970 to 2014 organised into five chapters. The first chapter dealt with the background of the study, statement of the problem, research questions, research objectives and research hypotheses. The second chapter specifically reviewed the relevant literatures that were germane to the study. Methodology and data sources were devoted to chapter three. The interpretation of the empirical results was the focus of chapter four. Chapter five articulated the summary of findings, conclusion and recommendation towards the policy implication of the study.

The data used were purely secondary data. To carry out this research, a critical review of related literatures were of immense importance in identifying some gaps and filling some of the gaps in order to contribute to the course of knowledge. In the course of carrying out this research work, four independent variables were employed as explanatory variables on the dependent variable. The four independent variables were Price of Agricultural Commodities (PAC), Agricultural Cultivable Land (ACL), Agricultural Finance (AGF) and Average Total Rainfall (ATR) while the dependent variable was Revenue from Agricultural Output (RAQ). The relationships were empirically tested through an econometric model to determine the influence of the independent variables on the dependent variable**.**

**1.9 Definition of Terms**

**Diversification**: This means considering other economic sectors rather than over reliance on a particular sector such as oil and gas as to increase the agricultural revenue diversities.

**Economic Growth**: This will be denoted by the quantum of Output of Agricultural Commodities (Output Approach) which is one of the parameters for measuring the Gross Domestic Product (GDP) which defines the people standard of living as used in this work and it could also mean sustainable growth. Other approaches used in measuring the GDP include Income approach and Expenditure approach. This study will only be limited to the output approach within the agricultural context.

**Agricultural Output**: This is the quantity of agricultural products produce at a given level of agricultural inputs at any given point in time.

**Price of Agricultural Commodity**: This is the price paid on agricultural produce. It is one of the variables that determine the supply of agricultural output.

**Agricultural Cultivable Land**: This is the value of farm land available to farmer for agricultural purposes. This also determines the quantity of agricultural output in no small measure.

**Average Total Rainfall**: This is the amount of rainfall required to achieve a desired level of agricultural output.

**Agricultural Finance:** This is the amount of money available for the agricultural operation. This is sourced from various means which include personal finance through savings from sales proceeds of agricultural commodities or inform of credit such as short term finance, medium term finance and long term finance or grant/subvention granted to enhance the production of some agricultural products such as cassava, cocoa, rice, wheat especially for research purposes. This determines the revenue from output of agricultural commodities greatly.

**Revenue from Agricultural Output:** This is the monetary value placed on agricultural output. It is the amount of money raised from the sales of agricultural commodities. This forms part of the national income.

**Agriculture:** This is the agricultural sector which involves fishing, crop production, livestock, feeds, forestry and horticulture.

**Revenue Base:** This refers to the various sources of generating revenue for economic growth and development. It also refers to various economic sectors such as agriculture, oil and gas, solid minerals, services, manufacturing and entertainment among others.

**Non-Oil Sectors:** This refers to all other economic sectors other than oil and gas sector.

**Agricultural Products**: These are farm produce and everything that comes from the farming activities.

**Critical Agricultural Indices:** This is the combination of all the explanatory variables which include Price of Agricultural Commodities, Average Total Rainfall, Agricultural Cultivable Land and Agricultural Financing

**CHAPTER TWO**

**LITERATURE REVIEW**

This chapter reviewed the literatures which are very significant to this study. The purpose of this was to examine the previous work with the determination to bridge some identified gaps in some of the research. This was embarked upon to update knowledge since some of the previous work in this area ended around 2010 and 2012. The extension of this research to 2014 was done to inculcate some recent developments to the study.

**2.1 Conceptual Review**

Over the past three decades, governments at all levels have become increasingly reliant on the revenue coming from the central pool for any public financial obligation. However, the effects of revenue diversification or revenue stability have been largely unexplored. Revenue diversification has become a prevalent practice in recent time when most national governments have turned to multiple revenue sources and encouraged to see to strategic diversification through internally generated revenue from their activities, operations, services and productions. Diversifying the revenue base of Nigeria towards agriculture provides summary of the current research on revenue diversification regarding its effect on fiscal performance and revenue stability on the economic growth and development in Nigeria (Aigbedion, 2004).

Agriculture has been variously viewed in different ways and common among these definitions is the fact that it is the production of food, feed, fiber and other goods by the systematic growing and harvesting of plants and animals (Johnson, 1996). Agriculture has also been seen as the science of making use of the land to raise plants and animals. It is the simplification of nature’s food webs and the rechanneling of energy for human planting and animal consumption (Oji–Okoro, 2011). Until the exploitation of oil reserves began in the 1970s, Nigeria’s economy was largely dependent on agriculture. Nigeria’s wide range of climate variations allows it to produce a variety of food and cash crops.

(Muhammad and Atte, 2006) have described agriculture as the profession of the majority of humans. The World Fact Book (1991) averagely estimated that over 50 percent of the world population is actively engaged in agriculture or dependent of it for a living, this is a general description of the sector. On the other hand, it includes farming, fishing, animal husbandry and forestry (Oji- Okoro, 2011), stated that agricultural sector is the largest sector in the Nigerian economy with its dominant share of the GDP, employment of more than 70 per cent of the active labour force and the generation of an average of 32 per cent during 1992 to 1996 to 33 per cent during 1997-2001 compared to crude oil to the GDP from which declined of an annual average of 39 per cent in 1992-1996 to 37 per cent during 1997-2001**.**

Development economists have focused on how agriculture can best contribute to overall economic growth and modernization. The physiocrats laid more emphasis on agriculture in the development of an economy. In their views, the development of an economy depends on the growth of the agricultural sector. The source of national wealth is essentially agriculture which has since remained the bedrock of any virile economy upon which other key sectors of the economy develop. The physiocrats believe that the fate of the economy is regulated by productivity in agriculture and its surplus is diffused throughout the system in a network of transactions. The agricultural sector to the physiocrats is the only genuinely productive sector of the economy and the generator of surplus upon which other sectors of the economy depend.

Lewis theory of development, assume that the underdeveloped economies consist of two sectors. These sectors are the traditional agricultural sector characterized by zero marginal labour productivity and the modern industrial sector. The primary focus of the model is the labour transfer or mobility that is rural-urban drift and the growth output and employment in the modern sector. Zenith Economy Quarterly (2015) argued further that, if development is to take place and become self-sustaining, it will have to include the rural area in general and the agricultural sector in particular. This study investigates the impact of agricultural sectors in Nigeria from 1970-2014 the level of revenues being generated and the need for total diversification of the revenue base to allow for a robust revenue generation necessary for meaningful economic growth and development. The strong correlation that has been established between Nigerian’s total GDP and the agriculture suggests that the prospects of the non-oil sub-sector and the overall economy are closely tied to the performance of the agricultural sector. Ekpo and Umoh (2012) submitted that in the 1960s, agriculture contributed up to 64 per cent to the total GDP but gradually declined in the 1970s to 49 per cent and it averagely declined to 20 per cent in 1980s due to the shift in favour of the oil sector.

Rostow in Oji-Okoro (2011) argued that in the process of economic development, nations pass through several stages namely: traditional stage, the precondition for takeoff, the take-off stage, drive to maturity and the high mass consumption stage. Agriculture played crucial roles in the first three stages (Traditional society, pre-conditions for take-off and take-off stages). The agricultural sector has the potential to be the industrial and economic springboard from which a country’s development can take off. Indeed, more often than not, agricultural activities are usually concentrated in the less- developed rural areas where there is a critical need for rural transformation, redistribution, poverty alleviation and socio-economic development. (Stewart, 2000 welcome Address “proceeding of the 7th World Sugar Farmers Conference Durban, South Africa)

Awe and Ajayi (2009) reported that the state of agriculture is of paramount importance to the development process. They pointed out that agriculture provides the basis for the world’s great civilization in the past and the increase in agricultural productivity in England laid the basis for, and sustained the first industrial revolution. Agricultural sector is known to employ over 70 percent of the labour force in developing countries and provide the purchasing power over industrial goods. The western countries experiences on economic development was seen as requiring a rapid structural transformation of the economy focused on agricultural activities to a more complex modern industrial and services society. As a result, agriculture’s primary role is to provide food and manpower to the expanding industrial economy (Akorbloe, 1994). Agricultural Sector and Economic Growth in Nigeria: A Review of Empirical Literature

**2.1.1 Revenue Diversification and Fiscal Performance**

In any economy, successful economic development depends on open balanced interaction between various sectors over a period of time often the process of interaction is such that some sectors become more important than others, depending on the level and the stages of development. In Nigeria, Agriculture is an example of one key sector whose role is, and would remain crucial to development fortunes. Economic history is replete with ample evidence that agricultural revolution is a fundamental pre-condition for economic growth especially in developing countries, CBN (2009) studied the effect of federal government agricultural expenditure and other determinants of agricultural output on the value of agricultural output in Nigeria.

(Oji-Okoro (2011) employed multiple regression analysis to examine the contribution of agricultural sector on the Nigerian economic development. They found that a positive relationship between economic growth vis a vis domestic saving, government expenditure on agriculture and foreign direct investment between the period of 1986-2007.

The greatest advantage of revenue diversification is the perceived stability and predictability of revenue flow brought by the various revenue sources. The theoretical and empirical verification of the relationship between revenue diversification and revenue stability is very important. While the uncertainty of the revenue sources or fluctuations in revenue streams can cause disruption in service delivery and other long-term in efficiencies revenue diversification can serve as remedy (Hendrick, 2002).

Government budgets are usually made before actual revenues are realized and legislators make expenditure decisions “based on the assumption of predictable and steady growth overtime” (White, 1983). Nevertheless, governments are expected to maintain a balanced budget at least if surplus budget cannot be feasible and borrowing capacity hindered by constraints. However, upon all these economic realities, economic stability is therefore critical in fulfilling short, medium and long term commitments of any government.With the additional funding sources, governments at all levels have greater capacity to accommodate the increased demands of spending as a result of economic cycles, natural disasters, judicial mandates or political actions (Suyderhand, 1994). Expanding the repertoire of revenue sources may also help achieve greater stability in cash management and more flexibility in budgetary planning (Bartle, Ebdon and Krane, 2003).

