# ASSESSMENT OF THE IMPACT OF INSURGENCY ON LIVELIHOODS OF FARMERS IN NORTHEASTERN NIGERIA

**BY**

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**A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA, IN PARTIAL FULFILLMENT OF THE REQUIRMENTS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY (Ph.D.) IN RURAL DEVELOPMENT**

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**OCTOBER, 2017**

## DECLARATION

I hereby declare that this thesis entitled: **"Assessment of the Impact of Insurgency on Livelihoods of Farmers in Northeastern Nigeria"** has been carried out by me in the Department of Geography and Environmental Management, and it is a record of my research work. No part of this work has been presented in my previous application for another degree at any institution. All borrowed ideas have been duly acknowledged in the text and a list of references provided.

**Augustine Sunday ONWUAROH** _____ _____
**Signature** **Date**

## CERTIFICATION

This thesis entitled: **"ASSESSMENT OF THE IMPACT OF INSURGENCY ON LIVELIHOODS OF FARMERS IN NORTHEASTERN NIGERIA"** by Augustine Sunday **ONWUAROH** meets the regulations governing the award of degree of Doctor of Philosophy (Ph.D) in Rural Development of Ahmadu Bello University, Zaria, and is approved for its contribution to knowledge and literary presentation.

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## DEDICATION

This thesis is dedicated to all those who lost their loved ones to insurgency and also, the staff and students of Department of Geography and Environmental Management, Ahmadu Bello University, Zaria for all their support to bring this work to a successful end.

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## ABSTRACT

The incessant bombing and killing by insurgents no doubt impacts negatively on agricultural activities as most farmers in the areas under attacks hardly go to farms and should therefore be an area people should research into for possible solutions, but unfortunately, there is dearth of empirical and quantitative data of the catastrophic damage insurgency has done to the livelihood of rural farmers. This study was designed to assess the impact of insurgency on livelihoods of farmers in northeastern Nigeria. The specific objectives were to: describe the socio-economic characteristics of the respondents, examine the nature and frequency of insurgency, examine the perception of the farmers on the causes of insurgency, determine factors that make farmers susceptible to insurgency, analyze the impact of insurgency on livelihoods of farmers and characterize the strategies farmers are employing in mitigating and coping with impact of insurgency. Multi-stage sampling procedure; involving purposive and systematic random sampling techniques were employed in selecting 353 farmers used for the study. Primary data were collected with the aid of semi-structured questionnaire and analyzed using descriptive and inferential statistical tools. The likert scale was used to measure the perception of the people on the causes of insurgency. Tobit regression model was used to determine the factors that make farmers susceptible to insurgency while the chow test was used to analyze the impact of insurgency on income and level of living of farmers. The findings indicate that 89.36% of the respondents were male and about 47% of respondents engaging in farming as their major occupation. About 45.62% of respondents' response stated that sporadic shooting was the most prevalent form of insurgent attacks, with regards to frequency of attacks, the respondents averagely experienced arson once, sporadic shooting twice, kidnapping once, suicide bombing thrice, bombing with improvised devices twice, forced recruitment once and threats 10 times. All the respondents were in support that unemployment is a major cause of insurgency and about 90% of them affirmed that poverty was a major cause of insurgency. The findings further indicate that Magumeri LGA, marital status, experience in livelihood activities and farming, which were all significant at 1% except for farming which was significant at 5% are the only factors associated with farmers that affect their susceptibility to insurgency. The Chow test model analysis indicated an F-calculated value (92.59***) for income which was statistically significant at 1% level of probability; meaning that insurgency had an impact on income. Also, the F-calculated value (0.15) for asset was statistically insignificant; meaning that insurgency had no impact on level of living. Half (50%) of the farmers stated that the use of civilian joint task force was a strategy being employed to shield them from insurgent activities and about 55% of the farmers indicated that eating from household grain reserves was a strategy they employed to cope after attacks from insurgents. Unemployment and poverty were the major perceived causes of insurgency and the civilian joint task forces was the major mitigating strategy used in fighting the insurgents. The study recommended that the civilian joint task force should be employed and empowered with weapons by the government so they can help the Nigerian army in fighting the insurgents since they understand the terrain more than the army. Also, government, international or local non-governmental organizations, private organization and individuals should intensify efforts in economically empowering people in the study area as this will help provide employment and alleviate poverty which are the major perceived causes of insurgency in the study areas.

# CHAPTER ONE

# INTRODUCTION

## 1.1. Background to the Study

The northern part of Nigeria has for years witnessed several violent clashes that have claimed lives and property worth billions of naira and, no doubt, have resulted in displacement of people, destruction of economic and social infrastructure and above all aggravating unsecured livelihood among rural peasants (Tukur, 2011). Among all forms of violence in recent history of Nigeria, the *Boko Haram* (BH) insurgency has most severe impact in terms of scale and extent.

According to Powell and Abraham (2006) insurgency refers to a violent move by a person or group of persons to resist or oppose the enforcement of law or running of government or revolt against constituted authority of the State or of taking part in insurrection. According to Kilcullen (2006) insurgency is a struggle to control a contested political space, between a state or a group of states or occupying powers, and one or more popularly based non-state challengers.

