

**ANALYSIS OF LIVELIHOOD DIVERSIFICATION STRATEGIES
BY FARMING HOUSEHOLDS IN CHIKUN AND ZANGO KATAF
LOCAL GOVERNMENT AREAS OF KADUNA STATE, NIGERIA.**

By

**Emmanuel Ali SHEYIN
(MSc /AGRIC /41464/2012-13)**

**A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE
STUDIES, AHMADU BELLO UNIVERSITY, ZARIA, IN PARTIAL
FULFIMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF
SCIENCE DEGREE OF AGRICULTURAL ECONOMICS.**

**DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL
SOCIOLOGY
FACULTY OF AGRICULTURE
AHMADU BELLO UNIVERSITY
ZARIA, KADUNA STATE
NIGERIA**

FEBRUARY, 2016

DECLARATION

I hereby declare that this dissertation titled '**Analysis Of Livelihood Diversification Strategies By Farming Households In Chikun And ZangoKataf Local Government Areas Of Kaduna State, Nigeria**' has been written by me and it is a record of my research work. No part of this work has been presented in any previous application for another Degree or Diploma in this or any other institution. All borrowed information have beenduly acknowledged.

Emmanuel Ali SHEYIN
Student

Date

CERTIFICATION

This dissertation titled ‘**Analysis Of Livelihood Diversification Strategies By Farming Households In Chikun And ZangoKataf Local Government Areas Of Kaduna State, Nigeria**’ by Emmanuel Ali SHEYIN meets the regulations governing the award of the Degree of Master of Science in Agricultural Economics of the Ahmadu Bello University Zaria and is approved for its contribution to knowledge and literary presentation.

Dr O. Yusuf
Chairman, Supervisory Committee

Date

Dr O. O Ugbabe
Member, Supervisory Committee

Date

Prof K.Abdulsalam
Head of Department

Date

Prof K. Bala
Dean, School of Postgraduate Studies

Date

DEDICATION

This dissertation is dedicated to Almighty God.

ACKNOWLEDGEMENTS

My deepest gratitude goes to God Almighty for the gift of life, the cherisher and sustainer of the universe, for His mercy, assistance and protection especially for seeing me through this programme successfully. I specially wish to express my deep appreciation and sincere gratitude to my supervisors, namely Dr. O. Yusuf and Dr. O.O Ugbabefor their invaluable assistance, suggestion, constructive criticisms, and pieces of advice that aided the completion of this research work. May God bless you all and your families in abundance. I sincerely express my gratitude to the entire staff and students of the Department of Agricultural Economics and Rural sociology, Faculty of Agriculture, Ahmadu Bello University, and Zaria. I also wish to express my sincere gratitude and appreciation to Mrs. Ali Sheyin, whose parental love, care, encouragement and advice have been source of inspiration all through my life; and my brothers and sisters, for their patience, words of encouragement, prayers and support. Once more thank you and May God bless you. Finally, I can't forget my able & valuable friends (too many to mention) whom have shared with me and contributed in one way or the other in my stay in school and all members of MSc /Agric /2012-13 set. May the Almighty God bless you and keep us together.

TABLE OF CONTENTS

Content	Page
TitlePage	i
Declaration.....	ii
Certification	iii
Dedication.....	iv
Acknowledgements	v
Table of contents	vi
List of Tables	ix
List of Figures	x
List of Appendices	xi
Abstract.....	xii
CHAPTER ONE.....	1
INTRODUCTION.....	1
1.2: Background of the Study.....	1
1.3: Problem Statement.....	4
1.4: Objectives of the Study.....	5
1.5: Justification of the Study.....	6
CHAPTER TWO.....	7
LITERATURE REVIEW.....	7
2.1: The Theory and Concept of Rural Livelihood	7
2.2: Livelihood Diversification Processes	8
2.3: Sustainable Livelihoods Approach (SLA)	9
2.4: Agricultural Production and Off-farm Income Activities in Nigeria.....	11

2.5:	Farm/Non-farm linkages	13
2.6:	The Rural Non-farm Sector (RNFS).....	15
2.7:	Poverty and Livelihoods Diversification.....	17
2.8:	Pathways Out of Rural Poverty	18
2.9:	Determinants of Livelihood Diversification.....	19
2.10:	Empirical Studies of Livelihood Diversification.....	21
2.11:	Review of Analytical Techniques	23
2.11.1:	Measures of Livelihood Diversification.....	23
2.11.2:	Regression Model.....	24
2.11.3:	Measurement of Poverty.....	25
CHAPTER THREE.....		27
METHODOLOGY.....		27
3.1:	The study Area.....	27
3.2:	Sampling Technique and Sample Size.....	28
3.3:	Method of Data Collection.....	29
3.3.1:	Analytical Technique.....	30
3.3.3:	Descriptive statistics and Simpson Index.....	30
3.3.2:	Tobit Regression Model.....	30
3.3.3:	Foster-Greer-Thorbecke (FGT) Poverty Measures.....	31
CHAPTER FOUR.....		34
RESULTS AND DISCUSSION.....		34
4.1:	Nature of Livelihood Diversification.....	34
4.2:	Extent of livelihood Diversification.....	35

4.3:	Socio-Economic and Institutional factors Affecting Sources of Livelihood Diversification.....	36
4.4	Some socioeconomic features of the sampled farming household head.....	39
4.4:	Assessing the level poverty among farming household.....	40
4.5:	Contributions of Livelihood Diversification among Farming Household	41
4.6:	Constraints to Livelihood Diversification among Farming Household.....	42
CHAPTER FIVE.....		44
SUMMARY, CONCLUSION AND RECOMMENDATION.....		44
5.1:	Summary.....	44
5.2:	Conclusion.....	45
5.3:	Recommendation.....	46
5.4:	Contribution to knowledge.....	47
REFERENCES.....		48

Table LIST OF TABLES Page

Table 3.1:	Distribution of respondents in the study area.....	30
Table 4.1:	Distribution of Respondents According to the Nature of Livelihood Diversification.....	36
Table 4.2:	Distribution of Diversification Index among farming Households.....	37
Table 4.3:	Tobit regression results on Socio-economic and institutional variables influencing livelihood diversification.....	39
Table 4.4:	Poverty Indices of respondents	40
Table 4.5:	Contribution of Livelihood Diversification to Poverty Alleviation.....	41
Table 4.6:	Constraints to Livelihood Diversification.....	42

LIST OF FIGURES

Figure	Page
3.1: Map of Kaduna State showing the selected local government.....	29

LIST OF APPENDICES

Appendices	Page
Appendix I: Questionnaire.....	52
Appendix II: Tobit regression result.....	58

ABSTRACT

This study examined livelihood strategies and their contribution to poverty reduction among farming households in Chikun and ZangoKataf Local Government Area of Kaduna State. Data were analyzed using descriptive statistics, Censored Tobit regression Model and the Foster-Greer-Thorbeck's (FGT) measures of poverty. The distribution of respondents by nature of livelihood activities revealed that trade had the majority of respondents with 54% followed by artisanship which had 20.5% and civil service 17%. On the extent of livelihood diversification, majority (71%) of farming household had low level of diversification (depend on one sources of livelihood) with 25% of farming household moderately diversified (depend on two sources of livelihood) and only 4% of the respondent were highly diversified. The study revealed that the major factor which negatively influenced the choice of livelihood strategies was household size and nearness to market while factors such as age, gender, education, income of the farmer and credit received had positive effects on the adoption of the livelihood strategy respectively. Respondents' distribution by poverty status showed that poverty incidence, depth and severity were 0.56, 0.25, and 0.14 respectively. The relative contribution from livelihood diversification amounted to about 56.14% of total household non-farm income and about 43.86% was from farm income sources. It was found that the major constraints to livelihood diversification were lack of access to formal loan, unstable electricity, high cost premises and poor access to market, Therefore, from policy perspective, Government should try as a matter of urgency to provide quality education to the masses (especially of the girl-child – being the most disadvantaged), this is because households with a more educated members tend to be more efficient in agricultural production or off farm activities. Also there is need for government to empower women in terms of equal access to productive resources and employment opportunities This could increase the off-farm activities that could generate more income thereby enhancing poverty reduction among households. Furthermore, Government should provide sufficient resources to develop infrastructure, organize public services and implement development programs.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

A fundamental challenge the world faces today is ensuring that millions of households in poverty have access to enough food to maintain a healthy life. Africa, over the years has been looking for ways of solving food problem and this has been a topical issue among African leaders, Scholars and all sundry (Sekumade, 2014). Diversification is the single most important source of poverty reduction in developing countries, for rural people in Africa and Nigeria in particular diversified their economic activities to encompass a range of productive areas that include farm and non-farm income generating activities (Idowu, 2014).

Livelihood diversification refers to attempts by individuals and households to raise income and reduce environmental risk which differs sharply by the degree of freedom of choice (to diversify or not), and reversibility of the outcome (Seera 2014). A majority of rural producers have historically diversified their productive activities to encompass a range of other productive areas. In other words, very few of them collect all their income from only one source, hold all their wealth in the form of any single asset, or use their resources in just one activity ((Dilruba and Roy 2012). For rural households, livelihood diversification includes both on-farm and off-farm activities which are undertaken to generate income additional to that from the main household agricultural activities. This could be via the production of agricultural and non-agricultural goods and services, the sale of waged labor, or self-employment in small firms and other strategies undertaken to spread risk.

The main driving forces of diversification are: to increase income when the resources needed for the main activities are too limited to provide a sufficient means of livelihood

(Nghiem, 2010), to reduce income risks in the face of missing insurance market (Dilruba and Roy 2012), to exploit strategic complementarities and positive interactions between different activities and to earn cash income and finance investment in the face of credit failures (Nghiem, 2010). In developing countries like Nigeria, a move away from the agricultural sector to industry is expected to improve the distribution of income by increasing the income of low earning groups while an increase in the relative productivity of agriculture is expected to reduce income disparities by increasing the income of those employed in this sector (Topalova, 2007).

The World Development Report 2008 is dedicated to 'Agriculture for Development' and states, that more than half of the population in developing countries live in rural areas, where poverty is most extreme, it is highly important to improve the livelihoods of the rural poor. Achieving secure household incomes is generally assumed to be a fundamental step out of poverty and food insecurity. Rural livelihoods diversification is generally accepted as desirable and a key focus of poverty reduction strategies in developing countries (Bezu *et al.*, 2012). Rural livelihood diversification is defined as the process by which rural farm households construct an increasingly diverse portfolio of activities and assets in order to survive and to improve their standard of living (Dilruba and Roy, 2012). The concept of livelihood diversification has rapidly gained ground as an approach to rural poverty reduction in poor countries. Poverty is an important aspect of this study and is prevalent in the large parts of the world and is one of the largest challenges of mankind in the 21st century. Therefore the member states of United Nations decided at the Millennium Summit in 2000 to combat global poverty and to halve the number of people by the year 2015. The achievement of the Millennium Development Goals (MDGs) targets is jeopardized by global change, because poor people mostly have the least possibilities to cope with the negative effects

hence unable to diversify their sources of livelihood to increase income thus reduce poverty.

The United High Commission for Refugees (UNHCR, 2004) therefore defines poverty as a human condition characterized as the sustained or chronic deprivation of resources, capabilities, choices, security and power necessary for an adequate standard of living and other civil, economic, cultural and political as well as social aspect (UNHCR 2004). Thus, Poverty can be describe as the state of being without the necessities of daily living, often associated the need, hardship and lack of resources across a wide range of circumstances. Diversification has been analysed as a rational response by households to lack of opportunities for specialisation, and was initially considered not the most desirable option. However, recent studies indicate that rather than promoting specialisation within existing portfolios, upgrading them to augmenting income could be more realistic and relevant for poverty reduction (Ellis and Freeman, 2004). Therefore exploiting these off-farm opportunities could offer a pathway out of poverty for the rural poor (Dilruba and Roy 2012).