**2.1.2 Revenue Diversification and Agriculture**

Diversification as a concept is generally taken as the process in which a growing range of economic output is produced. It can also refer to the diversification of market especially the agricultural produce for exports or the diversification of income sources away from domestic economic activities (CBN, 1998). Economic diversification in its standard usage, either in terms of the diversity of economic activities or markets, is a significant issue for sectors with the aim to contribute to the running of the economy. This will provide a substitute in terms of security and reliability thereby buffer for any economic variations in revenue streams due to varieties in the revenue contributors the primary reasons that economies are less likely to go through economic volatility **(**Johnson, 1996).

## For agriculture to remain the major primary way to generate revenue serious attention must be given to the sector to enhance its desired capacities, if fully explored as the chief source and foundation upon which other economic sectors can be rooted for instance, America was originally a nation of farming, a case for many developing nation to explore and up till now agriculture remains the American springboard upon which other economic sectors lean (Carol, 2005).

According to Prof. Wale Amole in his paper presented in Lagos in January, 2015 to Forum for Inclusive Nigerian Development (FIND) noted that “nations like Indonesia and Malaysia picked from Nigeria’s agricultural template in the early 1960s to leafrog into their current economic status. He further stated that value addition currently holds the ace in advancing the economic diversification programme especially with its concomitant multiplier effects.”Nigeria needs a paradigm shift from being a raw commodities exporter to value adding economy in the global market.

**2.1.3 Pursuance of Agro-Industrialization**

This will ensure local processing of farm produce as against mere exporter of primary goods or raw materials for foreign manufacturing industries which will later be imported to the country at cut-throat price (CBN, 1998). Establishment of industries whose chief source of raw materials are produced by Nigerian farming population will not only create employment opportunity to the teaming youth population of Nigerian but also contribute significantly to foreign exchange earnings for the nation. This indeed will facilitate foreign direct investment into the country (FGN, 2001).

**2.1.4 Prevailing Challenges and Realities Due to Non-Diversification**

As the price of crude oil in the international market nose-dives, fears have heightened that the nation’s three tiers of government may soon run into serious financial crisis due to non-diversifying nature and lavishness in the public spending in excess of the revenue. Crude oil price per barrel fell from $147 to less than $30 per barrel, its lowest price since January 2007. This is further aggravated by the militant activities around the pipeline and Niger Delta regions. The drastic fall in crude oil prices has been attributed to the scaling down of industrial production in the United States and other industrialized countries as a result of the global meltdown. Truly, it is heartrending that after the country has gone through a painful boom to burst crises in the oil sector in the past and earned well over $1.7 trillion from oil since independence yet recklessness in public spending on white elephant project with the intention of embezzling public fund without any direct bearing on people’s welfare and standard of living (OPEC, 2008).

Despite the boom in the past no any meaningful foreign or local reserve to cater for any likely future uncertainties putting the country in the tight economic corner of back log of unpaidsalaries, loan rescheduling due to dwindling revenue, bills payable not possible, capital projects being abandoned, labour unrest through strike, lock-ups, critical sectors such as health (hospitals) being shut down, educational institution shut down due to absence of getting federal grant, subvention and allocation, state government grounded by non-performance in spite of several bails out given to them by CBN, local government which is the closest to the common man eliminated by most corrupt state executives.

Also disturbing is the threat being posed by Fulani herdsmen to the Nigerian farmers most especially in Nigerian agriculture-top ranking Benue and Taraba States thereby affecting the crop production by half. This menace is so endemic especially in the main agricultural areas of Nigeria. This invariably reduces the farm products which in turn affect the productivity and profitability of the agribusiness enterprise.

**2.1.5 Agricultural Diversification**

Diversification of agriculture refers to the shift from the regional dominance of one crop to regional production of a number of crops, to meet ever increasing demand for cereals, pulses, vegetables, fruits, oilseeds, fibers, fodder and grasses, fuel, etc. It aims to improve soil health and a dynamic equilibrium of the agro-ecosystem.

Crop diversification takes into account the economic returns from different value-added crops. It is also the concept of multiple cropping or succession planting in which multiple crops are planted in succession over the course of a growing season. Moreover, it implies the use of environmental and human resources to grow a mix of crops with complementary marketing opportunities, and it implies a shifting of resources from low value crops to high value crops, usually intended for human consumption such as fresh market fruits and vegetables. With globalization of the market, crop diversification in agriculture means to increase the total crop productivity in terms of quality, quantity and monetary value under specific, diverse agro-climatic situations worldwide. There are two approaches to crop diversification in agriculture. First is horizontal diversification, which is the primary approach to crop diversification in production agriculture. Here, diversification takes place through crop intensification by adding new high-value crops to existing cropping systems as a way to improve the overall productivity of a farm or region’s farming economy. The second is the vertical diversification approach in which farmers and others add value to products through processing, regional branding, packaging, merchandising, or other efforts to enhance the product. Opportunities for crop diversification vary depending on risks, opportunities and the feasibility of proposed changes within a socio-economic and agro-economic context. Crop diversification may occur as result of government policies. The “Technology Mission on Oil seeds”, “Spices Development Board”, “Coconut Development Board” etc. are examples where the Indian government created policies to thrust change upon farmers and the food supply chain at large as way to promote crop diversity. Crop diversification is the outcome of several interactive effects of many factors:

\* **Environmental factors** including irrigation, rainfall, temperature, sunlight, relative humidity and soil fertility

**\* Technology-related factors** including seeds, fertilizers and water technologies, but also those related to marketing, harvest, storage, agro-processing, distribution, logistics, etc.

**\* Household-related factors** including regional food traditions, fodder and fuel as well as the labour and investment capacity of farm people and their communities.

**\* Price-related factors** including output and input prices as well as national and international trade policies and other economic policies that affect the prices either directly or indirectly.

**\* Institutional and infrastructure-related factors** including farm size, location and tenancy arrangement, research, in-field technical support, marketing systems and government regulating policies, etc.

All these five factors are interrelated. The adoption of crop technologies is commonly assumed to be influenced primarily by resource-related factors when institutional and infrastructure factors can play as much or more of a role in their adoption.

1. **Area of expansion problems under crop production**

Scaling up production area poses several new problems of significance such as:

1. Excessive use of groundwater leading to poor water use efficiency and depletion of ground water.
2. Deterioration of soil health or soil fertility.
3. Multiple infestation of weed flora, insect pests and diseases.
4. Indiscriminate use of energy such as chemical, electricity or disease, etc.
5. Reduction in the availability of other protective food and high value crops.
6. Pollution of agro-ecosystems.

On the other hand, crop diversification has potential as an economic driver in agricultural region. It may prove to be of paramount importance in meeting challenges that arise from a post-green revolutions scenario. In view of shrinkage of agricultural land and operational holdings due to expansion of urban centers, changes in consumer food habits, exponential population growth rate, farmers are pressured to include or substitute additional crops in to the cropping system.

1. **Major driving forces for crop diversification**
2. Increasing income on small farm holdings.
3. Withstanding price fluctuation.
4. Mitigating ill-effects of aberrant weather.
5. Balancing food demand.
6. Improving fodder for livestock animals
7. Conservation of natural resources (soil, water, etc.)
8. Minimizing environmental pollution.
9. Reducing dependence on off-farm inputs.
10. Decreasing insect pests, diseases and weed problems.
11. Increasing community food security

Nigerian agriculture is characterized by a dominance of small and marginal farmers (almost 68 per cent) who suffer as a result of difficult socio-economic conditions. 75 per cent of the farm holdings are below 2 hectares, and a large portion of rural people subsist as small holders. Income from these farms cannot be raised up to the desired level to sufficiently alleviate poverty in the countryside unless existing crop production systems are diversified through inclusion of high value horticultural and arable crops (NBS, 2006).

Furthermore, increased dependence on one or two major cereal crops (wheat, rice, etc.) witnessed after the green revolution makes the farming economy vulnerable to price fluctuation arising due to demand-supply or export-import equation especially after the markets interactions. Crop diversification on the other hand, can better tolerate the ups and downs in the market value of farm products and may ensure economic stability for farming families of the country. The adverse effects of aberrant weather, such as erratic and scanty rainfall and drought are very common in a vast area in agricultural production of the country. Incidence of flood in one part of the country and drought in the other part is a very frequent phenomenon between the northern and southern polar regions of Nigeria. Under these aberrant weather situations, dependence on one or two major cereals (rice, wheat, etc) is always risky. Hence, crop diversification through substitution of one crop or mixed cropping or inter-cropping may be a useful tool to mitigate problems associated with aberrant weather to some extent, especially in the arid and semi-arid drought-prone-dry land areas (Carol, 2005).

1. **Immediate need**

Crop diversification in agriculture in Nigeria is taking place both vertically and horizontally, mostly due to market forces and occasionally due to domestic financial considerations.

Where there are concerns regarding land and water use and quality, there is immediate need to consider:

1. There is a need to generate place-based approaches for diverse farming situation under various socio-economic conditions, domestic needs, market infrastructure, input supply, etc. The research on crop diversification is best done in a farmer- participatory mode in which a multi-disciplinary team of scientists involves farmers from project planning through arriving at conclusions.
2. A concept of sustainable productivity for each unit of land and water through crop diversification needs to be fostered.
3. There is need for promoting co-operatives in rural areas to solve micro-level and location specific problems.
4. Major thrust should be given on horticulture (vegetables, fruits, flowers, spices, etc. and animal husbandry (dairying, poultry , goatery, piggery, duckery, rabbitory etc.) to support a vigorous and expanding export market, balanced with supplying local markets with affordable, healthy food.
5. Strengthening food processing and other value-added industries in rural area is a means to provide employment to rural youth.
6. There is need to develop rural infrastructure such as roads, markets, medical and educational facilities in the villages with efficient utilization of local resources for farming community in a more pragmatic way.
7. Crop diversification provides efficient use of farm inputs and contributes to a strong rural economy.
8. Alternate cropping systems and farm enterprise diversification are most important for generating higher income, employment and protecting the environment.
9. There are numerous opportunities to adopt subsidiary occupations to the rice-wheat cropping systems. These include vegetable farming, fruits cultivation, floriculture, medicinal and aromatic plants cultivation, mushroom farming, dairying, piggery., goatery, poultry and duckery, fishery or aquaculture, bee-keeping, agroforestry, bio-diesel farming, palm, etc. to provide ample scope for diversification of rice-wheat cropping system in some southern and northern states of the country.