The complexity of Nigeria as a nation is centred on its unifying political formation but diverse economic, social and religious sub-groups. As a nation, the country since independence has experienced several ethnic and religious crisis of various degrees and magnitude (Gilbert, 2013). The *Boko Haram* insurgency in the North-east geopolitical zone of Nigeria that originally took the form of sectarian religious violence escalated into terrorist activities with international linkages and affiliations making it a relatively difficult nut for the Nigerian government to crack (Gilbert, 2014).

It was observed by Mohammed (2014) that the relentless kidnappings, capture of towns, bombings and gun attacks in the northeastern parts of Nigeria by the *Boko Haram* sect, have seriously affected the livelihoods of the people. Some of the affected people have abandoned their farming and business activities and have subsequently migrated to safer States (Iliyasu, Lawan, Ibrahim, Omonike, and Muktar, 2015). These dislocations had great impact on rural livelihoods in the affected States.

Chambers and Conway (1992) submitted livelihood to comprise the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stress and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base. The economy of northeast Nigeria is predominantly agrarian (Ajayi, 2009), while the climatic conditions make it favourable for cereal crops production since most cereals do not require heavy rainfall. Also, low prevalence of livestock pest and diseases usually high in forest regions of the country has made the region more conducive for livestock production. The major cereals and legumes grown by farmers are millet, groundnut, maize, rice, wheat, sesame seed, gum arabic, sorghum and cowpea. Therefore, farming is the major livelihood activity of the people; mainly production of crop and livestock.

The impact of insurgency on agriculture which is a major source of livelihood for most of these rural dwellers cannot be overemphasized as the fears of death in recent times have limited their participation in agriculture. Though there are several parameters being used to measure livelihood, this study used income and level of living as a proxy for livelihood measurement

since they can easily be quantified. The ongoing insurgency in the northeastern region of Nigeria poses serious threats not only on the lives of individuals, but also to their livelihood. It is against this backdrop that this research seeks to critically assess the impact of insurgency on livelihood of farmers in northeastern Nigeria.

### 1.2: Statement of the Research Problem

The consequences of the vicious *Boko Haram* insurgent group in northeastern Nigeria, such as destruction of lives and properties, are serious issues that cannot be dismissed with a wave of hand. The group's incessant bombings and other activities no doubt impacts negatively on agricultural activities of the affected areas, farmers in the area hardly go to farms. The problem should therefore be an area people should research into for possible solutions, but unfortunately, there is dearth of empirical and quantitative data on the catastrophic damage the insurgency has done to the livelihoods of rural dwellers in the affected areas. As such, there is presently no in-depth and detailed study on the assessment of the impact of insurgency on the livelihoods of farmers in northeastern Nigeria, although there is a scanty number of studies on effects of insurgency in the study area.

With farmers being afraid to go to their farms in Borno and Yobe States, rains that exceeded expectations failed to translate into a better harvest because most farmers were scared of being ambushed on the way to their farms. The fear of being ambushed made many farmers avoid going to distant farms and also limited the frequency of visits to their proximate farms. Even where farmers are still able to produce, they face difficulties moving their harvest to the towns and cities where they are in demand because transport infrastructures have been sabotaged by

insurgents, and vehicles traveling on remote roads risk being attacked. The ban on motorbikes which is a means of transportation for these rural dwellers has greatly limited the accessibility of their agricultural produce to markets with attendant consequences on their livelihood.

Iliyasu, Lawan, Ibrahim, Omonike, and Muktar (2015) analyzed the repercussions of *Boko Haram* insurgency on livestock production in northeastern Nigeria. Their study documented livestock losses incurred by livestock farmers in each of the northeastern State. Their study revealed that most of the farm animals killed by straying bullets were the ones on free range and semi intensive management systems, and such practices were predominant throughout northeastern Nigeria. The study's focus on effects of insurgency on livestock production meant that it did not factor in the assets, crops and other sources of income of these farmers to see how they were affected by the insurgency. This created a huge gap in their work and this gap is part of what this research work seeks to address.

Awortu (2015) assessed the role of the *Boko Haram* insurgency in the underdevelopment of Nigeria. The researcher adopted a qualitative approach. Her findings show that the *Boko Haram* insurgency has compounded the developmental challenges of northeastern Nigeria through destruction of lives and properties, destruction of schools which have led to the closure of so many schools in the North-east geopolitical zone, disruption of businesses, reduction in government revenue, fear of foreign investors to live and do business in Nigeria and political instability. However, the study did not quantitatively evaluate the degree of damage the insurgency has done to the Nigerian people. Therefore this research work bridged the gap on impact of insurgency.

Some previous works have been carried out on several aspects of insurgency. Those accessible such as: Iliyasu, *et al.* (2015); Chukwurah, Eme and Ogbeje (2015); Imasuen (2015); Salisu, Mohd, and Abdullahi (2015) and Awortu (2015) have provided information. However, that of Iliyasu, *et al.* (2015) which focused on impact of insurgency on livestock farmers is closer to the present work because livestock production is a rural livelihood option but the authors did not factor in the assets, crops and other sources of income of the farmers to see how they were affected too. These are essential components of livelihood that need to be understood.

Given the destabilizing consequences of insurgency in northeastern Nigeria, it is important to examine the extent to which the livelihoods of these farmers are being affected. Thus, this study assessed the impact of insurgency on livelihoods of farmers in northeastern Nigeria. The research addressed the following questions:

1. what are the socio-economic characteristics of farmers in the study area?
2. what is the nature and frequency of insurgency in the study area?
3. what are the perceptions of farmers on causes of insurgency in the study area?
4. what are the factors that make farmers susceptible to insurgency in the study area?
5. what is the impact of insurgency on livelihoods of farmers in the study area?
6. what are the strategies employed by farmers in mitigating and coping with the impact of insurgency in the study area?