Nigeria, with a population of over 140 million, is Africa's most populous country and the continent's fourth largest economy (NPC, 2006). The economy is still basically agrarian, since the advent of petroleum in the mid-1970s the relative share of agriculture, livestock, forestry and fishing which was 65.6 per cent in 1960/61 (with the agriculture subsector accounting for 56.6 per cent) has declined with the agricultural subsector accounting for only 32 per cent per annum in the 1990s. But the sector still constitutes the source of employment and livelihood for about three-quarters of the population. It is also the dominant activity in terms of linkages with the rest of the economy. The pattern of diversification and changing income levels indicates that agriculture is not a path out of poverty in many areas. In a case study of a cocoa

production area in Nigeria, for example, household Rural Non-Farm Income (RNFI) rose on average from 33% in the mid-80s to 57% in 1997, with the poorest households showing the strongest move towards RNFI over the period (Okere and Shittu, 2013). Livelihood strategies are therefore likely to be influenced by relative income levels and in particular the number of options that become available to different income classes (Ellis, 1999).

1.2 Problem Statement

The concern over increasing poverty levels especially in the developing countries and the need for its alleviation as a means of improving the standard of living of the people has led to the livelihood diversification (Babatunde, 2006). The number of poor people in Nigeria has continued to be on the increase within the past two or three decades. This is attributable to the economic and socio-political instability experienced in these countries. The situation is further aggravated by the declining and irregular income, low rate of capital accumulation and declining agricultural output due to the rapidly changing climatic conditions. Meanwhile, it has been established that in many rural areas, agriculture alone does not provide sufficient livelihood opportunities hence diversification into non-farm activities is seen as a form of self-insurance (Oluwatayo, 2009).

The accompanying increase in poverty levels has led farming household to devise a number of strategies to cushion the negative effects of these changes. Meanwhile, there has been an increased recognition among researchers especially in the past one or two decades that rural farming household diversify their livelihood strategies, including on-farm (crop, livestock, fisheries) and off-farm activities or market and non-market activities, to mitigate risks inherent in unpredictable agro-climatic and politico-economic circumstances (Igwe, 2013). Also, in the past it has often been assumed that

farm output growth would create plentiful non-farm income earning opportunities in the rural economy via linkage effects. However, this assumption is no longer tenable; for many poor rural households, farming on its own is unable to provide a sufficient means of survival, and the yield gains of new technology display signs of leveling off. Therefore, the following research questions were addressed in this study.

- i. What is the nature and extent of livelihood diversification;
- ii. What are the socio-economic and institutional variables influencing livelihood diversification among farming household in the study area;
- iii. What is the degree of poverty among farming household;
- iv. What are the contributions of livelihood diversification strategies to poverty reduction among farming household; and
- v. What are the constraints to livelihood diversification in the study area.

1.3 Objective of the Study

The broad objective of this study was to examine the contribution of livelihood diversification to poverty reduction among farming household in the study area. The specific objectives were to:

- i. examine the nature and extent of livelihood diversification;
- ii. determine the socio-economic and institutional variables influencing livelihood diversification
- iii. determine the degrees of poverty among farming household;
- iv. describe the contributions of livelihood diversification to poverty reduction and
- v. describe the constraints to livelihood diversification.

1.4 Justification of the Study

A number of studies have shown that rural farming households in developing countries such as Nigeria derive their income from different sources with non-agricultural activities accounting for a substantial share of total income (Oluwatayo, 2009). This is because diversification offers people options for coping with crisis. The resultant effect of this is that rural farming households diversify their income sources by combining two or more jobs (multiple job holding) to enhance consumption smoothing and acquire other basic needs. The existing gaps in poverty in the urban and rural sectors in the sub-Saharan Africa have therefore attracted the attention of researcher to the study of rural livelihoods (Nasa *et al.* 2010). The ruraleconomy is not based solely on agriculture but rather on a diverse array of activities and enterprises.

Farming remains important but rural people are looking for diverse opportunities to increase and stabilize their incomes, Individuals in developing countries often rely on various sources of monetary incomes. It is widely agreed that a capability to diversify is beneficial for households at or below the poverty line. Having alternatives for income generation can make the difference between minimally viable livelihoods and destitution. Burgeoning literature on livelihood diversification across the developing world has pointed to the increasing role of non-farm incomes in poverty reduction (Oluwatayo, 2009). Since many rural households derive livelihoods from some form of non-farm activity, increasing the profitability and range of such activities would improve their livelihoods security and living conditions (Mwabu and Thorbecke, 2001; Awoyemi, 2004). Therefore, studies on livelihood diversification would be useful to researchers, policy makers and students in understanding the nature of livelihood diversification adopted by farmers in the study area.

CHAPTER TWO

LITERATURE REVIEW

2.1 The Theory and Concept of Rural Livelihood

The concept of livelihood and sustainable livelihood framework has become an integral part of rural development and poverty reduction in recent times. Rural livelihoods are composed of the activities that provide the means of household survival and long-term well-being (Stephen and Lenihan 2010). Chambers and Conway (1992) defined livelihood as that which constitutes people, their capabilities and their means of survival including food, income and asset formation. Stephen and Lenihan (2010) state that livelihood strategies may be classified into natural resources based activities (e.g. collection and gathering, cultivation, livestock-keeping, etc) and non-natural resources based activities (e.g. trade, services, remittances).

In the past, rural development focused on promotion of modern agriculture for poor households to guarantee food security (Igwe, 2013). Most recently the emphasis has been on diversification to promote non-farm activities (Igwe, 2013, Scoones and Wolmer 2003, IFAD 2009), access to natural-based resources and opportunities (Freeman *et al.*, 2004) and the provision of social support services to aid vulnerable and landless households (Igwe, 2013).

Non-farm activities tend to have low entry requirements such as financial capital, skills and education that makes it attractive. (Dilruba and Roy 2012), note that non-farm is typically positively correlated with income and wealth in rural African countries, and seem to offer a pathway out of poverty if non-farm opportunities can be seized by the rural poor.

2.2 Livelihood Diversification Processes

The central focus in the debate on livelihood diversification centres on understanding the reasons why people diversify their assets or engage in diverse income activities and the concept of coping and survival-driven strategies which rural households adopt in poverty situations (Ellis, 1999). Diversification has become a livelihood pathway and strategy for rural household to sustain and increase their income. Livelihood diversification is a term used to describe the composition of income activities available to rural populations and their contribution to the overall household well-being. (Reardon *et al.*,2007). Current understanding of poverty places considerable emphasis on ownership or access to assets and resources that can be put to productive use as a base by which the poor can construct their own pathway out of poverty (Ellis and Freeman 2004). There are two types of income diversification – the period of capital accumulation and activity-driven diversification which occurs after capital accumulation has taken place (Davis and Bezemer 2003). There is also diversification as a result of economies of scope. Economies of scope describe when the same inputs generate per-unit profits when spread across multiple outputs than dedicated to any one output (Dilruba and Roy 2012).

Rural livelihoods are thus maintained from a combination of assets, resources and activities which are becoming more complex and diverse, cutting across economic sectors and which many governments and agencies tend to be ill-equipped to support because of the diversity and complexity of the rural sector (Ellis, 2001). Livelihood diversification enables households to survive the unfavourable rural environment by mitigating seasonality and spreading risk to reduce vulnerability to adverse trends and stress (Davis and Bezemer, 2003). It has also been suggested that self-employment offer

benefits of flexibility, adaptability and cultural acceptability that is otherwise unavailable in labour market (Start and Johnson, 2004).

Several authors (Seera, 2014) suggest that the determinants of rural livelihood diversification are influenced by over-bearing factors of necessity and choice. These authors maintain that necessity is the major involuntary and distress factor that drives poor people to diversify their income activities as a response to conditions mainly for survival or coping strategies. Similarly, it becomes a result of choice if it involves voluntary and proactive decisions undertaken by some people (possibly less poor or well-off) to invest in various kinds of assets, as a means for wealth formation that provides some long-term livelihood security (Ellis, 1998).

2.3 Sustainable Livelihoods Approach (SLA)

The Sustainable Livelihoods Approach is a means of analyzing and understanding the activities, assets, opportunities and needs of rural people. It describes the various assets, structures, processes and methods that rural people adopt in pursuing their livelihoods, as well as the main factors affecting rural people and the inter-relationships between these factors. It is a new development thinking from international development agencies (notably DFID and IFAD), useful in planning new strategies and in assessing existing development policies. The two key components of the SLA according to IFAD (2009) are:

- *Framework* that helps in understanding the complexities of poverty; and
- Set of *principles* to guide action to address and overcome poverty

The ‘sustainable livelihoods approach’ is a product of ideas and interest from debates on the various aspects of integrated rural development, sustainable development and poverty reduction strategies. According to Igwe (2013), the notion shifts attention from exclusion and marginalization of households from the benefit of economic growth to

exploration for more effective means to support people and communities in ways that are more meaningful to their daily lives, needs and aspirations. It focuses attention on the kinds of assets owned by local people and the rural opportunities available to the people as a means of reducing the vulnerability or poverty caused by a combination of effects of trends, shocks, choices, culture, geographical and climatic conditions. This approach is being employed by governmental, non-governmental and development agencies such as UNDP, DFID and IFAD as a means for accelerated rural development, policy intervention and poverty reduction. The underlining principle in the sustainable livelihoods concept involves the identification of assets and resources available or accessible to rural people. These assets, according to Igwe (2013) constitute a stock of capital which can be stored, accumulated, exchanged, transformed into use-values and reproduced to counter the negative effects of the trends, shocks and seasonal changes on livelihoods and can be analysed at individual, household and communities levels. It proposes that for livelihoods to be sustainable, all the social groups represented by these levels of analysis should be able to meet their basic needs (food and income) without compromising the natural resources or environment of their communities.

Nghiem(2010) maintain that a sustainable and vibrant livelihood framework allows people to pursue robust livelihood means that provide layers of resilience that not only enable people to cope with change but create the potential to translate adversity into opportunity. The system describes strategies that can help eliminate poverty both at individual, household, community and regional levels such as agricultural improvement, non-farm diversification, infrastructure provision, migration, new technology, skills training, education and numerous other means. The framework is neither a model that

aims to incorporate all the key elements of people's livelihoods, nor a universal solution (IFAD 2009).

2.4 Agricultural Production and Off-farm Income Activities in Nigeria

Agriculture remains a key sector in Nigeria's economy. This is because apart from being the principal non-oil foreign exchange earner, it provides employment for over 60% of the population (Oseni and Winter, 2009; Liverpool-Taise *et al.*, 2011). Despite the pace of urbanization taking place in Nigeria, (Liverpool-Taise *et al.*, 2011) report that about two-thirds of the population of 140 million people still resides and engage in smallholder agricultural production in the rural areas. However, the discovery of oil in the early 1970s and the subsequent neglect of the agricultural sector have led to the decline in growth of the sector in Nigeria. For example, while real annual Gross Domestic Product (GDP) growth from 2000 to 2007 averaged 8.8%, the agricultural sector grew at 3.7% in 2007 (Philip *et al.* 2009). Domestic food production began to fall and the country transform from a food sufficient net exporter to a net importer of many agricultural products including palm oil, rice, wheat and maize (Ogen, 2007). The value of food import has continued to grow in recent years reaching a value of USD 0.1 billion in 2006 (Akpan, 2009).

Apart from the neglect suffered by the agricultural sector in Nigeria, the decline in agricultural production has been attributed to low productivity of the sector. This is believed to be due to inadequate credit for investment in productivity-enhancing technologies, among others. (Liverpool-Taise *et al.*, 2011) report that there is a pervasive inefficiency and low productivity among Nigeria farmers: most smallholder farmers produce significantly below their production frontier and profit margins from agricultural enterprises are generally low. This low return in agricultural production has prevented a substantial reduction of poverty, especially in the rural areas in Nigeria.