**2.1.6 Economic Diversification and increased Revenue Sources**

It is very imperative to look outside the box of oil as the major source of revenue and return the economy on sustainable agricultural possibilities. Prior to the rebasing exercise, Nigerian economy was believed to be dominated by industry and agriculture which accounted for 46% and 30% respectively while services contributed 24% to nominal GDP in the old series.

However, the result of the rebasing exercise indicated a significant change in the share of services in nominal GDP an indication of stronger diversification and services-oriented. Post rebasing, in nominal terms increased the share of services to 50% while agriculture and industry declined to 24% and 26% as at 2010 and at the end of last quarter in 2014 the share of service sector to GDP stood at 55% industry 26% and agriculture declined to 20% (Zenith Economic Quarterly, 2016). This presents the most competitive and strategic option for Nigeria in the light of her development challenges and given her background.

Diversification has a lot of benefits for Nigeria to maximally utilize her abundant resource-base to rebuild the economy and enjoy the benefits of all the linkages, synergy, economies of scale, grow national technology and foreign investment profile, build human capital, exploit new opportunities, lessen averagely operational costs, increase national competitiveness and grow the standard of living and confidence of the citizens for national renaissance. Diversification does not occur in a vacuum, however, as income per capita rises agriculture loses its preeminence, giving way first to the industrial sector and then to the service sector. A number of key drivers have already been identified. These, for example, include investment, trade and industrial policies; a dynamic growth performance; macroeconomic stability; a competitive exchange rate and expansionary but responsible fiscal policy as well as institutional variables such as good governance and absence of conflict and corruption (Nigeria Economic Outlook, 2014). Nigeria is a middle income, mixed economy and emerging market, with expanding financial service, communications technology and entertainment sectors. Nigeria was ranked 26th in the world in 2014 in terms of GDP (nominal: 30th in 2013 before rebasing, 40th in 2005, 52nd in 2000), and was the largest economy in Africa (based on rebased figures announced in April 2014). It was also on track to become one of the 20 largest economies in the world by 2020. Its re-emergent, though currently underperforming, manufacturing sector was the third-largest on the continent, and produces a large proportion of goods and services for the West African Region as at the last quarter of 2014.

Nigeria recently changed its economic analysis to account for rapidly growing contributors to its GDP, such as telecommunications, banking, and its film industry. As a result of this statistical revision, Nigeria has added 89% to its GDP, making it the largest African economy. Nigeria rebased its GDP from 1990 to 2010, resulting in an 89% increase in the estimated size of the economy. As a result, the country now boosts of having the largest economy in Africa with an estimated nominal GDP of USD 510 billion, surpassing South Africa’s USD 352 billion. The exercise implies a more diversified economy than previously thought. Nigeria has maintained its impressive growth over the past decade with a record estimated 7.4% growth of real gross domestic product (GDP) in 2013, up from 6.7% in 2012. This growth rate is higher than the West African sub regional level and far higher than the sub-Saharan Africa level (African Economic Outlook (AEO), 2014).

**2.1.7 Agriculture and Meteorological Statistics**

Meteorological data are useful in planning farm schedules such as seed and seedling planting, fertilizer application, irrigation, crop monitoring (especially against pest infestation) as well as harvesting and storage of farm produce. They are also useful in livestock keeping and frost protection.

1. **Forestry:** Meteorological data are also important in the forestry sector for the timing of tree planting and watering (particularly in the arid and semi-arid areas), in the prevention of loss of valuable timber species and wildlife, arising from fire-hazards and severe drought through early warming system.
2. **Fishery:** In Fishery, meteorological data are useful as a guide in the establishment of fish ponds where rain is the main source of water. They are also significant in fishing on large bodies of water, particularly oceans and seas. Meteorological data provide early warnings on fogs and wind characteristics which are critical in the choice of fishing sites and timing.

**2.1.8 Significance of Diversifying the Nigerian Economy**

**a. Diversification ensures economic stability.**

The first importance of diversifying the economy is evident in the current state of the nation’s economy as the Naira continues a free fall to US dollar just because oil prices are falling.

Falling crude oil prices means that the nation generates a lower income from oil sales; hence, technically we need to reduce our expenses or borrow money in order to stay financially afloat as nation or we diversify the economy away from oil dependent.

**b. Diversification aids infrastructural development**

Another importance of diversification is that it would aid infrastructural development in different areas of the country and across different sectors of the economy. For instance, agricultural and industrial sectors will receive a new lease of life as the government remains committed to developing on agricultural hub through value chains that can meet the local demand and still have surplus for exports.

1. **Diversification Generates Employment Opportunities**

Another importance of diversification is that it would aid the country in generating

employment opportunities by direct and indirect job creation. For one, all the agricultural products that are not locally consumed are exported. The agro-allied industries will also generate meaningful employment opportunities.

1. **Diversification Cushions Fluctuation Effect**

Finally, the diversification of the revenue base will bring about leverage in the fluctuation of revenue generated from one source to be buffered by excess revenue from another sector thereby ensuring a neutral effect by offspring a deficit in one sector by surplus in another sector thereby cushioning the negative effect of such fluctuation brought about by economic uncertainties. This bridges the gap between import-export, demand-supply and income-expenditure disequilibrium.

**2.1.9 Agriculture Through Research and Development**

In developed and developing countries alike, Governments are actively involved in the promotion of science and technology, through investment in research and development (R & D). Historically, scientific research and development in Nigeria operated like any other department of a ministry. The exception was that the research departments were all headed by scientists and engineers when they were established in the 1940s. In the 1960s, there were 14 of such research departments within the Ministry of Agriculture and Water Resource alone. The Ministry of Trade and Industries had two of such research departments.While all others had only one each. They all worked independent of one another without a significant communication among them. Some of the early scientific research departments were the then West African Institute for Oil Palm Research [WAIFOR], now Nigerian Institute for oil Palm Research [NIFOR]. The first effort towards coordinating scientific research in Nigeria was in 1970 with the establishment of the Nigeria Council for Science and Technology [NCST]. It was charged with responsibility of ordering national priorities in scientific research and coordinating and supervising both and applied research activities in the country. Two other subsidiary Councils viz the Agricultural Research Council and the Industrial Research Council were established in 1971. Throughout the six years of the existence of the NCST there were various complaints concerning its relevance to the economic development of Nigeria. Consequently, virtually all the research departments in the various ministries were made autonomous research institutes.

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



**2.2. Theoretical Review**

For the purpose of this research work, the following theories were found relevant to this empirical study.

**2.2.1 Resource Dependency Theory**

Hillman, A.J., Cannella, A.A and Paetzold, R.L (2000) viewed organization as an open system which relies on the eventualities in the outside environment. The theory acknowledges the impact of external environmental issues on organizational performance therefore managers can act in a manner that will curtail the effects of environmental uncertainties. In relation to board of directors, proponents of resource dependency theory acknowledge the popularity of agency theory but argued that resource dependency theory was more successful in understanding the boards.

The theory is mainly concerned with board size and composition which are considered as the basis for evaluating board performance in terms of providing essential resources required by the organization. The theory concluded that board size and composition are not random or independent factors but are rather rational organizational responses to the condition of external environment. The theory finally submitted that ‘resource-rich’ directors should be the focus of board composition not just the number but the type of directors on the board that matters. The theory suggested that directors bring four benefits to the organizations.

* Information in the form of advice and counsel
* Access to channels of information between the firm and environmental contingency
* Preferential access to resource
* Legitimacy

**2.2.2 Positive Accounting Theory**

This holds that all is well or going to be well as long as normalcy is followed in an organization. This upholds the fact that as standards, regulations and ethical professional conduct are strictly complied with the organization continues to flourish into a foreseeable future thereby underpinning the concept of “Going Concern”.

**2.2.3 Modigliani and Miller (MM) Theory**

This holds that the capital structure of an organization will not influence the level of a company cost of capital. The theory provides a justification for the revenue generation, income approach and net operating profit. They based their theory on the arbitrage or portfolio diversification which allows investors to switch their investment from a geared company to an un-geared company vice-versa to take advantages of price differential and financial gains.

**Propositions of MM Theory**

1. As gearing increases, cost of equity increases in a manner that is derivable from the arbitrage process. This means that there will be movement of investors from this geared company to other un-geared company.
2. The increase in the cost of equity will exactly offset the advantages of using the cheaper debt capital as a result of this arbitrage process.

The arbitrage process results in an equilibrium level of pricing of company’s shares or market value of companies. Hence, the weighted average cost of capital will remain constant irrespective of the level of gearing.This holds that the cost of a company’s capital is dependent on the level of gearing and that there is an optimal level of gearing at which point the average cost of capital is lowest. That is, as gearing increases, the cost of equity capital will not initially show a significant increase since there will be enough profit to pay debenture interest and still pay an acceptable level of dividends. However, as additional debts are introduced, the gearing and marginal cost of capital increase. This cost of equity will show an upward trend after the attainment of “Optimum Gearing Level” At this point, equity holder will require extra returns from investment to compensate them for their perceived increase in risk.

**Key areas of concern to stakeholders**

1. Will there be sufficient returns to pay dividend after the deduction of debenture interest?
2. Can debenture holders interfere in the management of the company in the event of non-payment of principal, interest, or disposal of a charged asset?
3. Will interest of existing and new debenture holders increase due to increase in gearing, however, as substantial level of gearing is introduced, the weighted average cost of capital will show a downward trend up to Optimum Gearing Level. This is as a result of cheaper sources of finance (debt capital) at this point there is disequilibrium between weighted average cost of capital and the marginal cost of capital

**2.2.4 Stakeholders Theory**

Asher, C.C., Mahoney, J.M and Mahoney, J.T (2000) viewed organization as a system of relationship between shareholders and management. The theory views organization as a system that accommodates not only the owners but also the interest of other groups within the environment where the organization operates. These interests include creditors, investors, employees, customers, suppliers and other interest of the external environment.

The theory argued that since organizations cannot operate and exist in isolation without relating to its immediate environment then the interest of other stakeholders such as customers, employees, suppliers and other community members need to be considered. The theory further submitted that the organization should not only maximize the returns of its shareholders (owners) alone but should also factor in the expectation of the stakeholders. That for a firm to achieve an effective performance in the market , cordial relation must exist between the firm and its stakeholders and the firm board should be large and well diversified enough to accommodate the various interests of other stakeholders.