### 1.3: Aim and Objectives of the Study

The aim of the study is to assess the impact of insurgency on livelihoods of farmers in northeastern Nigeria. The specific objectives are to:

i. describe the socio-economic characteristics of farmers in the study area;
ii. examine the nature and frequency of insurgency in the study area;
iii. examine the perceptions of farmers on causes of insurgency in the study area;
iv. determine the factors that make farmers susceptible to insurgency in the study area;
v. analyze the impact of insurgency on the livelihoods of farmers in the study area, and
vi. characterize the strategies employed by farmers in mitigating and coping with the impact of insurgency in the study area.

### 1.4: Research Hypothesis

**$H_{O1}$:** There is no significant relationship between socio-economic factors of farmers and their susceptibility to insurgency.

**$H_{O2}$:** There is no significant relationship between insurgency and livelihoods of farmers.

### 1.5: Scope of the Study

This study covers two States in northeastern Nigeria namely: Borno and Yobe. Magumari and Gubio Local Government Areas (LGAs) which have Magumari and Gubio communities respectively were covered in Borno State while Geidam and Gujba Local Government Areas which have Geidam and Buni-Gari communities respectively were covered in Yobe State. The

selection of the LGAs and villages were based on the fact that they were affected by insurgency and are the most accessible for data collection.

The content scope include the socio-economic characteristics of the respondents, the nature of insurgency activities and their frequencies, perceptions by the farmers on causes of the insurgency activities, the livelihood sources of the respondents, their incomes and asset possession and finally, the coping strategy adopted by the respondents in handling and cushioning the impact of insurgency. Data were collected for 2009 farming season before the insurgency started having visible impact on the farmers and also for 2015 farming season during which the insurgency has abated enough to permit pursuance of livelihood options by rural dwellers.

### 1.6: Justification of the Study

Farmers no doubt, are the most valuable asset of any developing nation and anything that affects them directly or indirectly affects the nation as such would constitute a national threat to food security. In view of the fact that insurgency has led to grave consequences, there is therefore a pressing need to understand the impact of insurgency on agriculture which is a major means of livelihood for the rural dwellers in northeastern Nigeria.

Not all insurgent attacks in northeastern part of Nigeria are being reported by the media, and even when they are reported, the levels of damage to their livelihood are quantitatively not precisely reported. This research work provides details of the communities affected by insurgency to the government, Nigerians and the world at large for possible intervention to assist

them so they can comfortably go back to their livelihood activities. The study further provided information that can be used by policy makers to formulate workable policies in future that would be of assistance towards ameliorating or preventing the mindless destruction of crops, animals, properties as well as the senseless killings of humans that occurred in the region and beyond. It is hoped that the work will serve as an addition to already existing literature on insurgency. It is also hoped that findings from this study will be of benefit to academics in social science, humanities, development studies, peace, intelligence and security studies and the society at large.

# CHAPTER TWO

# CONCEPTUAL AND THEORECTICAL FRAMEWORKS AND LITERATURE REVIEW

## 2.1: Introduction

This section deals with conceptual and theoretical frameworks and review of relevant literature as a platform for investigating and analyzing insurgency and its impact on income and level of living of farmers in northeastern Nigeria. The theoretical underpinnings selected for explaining insurgency are the Conflict, Frustration-Aggression and Social Identity theories while the literature review is sub-divided into insurgency, socio-economic characteristics of farmers, livelihood, impact analysis and coping strategies. It begins by establishing the conceptual framework (insurgency, rural livelihood, impact and impact analyses), then the theoretical framework and then dovetails into nature and frequency of insurgent attacks, characteristics of rural dwellers influencing livelihood security, determinants of livelihood, impact of insurgency on income and level of living, methodological approaches to impact studies and finally, coping strategies for mitigating insurgency.

## 2.2: Conceptual Framework

### 2.2.1: The Concept of insurgency

According to Powell and Abraham (2006) insurgency refers to a violent move by a person or group of persons to resist or oppose the enforcement of law or running of government or revolt against constituted authority of the state or of taking part in insurrection. Insurgency as defined above becomes violation of the constitution's criminal law and the international treaty obligations of a nation in the same circumstances. These circumstances include when it

constitutes an attack on defenseless citizens and other property resulting into injuries, loss of lives and properties as well as forced or massive internal displacement of people out of their habitual places of residence, when it drives business/investors away from an insecure area and also when it constitutes domestic and international crimes punishable by law such as treasonable felony, terrorism, murder, crimes against humanity and genocide (Powell and Abraham, 2006).

Traditionally however, insurgencies seek to overthrow an existing order with one that is commensurate with their political, economic, ideological or religious goals (Gompert and Gordon 2008). Kilcullen (2006) noted that insurgency is a struggle to control a contested political space, between a state or a group of states or occupying powers, and one or more popularly based non-state challengers. The author further draws a line between classical and contemporary insurgencies indicating that the latter seek to replace the existing order, while the former sometimes strive for the expulsion of foreign invaders from their territory or seek to fill an existing power vacuum.