According to Oseni and Winter (2009), though the poverty rate has decreased in recent years, the general belief is that the current poverty level should not be as high as it is. According to Oseni and Winter (2009), more than 80% of the rural households in Nigeria relate their poverty status to problems in the agricultural sector and specifically to lack of inputs and not being able to afford inputs such as fertilizer and seeds. To overcome this problem, farm households often diversify their livelihood from farm into non-farm activities. Oxford Policy Management (OPM 2004), reports that the majority of households across all income strata in Nigeria are involved in several non-farm activities, whose importance has increased over the last 25 years.

The report suggests that non-farm activities account for an average of 36% of adult working hours per annum and 60% of cash income. Babatunde, R.O (2013) explained that non-farm activities in Nigeria are diverse, partly seasonal and often performed within the family compound. They include, but are not limited to, agro processing, snack and food making, transport, retail, household trade and tailoring.

In a similar way, (Okali *et al.* 2001) found that income diversification is increasing in the rural areas through the sub-urbanization of individual activities like paper mills, packaging and home construction activities. The more recent study by Oseni and Winter (2009) found that 31% of farm households in Nigeria participate in various non-farm activities and that non-farm income makes up 27% of total annual household income, on average. The authors indicated that southern households earn more from non-farm activities than northern households where about 50% of household income is from non-farm sources. Non-farm self-employment is the most common forms of off-farm activities in Nigeria followed by non-farm wage employment (Oseni and Winter, 2009). The most common types of self-employment are those in commerce and manufacturing, including retail trade, oil refining, hotel and restaurants, passenger transportation, food

processing, textile, food selling and quarrying. Among non-farm wage employment, professional and clerical jobs are the most common in Nigeria (Oseni and Winter, 2009).

2.5 Farm/Non-farm linkages

Farm/non-farm linkages – is a concept used to explain the relationship between farm and non-farm sectors in the rural economy. When agriculture productivity grows, rural household income increases and the additional household demand caused by agricultural expansion has a very high multiplier effect across the rest of the economy, particularly in closed economies, which is in practice the case of many developing rural economies due to high transaction costs (Anriquez and Daidone, 2008). The notion of farm/non-farm linkages seeks to find out whether expansion of one sector is hindering the existence or performance of the other sector by competing for scarce inputs and capital. Links between farm and non-farm sectors differ according to place and time, are dynamic and interactive and may extend in any direction (Kusters 2010). The literature identifies forward and backward relationships in production, expenditure and investment linkages between rural farm and non-farm activities (Ngheim, 2010; Dilruba and Roy, 2012; IFAD 2009). Backward linkages refer to movement from the farm sector to the non-farm sector that provides inputs for agricultural production. Forward linkages refer to the activities which involve non-farm sector that uses agricultural output as input. They may also be substituting each other, which suggest that growth in one sector would lead to a (relative) decline in the other (Kusters, 2010).

The expenditure linkages occur when income obtained from one of the two sectors is used to purchase the outputs of the other. It has been shown that growth in farm incomes provides the links for the expansion of rural non-farm activities by creating demand for non-farm products (Ngheim, 2010). The underlining principle is that growth

in the non-farm sector induces the expansion of expenditure on farm output. Investment linkages describe the relationship which exists where investment of capital generated in one of the sectors is used in the expansion of the other (IFAD, 2009). Some authors maintain that this is an important link in rural areas, where access to financial capital is hindered by poor access to financial services. Without start-up funds, or with little cash available for investment, households are limited to a smaller number of activities that yield poor returns (Fabusoro *et al.*,2010).

The literature shows that products of rural non-farm activities are inferior in quality and tend to diminish in importance with rising household income. Rural people tend to spend their higher or new income on superior goods and services, modern and higher technology that are usually urban by-products. The assumption that rural products and services tend to diminishing importance with rising rural incomes appears to have focused on non-farm production activities that take place in the rural sector (IFAD, 2009). This to some extent does not apply to most African countries because the majority of rural agricultural activities are small scale and people are unable to expand their incomes from farming alone (IFAD, 2009).

If the rural economy is to be sustainable, it is important that both farm and non-farm sectors interact and support each other in order to increase income activities. There are two strong opposite views as to the most important sector in the rural economy in the literature. Some authors regard agriculture as the primary source of growth (Igwe, 2013), while others suggest that non-farm sector have the potential to contribute to growth and rural development (Ngheim, 2010; Reardon *et al.*,2007; Kusters, 2010). Despite the two different views, the majority of literature shows that rural households in developing countries are finding it difficult to engage profitably in agriculture and have been diversifying into non-farm activities (IFAD 2009, 2011 and 2012). This accounts

for the high rate of poverty in rural communities that solely depend on agriculture as primary sources of livelihood.

There is growing evidence in developing nations that the rural sector is much more than just agriculture (Igwe 2013). The non-farm sector in developing countries is generally assumed to be growing in importance over time, while the relative importance of farming is thought to be decreasing (Kusters, 2010). Several authors have identified this process in different ways. Bryceson (1996) describe this as a process of ‘deagrarianisation’, while (Igwe, 2013) called it ‘de-peasantisation’ for the same process and a consequence of this process is that access to land is no longer a precondition for poverty alleviation (Kusters, 2010). Most African rural communities have been developing into less agrarian and participating in a wide range of non-farm activities, such as wage employment, self-employment, manufacturing and services. Therefore, ‘de-agrarianisation’ describes the livelihood process whereby rural populations steadily become less and less agrarian as they increasingly depend on non-farm income. This is the case with most rural communities; as most studies show that non-farm income now contribute more than half the share of household income.

2.6 The Rural Non-farm Sector (RNFS)

Rural non-farm sector refers to all rural economic activities outside of farming. According to Ngheim, (2010), it includes self or wage employment, full-time or part-time, formal or informal, seasonal and occasional local manufacturing or production. These authors maintain that the process typically begins with a rural village dominated by self-sufficient and households producing most of farm and non-farm goods and services they need. Gradually, as the rural population increases, local demand and market access increases, new technologies and new farm inputs becomes available,

leading to increased agricultural surpluses in some products and increased opportunities for trade (Ngheim, 2010).

It has also been stated that households diversification into non-farm opportunities develops naturally from diminishing returns to labour or land, from market failures (for credit) or transactions (for mobility or entry into high-return niches), from ex ante risk management, and from ex post coping with adverse shocks (Dilruba and Roy 2012). Ngheim, (2010) state that as rural farm economy grows it stimulates growth of the RNFS through a number of key linkages as:

- rising labour productivity on the farm increases food supplies and releases family workers to undertake non-farm activities;
- increases in farm incomes, together with high rural savings rates, make capital available for investment in non-farm activities;
- as agriculture modernises and its productivity grows, it requires additional inputs and services such as seeds, fertiliser, credit, pumps, farm machinery, marketing and processing of output which create a growing demand for non-farm firms providing these inputs and services; and
- as their incomes increase, farm households, like good consumers everywhere, spend much of their new income on a range of consumer goods and non-farm services. (Ngheim, 2010)

Ngheim, (2010) explained that as the transformation process evolves in the rural communities, people begin to specialize in their individual skills, taking into account the local resources, market and employment opportunities available to them. These authors suggest that some non-farm local activities initially undertaken by rural households for their own consumption transform into commercial activities. As a consequence, greater trade develops between rural households, small village market centers and rural towns

(Haggblade *et al.* 2000). This structural transformation process helps to develop infrastructure which leads to reduction in production and transportation costs and increase market access in rural communities.

2.7 Poverty and Livelihoods Diversification

Livelihood approaches lay emphasis on the capabilities of people, and associate poverty with the inability of people to develop their potential. Livelihood strategies are deemed successful when the quantity, quality and mix of assets available to a household (or individual) are sufficient to withstand adverse events without compromising future survival (Mike Morris *et al.*, 2001) The causes of poverty are thus linked to limited or limiting asset bases. At the household level this might include deficits in: human capital (e.g. ill health; insufficient labour, skills, education or training); physical capital (e.g. poor tools or equipment for production or processing; inadequate household goods and utensils; stocks - food, livestock, jewellery); financial capital (e.g. lack of cash or savings; poor access to credit or insurance markets); natural capital (e.g. lack of access to productive land and other resources); and social capital (Mike Morris *et al.*, 2001). It is widely held that social capital in the form of networks, horizontal and vertical (patron/client) connections and groups, provides the trust, reciprocity and associated morality that enable people both to work collectively and access wider political and civic institutions. Lack of social capital might thus impede, access to and/or the sanctioned use of, a number of other resources (e.g. healthcare, officialdom, credit, land, draught oxen).

Not only are livelihood strategies and options circumscribed by the availability and mix of household assets, but as suggested above they are also dependent upon resources associated with the community or supra-community level. These might include common pool resources (e.g. pasture, forest, and water resources), general agro-ecological

conditions, rural and rural-urban infrastructure including roads, schools, hospitals, clinics, marketplaces, and communication and energy facilities) (Mike Morris et al., 2001). Furthermore access to these resources and involvement in the decision-making associated with securing such community level resources, are mediated by the wider set of policies, institutions and processes. Inadequacies or anomalies in prevailing social relations, institutions and governance at local levels may thus too play a contributory role in the causes of poverty.

2.8 Pathways Out of Rural Poverty

It is widely reported in the literature that poverty rates are highest in rural areas of developing economies. It is certain that the main occupation of these rural populations is farming. Literature shows that farming alone, has failed to lift rural households out of poverty. Some authors recognize that the most effective way of increasing income and reducing poverty will be to increase the productivity of the resources which people depend on for their income and livelihood. These resources are agriculture and non-farm activities. Sen (1999) showed that during years when non-agricultural rural employment increases, rural poverty declines, and off-farm rural employment is crucial to reducing rural poverty and to secure adequate livelihood within the households of smallholders and landless agricultural labourers. IFAD (2011) maintain that income from non-farm sector assists the small-farm households to become hunger-free and that through effectively-managed 'monetization' small farm households could benefit from globalization and avoid poverty. There are still many strong views in the literature that the only way to improve household income and reduce poverty in rural areas in developing economies is through agricultural development (Collier and Dercon 2009, Obike *et al.*, 2011). There are many reported stories of agriculture as a foundation of

growth early in the development process and of agriculture as a major force for poverty reduction through green revolution.

In Nigeria, agriculture provides the most employment opportunities and majority of rural households depends entirely on farming for food and their survival. Therefore productive gains in the farm sector are pre-condition for self-sustaining economic development (Obike *et al.*,2011). Most Nigerian farming households, who are the backbone of the Nigeria economy, are peasant and poorly equipped in terms of resources and income, but these subsistence farmers account for up to 95% or more of food produced for consumption in the country (Obike *et al.*,2011). That the rate of poverty among rural agricultural households is persistently much higher is confirmed by the micro evidence from numerous country poverty studies by the World Bank, UNDP, DFID, UNECA, IFAD, ADB and FAO. Many countries that had fairly high agricultural growth rates maintained substantial reduction in rural poverty: Vietnam, with land reforms, trade and price liberalization; Bangladesh, with rising rural farm and non-farm earnings and lower rice prices resulting from modern technologies; and Uganda, with economic reforms and a resulting boom in coffee production (World Bank 2008).