**2.2.5 Malthusian Theory of Population**

This was the postulation put forward by Thomas Robert Malthus as the first economist to propose a systemic theory of population. He articulated his views regarding population in his famous book, Essay on the Principle of Population (1798) for which empirical data was collected to support his thesis. In 1803, he reviewed his first edition but essentially his original thesis did not change. Malthus proposed that human populations grow exponentially doubling with each cycle while food production grows at an arithmetic rate, that is, by repeated addition of uniform increment in each uniform interval of time. Thus, while agricultural production was likely to increase in a series of twenty-five year intervals in the arithmetic progression1, 2, 3, 4, 5, 6, 7, 8, 9 and so on and population was capable of increasing in the geometric progression 1, 2, 4, 8, 16, 32, 64, 128, 256, and so forth.

This scenario of arithmetic food growth with simultaneous geometric human population growth predicted a future when humans would have no resources to survive on if not checked through agricultural enhancement and population control. To avoid such catastrophe, Malthus urged controls on population growth as the major determinant of the per capita income which indicates the people living standard. On the basis of a hypothetical world population of one billion in the early nineteenth century and an adequate means of subsistence at that time, Malthus suggested that there was a potential for a population increase to 256 billion within 200 years whereas the means of subsistence were only capable of being increased enough for nine billion to be fed at the level prevailing at the beginning of the period. He therefore considered that the population increase should be kept down to the level at which it could be supported by the operation of various checks on population growth, which he categorized as ‘preventive and positive checks.

His assertion was based on the fact thatthe global agricultural production over time will not be able to match in response to the world population explosion thereby leading to food crisis. Today, most countries of the world depend on importation of food from other nations of the world to feed their outburst population in reality to the Malthusian theory. This is resident upon the absolute comparative advantage principle which states that a country should concentrate in the production for which it has cost advantage relative to another country which has cost disadvantage. Thus a country should jettison the production of goods that result into cost disadvantage and import from a country which has cost advantage underpinning the concept of make or buy decision in management accounting.

Thomas Robert Malthus, with whose name the famous Malthusian Theory of Population is associated, showed more appreciation than most of his contemporaries of the importance of distinct and systematic theory of growth’ His ideas about economic growth and development are found in Book II entitled “The Progress of Wealth” of his Principles of Political Economy in 1820. In his model, he never regarded the concept of development as automatic but rather a process that required consistent efforts on the part of the people. He did not conceive of any movement towards the stationary state but emphasized that the economy reached the slump many times before attaining the optimum level of economic growth and development. Thus for him, the process of development was one of ups and downs of economic activity rather than smooth. He was particularly concerned about the” Progress of wealth” of a country (Jhingan, 2012).

**Malthus Measures towards Boosting the Revenue Base for Economic Growth**

* **Balanced Growth**. Part of his measures towards economic growth and development was to divide the economy into agricultural and industrial sectors. However, he asserted that only technological progress in these two sectors that can lead to economic development. In that, capital is invested in agriculture until all the arable land is brought under cultivation, stocked and improved. He advocated a balanced growth of both agricultural and industrial sectors to achieve a meaningful economic growth and development.
* **Raising Effective Demand.** Malthus suggested the expansion of internal and external trade as a panacea to the problem of ineffective demand. These two trades increase wants, tastes and the desire to consume which are absolutely necessary to keep up the market prices of commodities and prevent the fall of profits through value of products mix. He also posited that under-consumption of goods leads to glut and stagnation in the country. Therefore, production can be raised by increasing consumption and removing unemployment thereby increasing effective demand. For instance, employment will remedy the evils arising from that disturbance in the balance of production and consumption. It is under-consumption or deficiency in effective demand leading to gluts which is the main cause of under-development. For sustainable growth and development, the country should maximize production in the agricultural and industrial sectors of the economy
* **Population and Economic Growth**. According to Malthus in his analysis of population explosion in the context of economic growth and development, that population growth by itself is not sufficient to bring about economic growth or development. Rather, it is the development process, in that, an increase in population cannot take place without proportionate increase in national wealth. This implies that as the rate of capital accumulation increases, the demand for labour also increases which invariably induces population growth. However, mere population growth does not increase wealth. Population growth increases wealth only if it increases effective demand which eventually leads to increase in wealth.
* **Production and Distribution**. Malthus regarded production and distribution as the two grand elements of wealth. If these two elements are combined in the right proportions, they can increase the national wealth which is a key component of the economic growth in a short time. However, if they are taken separately or combined in undue proportions they may take many thousand years to increase wealth. He suggested maximum production and optimum allocation of resources for increasing the wealth of a country during the short run (Jhingan, 2012).

Food increases in arithmetical progression 1, 2, 3, 4, 5, 6, 7, 8, 9, in 200 years

Population increases in geometrical progression 1, 2, 4, 8, 16, 32, 64, 128, 256 in 200 years

Imbalance leads to over population and food crises

Corrected by

Corrected by

Preventive checks- late marriage, chastity, moral restraint etc.

Positive checks- vice, misery, war, famine, floods, etc.

**Fig.2.1 Malthusian Theory of Population**

**Source: Jhingan(2012).**

**Criticism against Malthusian Theory of Population**

-**Malthus had a narrow vision**. He related the growth in population to food supply whereas Prof. Cannan, one of the proponents of the optimum population theory had a much wider outlook by relating the problem of population to the total production of the country both industrial and agricultural.

-**Malthusian theory neglects the economic conditions** of the country under review studies the population problem within the context of the economic condition of such country

**-Malthusian theory is a static concept which applies to a period of time**. The optimum theory is a dynamic one because over a period of time the per capita income may rise with the expansion in output due to improvements in knowledge, skill, capital equipment and other elements in production. This may raise the optimum level of population.

- **The Malthusian theory of population is based on the unrealistic assumption of the niggardliness of nature**. This belief arises from the operation of the law of diminishing returns in agriculture. But the optimum theory takes a realistic view when according to this. The law of diminishing returns does not operate in agriculture immediately but after the optimum point is reached. In other words, first the law of increasing returns operates up to the optimum point and the law of diminishing returns sets in after it.

- **Malthus was so much obsessed by the fear of over- population**. That he ignored some fundamental facts that a newly born child comes not only with a mouth and stomach but also with a pair of hands. The optimum population theory allays all such fears of the Malthusians by stressing the fact that increasing population increases the labour force which helps raise the optimum expansion of the country’s natural resources. So long as the actual population is less than the optimum, the increase in population is safe and good. It is only when the actual population exceeds the optimum that the increase in population needs control. Thus, unlike the Malthusian theory of population which necessitates the use of preventive checks all the time for fear of the country being over populated, the optimum theory is free from all such taboos and is silent about any type of checks to control population.

- **Malthus was essentially a pessimist** who portrayed a gloomy picture about the future of mankind which was full of misery, vices, floods, droughts, famines and other natural calamities. The optimum theory is therefore superior to the Malthusian theory because it does not suffer from any pessimism rather it adopts optimize and realistic attitude towards the problem of population when it relates population to the wealth of the country.

**2.2.6 The Optimum Theory of Population**

The optimum theory of population was propounded by Edwin Cannan in his book ‘Wealth’ published in 1924 and popularized by Robbins, Dalton and Carr-Sounders. Unlike the Malthusian theory, the optimum theory does not establish relationship between population growth and food supply (agriculture). Rather, it main concern is the reduction between the size of population and the production of wealth. While the Malthusian theory delved extensively into the problem of population of a country within the context of agricultural economics. Thus, the optimum theory of population gives a more realistic perspective than the Malthusian proposition.

What is optimum population? The optimum population is the ideal population which combined with the other available resources or means of production of the country which yields the maximum returns or income per head. Optimum population according to Robbins is defined as that population which just makes the maximum returns possible that he called the optimum population or the best possible population. Optimum population according to Carr-Saunders is defined as that population which produces maximum economic welfare. Optimum population according to Dalton is defined as that population which gives the maximum income per head. However, looking at these various schools of thought as regards optimum population, Dalton’s view is more scientific and realistic to adopt.

**2.2.7 Professor Dalton’s Perspective of Optimum Population Theory**

The optimum population is that ideal size of population which provides the maximum income per head. Any rise or diminution in the size of the population above or below the optimum level will diminish income per head. Given the stock of natural resources, the technique of production and stock of capital in a country, there is a definite size of population corresponding to the highest per capita income. Other things being equal, any deviation from this optimum-sized population will lead to a reduction in the per capita income. If the increase in population is followed by an increase in per capita income, the country is under-populated and can afford to increase its population till it reaches the optimum level.

On the contrary, if the increase in population leads to diminution in per capital income, the country is over-populated and needs a decline in population till the per capita income is maximized. However, the optimum level is not a fixed point but changes with a change in any of the factors assumed to be given for instance, if there are improvements in the methods and techniques of production, the output per head will rise and the optimum point will shift upward. What makes the optimum point for the country today may not be the same tomorrow if the stock of natural resources increases and the optimum point will be higher than before. Thus, the optimum level is not a static level but one that keeps changing

Professor Dalton deduced over-population and under-population which result from the deviation from the optimum level of population in the form of a formula. The deviation from the optimum level of population he calls maladjustment. Maladjustment (M) is a function of two variables- the optimum level of population (O) and the actual level of population (A)

The maladjustment (M) = A – O

O

When M is positive, the country is over-populated and when M is negative, the country is under-populated. When M is zero, the country possesses optimum population.

- **Under Population**. If the actual population in a country is less than the optimum or ideal population, there will not be enough people to exploit all the resources of the country fully. Thus, the population and the per capita income will be lower. In other words, if the per capita income is low due to too few people, then the population is said to be under-population.

**- Over Population.** If the actual population is above the level of optimum population, there will be too many people to work efficiently and produce the maximum goods and the highest per capita income. As a result, the per capita income becomes poorer than before. This is the stage of over population. In other words, if the per capita income is low due to too many people, the population under these circumstances would be over population.

**Two Basic Assumptions of Optimum Population**

**-** The proportion of working population to total population remains constant as the population of the country increases

-As the population of a country increases, the natural resources, the capital stock and state of technology remain unchanged.