These worldwide manifestations of insurgencies include Al-Qaeda in Afghanistan, Hezbollah in Lebanon, the Syrian Islamic Liberation front in Syria, Hamas in Palestine, the Taliban's in Pakistan among others. Africa which is also not left out of this social hazard, has become a breeding ground for various insurgencies such as the Al-shabaab in Somalia, the Lord's Resistance Army in Central African Republic, the M23 Rebels in Democratic Republic of Congo, the National Movement of Azawad (MNLA), the Al-Qaeda in the Islamic Maghreb(AQIM) in Mali to mention a few. Thus, the most devastating effects of these insurgencies all over the world have been the high toll of humanitarian crisis in the form of rise

in internally displaced persons(IDP's), refugee influx, food insecurity, spread of diseases, gender and sexual based violence (Hughes, 2012).

The phenomena of arm struggle in Nigeria have been evident since her independence in 1960. Some of these include the twelve-day revolution by Adaka Boro (1964), the civil war (1967-1970) to the various ethnic militias' attacks such as the Oduduwa People's Congress (OPC), the Movement for the Actualization of the Sovereign State of Biafra (MASSOB), the Movement for the Emancipation of Niger Delta (MEND) and the Niger-Delta insurgency. The most recent is the "Ahlal sunnati wal Da'awa wal Jihad", popularly known as *Boko Haram* which has been operating in Northern Nigeria since the early 2000 (Fwatshak and Larab, 2004; Ikelegbe, 2010). *Boko Haram* is the insurgent group in this study hence effort is made to bring out key information about the group.

It is on record that *Boko Haram* was initially operating under the name Shabaab Muslim Youth Organization with Mallam Lawal as the leader since 1995 but leadership of the group shifted to Mallam Mohammed Yusuf when Mallam Lawal left Nigeria to continue his education in Saudi Arabia (Ekanem, Dada and Ejue, 2012). It is the leadership of Mallam Mohammed Yusuf that allegedly opened the group to political influence and popularity. By implication, therefore, Mallam Mohammed Yusuf is the one that officially founded *Boko Haram* in 2002 in the city of Maiduguri with the aim of establishing Sharia government in Borno and neighbouring states (Gilbert, 2014).

The understanding of Nigerians on insurgency is multidimensional and there are different reactions of Nigerians to the real identity and motive of *Boko Haram* sect. Most Muslims liken it to Maitatsine sect which was established in 1945 to bring turmoil to Islam as it was confirmed that Maitatsine was not a Muslim until his death. A reasonable number of Christians see it as an attempt to islamize Nigerians while some are indifferent (Shehu, 2014). According to Agomuo (2011) what started around 2006 in the far flung North East geopolitical zone of the country as a regional disturbance, became a national embarrassment of international magnitude. The emergence of the deadly group whose activities assumed a worrisome dimension in 2009 led to a reign of terror in the affected parts of the country for five years. Since then, people in these areas have not known peace. The emergence of the fundamentalist Islamic sect, has led to the flight for safety and security of most Nigerians residing in the north east, especially Christians (Nwakaudu, 2012).

*Boko Haram* grew out of a group of radical Islamist youth who worshipped at the Al-Haji Muhammadu Ndimi Mosque in Maiduguri, capital of Borno State, in the 1990's (Walker 2012). Its leader, Mohammed Yusuf, began as a preacher and leader in the youth wing of Shababul Islam of Ahl-Sunnah, a Salafi group. His literal interpretation of the Quran led him to advocate that aspects of western education he considered as contradictory of religious knowledge (such as theory of evolution, the big bang theory of the universe development and elements of chemistry and geography) should be forbidden in Hausa (Crisis Group Africa Report (CGAR), 2014). While critical of the government, Yusuf was involved in official efforts to introduce and implement Sharia in several northern States in the 2000s. The failure to fully achieve this

partially explains Muslim youths' anger over government deception and insincerity and the call for an authentic Islamist revolution (CGAR, 2014).

*Boko Haram's* principal goal is to create a strict Islamic state in the north that it believes would address the ills of society, including corruption and bad governance. The sects core beliefs are strict adherence to the Quran and the Hadith (sayings of prophet Muhammed), and their interpretation as sanctioned by Ibn Taymiyyah. Abu Qaqa, the group's best known spokesman, explained that the group's agenda is to destabilize Nigeria and take her back to the pre-colonial period when the Sharia law was practiced (CGAR, 2014). In the early stages, the *Boko Haram* sect was widely known to have mobilized its membership from women and children, school dropouts and unemployed university and polytechnic graduates, most of who tore their certificates. The rationalization is that unemployment, underdevelopment and the general hopelessness pervading the society was caused by government which imposed western education on them and failed to manage the resources of the country to their benefits. Therefore, "western education is sin"; and this is the literal interpretation of *Boko Haram* in Hausa Language (Gilbert, 2014).

Although from the outset the sect's mission was to impose Sharia on Nigeria, the leadership went about its preaching and interpretation of the Quran as a recipe for violence and an affront to constituted authority (Anyadike, 2013). More than 9,500 civilians have died in the *boko haram* conflict since 2009 with over 2 million people being displaced (Human Rights Watch, 2016).

### 2.2.2: Rural livelihood

*2.2.2.1: The concept of livelihood*

The concept of livelihoods has gained wide acceptance as a valuable means of understanding the factors that influence people's lives and well-being, particularly those of the poor in the developing world (Bernstein, Crow and Johnson, 1992; Davies, 1996; Rennie and Singh, 1996; Carney, 1998). It has been embraced by a number of development agencies, with UNDP being the first to do so fully and the Department for International Development (DFID) adopting it as central to its strategy for meeting the goals set out in its 1997 'White Paper Eliminating World Poverty' (John, Piers, Oliver and Matthew, 2002). Livelihood has a number of meanings, and there are a number of definitions for the term. Clarity and rigour are therefore needed if the approach is to achieve its full potential as a basis for development initiatives that are in tune with the realities on the ground (John, Piers, Oliver and Matthew, 2002).