2.9 Determinants of Livelihood Diversification

Several authors (Seera 2014,Igwe 2013,) suggest that the determinants of rurallivelihood diversification are influenced by over-bearing factors of necessity and choice. These authors maintain that necessity is the major involuntary and distress factor that drives poor people to diversify their income activities as a response to conditions mainly for survival or coping strategies. Similarly, it becomes a result of choice if it involves voluntary and proactive decisions undertaken by some people (possibly less poor or well-off) to invest in various kinds of assets, as a means for

wealth formation that provides some long-term livelihood security (Ellis, 1998). Also, several authors identify factors of necessity and choice as the main drivers of livelihood diversification processes (Bryceson 1996;). These authors believe that ‘people’s motives to minimize the risk of ‘livelihood failure’ as the main factor that influence their livelihood diversification strategies. It has also been suggested that livelihood diversification reduces the potentially damaging effects of food and other local products markets imperfections, thus facilitating production and consumption, smoothing inter seasonality over several years, ensuring continuous secure livelihoods and food security for the poor people (Davis and Bezemer, 2003). There are two kinds of diversification trend in the rural sector. On one hand, diversification takes place (survival strategy) because of increasing rural population growth, land fragmentation, increasing input cost, adverse environmental conditions, diminishing access to agricultural markets, declining farm income and lack of access to public services (Ellis, 2001). On the other hand, diversification evolve either as a coping strategy where it is an enforced response to failing agriculture (distress-push) or as opportunity mechanism where the economy is growing and opening markets (demand-pull) (Davis and Bezemer, 2003).

According to Ngheim, (2010) the global economic liberalization during the 1990s has opened up the rural non-farm sector as never before – to new opportunities and to new treats. Kusters (2010) explained both distress-push and demand-pull diversification situations as: “In the first case (distress-pull diversification), people are pushed towards non-farm activities as they try to diversify their income sources in an attempt to reduce vulnerability environment of risk, market imperfections and of hidden agricultural unemployment and is usually facilitated by economic diversity which takes the household on a downward income trajectory. The authors maintain that demand-pull diversification is a response to evolving market and technological opportunities to

increase labour productivity and household income. It has also been suggested that ‘poorer people and households’ engage in non-farm activities as survival-driven rather than opportunity-driven strategy (Kusters, 2010).

The determinants of participation in and returns to rural non-farm activities include the households’ assets endowment (quantity and quality) and its access to public goods and services as shown in various studies such as (Ibekwee *et al.*, (2010). For particular activities, such as education, some households are “pushed” to diversify their activities off-farm only to cope with external shocks to their own farming (such as drought or a steep decline in farm-gate prices), or, households may be “pulled” into non-farm activities because it often pays more than farming and generates cash. Gender relationships are also important in shaping diversification process. Social organization and culture can significantly influence the relative access of diverse gender (and age groups) to household’s capital assets (Ahmed, 2012) or constraints promote their mobility. This might result in a different degree of involvement in diversification activities and/or in an unequal distribution of their benefits between genders. (Ahmed, 2012). In some activities, migratory wage labour or off-farm enterprises are basically men business, which results in transferring to women the whole responsibilities of conventional subsistence and cash cropping (the so called “feminization of agriculture”). However, in other cultures, women are often able to play an autonomous role on their own small-scale enterprises or migrating to town or abroad.

2.10 Empirical Studies of Livelihood Diversification

In a study conducted by Saha *et al.* (2010), on livelihood diversification pursued by West Bengal, India shows that there is a high involvement of farming household (76.25%) in different non-farm income sources along with agricultural income. There was a high involvement of women (24%) also in different diversification activities. It

was found that diversification activities make a greater contribution to cash incomes for poorer households, as the proportion of total cash income from off-farm and non-farm activities is larger for poorer wealth groups. The study also revealed that nearly two third of the farmers participated in different non-farm activities. Finally the study concluded that state machinery should play a facilitator's role in terms of promoting investment infrastructure development.

In another study conducted by Abimbola *et al.*(2014)on rural livelihood diversification and income inequality in local government area Akinyele, Ibadan, Oyo State, Nigeria. It shows that The distribution of respondents by type of livelihood strategy adopted revealed that almost half of the respondents adopted the combination of farm and non-farm strategy while 14.3% and 40.0% adopted only farm and non-farm strategy respectively. Income inequality was the highest among non-farming households and the lowest among farming households, implying that income from non-farm activities contributed most to income inequality in the study area. The study revealed that the major factor which negatively influenced the choice of farming as a livelihood strategy was household size while factors such as age and land ownership had positive and negative effects on the adoption of the non-farm strategy respectively. The study recommends that policies targeted at rural dwellers should centre on improved access to productive assets such as land for the landless farmers as well as the provision of improved technology, which could encourage the ageing farming population to engage in farming activities.

Also, in a study conducted by Oluwatayo (2009) on Poverty and Income Diversification among Households in Rural Nigeria: A gender analysis of livelihood patterns. The study shows that the coefficients of gender, household size, poverty status and access to credit

facility are positive. This means that female-headed, large-sized, poor households and those lacking access to credit facility have higher likelihood of being more diversified in their livelihood activities than male headed, small-sized, non-poor households and those having access to credit facility. The study concluded that it is very clear that factors encouraging respondents to be more diversified have higher likelihood of aggravating their living conditions while those factors discouraging diversification enhances specialization and these have higher likelihood of improving the living conditions of the respondents.

2.11 Review of Analytical Techniques

2.11.1. Measures of livelihood diversification

Livelihood diversification index – There are various indicators for measuring livelihood diversification like number of income sources and their share, Simpson index, Herfindahl index, Ogive index, Entropy index, Modified Entropy index, Composite Entropy index (Shiyani and Pandya, 1998). In this study Simpson index will be used because of its computational simplicity, robustness and wider applicability.

The formula for Simpson index is given below.

$$S.I = 1 - \sum_{i=1}^N P_i^2 \dots\dots\dots(1)$$

Where;

N is the total number of income sources and Pi represents income proportion of the i-th income source. Its value lies between 0 and 1. The value of the index is zero when there is a complete specialization and approaches one as the level of diversification increases. Accordingly, households with most diversified incomes will have the largest SID, and the less diversified incomes are associated with the smallest SID. The least diversified household, (i.e those depending on a single income source) SID takes a

minimum value of 0. The upper limit of SID is 1 which depends on the number of income sources available and their relative shares. The higher the number of income source as well as more evenly distributed the income shares, the higher the value of SID. (Saha and Ram, 2010).

2.11.2 Regression Model

Many quantitative studies on diversification have used the tool of regression analysis in which the dependent variable (e.g often income or consumption as proxies for overall well-being) is estimated, based on the value of one or more independent variables (Winters *et al.* 2009). Regression analysis has the advantage of identifying the strength and significance of the relationship(s) between variables (Ansoms and McKay, 2010). In this study, Tobit regression model (Greene, 2003) model is considered appropriate to determine the socio-economic variables influencing livelihood diversification, some farmers that highly diversified in specified period may not diversify during the period covered by the survey because of prevailing circumstances like, pressure from farm work, health, seasonal variation (in raining and dry season) and many other possible factors, Simpson Index of diversification is used as the dependent variable, and is regressed against a set of explanatory variables that are hypothesized to be important in determining livelihood diversification. Therefore, Tobit model assumes that all zeros are attributable to standard corner solutions. As such, zero observations are accounted for and the censored regression provides a more accurate estimation. The Tobit model (Greene, 2003) employed was of the form;

$$Y^* = X_i \beta + e_i \dots\dots\dots(2)$$

Where

e_i = is normally distributed with zero mean and constant variance.

Y^* = is the Simpson diversification index.

Thus, the implicit and explicit functions are stated below;

Thus, the explanatory variables that were used in the regression analysis are measured as; $Livelihood\ diversification = f(Age, Gender, Marital\ status, Household\ size, Years\ of\ formal\ education, Income\ of\ respondents, Primary\ occupation, amount\ of\ credit\ received, nearness\ to\ market(km) + e_i \dots \dots \dots (3)$

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + e_i \dots \dots \dots (4)$$

2.11.3 Measurement of Poverty

Measurement of poverty is complex and varied. Discussion of poverty measure has, therefore, commenced with the simple living standard measure, poverty line determination and array of measures involved in absolute and relative poverty measures. The Foster-Greer-Thorbecke (sometimes referred to as FGT) among other measures of poverty like Sen Poverty index, The Sen-shorrocks-ton poverty index, Watts Indexmetric was employed for this study as a generalized measure of poverty within an economy because of its consistency and additively decomposable, which allow poverty to be evaluated across population subgroups in a coherent way.. It measures the weighted shortfall from the poverty line and also incorporates the inequality among the poor (Foster *et al.*, 1984)Foster, Greer and Thorberke (1984) poverty model was used to decompose farming households into various poverty statuses. The procedure entails estimating using the farm-household data set, the number of farming household that were - below a poverty line will be calculated. The depth and severity of poverty was also - calculated using poverty indices. The poverty measure itself is a statistical function that translates the comparison of the indicator of household well-being and the chosen poverty line into one aggregate number for the population as a whole or a

population sub-group (Foster, Greer and Thorbecke - FGT, 1984). The FGT index used is generally given by:

$$P\alpha = \frac{1}{N} \sum_{i=1}^{Hi} \frac{(z-y_i)^\alpha}{z} \dots\dots\dots (5)$$

When:

$$\alpha=0 \quad P_0 = \frac{1}{N} \sum_{i=0}^{Hi} \frac{(z-y_i)}{z} \dots\dots\dots (6)$$

i.e poverty incidence or head count

$$\alpha = 1 \quad P_1 = \frac{1}{N} \sum_{i=1}^{H1} \left(\frac{(z-y_i)}{z} \right) \dots\dots\dots (7)$$

i.e. poverty depth

$$\alpha = 2 \quad P_2 = \frac{1}{N} \sum_{i=1}^{H1} \frac{(z-y_i)^2}{z} \dots\dots\dots (8)$$

i.e poverty severity

Where:

N = number of household in a group

Z = poverty line using 2/3 mean consumption/expenditure of the farming household

Y = Expenditure/Consumption

α = degree of poverty aversion (0, 1 and 2)

Based on household consumption/expenditure, poverty lines quantify absolute poverty in monetary terms and characterize people in terms of their monetary income or consumption, particularly of food. Thus, a poverty line is just a cut-off line (or threshold) used to distinguish between “poor” and “non-poor” households.

CHAPTER THREE

METHODOLOGY

3.1 The study Area

The study was conducted in Chikun and Zango Kataf local government areas of Kaduna State. The state lies between latitude $11^{\circ} 32'$ and $9^{\circ} 02'$ North of the equator and $80^{\circ} 50'$ and $06^{\circ} 15'$ East prime meridian. It had an estimated population of 6,066, 562 million based on 2006 provisional census figures (NPC 2006) and based on annual growth rate of 3.0, the projected population of the state in 2014 was 7,830,293 million. The typical weather is mostly categorized by constant dry and wet seasons. The rains begin in April/May and stops in October while the dry season sets in late October and ends in March of the subsequent year. Crop cultivation is mostly practiced in the upland and the farming system in the upland area is essentially rain-fed, Upland farming is for the most part cereals (like maize millet, rice, and sorghum); legumes (including cowpea; groundnut and soya bean). The main occupation is farming, while trading is very common in both urban and rural areas. Other income generating activities/occupations in the study area includes; civil servants, carpentry, building, welding, poultry farming, Tailoring, Hair plaiting, Bricks making, automobile mechanics, plumbing, electrician, paint work, commercial motor and tricycle drivers.