**2.2.7.1 Professor Cannan Perspective of Optimum Population**

At any given time, increase of labour up to a certain point is influenced by increasing proportionate five returns and beyond that point further increase of labour is attained by diminishing proportionate returns. The per capita income is the highest at the point where the average product of labour starts falling. This point of maximum returns is the point of optimum population.

**2.2.7.2Criticisms against Optimum Population Theory**

It is extremely difficult to know the optimum population of a country at any time. Many factors like technical knowledge, stock of capital, per capita income and natural resources etc. have to be taken into account for this purpose. Also, the theory neglects biological and sociological factors which in the actual sense determine the size of the population. The theory also suffers some drawback in only considering the economic factors in determining the optimum population which makes it one-sided whereas other influencing factors such as political, social and non-economic factors are relegated to the background. Lastly, the theory operates under a static economic scenario whereas in the real sense of the knowledge and technological driven economy, dynamism is the order of the day.

**Evidence of Optimum Level:** The optimum level of population is vogue due to their changing nature for instance the population distribution based on age composition which subdivides population into working population, dependent population or aging population. However, it is difficult to ascertain optimum population since no country can evidently measure it.

**Correct Measurement of Per Capita income Not Possible**: More often than not, the data on per capita income are often inaccurate, misleading and unreliable which make the concept of optimum as one of doubtful validity. For instance in Nigeria only estimated figure of population is used since per capita income is a function of population.

**Neglect of the Distributional aspect of the Per Capita Income**. Even if it is assumed that the per capita income can be measured, it is not certain that the increase in population accompanied by the increase in per capita income would bring prosperity to the country. Rather, the increase in per capita income and population might even prove harmful to the economy if the increase in per capita income has been the result of concentration of income in the hands of a few rich as we have here in Nigeria during the oil boom. Thus the optimum theory of population neglects the distributional aspect of increase in the per capita income

**Optimum Level not fixed but Oscillating**. The concept of the optimum population assumes that technique of production, the stock of capital and natural resources, the habits and tastes of the people, the ratio of working population to total population and the modes of business organization are constant. But all these factors are constantly changing as a result, what may be the optimum at a point of time might become less or more than the optimum over a period of time.

**No place in State Policies.** The concept of optimum population has no place in the policies of modern states. While fiscal policy aims at increasing or stabilizing the level of employment, output and income in a country, no reference is made to the optimum level of population.

**2.2.7.3 Justification of the Optimum Population Theory**

Notwithstanding the above criticisms against the optimum population theory, is surely said to be an improvement over Malthusian Theory. It is valuable because it enables us to overcome the bogey of Malthusianism and give us a test of progress (in per capita income)

**2.3 Empirical Review**

The dwindling nature of revenue from the economic sectors in Nigerian calls for broader consideration of revenue sources from agricultural sector in conjunction with global food crisis and the need for Nigeria to diversify its export base especially in the area of agriculture remain a great concern for all.

Oji- Okoro (2011) viewed the contribution of agricultural sector on the Nigerian economic development and revealed that foreign direct investment in agriculture contributed the most which means for every unit of change in FDI on agriculture there is a corresponding change in GDP in Nigeria. In similar vein, Suleiman and Aminu (2010) conducted research on the contribution of agriculture, petroleum and manufacturing sectors of the Nigerian economy and found out that agricultural sector was contributing higher than both petroleum and manufacturing sectors.

This research revealed that cumulatively, agricultural sector has contributed immensely to the GDP far better than other sectors even despite the neglect of this sector in favour of oil and gas sectors. Awe and Ajayi (2009) conducted research on the diversification of the Nigerian revenue base for economic development and reported that the correlation coefficient (R) for agricultural revenue was significant when the log of revenue from agriculture was tested on the revenue from agriculture. The findings from the study further revealed that dynamic relationship exists between the revenue from the non-oil sector of the economy.

Nigeria as a whole is well endowed with both natural and physical resources. Nigeria is well drained, with a reasonably close network of rivers and streams. Although some of these rivers especially the smaller ones are mostly seasonal particularly those in the northern parts of the country where the rainy season is only three or four months in duration. In addition, there are natural water bodies like lakes, ponds, and lagoons mostly around the coastal regions. Ayanwale, Adekunle, Nwagbo, Alimi and Adeoti (2006) examined that the problems of water resources management in Nigeria arise from inadequate planning and management of the water resources and poor distribution of water in time and space in relation to man’s needs. Ekpo and Umoh (2012) revealed that the contribution of agriculture to GDP which was 63 per cent in 1960, declined to 34 per cent in 1988 shortly after the Structural Adjustment Programme (SAP), not because the industrial sector increased its share but due to neglect of agricultural sector. It was therefore not surprising that by 1975, the economy had become a net importer of basic food items. The apparent increase in industry and manufacturing from 1978 to 1988 was due to activities in the mining sub-sector, especially petroleum. (Muhammad and Atte, 2006) conducted study on production of agriculture in Nigeria and revealed that the negative coefficient of the value of the food imports indicates that as food importation increases, domestic agricultural production decreases. This might be due to the fact that food importation exposes the local farmers to unfair competition by foreign producers who usually take advantage of economies of scale in production due to their access to better production technology. Despite various research efforts by some contemporary scholars on this research topic, no much attention was given to certain critical factor a failure of some of which are enumerated below

**The current Fulani herdsmen** which have become terrors on the Nigerian food crop farmers as a result of grassing their cattle. This was not captured in some of their works.

**The climate change** is another critical factor which may hamper the agricultural productivity. This was not factored in by previous works

**Disease and pests:** This is another disturbing menace to the agricultural productivity. It is capable of rendering the agricultural output not marketable thereby resulting into losses

**Marketing Board:** This was not also critically examined in some of the previous work.

**Storage Facilities:** This is one of the greatest problems of agriculture in Nigeria and other developing nations. This was not looked into in some of the literature reviews

**Vast uncultivable land**: It was identified that up till now about 50 per cent of Nigerian land are still uncultivable. However, no efforts were taken to prosecute the menace of rural – urban drift as a result of absence of social and infrastructural amenities in the farm to ensure that young school leavers see agriculture as an alternative to white choler job which is not available any longer.

**All Year Round Farming**: If agriculture will indeed take the lead of all other sectors all –year round farming should be embarked upon by Nigerian farmers through irrigation system. This too was not considered by some of the literatures examined.

**Government Policy Inconsistency**- This also was not hammered in most of the literatures whereas it affects agriculture in no small measure. These include budgetary allocation, intervention fund to agriculture, technological advancement, subsidies in agricultural inputs such as pesticides, fertilizer, improved seeds, hybrid live stocks, manpower, foreign direct investment, international grant and subventions among others.

Following some of the gaps identified in some of the previous research works and the omission of various variables which may impede the performance of the agricultural diversification towards achieving sustainable growth and economic development, effort should therefore be intensified toward ameliorating the impediment to transformational diversification. To achieve this onerous objective, all hands must be put on deck towards achieving a value-chain in agriculture in a bid to facilitate enhanced agricultural performance. This research work has actually delved into some of those areas previously ignored in order to accelerate a sincere paradigm shift towards sustainable growth and economic development brought about by diversification of Nigerian revenue base for sustainable growth and economic development through “Agriculture”.

**2.4 Conceptual Framework**

The United States for instance, was originally a nation of farming, the major sector Nigeria seems to want to diversify to. This is contingent upon the fact that agriculture remains the key economic sector and upon which other sectors depend. For instance, what will manufacturing sector use as input if raw materials are not provided by agriculture. Also, the manufacturing industries will produce industrial goods as finished products upon which various taxes will be levied by government whether locally or foreign trade. This is termed value-chain with its concomitant multiplier effect on the revenue diversification through agriculture on all other sectors of the economy.

The conceptual framework upon which this research is based is enhanced revenue from agricultural output. The term ‘enhanced revenue from agricultural output’ is predicated upon a renewed agricultural policy in line with the emerging trends such as value-chain, climate change, sustainable growth, all-year round farming, mechanized agricultural system, research and development, pests and disease control, renewed extension services, rural development, farm settlement scheme, prohibition of bush burning, good crop rotation, irrigation system, export promotion, import substitute, good international relation through bilateral and multilateral trade agreement. There is need to promote expanded production in both the agriculture and industrial sectors to increase the diversities of revenue generation from agriculture. A higher level of agricultural produce will help to achieve the diversification of Nigerian revenue base away from over-dependence on the oil and gas sector which has been over-flogged by the crash in the price of crude oil in the global market by alternatively taking advantage of the existing international relation through market diversification of exported goods. Also important is the image restoring measures to counteract the battered Nigerian image abroad and it resultant effect on the global markets.

Agriculture and Employment, World Bank Report (1970) puts it that the agricultural sector employed 71% of the total labour force in Nigeria in 1960. By 1977, this had dropped to 56%. It increased to 68% in 1980, before falling to 55% in 1985, 53% in 1986, 55% in 1987 and 1988, and 57% annually from 1989 to 1992. This downward trend has continued into the 2000s. The fall in the labour force has been due to structural changes in the economy where other sectors are assuming different dimensions and engaging more labour than they previously did. It is necessary to point out that given the importance of labour in agriculture of most African countries including Nigeria, and the poor labour absorptive capacity of their industrial sector, rapid outflow of labour from the agricultural sector has generated not only social but economic problems as well. A partial consequence of high labour outflow especially the youth labour force, which (Adegoke, 2010) referred to as “the life-wire of agriculture” has led to a decline of agricultural production and lessened the level revenue generation in Nigeria in recent years. Enhancement of agriculture labour productivity should therefore be a goal for the country in order to achieve a sincere and robust economic growth and development. Agriculture and Gross Domestic Product (GDP) shows the contributions of agriculture to GDP of Nigeria between 1970 and 2014. One of the dogmas of economic development states “that there is a secular decline of agriculture’s share in the GDP in the course of economic development,” is manifested here.