Livelihood can be attached to all sorts of other words to construct whole fields of development enquiry and practice. These relate to locales (rural or urban livelihoods), occupations (farming, pastoral or fishing livelihoods), social difference (gendered, age-defined livelihoods), directions (livelihood pathways, trajectories), dynamic patterns (sustainable or resilient livelihoods) and many more (Scoones, 2009). The concept of livelihood is used mostly to address the issue of poverty that aims to be people-centered, non-sectional and grounded in the multidimensional reality of daily life (Dekker, 2002). Over the years, livelihood has emerged as a boundary term; something that brings disparate perspectives together, allows conversations over disciplinary and professional divides and provides an institutional bridging function (linking people, professions and practices in new ways) (Gieryn, 1999).

Rahman, Frdissa, Bwalya, Lund and Ghulan (2007) see livelihood as being broader than income; it includes everything done to obtain a living. Livelihood comprises of the assets (natural, physical, human, financial and social capital), the activities, and the access to these (mediated by institutions and social relations) that together determine the living gained by the individual or household. As defined by Ellis (2000) livelihood is made up of the capabilities, assets (stores, resources, claims, and access) and activities necessary for a means of living. Abilities do not only include sheer physical labour, but also knowledge, trainings, skills, and years of experience. Assets are the basic material or social, tangible or intangible services, resources, skills or attributes. They are the physical, natural, social, financial, and human resources that people use for constructing their livelihoods. Livelihood activities are understood in the sense of individual and group perspectives that transform materials, using the abilities and resources to produce goods and/or services that can be exchanged, especially for a price. Activities in livelihood analysis include income-generating (agricultural and non-agricultural), and non-income generating (for example, religious, environmental, fun/relaxation, etc.) (Ellis, 2000). The United Nations estimated that 48.3% of Nigeria's populations live in the urban areas while the remaining (51.7%) live in the rural areas and they are largely engaged in agricultural production (Ogunnowo and Oderinde, 2012).

Kollmair and Gamper (2002) states that natural assets are forest land (non-timber forest products and wildlife), agricultural land (inherited or acquired), water (stream, well, borehole, or pipe-borne water), soil (fertility), and genetic resources (for example, disease resistant livestock and crops). Human asset represents the household size (demographics), skills (credit management, entrepreneurship, leadership, numerical and language), knowledge (indigenous, non-formal,

extension or formal), ability to labour (amount and quality), and health status that one has access to in other people that together enable one to pursue different livelihood strategies and achieve livelihood objectives (Kollmair and Gamper, 2002). Inadequate access and control over capital assets, education, and policies still pose constraints to livelihood activities (both farm and non-farm), which in-turn reduce development in rural areas and undermine sustainable rural development (Ellis, 2000).

A Livelihood is a means of making a living. It encompasses people's capabilities, assets, income and activities required to secure necessities of life (International Federation of Red Cross and Red Crescent Societies (IFRC), 2013). Frankenberger and Curt (1994) defined livelihood as the sustainable access to meet basic needs including adequate access to food, potable water, health facilities, educational opportunities, housing, time for community participation and social integration. Livelihood could be looked at in terms of quality of life and level of living. Quality of life in the rural setting according to Phillips (2006) is a multifaceted phenomenon determined by the cumulative interactive impacts of numerous and varied factors like housing conditions, infrastructure, access to various amenities, income, standard of living, satisfaction about the physical and social environment. Level of living refers to the quantity of goods and services actually consumed by an individual and his family. Studies carried out in different parts of Nigeria indicate a comparatively lower level of living in the rural than urban areas (Ekong, 2010).

Level of living is the way an individual lives, not the way he wants to live. According to Benjamin (2010) level of living is concerned with the consumption or use of economic goods.

But the author also observed that if applied to a family level, it means the content or consumption of the total of food, fuel, and other non durable goods used up, the services of houses, automobiles, clothing, and other goods of varying durability, and the services that human being enjoyed by an individual, or group in a given period of time. Benjamin (2010) stated that US census of agriculture data used in measuring the rural famers' level living was based on seven living items, (possession of telephone, electricity, Television, piped borne water, freezers, automobiles, and tractors). Also, a number of indicators that would provide quantifiable components of the level of living can be summarized under the following major headings namely: health, food, education, conditions of work, employment situation, aggregate consumption and savings, transportation, housing, clothing, recreation, social security and human freedoms.

Livelihood according to Chambers and Conway (1992) is based on the premise that a rural household has access to (or has an endowment of) a minimum amount of resource base (capitals or assets), which can be utilized to fashion out a set of livelihood strategies (crop farming, livestock rearing, off farm employment, etc.) to improve its welfare. A holistic attempt to identify the various livelihood strategies rural poor people adopt across ethnic groups shows that, households and individuals are in pursuit of different strategies based on normative standards (e.g. nutritional status) disaggregated across groups, households and individuals under social, economic, political, historical and demographic trends that influence these livelihood options ( Chambers and Conway, 1992).