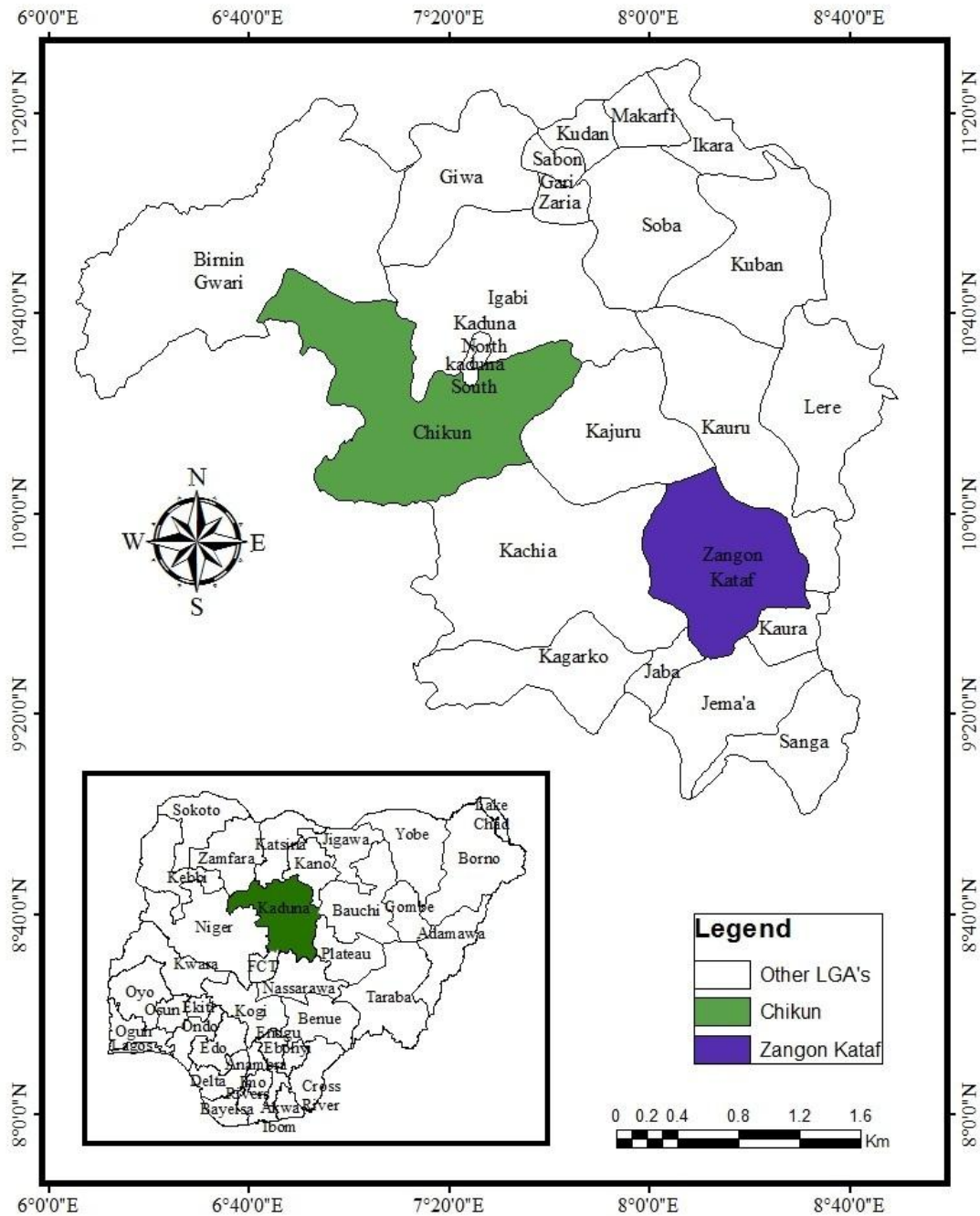


Figure 3.1: Map of Kaduna State Showing the Study Areas

3.2 Sampling Technique and Sample Size

Multi-stage sampling technique was employed in the selection of respondents in the study area. The first stage involved purposive sampling of two local governments' areas (Zango Kataf & Chikun) from the twenty three (23) Local Government Areas (LGAs) base on both their level of economic activities and farming. Secondly, random sampling

was employed to select two (2) districts out of 11 and 13 wards respectively from the two local governments, from these two (2) districts, three (3) villages were randomly selected. Finally ten (10%) of the sample frame (1641) was used to get the sample size of (164) farming household. Table 1 below gives the summary of the sampling procedure of the research.

Table 3.1: Distribution of respondents in the study area

L.G.A	Wards	Villages	Sampling frame	Sample Size(10%)	
Zango Kataf	Ung. Wakili	Atak nje	193	19	
		Samaru	186	19	
		Mabushi	92	09	
	Zonkwa	Fadan Kamantan		113	11
			Gan Gora	126	13
			Madakiya	142	14
Chikun	Kujama	Ung. Mission	119	12	
		Maraban rido	211	21	
		Pamfura	66	06	
	Sabon Tasha	Janruwa	134	13	
		Juji	105	11	
		Bagodo	152	15	
Total			1,641	164	

Reconnaissance Survey 2015

3.3 Method of Data Collection

Primary data were used for this study and the data were collected from farming household in the study area with the aid of structured questionnaire. The data sourced includes socioeconomic variables like age, education, marital status, farm-size, household size, gender, cooperative society, farming experience, amount of credit received. Data on farm and non-farm activities, access to infrastructures will also be collected and on variables for determining poverty. Data were also collected on household expenditure as well as problems affecting livelihood diversification in the study area. Data collected covered 2014 season year.

3.4 Analytical Technique

The analytical tools that was used to achieve the objectives for this study include descriptive statistics, Tobit regression model, diversification index (Simpson index of diversity), and Foster- Greer-Thorbeck (FGT) model of poverty.

3.4.1 Descriptive statistic and Simpson Index

Descriptive statistic and Simpson index of diversification was used to determine the nature and extent of livelihood diversification among farm households. It was used to answer objective (i)

$$S.I = 1 - \sum_{i=1}^N P_i^2 \dots\dots\dots(9)$$

Where, Pi as the proportion of income coming from source i. The value of Simpson Index of Diversification (SID) always falls between 0 and 1. If there is just one income, Pi=1, so SID=0. N= number of farming household. As the number of sources increase, the shares (Pi) decline, as does the sum of the squared shares, so that SID approaches zero.

3.4.2 Tobit Regression Model

In this study Tobit regression model was used to determine the socio-economic variables of livelihood diversification and simpson index of diversification will be used as dependent variable. This was used to achieve objective (ii).

The explicit and implicit function is given as follows: Livelihood diversification = f(Age, Gender, Marital status, Household size, Years of formal education, Income of respondents, Primary occupation, amount of credit received, nearness to market(km) + ei.....(10)

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + ei \dots\dots\dots(11)$$

Where:

Y = Livelihood diversification index (Simpson index)

X₁ = Age (in years)

X₂ = Gender (Female = 1, Male = 0)

X₃ = House hold size (numbers)

X₄ = Years of formal education (years)

X₅ = Income of respondents (Naira)

X₆ = amount of credit received (Naira)

X₇ = nearness to market (km)

β_1 - β_7 =Regression parameters or coefficient

β_0 =intercept

e_i= Error term.

3.4.3 Foster-Greer-Thorbecke (FGT) Poverty Measures

Foster-Greer-Thorbecke weighted poverty measures was used to achieve objective (iii) of the study. This was used to determine the Poverty Status of the farming households in the study area. The poverty status of the farmers was measured based on their consumption/expenditure from the sources of livelihood diversification. The consumption/expenditure level that separates the poor from the rest of the population is called the poverty line. The first step in calculating the consumption/expenditure -based index was to assess a level of consumption/expenditure below which an individual was defined as poor: the so-called poverty line. It is well known that if consumption/expenditure is divided into two categories, food consumption/expenditure and non-food consumption/expenditure, the poorer people are, the higher the proportion of their overall expenditure that is accounted for by food consumption/expenditure. In determining consumption/expenditure levels that can be used to separate the poor from

the non-poor, food consumption/expenditure is the most significant measure. Thus a food poverty line (a minimum level of food consumption/expenditure) is first calculated. A non-food minimum allowance is then calculated and added to the food poverty line to provide the total poverty line. This poverty line was used to determine the magnitude and intensity of poverty among the farming household in the study area. The Foster-Greer-Thorbecke indices are specified as:

$$P_{\alpha} = \frac{1}{N} \sum_{i=1}^{H_1} \frac{(z - y_i)^{\alpha}}{z} \text{----- (12)}$$

$$P_0 = \frac{H_0}{N} \text{----- (13)}$$

Measures the proportion of persons whose consumption/expenditure level is under the poverty line. It is popular because it is easy to understand and measure. But it does not indicate how poor the poor are.

$$P_1 = \frac{1}{N} \sum_{i=1}^{H_1} \frac{(z - y_i)}{z} \text{----- (14)}$$

The poverty gap index (P_1) measures the extent to which individuals fall below the poverty line (the poverty gaps) as a proportion of the poverty line. The sum of these poverty gaps gives the minimum cost of eliminating poverty, if transfers were perfectly targeted

$$P_2 = \frac{1}{N} \sum_{i=1}^{H_1} \frac{(z - y_i)^2}{z} \text{----- (15)}$$

The squared poverty gap (“poverty severity”) index (P_2) averages the squares of the poverty gaps relative to the poverty line.

Where,

P = is FGT parameter; α is a non-negative parameter, which takes the value 0, 1 and 2.

When $\alpha = 0$, this index gives the head count ratio or the incidence of poverty which was the percentage of farming household that are classified poor in the study area.

When $\alpha = 1$, this index measures the poverty depth, it means percentage shortfall of consumption below poverty line while severity of poverty is measured when $\alpha = 2$.

N = Total No. livelihood sources.

H_i = Head count of the poor (Number of poor farm households).

Y_i = is the average real spending of the households

Z = Poverty line using $2/3$ of mean consumption/expenditure of the farming households.

3.4.4: Descriptive statistic

Descriptive statistic was used to analyzed objective (iv) and (v)

CHAPTER FOUR
RESULTS AND DISCUSSION

4.1 Nature of Livelihood Diversification

Livelihood diversification is the process by which households construct a diverse portfolio of activities and social support capabilities for survival and in order to improve their standard of living (Olawale *et al*; 2010). Rural livelihood diversification is defined as the process by which rural farm households construct an increasingly diverse portfolio of activities and assets in order to survive and to improve their standard of living (Olawale *et al*; 2010).

Table 4.1: Distribution of farming Households According to the Nature of Livelihood Diversification

Livelihood Activities	Frequency	Percentage
Trade	118	72
Civil service & Private Salaried Job	37	23
Revenue From Leasing Out Land and Other Resources/Rent	7	04
Wage From Agricultural Labour Supply On Other People's Farm	12	07
Artisans :		
Barbing/hair dressing/platting	9	05
Brick laying	5	03
Carpentry	12	07
Tailoring	11	07
Other Sources	8	5

Multiple Response Allowed*

Farming household combine a range of activities to make a living since barely any household was found to depend on one activity but used a host of activities and opportunities offered by farm and non-farm sectors. All the farming households reported non-farm income for the survey either in employed activity or participating part-time when not in farming work. A list of livelihood activities which various

household members undertake and recorded in the study area is presented in Table 4.1. The result of the analysis on the nature of livelihood diversification in Table 4.1 shows that about 54% percent of those surveyed are engaged in trade, Artisanry accounted for 20.5% and Civil service/private salaried jobs 17%. Wage from agricultural labour supply on other people's farm accounted for 12% while revenue from leasing out land and other resources/rent accounted for 7%. The result revealed that trading and artisanry, were the favored livelihood activities in the study area. This result is consistent with the findings of Olawole *et al*; (2010) on poverty and rural livelihood diversification among farming households in southwest Nigeria, Trading generated the highest 34.67% with mean income of N7,368,27 per week.

4.2 Extent of livelihood Diversification

This examines the degree of livelihood diversification in the study area. It looks at how many livelihood activities a farming household is involved engaged in.

Table 4.2: Distribution of Diversification Index among farming Households

Diversification Index		Frequency	Percentage
Low	(Up to 0.50)	115	70
Medium	(Between 0.60-0.69)	41	25
High	(More Than 0.70)	08	05
Total		164	100

Average Diversification Index in the Study Area =0.55.