**Fig.2.2 Nigeria GDP Per Capita PPP**

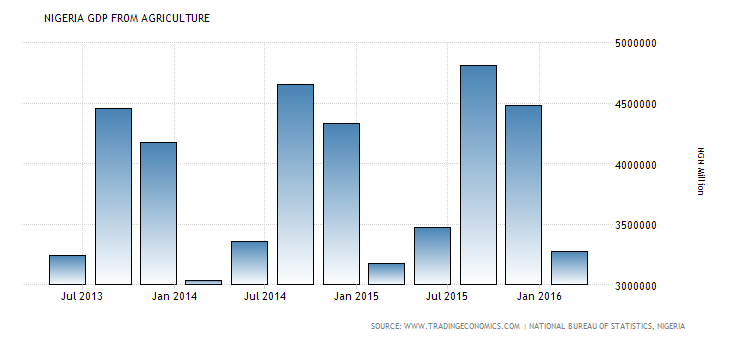
**Source: wwwtradingeconomics.com: World Bank**

**Nigeria GDP from Agriculture**

GDP from agriculture in Nigeria decreased to 3274725.01 NGN million in the first quarter of 2016 from 4481257.62 NGN million in the fourth quarter of 2015. GDP from agriculture in Nigeria averaged 3606633.40 NGN million from 2010 until 2016, reaching an all time high of 4816519.15 NGN million in the third quarter of 2015 and a record low of 2594759.86 NGN million in the first quarter of 2010.

**Reported by: National Bureau of Statistics, Nigeria**

* + Column
  + Line
  + Area
  + Spline
  + Splinearea
  + Candlestick
  + Bars
  + Trend
  + Average(4)
  + Histogram
  + Variance
  + Mean
  + Maximum
  + Minimum



OK

**Fig. 2.3 Nigeria GDP from Agriculture**

**Source: National Bureau of Statistics, Nigeria**

**CHAPTER THREE**

**METHODOLOGY**

This study focused on diversification of sources of revenue and agricultural activities in Nigeria. Quantitative technique was adopted using the time series spanning through 1970 to 2014. Revenue from Agricultural Output, Prices of Agricultural Commodities, Value of Agricultural Cultivable Land and Agricultural Financing data were sourced from various statistical bulletin of Central Bank of Nigeria, Nigeria Bureau of Statistics annual reports and United Nation Food and Agricultural Organization while the Average Total Rainfall data were sourced from the Nigeria Meteorological Agency (NIMET). The data were purely secondary in nature. The revenue from agricultural output was set as the dependent variable while prices of agricultural commodities, average total rainfall, value of agricultural cultivable land and agricultural finance were the explanatory variables.

To clearly achieve the stated objectives, the revenue from agricultural output which is the function of agricultural inputs was analysed and evaluated through the econometric model using Ordinary Least Square Method and the correlation coefficient to estimate the line of best fit and the correlation of the dependent variable that is agricultural output and other independent variables that influence the output towards economic growth of Nigeria.

Thus the link between agricultural development and economic growth has a significant role to play in the transformation and structuring of the economy of Nigeria and other economies where the majority of the labour force is primarily dependent on agriculture. However, the relationship between the dependent variable – Revenue from Agricultural Output and the independent variables- Price of Agricultural Commodities, Average Total Rainfall, Agricultural Cultivable Land and Agricultural Finance as a one-way relationship explained by classical economists in their classical growth theory derived essentially from the technical relations that make the level of output a function of production inputs in tune with Cobb –Douglas production function (Shepherd 1970). It is on this premise that, classical model of Cobb – Douglas function would be adopted as the framework in this study which will reflect better in the methodology.

**3.1 Research Design**

The research design used in carrying out this research was the collaborative survey indices of the National Bureau of Statistics, Central Bank of Nigeria, United Nation Food and Agricultural Organization and the Nigerian Meteorological Agency (NIMET). The sources of data were from secondary sources.

**3.2 Area of Study**

The main area of study of this research was Nigerian agricultural space. The study examined the revenue sources and agricultural activities in Nigeria looking at the influencing variables such as prices of agricultural commodities, average total rainfall, agricultural cultivable land and agricultural finance. The reason for this is premised upon the fact that no meaningful revenue could be generated towards economic growth and development if there is no increase in agricultural activities

**3.3 Sources of Data**

The data used in this research were purely secondary data, mostly time series and aggregated data sourced from previous related literatures, Central Bank of Nigeria (CBN) Annual Statistical Bulletin, International Journals, text books and print media. African Economic Outlook, World Development Indicator (WDI) of the World Bank, United Nation Food and Agricultural Organization Statistics (FAO Stats), Nigerian Bureau of Statistics (NBS) Nigeria Meteorological Agency (NIMET), Zenith Economic Quarterly and Industry Survey for various years were used.

**3.4 Validity of the Data**

The sources of the data were well clarified and the influence of the disturbance variable is tolerably controlled, observed and precaution taken to guide their effect on the result of the study. For instance, the effect of disease, pests and rodents, post-harvest wastages, weed and Fulani herdsmen on the farm will definitely reduce the farm yield thereby termed as likely disturbance error that can adversely reduce the revenue from agricultural output. The validity of data is very important in achieving an unbiased result which is contingent upon the following factors; testing, maturation, history, instrumentation, biasness in selection, agreement with the known fact, generalization, statistical regression, experimental mortality, experimental biasness and interaction of selection and maturation.

**3.5 Measurement of Variable**

**Revenue from Agricultural Output:** This is the dependent variable to be investigated using the influencing variables. The Revenue from Agricultural Output is defined as the total income realized from the sales of agricultural commodities such as forestry, livestock and fisheries and they form the aggregate agricultural contribution to GDP. The CBN, FAO and NBS survey data were used.

**Price of Agricultural Commodities:** This is one of the major explanatory variables that determine the Output of Agricultural Commodities. The variable is denoted in naira and determined by the production and consumption net index of the Nigerian Bureau of Statistics and United Nation Food and Agricultural Organisation.

**Average Total Rainfall:** This is another important variable that determines the output of agricultural commodities. It is measured in millimeter (mm). The data was obtained from NIMET.

**Agricultural Cultivable Land:** This is also a major independent variable that determines the output of agricultural commodities. The value of agricultural cultivable land is denominated in naira and was obtained as book value of the agricultural real estate from CBN and NBS report.

**Agricultural Finance:** This is the amount of credit/ loan facilities guaranteed by purpose within the study period by the CBN. It is also an important variable that explains the output of agricultural commodities.

**3.6 Model Specificatio**n

The Model in this study will follow the approach of production analysis and estimate the relationship between Revenue from Agricultural Output (RAQ) on the independent variables. The research work would employ the use of econometric model in estimating the relationship between the variables. The Ordinary Least Square (OLS) technique was employed in obtaining the numerical estimates of the coefficients of the equation. The OLS method is chosen because it possesses some optimal properties; its computational procedure is fairly simple and it is also an essential component of most other estimation techniques. In demonstrating the application of ordinary least square method, the multiple linear regression analysis was used. Justification for the selection of this method was that the data involved a multiple time series data which exhibit a random walk.

This study employed the model of Cobb-Douglas production function with constant returns to scale. Revenue from Agricultural Output (RAQ) is the dependent variable while Price of Agricultural Commodities (PAC), Average Total Rainfall (ATR), Agricultural Cultivable Land (ACL) and Agricultural Finance (AGF) are the explanatory variables

The functional form of the model can then be written thus:

RAQ= F (PAC, ATR, ACL, AGF) + U………………………….. (1)

Put in an econometric form:

RAQ= α + β1PAC +β2ATR + β3ACL + β4AGF + U…………... (2)

Where : α = Intercept

β = coefficient of independent variables (1, 2, 3, 4)   
 RAQ = Revenue from Agricultural Output

PAC = Price of Agricultural Commodities

ATR = Average Total Rainfall

ACL = Agricultural Cultivable Land

AGF = Agricultural Finance

U = Stochastic Error Term

**3.7 Empirical Analysis**

From the Model specified above, we shall extend the empirical work using the Cobb-Douglas production Function as shown in equation (3) below

RAQ= α+ β1PAC + β2ATR + β3ACL + β4AGF + U…………..... (3)

Where RAQ, PAC, ATR, ACL, AGF and μ are as defined above. The advantage of Cobb-Douglas is that it is convenient to estimate because it is linear in parameters.

The data used are taken from the United Nation Food and Agricultural Agency, Nigerian Bureau of Statistics, Central Bank of Nigeria and Nigerian Metrological Agency (NIMET). For Revenue from Agricultural Output (RAQ) we made use of agricultural contribution to GDP as proxy and Price of Agricultural Commodities (PAC) we made use of the weighted average net production index obtained from Nigerian Bureau of Statistics and Central Bank of Nigeria Statistical bulletin. In order to proxy Agricultural Cultivable Land (ACL) input in the production function, we use book value of agricultural real estate which includes arable land and the area used for permanent crops and pastures while value of Agricultural Financing (AGF) and Average Total Rainfall (ATR) are obtained from Central Bank of Nigeria and Nigerian Metrological Agency (NIMET) respectively

These data have been used in previous studies of revenue from agricultural productivity since the establishment of FAO of the United Nation in 1945 with its leading role in agriculture, global food security, rural development and population growth across its member state

**CHAPTER FOUR**

**DATA ANALYSIS, PRESENTATION AND DISCUSSION**

This section dealt with the presentation, interpretation and analysis of the results. Econometric theory requires all variables to be stationary if regressions are to be realistic and non-spurious. Null Hypothesis of non-stationary is consistently rejected for all variables across years when variables are expressed in first differences. We considered the results on a priori criterion before attempting other statistical test results like the test for stationary, co-integration and ordinary least square regression (OLS).With the existence of a unit root in the log spot rates series, we test for the presence of a single unit using the method of Dickey and Fuller which is very robust in econometrics tests.

A time series approach was adopted in order to avoid potentially spurious results emanating from the non-stationarity of the data series and to analyse the short-run dynamic structure of the relationships using a two-step approach. First, the existence of a co-integrating relationship among the variables in the equations is determined by standard co-integration techniques. All these tests and estimations were carried out and interpreted accordingly.