2.2.2.2: *Nature and sources of rural livelihood*

Rural livelihoods are composed of the activities that generate the means of household survival and longer-term well-being. Livelihood strategies may be divided into natural resource based activities (e.g. collection and gathering, cultivation, livestock-keeping, weaving) and non-natural resource based activities (e.g. trade, services, remittances.) (Ellis, 2000). Means of livelihood are referred to as production strategies which include income-earning activities, remittance, gifts and loans. But livelihood strategies are dynamic and widespread from which rural poor people are able to respond based on changing pressures and local opportunities that could be adapted accordingly (Ellis, 2000). However, livelihood outcomes and goals vary and they are subject to changes: for example, in peaceful and politically stable situations, livelihood goals might include increased well-being or more income; whereas in times of crisis, people's goals might become focused on such short-term objectives as personal safety, food security, reduced vulnerability and survival (United Nations Development Programme (UNDP), 2013). Though there are several parameters being used to measure livelihood, this study used income and level of living as a proxy for livelihood measurement since they can easily be quantified.

### 2.2.3: Impact and impact evaluation

According to Weiss (1998) people often use the terms "impact" and "outcome" interchangeably. Impact is about what has happened as a result of any phenomenon, this being consequences the phenomenon has had on those exposed to it or on a larger community, both in the short and long-term. Impact is net-effect and net-outcome; outcomes that can be explained by the programme. Impact refers to outcomes, meaning the same as effects and results of events. This might be expected and wanted results, as well as unintended and less fortunate outcomes (Weiss, 1998).

The Development Assistance Committee (DAC) defines impact as "the positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended" (DAC, 2007). Impact can be defined as a long term influence on the state of the environment surrounding an organization (Sanginga, Adesina, Manyong, Otite, and Dashiel, 1999). The impact of a programme can be seen in relation to what the programme actually has done to the people who participated. According to Patton (1978) it is the actual programme outcomes in relation to the desired outcomes (goals).

Monitoring is a continuous process that tracks what is happening within a program and uses the data collected to inform programme implementation and day-to-day management and decisions. Using mostly administrative data, monitoring tracks programme performance against expected results, makes comparisons across programs, and analyzes trends over time. Usually, monitoring tracks inputs, activities, and outputs, though occasionally it can include outcomes, such as progress toward national development goals (Paul, Sebastian, Patrick, Laura and Christel, 2010). Evaluations are periodic, objective assessments of a planned, ongoing, or completed project, intervention, or policy. Evaluations are used to answer specific questions related to design, implementation, and results. In contrast to continuous monitoring, they are carried out at discrete points in time and often seek an outside perspective from technical experts. Their design, method, and cost vary substantially depending on the type of question the evaluation is trying to answer (Paul, *et al*., 2011). According to Imas and Rist (2009) evaluations can address three types of questions:

a. *Descriptive questions*. The evaluation seeks to determine what is taking place and describes processes, conditions, organizational relationships, and stakeholder views.
b. *Normative questions*. The evaluation compares what is taking place to what should be taking place; it assesses activities and whether or not targets are accomplished. Normative questions can apply to inputs, activities, and outputs.
c. *Cause-and-effect questions*. The evaluation examines outcomes and tries to assess what difference the intervention makes in outcomes.

Impact evaluation is a particular type of evaluation that seeks to answer cause-and-effect questions. Unlike general evaluations, which can answer many types of questions, impact evaluations are structured around one particular type of question: What is the impact (or causal effect) of a program on an outcome of interest? (Paul, *et al.*, 2010). The terms impact assessment and impact evaluation is used interchangeably to mean an attempt to find out the effects of an intervention after it has occurred, and the term appraisal to mean an attempt to predict the effects of an intervention before it occurs (Momoh , 2015).

Sanginga, *et al.* (1999) stated that impact analysis deals with the investigation of the changes that occurred or likely to occur on the people's life as a result of a project or intervention or any other phenomenon. In their study, their use of impact assessment tries to find out how far the introduction of technology have been successful in meeting the socio-economic objectives and how well agricultural technologies have satisfied the needs and priorities of household and other units in the target population. Impact assessment is a special form of evaluation that deals with the effects of intervention programme output on the target beneficiaries. It is also the influence of

social programme on its client and or its social content, the impact of a programme therefore, can be said to be what the service actually does to the people who receive them (Momoh , 2015).

In conducting impact assessment, researchers often use "with" and "without" impact method, while others use the "before" and "after" method. The "with" and "without" approach to impact study involves the study of population, villages or communities that benefited or did not benefit from the execution of a project (Momoh, 2015). Rossi, Howard, Freeman, Wright (1979) observed that the primary objective of any impact assessment study is to estimate the net effects of an intention. Changes traceable to the intervention are the net effects, devoid of effects of other elements present in the situation under assessment.

Having an impact focus in evaluation means, according to Patton, looking at the direct and indirect impacts a programme has, both on those exposed and on the larger community (Patton 1978). The Development Assistance Committee (DAC) defines impact as "the positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended" (DAC, 2007). Sanginga, *et al.* (1999) defined impact as a long term influence on the state of the environment surrounding an organization. As illustrated above, the term "impact" is somewhat vague and a bit differently defined by different authors. The above definitions have similarities; they include both intended and unintended changes that might happen directly or indirectly to the participant or to the community as a whole. For this work the term "impact" is in accordance with conceptualization of DAC (2007) and Sanginga, *et al.* (1999). The long time influence of insurgency in northeastern Nigeria was analyzed putting into consideration the positive and negative changes it has brought which could be directly or indirectly, intended or unintended.