It is clear from table 3 that majority (70%) of farming household had low level of diversification (depend on one source of livelihood). Twenty five percent (25%) of farming household moderately diversified (depend on two sources of livelihood). And only 5% of farming household were highly diversified (more than two sources of livelihood) indicating that the richest households derive the largest income share from

off-farm activities. This is not surprising, because establishing an own business often requires huge capital. It should be noted that diversification in the context of this study means having other sources of livelihood in addition to the existing farming. Furthermore, the result shows that farming households do not depend on one source of livelihood. This strategy is adopted to ensure secure livelihood and reduce poverty. The result is at variance with studies conducted by Saha *et al*, (2010) and Idowu *et al*. (2014) where majority of farming household moderately diversify their sources of livelihood

4.3 Socio-Economic and Institutional factors Affecting Sources of Livelihood

Diversification

A Tobit regression model was employed to examine the socioeconomic and institutional factors influencing the sources of livelihood diversification among farming households (Table 4.3) in the study area.

Table 4.3:Tobit regression results on Socio-economic and institutional variables influencing livelihood diversification

Variables	Constant	Coefficient	Standard Error	Marginal Effect	T. Values
Age	.87730061	.36385467	.16880747	.0311	2.155**
Gender	50.7607362	.01786769	.00508385	.0004	3.515***
Household size	1.38650307	-.02303994	.06892724	.7382	-.334
Education	5.78527607	.06907426	.02929531	.0184	2.358**
Income of farmer	.90184049	.17819705	.22505936	.4285	.792
Credit received	489903.742	.411196D-07	.177279D-06	.8166	.232
Nearness to market	76717.7914	-.894573D-07	782731D-06	.9090	-.114
Sigma		.68482798	.03792911	.0000	18.055
Log likelihood function		-169.5772			

***, ** and * denotes that the associated coefficient is significant at 1%, 5% and 10% level, respectively
Source:

The results shows that the coefficients of age, gender, education, income of the respondent, and amount of credit received and access are positive. The log likelihood function (-169.5) shows that the estimated model including a constant and the set of explanatory variable fit the data better. This implies a better relationship between odds ratio (or log of odds), probability of socio-economic factors influencing Simpson index of diversification (dependent variable) and the explanatory variables included in the model collectively contribute significantly to the explanation of farmers influence in adopting a livelihood diversification strategy.

The results showed that age of the farming household heads was found to be positive and significant at $p < 0.05$. The coefficient of age is 0.3634. This implies that sources of livelihood are increased by 0.3639. This may be due to the fact that older people are likely to have a greater tendency to engage in several income generating activities but the likelihood declines as they get older. This finding is also similar to Abdulai and Delgado (1999) in Ghana. This might result in a different degree of involvement in diversification activities and/or in an unequal distribution of their benefits between genders (Ahmed, 2012).

Gender was also found to be positively related to the sources of livelihood and statistically significant at $P < 0.1$. This implies that sources of livelihood will be increased by 0.0178 for male-headed farming household as against female-headed farming household. This is because males dominate ownership of assets, leadership of households and participation in livelihood activities and formal employment. Female-headed household are often disadvantage in terms of social status and economic opportunities. Gender is an integral and inseparable part of rural livelihoods. Men and women have different assets, access to resources, and opportunities. Women rarely own land, may have lower education due to discriminatory access as children, and their

access to productive resources as well as decision making tend to occur through the mediation of men. This is consistent with the result of the study conducted by Babatunde (2010) who found out that male household are economically efficient and have more sources of livelihood

Education of farming household head was found to be significant and positively related to the sources of livelihood. The coefficient for education is 0.6907. The results show that higher level of education among household members such as completing secondary education or university education had a positive effect on the sources of livelihood. This is probably because school education increases human capital level and provide the necessary skills which enable the entry into more remunerative labor market especially for non-farm activities. It is also a valuable asset for rural people to pursue opportunities in new agriculture, obtain skilled jobs, and start business into the non-farm sector. A study by Central Bank of Nigeria/World Bank (2008) showed that education is crucial as it provides skills and abilities which allow households to secure productive and well-paying jobs. This result is consistent with studies on diversification by Babatunde *et al.*, (2009) and Idowu *et al.*; (2011) where education was found to be a key determinant of diversification of income generating activities. The other variables that have negative relationship with sources of livelihood are household size and nearness to market. These two variables have a diminishing impact on sources of livelihood in the study area.

4.4:Socio-economic features of the sampled farming household head

Table4.4: Socio-economic characteristics of the sampled farming household head

Variables	Minimum	Maximum	Mean	Standard Deviation
Gender	0	1	0.877301	0.329103
Age (yrs)	25	73	50.76074	11.16975
Education(yrs)	0	3	13.86503	0.803735
Household Size(No.)	2	15	5.785276	2.098625

Table 4.4: Revealed that the average sampled head of a farming household was 0.9 indicating that majority of farming household were dominated by males This is because males dominate ownership of assets, leadership of households and participation in livelihood activities and formal employment. Female-headed household are often disadvantage in terms of social status and economic opportunities, and about 51 years of age which implies that farming household were in their economically active age. Also an average farming household had about 13 years of formal education, Most of the respondents had one form of formal education or the other this is probably because school education increases human capital level and provide the necessary skills which enable the entry into more remunerative labor market especially for non-farm activities, and had about five persons in the household with at least three dependants. By implication the larger the household size the poorer the household is likely to be because more of the household members will likely be children who are unproductive

and yet take a big proportion of household income in terms of school fees, medical bills, food and clothing.

4.5 Assessing the level of Poverty among Farming Household

A concise and universally accepted definition of poverty is elusive largely because it affects many aspects of the human conditions, including physical, moral and psychological. The most conventional view of poverty is seen as a result of insufficient income for securing basic goods and services.

Table 4.5: Poverty Indices of respondents

FGT Poverty Indices	Estimates
Poverty Incidence(P_0)	0.56
Poverty Depth(P_1)	0.25
Poverty Severity(P_2)	0.14
Poverty Lines	
Mean Per Capita Household Expenditure	₦169,362.3 Per Annum
2/3* Mean Per Capita Household Expenditure	₦112,908.2 Per Annum
1/3 * Mean Per capita House Expenditure	₦56,454 Per Annum

The Foster, Greer and Thorbecke model was employed in this study for measuring poverty. To determine the poverty level of farming households, a common base line was established. This base line is known as the poverty line. Poverty line has been defined as the minimum or the cut-off standard of expenditure on food or per capita income below which an individual or household is described as poor (Adekoya 2014). The poverty line was determined using two third mean per capita household expenditure of the farming households. From Table 5, a relative poverty line of ₦112,908.2 was established from food and non-food expenditure of the farming household. This implies that a household having an average annual expenditure above ₦112,908.2 was considered non-poor, those with income between ₦56,454 and

₦112,908.2 are considered moderate poor while those having annual average expenditure less than ₦56,454 were considered very poor. Thus the result of the poverty incidence is 0.56 which indicate about 56% in variability of the poverty of households of farming households were poor. This indicated that poverty was predominant among rural farming households which might be due to limited access to opportunities and infrastructure in rural areas. Infrastructure such as roads, water and sanitation, universities and electricity are seldom available in the rural areas of the Nigeria (Omonona 2008)

The poverty gap index results revealed was 25% indicating the gap between the poor and the poverty line was 25%. Therefore, the poor will require 25% raise in their per capita expenditure to become non-poor which translate into ₦28,227.05. Alternatively, the poor will require poverty reduction programmes toward increasing the household expenditure.

The poverty severity index of the farming households was 0.14. This implies that poverty is not severe among poor farming households with about 14% of the farming households that constitute the poorest among the respondents. In other words, the squared poverty takes into account not only the distance separating the poor from the poverty line, but also the inequality among the poor.

4.6 Contributions of Livelihood Diversification among Farming Household

Non-farm income constitutes all sources of non-agricultural income earned off-farm and includes off-farm paid labour work, wage employment, trading, remittances and other businesses while farm income constitutes income from crop and livestock production.

Table 4.6: Contribution of Livelihood Diversification to Poverty Alleviation

Contributions	Amount(₦)	Percentage
Farm Income	35,023,510	43.86

Non-Farm Income	44,830,800	56.14
Total	79,854,310	100.00

Computed from survey data, 2014

The results on Table 4.6 revealed that non-farm employment serves as a main source of family income and as a source of extra income to the majority of farming households. It also revealed that in monetary terms, non-farming activities contributes about 56.14% with an average of ₦44,830,800 per annum while farm activities contribute about 43.86% with an average of ₦35,023,510 per annum respectively of overall household earned income in the study area. Therefore, both farm and non-farm incomes constitute a substantial proportion of household income and both are therefore important to farming household people. This implies that income from non-farm activities contributed more to income inequality than any other livelihood strategy and could be attributed to the fact that non-farm activities yield higher returns than farm activities. This finding is consistent with the study conducted by Igwe(2013) where he found out that nearly 78% of respondents participated actively in non-farm employment.

4.7 Constraints to Livelihood Diversification among Farming Household

Information collected on constraints of farming household was collected during the household survey in Table 4.7. The aim was to understand the problems encountered in the study area in adopting livelihood activities.

Table 4.7: Constraints to Livelihood Diversification

Constraints	Frequency	Percentage	Rank
Lack of Access to Formal Loan	72	44	1 st
Unstable Electricity	68	41.5	2 nd
High Cost of Business Premises	53	32	3 rd
Poor Access to Market	46	28	4 th
Unavailable Skilled Labour Supply	34	21	5 th
Gender Issues	32	20	6 th
Others	27	16.5	7 th

Multiple Response Allowed*

It is assumed that knowledge of community-based issues could be used to better understand the behavior of households and the decisions they make in pursuing their livelihoods. Several factors affect farming household's livelihood diversification. Some of the factors among others considered as the most important constraints affecting diversification are: Lack of access to formal loan (44%); unstable electricity (41%); High cost of business premises (32%); and poor access to market (28%)

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Livelihood diversification activities have become an important component of livelihood strategies among farming households in most developing countries, and non-farm income diversification has recently received increased attention in discussions about rural development and poverty reduction.

This present study was conducted to analyze the contribution of livelihood diversification strategies in enhancing poverty reduction among farming household in the study area. Data was collected from a sample of 164 farming households in two local government (Chikun and Zango Kataf). Descriptive statistic and simpson index of diversification was estimated to described the nature and extent of livelihood diversification activities. The factors influencing adoption of different sources of livelihood activities was examined using censored Tobit regression model. Foster Greer Thorbeck measure of poverty was used to analyze the degree of poverty among the 164 respondents in the study area. And descriptive statistic was used to analyzed the contributions of livelihood diversification and constraints affecting livelihood diversification in the study area.

The results showed trade is by far the most important single additional source of livelihood for the rural households, providing about 72% of total income, Artisanry accounted for 27% and Civil service/private salaried jobs 44%. Conversely, the results

for extent of livelihood activities shows that majority (70%) of farming households depend on one source of livelihood in addition to farming. Some 25% farming households moderately diversify (depend on two sources of livelihood) Only 5% were highly diversified (more than two sources of livelihood). The results of Tobit regression model shows that five (5) out of the seven (7) independent variables were positively related to the dependent variable (Simpson index of diversification). And three (3) variables age, gender and education were statistically significant at $p < 0.05$, $p < 0.01$, and $p < 0.05$ respectively.

In assessing the level poverty among farming household, the results shows that poverty incidence is 0.56 which indicate about 56% in variability of poverty of households of farming household within the poor. The poverty gap indicates that the poor will require 25% rise in their expenditure to become non-poor which translate into ₦28,227.05. The poverty severity index of the farming households shows 14% of the farming households that constitute the poorest among the farming household. This implies that poverty is not severe among poor farming households. The contribution of livelihood diversification shows that non-farm income activities were a major contributor of farming households' income diversification strategy. The non-farm income accounted for 56.14% of total farming household income and farming 43.86%. Therefore non-farm employment serves as additional source of extra income to the majority of farming households alongside farming which is the major occupation. Concerning constraints affecting livelihood diversification in the study area, it was observed that the major constraints is lack of access to loan which accounted for (44%), unstable electricity (41%); and high cost of business premises (32%); among others.