**Unit Root Test Result**

For a guide to an appropriate specification of the regression equation, the characteristic of the time series data used for estimation of the model were examined to avoid spurious regression. We begin by determining the underlying properties of the process that generate our time series variables. That is, whether the variables in our model were stationary or non- stationary. Macroeconomic data often appear to possess stochastic trends that can be removed by differentiating the variables. We therefore employed the Augmented Dickey- Fuller (ADF) to test the order of integration of the variables

**4.1 Data Analysis**

**Table4.1.1: Unit Root Test: Augmented Dickey Fuller**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variables** | **T-Statistic** | **CriticalValue-1%** | **CriticalValue-5%** | **Order of Integration** |
| LnRAQ | -5.7324 | -3.7485 | -2.8699 | I (1) |
| LnPAC | -5.3275 | -3.7485 | -2.8699 | I (1) |
| LnATR | -7.4363 | -3.7485 | -2.8699 | I (1) |
| LnACL | -3.5828 | -3.7485 | -2.8699 | I (1) |
| LnAGF | -4.6576 | -3.7485 | -2.8699 | I (1) |

**Source: Author’s Computation, Using E-views 8**

The result above in Table 4.1.1 shows that Revenue from Agricultural Output (RAQ), Price of Agricultural Commodities (PAC), Average Total Rainfall (ATR), Value of Agricultural Cultivable Land (ACL) and Agricultural Finance (AGF) are all stationary at first difference. That is, the variables are integrated of order one I (1) series. This is deduced from the fact that for the levels of variables, the absolute values of the Augmented Dickey Fuller (ADF) are less than the critical values of the ADF at 5% level of significance.

**Table 4.1.2 : Johansen Co-integration Test Result**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Trace Test: K=2** | **Trace Test: K=2** | **Trace Value** | **Critical Values 1%** | **Critical Values 5%** |
| Ho | Hi |  |  |  |
| r ≤ 0 | r > 0 | 62.85 | 66.06 | 58.42 |
| r ≤ 1 | r.> 1 | 32.74 | 46.35 | 39.15 |
| r ≤ 2 | r > 2 | 14.05 | 29.54 | 23.57 |
| r ≤ 3 | r > 3 | 3.26 | 18.02 | 13.32 |
| r ≤ 4 | r > 4 | 0.51 | 4.54 | 2.55 |
| r ≤ 5 | r > 5 | 0.48 | 4.63 | 1.49 |

**Source: Author’s Computation, Using E-views 8**

Notes: r- represents number of co-integrating equations and k- represents the number of lags in the unrestricted co-integration test which denotes the rejection of the hypothesis at the 5% level of significance.

**Table4.1.3: Johansen Co-integration Test Result**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Maximum | Maximum | Max.Eigen Value Test K=2 | CriticalValues-1% | CriticalValues-5% |
| Ho | Hi | λ max |  |  |
| r =0 | r =1 | 31.13 | 37.20 | 30.36 |
| r = 1 | r = 2 | 26.06 | 32.22 | 27.77 |
| r = 2 | r = 3 | 22.12 | 28.56 | 23.53 |
| r = 3 | r = 4 | 19.14 | 21.44 | 16.46 |
| r = 4 | r = 5 | 13.28 | 14.32 | 11.34 |
| r = 5 | r = 6 | 2.18 | 4.56 | 1.77 |

**Source: Author’s Computation, Using E-views 8**

Notes: r- represents number of co-integrating equation and k- represents the number of lags in the unrestricted co-integration test.

**Johansen’s Co-integration Test Results**

The co-integration analysis helps to test for the existence of long run relationship that exists between the dependent variable and its regressors that is, independent variables. A vector of variables integrated of order one is co-integrated if there exist linear combination of variables which are stationary following the approach of two likelihood ratio test statistics: the trace statistic and the maximal Eigen value were utilized to determine the number of co-integration vectors.

**4.2 Test of Hypotheses**

From the results obtained in Tables 4.1.2 and 4.1.3 using the Johansen procedure, the null hypotheses of zero co-integrating vectors between the examined variables is rejected by both the trace and max-Eigen value statistics. The trace statistic showed zero co-integrating equation at the 1% level of significance and five co-integrating equations at the 5% level of significance. While the maximal-Eigen value test showed zero co-integrating equation at 1% level of significance and two co-integrating equations at the 5% level of significance. The a priori criterion is that the statistical values either at trace or max-Eigen must be less than the values at the critical levels either at 1% or 5% level of significance.

It was therefore, concluded that there is a unique co-integrating relationship between Revenue from Agricultural Output (RAQ) and Agricultural indices at 5% level of significance, confirming that a long run relationship exists between the examined variables. This revealed that the null hypothesis of no co-integrating relationship between the Revenue from Agricultural Output and the Agricultural indices is rejected. However, the result showed that there is a long run relationship between Revenue from Agricultural Output (RAQ) and its explanatory variables- PAC, ATR, ACL and AGF.

**Table 4.1.4: Ordinary Least Square (OLS) Result**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **Coefficient** | **Standard Error** | **T-Statistic** | **Prob. Values** |
| C | -20293.06 | 6512.997 | -3.115779 | 0.0034 |
| PAC | 80.02959 | 109.9935 | 7.275849 | 0.0000 |
| ATR | -16.00974 | 7.017571 | -2.281379 | 0.0279 |
| ACL | 64.12951 | 284.3468 | 0.225533 | 0.0227 |
| AGF | 9.551898 | 1.671596 | 5.714237 | 0.0000 |

**Source: Author’s Computation Using E-views 8**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| R-squared | 0.835981 | Mean dependent var | | 73051.22 |
| Adjusted R-squared | 0.833579 | S.D. dependent var | | 50791.80 |
| S.E. of regression | 8255.946 | Akaike info criterion | | 20.97969 |
| Sum squared resid | 2.73E+09 | Schwarz criterion | | 21.18043 |
| Log likelihood | -467.0431 | Hannan-Quinn criter. | | 21.05453 |
| F-statistic | 406.3382 | Durbin-Watson stat | | 1.106534 |
| Prob(F-statistic) | 0.000000 |  |  |  |

**Table 4.1.5 Summary of the Results Using OLS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | -20293.06 | 6512.997 | -3.115779 | 0.0034 |
| PAC | 80.02959 | 109.9935 | 7.275849 | 0.0000 |
| ATR | -16.00974 | 7.017571 | -2.281379 | 0.0279 |
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| AGF | 9.551898 | 1.671596 | 5.714237 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.835981 | Mean dependent var | | 73051.22 |
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| Sum squared resid | 2.73E+09 | Schwarz criterion | | 21.18043 |
| Log likelihood | -467.0431 | Hannan-Quinn criter. | | 21.05453 |
| F-statistic | 406.3382 | Durbin-Watson stat | | 1.106534 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Source : Author’s Computation Using Stata

**4.3 Presentation and Discussion of Research Findings**

Table 4.1.4 above shows that Price of Agricultural Commodity (PAC), Agricultural Cultivable Land (ACL) and Agricultural Finance (AGF) are positively related to Revenue from Agricultural Output (RAQ) using the coefficient criterion. However, a negative but significant relationship exists between Average Total Rainfall (ATR) and Revenue from Agricultural Output (RAQ). Also, the results indicate that 1% increase in Price of Agricultural Commodities (PAC), Agricultural Cultivable Land (ACL) and Agricultural Finance (AGF) will result in 0.8003, 0.6413 and 0.0955 increase in Revenue from Agricultural Output (QAC) respectively while 1% increase in Average Total Rainfall (ATR) will result in a decline in Revenue from Agricultural Output by 0.1601. The Adjusted R-Squared is 0.8336, meaning that the explanatory variables jointly explain 83% of the variation in Revenue from Agricultural Output (RAQ) while other variables outside the examined independent variables accounted for the remaining 17%. There is no serial auto-correlation given that the Durbin Watson Statistics (1.106534) is within the acceptable bound and greater than the R-squared. The slight variation between the R-squared (0.835981) and Adjusted R-squared (0.833579) = 0.01 was the effect of the disturbance variable, that is the stochastic trend or error term. Hence, the adjusted R-squared is preferred. Also, the probability of F-statistics Prob (F-Statistics) = 0.000000 and P (F: 0.000000 < 0.05) indicates that there is a joint relationship between the critical agricultural indices and the revenue from output of agricultural commodities considering the statistical significance of the value.

The results showed that the coefficient of Price of Agricultural Commodities (PAC) is positive 0.8003 and statistically significant related to Revenue from Agricultural Output (RAQ) considering the probability test (P: 0.0000 < 0.05). The implication of this is that, following the simple Law of supply: the higher the price, the higher the quantity of commodities supplied which will in turn increase the total revenue from turnover. Hence price is one of the most important determinants of profitability which is the excess of revenue over cost. However, this indicates that the price of agricultural commodities is a valid determinant of the quantum of Revenue from Agricultural Output in Nigeria.

The coefficient of average Total Rainfall (ATR) -0.1601 shows that it is negative. However, it is significantly related to Revenue from Agricultural Output (RAQ) (P: 0.0279 less than 0.05). The finding is counter-intuitive, that is, the more the amount of rainfall, the less the agricultural output in Nigeria and this invariably reduces the level of Revenue from Agricultural Output (RAQ). This may be as a result of the fact that aside rainfall there are other artificial sources of water, like irrigation which boost agricultural production in Nigeria and excess water leads to flood which washes away the soil nutrients thereby making the soil to bear and reduces the farm yield.The result shows that Average Total Rainfall is an important variable in determining the volume of agricultural output especially in the short term and medium term than in the longer term and this to a great extent affect the revenue from Agricultural Output (RAQ).

Furthermore, it was also observed that the coefficient of Agricultural Cultivable Land (ACL) 0.6413 is positive and significantly related to revenue from Agricultural Output (QAC) (P: 0.0227 < 0.05). This implies that availability of cultivable land and not just any form of land as rocky land which is part of the earth crust cannot be a good cultivable land for agricultural purposes and will not have value for money as far as agriculture is concerned. This is also a major factor determining the level of Revenue from Agricultural Output (RAQ) in Nigeria. For instance, a farmer who operates in a very large expense of land using a mechanized system of farming will have better returns compared with a peasant backyard farmer with primitive land tenure system.

Agricultural Finance (AGF) is another important variable which significantly influences the Revenue from Agricultural Output (RAQ) positively, from the computation, the coefficient of Agricultural Finance is very low and infinitesimal 0.0955 compared to other variable aside ATR which is negative. The implication of this is that there is shortage of loans, credit and other advances available to the real grass root farmers to expand or improve agricultural production which will in turn impact positively on the level of Revenue from Agricultural Output (RAQ) in Nigeria.