*2.2.3.1 Conceptual model*

Conceptual models express ideas about components and processes deemed important in a system. They identify gaps in our knowledge and can be seen as document assumptions on how components and processes are related, thereby serving as working hypotheses about system form and function (Manley, *et al*. 2000). Furthermore, Asika (2004) observed that a conceptual model is a construction that shows the relationship existing among variables and most often these relationships are depicted schematically and mathematically. Here in Figure 2.1, the model proposes the insurgent activities which are the independent variable acting on livelihood activities which include both farm and non-farm activities to create an impact leading to changes in the farm, non-farm activities and level of living of the farmers.

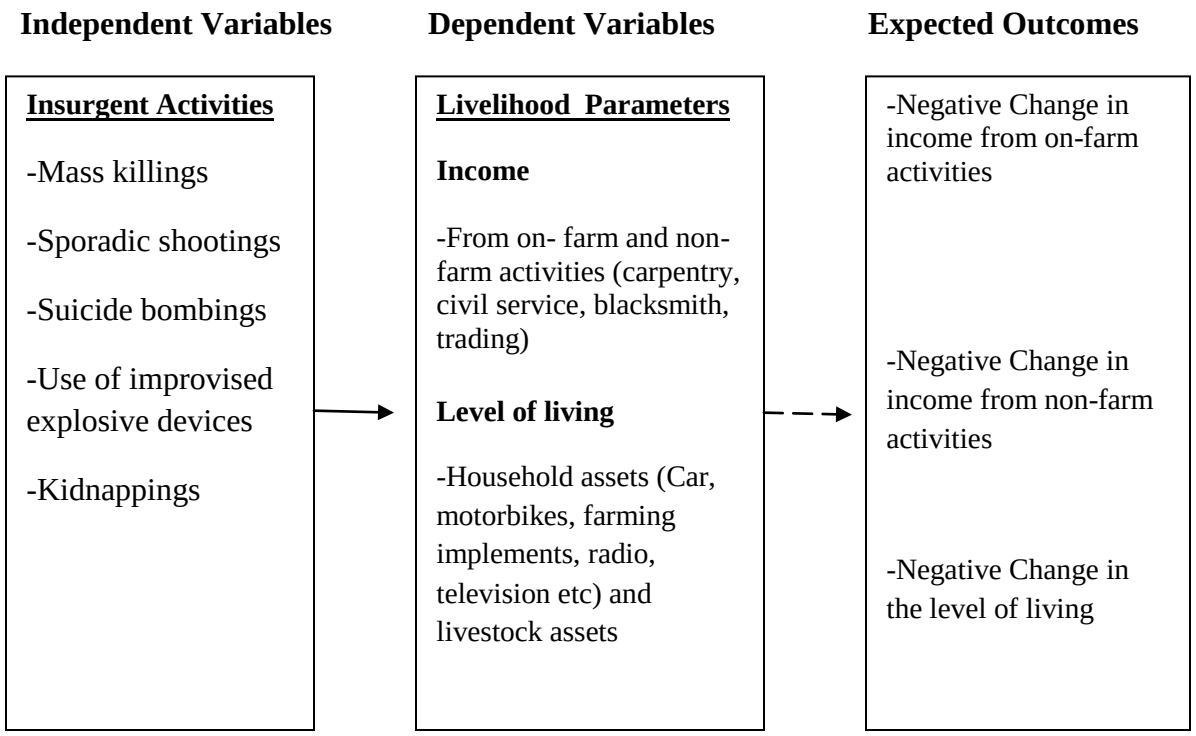



**Fig 2.1: Schematic representation of impact of insurgent activities on livelihoods (income and level of living) of farmers in northeastern Nigeria.**

**Source:** Author, (2016). **(Key:** ⟶ = line of impact**,** – – → = line of expected outcome**)**

## 2.3: Theoretical Framework

### 2.3.1: Conflict theory

Conflict theory has a long history in sociology. Without question, Karl Marx's work in the early to mid 1800 formed the initial statements of this perspective. Marx was centrally concerned with class and the dialectics of capitalism. Karl Marx argued that capitalism would produce its own grave diggers by creating the conditions under which class consciousness and a failing economy would come into existence. With the existence of structure and class-based group experience, the working class revolution would take place (Allan, 2010)

In the early twentieth century, Max Weber provided a response to Marx's theory. Weber saw that conflict didn't overwhelmingly involve the economy, but that the state and economy together set up conditions for conflict. Weber saw that class is more complex than Marx initially supposed, and that there are other factors that contribute to social inequality, most notably status and party (or power) (Allan, 2010). In general, conflict theory seeks to scientifically explain the general contours of conflict in society: how conflict starts and varies, and the effects it brings. The central concerns of conflict theory are the unequal distribution of scarce resources and power. What these resources are might be different for each theorist, but conflict theorists usually work with Weber's three systems of stratification: class, status, and power (Allan, 2010).