5.2 Conclusion

This study revealed that the majority of farming households that engaged in trade were mostly low diversifiers with trade as an additional source of livelihood to farming. This study also revealed that age, gender, education, income of the farmer, and credit received out of seven (7) independent variables were positively related to the dependent variable. And three (3) variable age, gender and education were statistically significant at $p < 0.05$, $p < 0.01\%$, and $p < 0.05$ respectively. This study further revealed that the poor requires 25% rise in their expenditure to become non-poor. And that poverty is not severe among poor farming household with about 14% of the farming household that constitutes the poorest among the respondent. Finally, this study revealed that non-farm contribute more to poverty reduction than any other livelihood strategy.

5.3 Recommendation

Based on the findings of this study the following recommendations were made:

- i. It is recommended that in order to increase small/medium enterprises, formation of cooperative societies and encourage farmers to join the existing cooperative societies, this will ensure that farmers pool their resources to achieve economies of scale for large scale business.
- ii. It is therefore recommended that Government should establish skills acquisition centers for rural farming households to acquire more skills to diversify more into non-farm activities so that income realized will be channeled back to boost agriculture. Also, Government should partner with organizations like World Bank towards sponsorship of entrepreneur skills in the rural areas.
- iii. There is need for improvements in the physical infrastructure – including roads, electricity, water, and telecommunication in the rural areas by Government.
- iv. It is recommended as a matter of urgency that Government should provide quality education to the masses (especially of the girl-child – being the most

disadvantaged), the type of education that will make households acquainted with educational programmes (formal and non-formal), become aware of benefits of cooperative societies, and accessibility to credit schemes which can make them self-reliant. This could increase the off-farm activities that could generate more income for the household and thereby reduce poverty among them.

- v. Therefore, it is recommended that Government provide sufficient resources to develop infrastructure i.e improvements in the physical infrastructure – including roads, electricity, water, and telecommunication, organize public services and implement development programs. Furthermore, there is need for government to empower women in terms of equal access to productive resources and employment opportunities.

5.4 Contribution to Knowledge

The insight gained from this study highlighted that livelihood diversification is stated below.

- i. Education of farming household had a significant effect on sources of livelihood diversification at $p < 0.05$.
- ii. Non-farm sector constitute the major source of poverty reduction in the study areas and contributes (56.14%) to overall household income.
- iii. Farmer's participation in the livelihood diversification activities was constrained by Lack of access to formal loan (44%), unstable electricity (41.5%), high cost of business premises (32%), and poor access to market (28%).
- iv. The level of involvement of farming household in trade 72%, targeted civil service/private salaried job 23% and artisans 27%.

REFERENCES

- Adekoya Olusoji Adetayo (2013) Analysis Of Farm Households Poverty Status In Ogun States, Nigeria *Asian Economic and Financial Review*, 4(3):325-340
- Ahmed, Funmilola Fausat (2012) Income Diversification Determinants among Farming Household in Konduga, Borno state, Nigeria. *Journal of Academic Research International* 2(2) 555-561
- Akpan, E. (2009). Oil Resource Management and Food Insecurity in Nigeria. Paper Presented at the European Report on Development (ERD) Conference in Accra, Ghana.
- Abimbola, O. Adepoju, and Olaniyi, O. Oyewole.(2014) Rural Livelihood Diversification and Income Inequality. *Journal of Agricultural Sciences*. 59 (2):175-186.
- Anriquez, G. and S. Daidone (2008) Linkages between Farm and Non-farm sectors at the Household level in Rural Ghana, A Consistent Stochastic distance function approach, *ESA working Paper .08(01): 4*, <http://www.fao.org/es/esa> (24.01.2015).
- Ansoms, A., & McKay, A. (2010). A quantitative analysis of poverty and livelihood profiles: The case of rural Rwanda. *Food Policy*.35(6), 584–598.

- Awoyemi, T. T. (2004) *Rural Non-Farm Incomes and Poverty Reduction in Nigeria*. A Report Submitted to Africa Economic Research Consortium, Nairobi, Kenya.
- Babatunde, R.O. and Qaim, M. (2009). Patterns of Income Diversification in Rural Nigeria: Determinants and Impacts. *Quarterly Journal of International Agriculture*.48(4): 305-320.
- Babatunde, R.O and Andre L. (2013). On-farm and off-farm Works: Complements or Substitutes? Evidence from Rural Nigeria. Africa Study Centre Working Paper 249. Leiden
- Bezu, S., Barrett, C. B., & Holden, S. T. (2012). Does the Nonfarm Economy Offer Pathways for Upward Mobility? Evidence from a Panel Data Study in Ethiopia. *World Development*.40(8), 1634–1646
- Saha, B, Ram B. (2010) livelihood Diversification Pursued by Farmers in West Bengal. *Indian Research Journal*. 10 (2) 1-2.
- Chambers, R. and Conway, G. (1992) “Sustainable Rural Livelihoods: Practical Concepts for the 21st Century”, *IDS Discussion Paper 296*. Brighton: IDS.
- Collier, P. and Dercon, S. (2009) African Agriculture in 50 years: Smallholders in a Rapidly Changing World. Food and Agriculture Organisation of the United Nations Economic and Social Development Department, FAO, Expert Meeting on How to Feed the World in 2050.
- Davis, J. R. and Bezemer, D. J. (2003) Key emerging and conceptual issues in the development of the RNFE in developing countries and transition economies, NRI Report No. 2755, Natural Research Institute, Kent.
- DFID (2011) Economic growth and private sector, Department for International Development, <http://www.dfid.gov.uk/what-we-do/key-issues/Economic-growth-and-the-private-sector/Growth/>(23.09.2014)
- Dilruba Khatun and B.C Roy (2012). Rural Livelihood diversification in West Bengal; Determinants and constraints. *Journal of agricultural research review*. 25(1) 115-124
- Fabusoro, E., A. M. Omotayo, S. O. Apantaku and Okuneye, P. A. (2010) “Forms and Determinants of Rural Livelihoods Diversification in Ogun State, Nigeria,” *Journal of Sustainable Agriculture*.34(4), 417 – 438.
- Freeman, H. A., Ellis, F. and Allison, E. (2004) “Livelihoods and Rural Poverty in Kenya”, *Development Policy Review*.22 (2), 147-171.
- Foster, J. E., J. Greer and E. Thorbecke (1984) A Class of Decomposable Poverty Measures, *Econometrica*,52(3),761-776
- Greene, W. (2003) Statistics and Data Analysis, Stern School of Business, Department of Economics, New York University, United States
- Idowu, A. O, Ambali, O. I, and Onasanya, A. S (2014) Living Condition, Livelihood and CropDiversification among Rural Farm Households in Remo Division of

Ogun State Nigeria. *Asian Journal of Agricultural Extension, Economics and Sociology*.3(6): 619-629.

- Ibekwe, U.C; Eze, C.C; Ohajianya; D.O, Orebiyi, J.S; O.C Korie (2010) Determinants of non-farm income among farm household in southeast Nigeria. *Journal of academic arena* 2(8) 29-33
- Idowu A.O, Aihonsu, J.O.Y, Olubanjo, O.O, Shittu, A.M (2011) determinants of income diversification amongst rural farm households in southwest Nigeria. *Journal Economics and finance review* 1(5) 31-43
- IFAD (2009) Rural Enterprise and Poverty Reduction, Asia and the Pacific Division, International Fund for Agricultural Development.
- IFAD (2011) Non-Farm Opportunities from Smallholder Agriculture, Conference on New Directions for Smallholder Agriculture, 24 – 25 January 2011, Rome, IFAD HQ. <http://www.ifad.org/events/agriculture/doc/papers/non-farm.pdf>.(23.09.2014)
- Kusters, K. (2010) Which role for the non-farm sector in a forested landscape? Lessons from Krui, Indonesia, University of Amsterdam and Centre for International Forestry Research. 320 – 322
- Millennium Development Goals (MDGs 2000)<http://www.un.org/millenniumgoals/bkgd.shtml>(03.02.2015)
- Mwabu, G. and E. Thorbecke (2004) “Rural Development, Growth and Poverty in Africa” *Journal of African Economies*. 13 (1) 16 – 65.
- Nasa, D.H., Atala, T.K., Akpoko, J.G., Kudi, T.M., Habib, S. (2010): Analysis of factors Influencing livelihood diversification among rural farmers in Giwa local government area of Kaduna state, Nigeria. *International Journal of Science and Nature*. 1(2):161-165.
- NPC. (2006). National Population Census, Nigeria Census Figure
- Obike, K.C., Ukoha, O.B. and Ezech, C.I. (2011) The Determinants of Income among Poor farm households of The National Directorate of Employment (NDE) in Abia State, Nigeria: *Journal of Sustainable Development in Africa*. 13.(3), 176 – 182,
- ODI, (2001) “Economic Theory, Freedom and Human Rights: The Work of Amartya Sen” *Briefing Paper ODI*. (<http://www.odi.org.uk/publications/briefing/poly-final.pdf>)(03.02.2015)
- Ogen, O. (2007). The Agricultural Sector and Nigeria’s Development: Comparative Perspectives from the Brazilian Agro-Industrial Economy, 1960-1995. *Nebula*.4(1): 184-194
- Olawale D. Awotide, Adetunji L. Kehinde and Peter O. Agbola (2010) Poverty and rural livelihood diversification among farming households in southwest Nigeria. *Journal of Food, Agriculture & Environment* 8 (1) : 3 6 7 - 3 7 1

- Oluwatayo. I. B. (2009). Poverty and income diversification among households in Rural Nigeria: A gender Analysis of livelihood patterns. Paper presented at the 2nd institutode Estudos Sociais de Economicos (IESE) Conference on Dynamics of Poverty and Patterns of Economic Accumulation in Mozambique. 1-21
- Okere C.P and Shittu A.M (2013) Patterns and Determinants of Livelihood Diversification among Farm Households in Odede LGA ogun. *Research Journal of Economics*. 1 (1) 1-12
- Omonona, B.T, E.J. Udoh, and A.A. Adeniran (2008). “Poverty and its Determinants among Nigerian Farming Households: Evidence from Akinyele LGA of Oyo State, Nigeria”, *European Journal of Social Sciences* 6(3) 402-412.
- OPM (2004). Oxford Policy Management, DFID Rural and Urban Development Case Study – Nigeria
- Oseni, G. and Winters, P. (2009). Rural Nonfarm Activities and Agricultural CropProduction in Nigeria. *Agricultural Economics*. 40(2), 189-201.
- Igwe A. P. (2013). Rural Non-farm Livelihood Diversification and Poverty Reduction in Nigeria. Athesis submitted to the university of plymouth for the award of the degree of doctor of philosophy (phd) in business with management.School of Management (Plymouth Business School), University of Plymouth, Plymouth, PL4 8AA, United Kingdom.
- Nghiem, Le Tan (2010). Activity and income diversification: Trends, Determinants and effects on poverty reduction. The case of the Mekong River Delta. A thesis submitted to the University of Eramus University Rottendam, for the award of the degree of doctor of philosophy (phD) in economics. University of Eramus Vietnam
- Phillip, D., Nkonya, E., Pender, J. and Oni, O.A. (2009). *Constraints to Increasing AgricProductivity in Nigeria: A Review*. IFPRI-NSSP Background Paper No. 6.
- Reardon, T., Berdegue J., Barrett C. B. and Stamoulis K. (2007) Household IncomeDiversification into Rural Nonfarm activities, In: Kusters, K. (2010) Which role for the non-farm sector in a forested landscape? Lessons from Krui, Indonesia, University of Amsterdam and Centre for International Forestry Research 320 – 322.
- Seera Sylvia (2014). Determinants of participation in livelihood diversification among peasant farmers in rural Uganda: A dissertation submitted in partial fulfilment of the requirement for the award of degree of masters of Art in population and development of Makere University, Uganda.
- Sekumade A.B, Osundare F.O (2014) Determinants and Effect of Livelihood Diversification on Farm Households in Ekiti State. *Journal of Economics and Sustainable Development*.5.(5): 1-2
- Sen, A. (1999) Development as Freedom: *An Essay on Entitlement and Deprivation*. New York: Clarendon Press.6 (3) 18-23.