**CHAPTER FIVE**

**SUMMARY, CONCLUSION AND RECOMMENDATIONS**

**5.1 Summary of Findings**

The specific objectives of this research work are to determine the significant effects of agricultural indices on the Revenue from Agricultural Output (RAQ). These agricultural indices include Price of Agricultural Commodities, Average Total Rainfall, Agricultural Cultivable Land and Agricultural Finance.

The secondary data were collected from Central Bank of Nigeria various statistical bulletin, Nigeria Bureau of Statistics, United Nation Food and Agriculture Organisation, Local and International Journals of Finance, Economics and Agriculture, Texts, Newspapers and other related literature of valuable substance.

The data were analysed using an econometric model of Ordinary Least Square Method. Following summary of the results of the Ordinary Least Square Method shown in chapter four, the coefficient and probability of the variable are used to test the individual and joint significant level of the variable against the standard decision criterion of P < 0.05. That is, if the null hypothesis is having a probability value greater than the 0.5 (P >0.05) the null hypothesis should be accepted and if otherwise it should be rejected.

The results in chapter four show that the coefficients of Price of Agricultural Commodities, Average Total Rainfall, Agricultural Cultivable Land and Agricultural Finance are significantly related to Revenue from Agricultural Output (RAQ) going by their individual probability values and joint probability value of F-Statistics (0.000000). The Durbin- Watson Statistical value of (1.106534) which is still within the tolerable bound also amplifies the fact that agricultural indices significantly determine the Revenue from Agricultural Output (RAQ) to a greater extent.

**5.2 Conclusion**

Based on the data collected, analysed and the tested hypotheses it was discovered that the Price of Agricultural Commodities in Nigeria is not also stable at all times due to many influencing factors such as the quality of goods itself, the type of market whether perfect or imperfect, level of risk, artificial constraints such as hoarding, perishability of the commodity, the influence of change in the pump price of petrol (subsidies) and the effect of competitors pricing strategy. Efforts must be made towards addressing these influencing factors in order to achieve steady and enhanced Revenue from Agricultural Output (RAQ) which will impact positively on the economic growth of Nigeria.

Agricultural Cultivable Land (ACL) is greatly required before any agricultural development can be achieved. It is imperatively noteworthy that despite the Land Use Decree of March 29, 1978 that returned all lands in the entire federation to the Government (Federal, States and Local) trust ownership through Certificate of Occupancy (C of O) to abrogate the existing Law that encouraged individual land tenure system and community ownership of land with attendant land fragmentation problem among the farming population this sometime inhibit agricultural production. However, some fertile and Agricultural Cultivable Lands of the government are still lying fallow and even in some places fenced without adding any value in terms of revenue generation towards economic growth of Nigeria. These lands could be allotted to farmers on lease for agricultural purposes which will invariably enhance Revenue from Agricultural Output (RAQ) thereby impact positively on economic growth of Nigeria.

Effects of climate change especially rainfall on agricultural productivity is very disturbing in recent time. This may result from factors like changes in orbital elements such as eccentricity, obliquity of the ecliptic orbit, precession of equinoxes or anthropogenic forces such as high concentration of carbon dioxide and other gaseous effect which result in variations in the ozone layers that affect not only the agricultural sectors but other sectors such as health, energy and water resources (Ozor and Nnaji, 2011).The study indicates a negative coefficient which implies an inverse relationship with the Revenue from Agricultural Output (RAQ) which is a key component of the economic growth. However, in Nigeria, rainfall is very important to the success of agricultural sector. Agricultural sector and other agro-allied industry contribute about 42% of the country Gross Domestic Product (GDP) and about 80% of poor and poverty stricken Nigerians live in rural areas depending solely on rainfall, natural streams and river with attendant poor state of basic infrastructure or even absence of such for agricultural practices. Nigerian economy is therefore predominantly agrarian and the exploitation of natural resources remains the driving force for the country’s economic growth and development. Most of the crops in Nigeria are low-technology based and are therefore heavily susceptible to climatic and environmental factors (NBS 2006).

Agricultural Finance from the study indicates the lowest positive coefficient. It is rather unfortunate that despite the huge resources agricultural sector has brought to the government coffers through various fiscal policies and programmes of the government, yet the sector has remained neglected due to the discovery of oil in commercial quantity in the 1970s without any meaningful reserve to cater for other vital sectors of the economy especially the agricultural sector in case of any future uncertainty. Conversely, during the agricultural boom in the past it was recorded that many giant stride projects were executed using the Revenue from Agricultural Output (RAQ) among which include surplus reserve from cocoa in the Western Nigeria was used in building various infrastructures such as roads, educational institutions, hospitals, cocoa house-high scrapper in Ibadan, media institutions and granted scholarship home and abroad to many indigent Nigerians who are great people in authority today yet the sector is begging for financial attention. Up till today, agricultural sector is still very relevant to the economic growth of Nigeria considering the revenue accruable from this sector. Premised upon this fact, governments at all levels should give their helping hands in supporting the Nigerian farmers with credit and other farm inputs and train the rural dwellers and young school leavers to see agriculture as a good vocation that can compete side by side with others engaging in other economic ventures.

Finally, it is germane to conclude that to achieve robust Revenue from Agricultural Output (RAQ) that will enhance the desired Nigerian economic growth concerted efforts must be intensified towards putting the agricultural indices in a right perspective.

**5.3 Recommendations**

In view of the findings and conclusions aforementioned, the following recommendations will help in putting the agricultural sector of Nigeria in the right perspective toward achieving the much desired Revenue from Agricultural Output (RAQ) from a sustainable agricultural performance that will enhance the economic growth of the nation.

* **Unlimited Access to Market**. Government should open up the agricultural market of Nigeria by restricting the importation of those items which are being grown locally by encouraging import-substitute goods in order to protect local or infant producer and to avoid being a dumping ground for other countries. This will provide enormous opportunities for our agrarian people and in away reduce our dependence on those items that can be produced locally as this was what made China what it is today. This will greatly influence the Price of Agricultural Commodities which will invariably impact on Revenue from Agricultural Output in no small way.
* **Unlimited Access to Credit**. Government should encourage Nigerian farmers especially the peasant ones through micro credit, advances and other financial aids that will ensure enhanced agricultural production. The large-scale farmers can be encouraged as well by allowing credits and granting of interest free loan or loan at single digit interest rate through specialized banks such as Agricultural bank or Bank of industry. Government through its various agencies can facilitate foreign direct investment from African Development Bank, World Bank and International Monetary Fund with the aim of rescuing the threat of global food insecurity which will benefit several Nigerians especially the farmers to boost their productive capacities thereby enhancing the Revenue from Agricultural Output (RAQ)
* **Accessibility to Land Resources.** Land is defined as the free gift of nature. However, in Nigeria like several countries of the world, all the lands including water resources and their territorial boarders of the federation is held in trust and ownership by the governments at all levels in compliance to the Land Use Decree of 1978. This law of the land has reduced the agricultural cultivable land by half thereby affecting the agricultural expansion in terms of the availability of access land for agricultural purposes. Most lands of the government are lying idle-fallow with inscription “Government Resources Keep Off” the opportunity cost of this land have been the foregone agricultural immense opportunities these lands would have accrued not only to the farmers but also to the economic growth of Nigeria. Hence, Government should allow access to its vast agricultural lands and other resources even if on token-lease arrangement to farmers for agricultural production as this will greatly enhance the Revenue from Agricultural Output (RAQ)

- **Provision of Good Infrastructure**. Government at all levels should provide required infrastructure that will enhance agricultural development. These infrastructures include good road network, channelization scheme against flood, good transportation system, electricity, pipe born water, good health care facility, good educational institutions, farm settlement scheme, river basin, bridges, preservation, storage facility and irrigation system to solve the problem of excess or erratic rainfall as a result of climate change and this will impact positively on the Revenue from Agricultural Output (RAQ).

These infrastructures are necessary if our agricultural system is to be reckoned with. For instance the post-harvest losses always recorded from the farm to the market is always on a very high side due to poor road network and poor storage facility which could be saved by the provision of good network of roads. Also, the rural –urban drift by many farmers in search of greener- pasture could be addressed by the farm settlement scheme such as Ilesha farm settlement scheme established in 1959 to encourage the young school leavers to see agriculture as a good vocation. This if revamped will stem the rural–urban drift.

Finally, from a policy perspective, there should be development and implementation of new framework of agricultural techniques that optimize agricultural output through increased and improved agricultural revenue diversities in line with the international best practices.

**5.4 Contribution to Knowledge**

The purpose of this research work is to bridge the knowledge gap which has been the bane of agricultural development in Nigeria. No doubt the country is endowed with 32 out of the 39 major economic resources in the world and agriculture being the bedrock upon which all other economic resources are premised has since been neglected due to the discovery of oil in commercial quantity.

This research will provide a policy guard and enhance the agricultural development towards ascertain a better Revenue from Agricultural Output (RAQ) which will stimulate the much desired economic growth and development in Nigeria.

**5.5 Limitations of the Study**

The major limitation of this research work was that most of the literatures reviewed have some divergent opinion about some statistics probably which is largely due to some Nigerian factors of poor database for research purpose. Also, the use of secondary data is mostly confronted with subjectivity and approximation of some material fact owing to poor data base management. Another major challenge to this research work is the estimation of the actual Revenue from Agricultural Output (RAQ) to the economic growth. For instance the revenue from agricultural activity of a subsistent farmer for his household consumption may be difficult to estimate and factor in to the national data (such as backyard farming consumed by self) and many factors limit the success of this research work. Political and economic factor can also adversely affect accurate data collection. The incessant cabinet shakeup of Nigerian political and economic space with each government having its divergent agenda not minding that of his predecessor in the spirit of continuity in government which account for doctoring national statistic in order to score some political points undermine generation of accurate statistical data for research purposes.

**5.6 Suggestion for further Research**

This research should be a continuous work due to its significance to the survival of any economy. It is the desire of the author to expand this research beyond this level and delve into other areas of agriculture extensively. However, this should be another start-up point for other upcoming researcher who may want to explore beyond this for the development of agricultural sector. This is one good area of interest both nationally and internationally in a combat against paucity of Revenue from Agricultural Output (RAQ) and global food crisis which are very endemic to human survival.

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