- Scoones, I. and Wolmer, W. (2003) “Introduction: Livelihoods in Crisis: Challenges for Rural Development in Southern Africa” *IDS Bulletin*. 34 (3) 1-14.
- Start, D. and Johnson, C. (2004) “Livelihood Options? The Political Economy of Access, Opportunity and Diversification” *ODI Working Paper* No. 233.
- Stephen, O. and Lenihan, E. (2010) Rural Livelihood Insecurity in Etsako East of Edo State, Nigeria, *Journal of Sustainable Development*.5(1/2). 1 – 11.
- Topalova, P. (2007): Trade liberalization, poverty, and inequality: Evidence from Indian districts. In:Harrison, A. (Ed.), *Globalization and poverty*. National Bureau of Economic Research, Chicago, USA. 291-336.
- UNU/WIDER (2000): United Nations University, World Institute for Development Economic Research, World Inequality Database, Vol. 10, Helsinki, Finland
- World Bank (2008.): World Development Report: agriculture for development, in: www.econ.worldbank.org (15.06.2015).

APPENDICES

DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY, AHMADU BELLO UNIVERSITY, ZARIA.

Dear Sir/Madam,

I am a post graduate student (M.sc) of the aforementioned department carrying out a research on the topic: **CONTRIBUTIONS OF LIVELIHOOD DIVERSIFICATION IN ENHANCING POVERTY REDUCTION AMONG FARMING HOUSEHOLDS IN ZANGO KATAF AND CHIKUN LOCAL GOVERNMENT AREAS OF KADUNA STATE, NIGERIA**. Please kindly answer the following questions to the best of your knowledge. Information provided will be treated confidentially.

Best of regards,

Instruction: Kindly tick (✓) or fill in the blank spaces as appropriate

SECTION A

- 1 Name of farming household
- 2 Sex: Male () Female ()
- 3 Age (years)
- 4 Highest level of Education:
 (a) No Formal Education () (b) Primary Education () (c) Secondary Education ()
 (d) Tertiary Education ()
6. Family size (All the number of the people depending on you for Living).....(a) No. of Adult Male () (b) No. of Adult female () (c) Children >15yrs () (d) Children <15yrs ()

7. If you have diversified into non-farm activities, do you have access to market? a)Yes
b)No

8. Access to credit facilities. Please specify by ticking as appropriate whether you have access to the following type of credit

	Types of credit	Yes	No
1	Credit for Agricultural production		
2	Credit for Off-farm business		
3	Credit for household consumption		

9. If 'Yes' from which sources do you get credit and the amount in the last one year (please fill appropriate)

Source of Credit	Agricultural Credit		Off-farm business Credit		Household Consumption	
	Amount Taken(₦)	Interest Paid(₦)	Amount taken(₦)	Interest paid(₦)	Amount taken(₦)	Interest Paid(₦)
	1	Bank				
2	Money Lender					
3	Cooperatives					
4	Government loan					
5	Friends & relatives					
	Others specify					
6						

SECTION B

1. Have you diversify into non-farm income enterprise Yes () No ()
2. If you have diversified into any of the income activities listed below, please tick (√) all that apply to you.

S/no	Income source	Amount in ₦ per week or per month or per quarter or per year
1	Self employed (farming, trading, blacksmith, carpentry, crafts , barbing, etc)	

2	Private employed (salaried)	
3	Government employed (salaried)	
4	Remittance from children and relatives	
5	Gifts	
6	Pension/government bonus	
7	Revenue from leasing out land and other resources/rent	
8	Wage from agricultural labour supply on other people's farm	
	Other sources specify	
9		
10		

3. Why did you diversify your operations? Please tick (✓) one main reason from the list below.

s/no	Reason for diversification	✓
1	To generate sufficient income	
2	To diversify away from agriculture	
3	Availability of government grant	
4	Conservation & environmental reasons	
5	to employ family members	
6	identification of market opportunity	
7	Provide food security for the family	
8	Reduce poverty level in the family	
	Other specify	
9		
10		

4. If you are engage in livestock farming; how many livestock animals do you currently have? Number of livestock owned.....

SECTION C

Household Expenditure:

In the last one week, month or one year (whichever is easier), indicate the amount spent on following items by your household.

Food expenditure	Last one week(₦)	Last one month (₦)	Last one year(2014) (₦)
Staple foods (Garri, yam tuber, cocoyam, maize flour, sorghum, grain flour, groundnut, beans, rice, millet)			
Vegetables (okra, tomato, pepper, onion, spinach, carrot, bitter leaf			
Fruits (orange, mango, pawpaw, guava, coconut)			
Meat & animal product (beef, chicken,fish, crayfish, egg)			
Dairy products and Beverages (Milk, Cheese, Yoghurt, ice cream)			
Drinks			
Others food expenses specify			

Non-food Expenditure

Non-food Expenditure	In the last month Amount spent in naira(₦)	In the last one year (2014) Amount spent in naira(₦)

Clothing(fabric, clothes, beddings, foot wares)		
Purchase of vehicles/motor cycles/bicycles		
Repairs Of Vehicles/motor cycles/Bicycles		
Home Repairs(Painting, Roofs, Plastering)		
House rent, water bill, electricity, GSM bills		
Kerosene, charcoal, firewood, gas cost		
Alms, offering, tithe, charity		
Radio/Television/Fan		
Ceremony- wedding, naming, funerals, graduation		
Extra Land		
Other non-food expenses specify		

OTHER WELFARE MEASURES:

- (a) Do you pay any levies to LGA or State or any other stakeholders in your area?
- (b) How much do you pay (₦).....? Per weekly/monthly/yearly.
- (c) What benefits do you receive from paying the levies above.....?
- (d) Has diversifying into non/off-farm activities helped in alleviating your poverty
a) Yes () b) No ()
- (e). If yes, on a scale of 0 – 5, what level can you select for the contribution livelihood diversification to your household poverty alleviation with zero (0) implying zero (0) or no contribution and 5 implying the highest contribution
- (f). In what way can you say diversification into farm/non-farm has helped in alleviating your poverty?
.....

SECTION D:

1. What is/was your level of income before diversification? (a) Very high (b) high (c) average (d) low (e) very low
- 2.What is your level of income after diversification? (a) Very high (b) high (c) average (d) low (e) very low
3. Do you farm? A) Yes b) No

4. If yes, then please complete the table below:

		Maize	Sorghum	Rice	Millet	Cowpea	Yam	Cocoyam	Soybean	Groundnut	okra	wheat	Others Pls specify				
Total Cost of each crop production fm last 4years ₦	2011 (₦)																
	2012 (₦)																
	2013 (₦)																
	2014 (₦)																
Revenue from crop production in the last 4 years (₦)	2011 (₦)																
	2012 (₦)																
	2013 (₦)																
	2014 (₦)																

- How important could you describe crop incomes for your household survival? Rank 1 to 5; use 1 for least important and 5 for most important.
- Please complete the table below on cost of livestock production and the revenue derived.

		Chicken	Fish	Cow/Bull	Rabbit	Sheep	Guinea fowl	Pig	Others Specify			
Cost of production of	2011 (₦)											
	2012 (₦)											

	2013 (₺)												
	2014 (₺)												
Revenue from livestock last 4 yr (₺)	2011 (₺)												
	2012 (₺)												
	2013 (₺)												
	2014 (₺)												

3. How important could you describe livestock incomes for your household survival? Rank 1 to 5; use 1 for least important and 5 for most important.
4. Does your household have any sources of off-farm income? a) Yes () (b) No ()
5. If yes, then please complete the table below:

	Off-farm income sources	Income obtained by household members during the last 4 (₺/year)			
		2011(₺)	2012(₺)	2013(₺)	2014(₺)
1	Income from wage employment outside Agriculture				
2	Wage from agricultural labour supply on other people's farms				
3	Income from self employment or own business				
4	Income from self employment or own business				
	Income from machinery service for other farms				
6	Remittances received from family members and relatives				
7	Pensions/share dividend/government bonus				
8	Revenue from leasing out land and other				

	resources				
	Other sources				
9					
10					

6. What would you say was the impact of the off-farm income on the following household's characteristics for the past 12 months? (Tick one option per row please)

	Household characteristics	Increased	Decreased	Unchanged	I cannot say
1	Household total farm production				
2	Household food consumption				
3	Household demand for quality food				
4	Household cash expenditure on food				
5	Household cash expenditure on Non-food				
6	Household productive assets				
7	Household family labour supply				
8	Household hired labour demand				
9	Agricultural yield				
	Others specify.				

7. How important could you describe non-farm incomes for your household survival? Rank 1 to 5; use 1 for least important and 5 for most important.
8. What is the effect of the above income(s) on your household (a) Positive () (b) Fairly positive () (c) Strongly positive () (d) Negative ()

SECTION E

Please indicate by ticking (√) in order of importance

S/n	Constraints affecting livelihood diversification	Most Important Constraint	2 nd most important constraint	Coping Strategy
1	Lack of access to formal loan			
2	Poor access to market			
3	Unavailable skilled labor supply			
4	High cost of business premises			
5	Low market			
6	Gender issues			
7	High tax rate			
8	Unstable electricity			
	Others factors specify			
9				
10				
11				
12				

Thank you for your attention.

APPENDICES II

--> RESET

Initializing NLOGIT Version 4.0.1 (January 1, 2007).

--> READ;FILE="C:\Users\samson\Desktop\excel for tobit regression original.xls"\$

--> TOBIT;Lhs=Y;Rhs=X1,X2,X3,X4,X5,X6,X7\$

Normal exit from iterations. Exit status=0.

```

+-----+
| Limited Dependent Variable Model - CENSORED |
| Maximum Likelihood Estimates                |
| Model estimated: May 08, 2015 at 03:38:35PM. |
| Dependent variable                          Y |
| Weighting variable                          None |
| Number of observations                       164 |
| Iterations completed                         3 |
| Log likelihood function                     -169.5772 |
| Number of parameters                         8 |
| Info. Criterion: AIC =                      2.17886 |
|   Finite Sample: AIC =                      2.18460 |
| Info. Criterion: BIC =                      2.33070 |
| Info. Criterion:HQIC =                     2.24051 |
| Threshold values for the model:             |
| Lower= .0000 Upper=+infinity                |
| LM test [df] for tobit= 2.102[ 7]           |
| Normality Test, LM = 31.216[ 2]            |
| ANOVA based fit measure = .302144          |
| DECOMP based fit measure = .221889         |

```

+-----+

```

+-----+-----+-----+-----+-----+-----+
+
|Variable| Coefficient | Standard Error |b/St.Er.|P[|Z|>z]| Mean of
X|
+-----+-----+-----+-----+-----+-----+
+
-----+Primary Index Equation for Model
X1      | .36385467   .16880747      2.155   .0311
.87730061
X2      | .01786769   .00508385      3.515   .0004
50.7607362
X3      | -.02303994   .06892724      -.334   .7382
1.38650307
X4      | .06907426   .02929531      2.358   .0184
5.78527607
X5      | .17819705   .22505936      .792    .4285
.90184049
X6      | .411196D-07 .177279D-06    .232    .8166
489903.742
X7      | -.894573D-07 .782731D-06    -.114   .9090
76717.7914
-----+Disturbance standard deviation
Sigma   | .68482798   .03792911      18.055  .0000

```