Coser (1956) moved beyond Marx and Weber to consider the ways in which conflict can fluctuate. One of the more important ways that conflict can vary is by its level of violence. If people perceive conflict as a means to achieving clearly expressed rational goals, then conflict will tend to be less violent. A simple exchange is a good example. However, conflict can be

violent when it has emotional involvement and transcendent goals (Coser, 1956). Karl Marx, Weber and Lewis Coser had good perceptions on conflicts, but this work was guided by Ralf Dahrendorf's view on conflict. The development of conflict theory gained new vigor with the publication of Dahrehdorf's work titled "Class and Class Conflict in Industrial Society" in 1959. Although initially influenced by the thought of Karl Marx, Dahrendorf departed from Marx's focus on the conflict between the social classes and looked instead to the conflict between interest groups. Thus for Dahrendorf, social inequalities have their basis not only in economics but also in bureaucratic and political power.

Dahrendorf (1959) categorized groups contributing to conflicts to be: quasi-group, interest group and conflict group. The quasi-group is aggregates of people occupying identical power positions and holding latent interests or unconscious role expectations. The quasi-group may have conflicts of interest with other groups, but these conflicts are not usually overt. People of quasi-group may be recruited into interest group. Interest groups are associations of people mobilized into action by virtue of their membership in the group. They share manifest interests or conscious goals. Interest groups are real agents of group conflict. Conflict groups attempt to instigate revolutionary social change, sometimes through violent means (Dahrendorf, 1959). The American Association of Retired Persons (AARP), which is an organization with over 32 million members, is an example of an interest group while provincial Irish Republic Army (IRA) of Northern Ireland, the Islamic Jihad of the middle-east and the Zapatistas of Mexico are all examples of conflict groups.

The Dahrendorf perception of conflict theory applies so much to this research work. Most of the financiers and sponsors behind *Boko Haram* are believed by many to be politically exposed persons that are not being favoured by the Nigerian government and as such are being persuaded by people of similar views to join their group. It is generally believed that the *Boko Haram* insurgents have "faceless persons" sponsoring them and giving them all weapons they need to unleash terror on their targets. These political figures can be likened to the quasi-group, the group they are being persuaded to join can be likened to the interest group while the *Boko Haram* insurgents can be likened to the conflict group as explained by Dahrendorf. So therefore, this research work is deeply rooted in the conflict perception of Ralf Dahrendorf.

### 2.3.2: Frustration-aggression theory

In 1939, researchers at the Yale University Institute of Human Relations published a small monograph that had a tremendous impact, directly or indirectly, on almost all of the behavioural sciences. Led by Dollard, Doob, Miller, Mowrer, and Sears (1939) the group attempted to account for virtually all of human aggression with a few basic ideas (Berkowitz, 1989). Aggression is always a consequence of frustration, meaning that the occurrence of aggressive behaviour always presupposes the existence of frustration and the existence of frustration always leads to some form of aggression (Dollard *et al.,* 1939). A frustration is an interference with the occurrence of an instigated goal-response at its proper time in the behavior sequence, while aggression is any sequence of behaviour or the goal-response to which is the injury of the person toward whom it is directed" (Dollard *et al.,* 1939). Expectations of punishment can evoke inhibitions against the open display of aggression (Dollard *et al.,* 1939).

According to Dollard *et al.* (1939) several aspects of the thwarting that presumably affected the strength of the resulting instigation to aggression are: the strength of the drive whose gratification was blocked, the degree of interference with this drive satisfaction, and the number of frustrated response sequences. The greater the satisfaction anticipated on attaining their objective, the more aggressively inclined people will become when kept from reaching their goals; the strength of the resulting instigation to aggression will be reduced by whatever partial gratifications are obtained, and the frustration-generated aggressive inclinations will summate over repeated instances of unsatisfied expectations (Berkowitz, 1989).

Persons unfairly prevented from reaching a desired objective are often more angry and aggressive than those exposed to socially approved barriers to goal attainment (Kulik and Brown, 1979). People become angry and aggressive on being kept from reaching a desired goal to the extent that they think that someone had intentionally and unfairly produced this interference or had deliberately and wrongly tried to hurt them (Averill, 1982). Deliberately provoked subjects are spurred to stronger attacks on their tormentor when they receive indications that their initial punishment of that person is hurting him (Baron, 1977).

Dollard and his colleagues regarded aggression as not merely the delivery of noxious stimuli but as an action having a fairly definite objective: the infliction of injury. The exact nature of this response is not always the same from one occasion to the next (Berkowitz, 1989). Anticipations of punishment could lead to indirect forms of aggression rather than a direct attack on the target and any interference with the instigated aggression is also a frustration and thus would strengthen the thwarted persons' aggressive inclinations (Dollard *et al.*, 1939). However, even when

aggression is not initially the dominant response, if the person persists in trying to reach the goal but the thwarting continues, the nonaggressive reactions will extinguish and there will be an increasingly greater probability that the instigation to aggression eventually will become dominant ( Miller, 1941).

Dollard and his associates believed that all aggression could be traced to one or more prior frustrations, although they did not specify how this previous influence would operate. This supposition seems to neglect the possibility that aggression can be learned instrumental behavior. People at times attack others, not because they have been thwarted in the past, but because they think this action will bring them some other benefits (other than the infliction of injury) (Berkowitz, 1989). Dollard *et al*. (1939) also appeared to assume that aggression was always primarily aimed at doing harm. Such an assumption fails to recognize the important distinction between instrumental and hostile aggression first made by Feshbach (1964) and now widely accepted by most social psychological investigators of aggression. In hostile (or emotional) aggression, the primary goal is to do harm, whereas instrumental aggression is oriented mainly to the attainment of some other objective such as money, social status, or territory. Dollard and his associates apparently were thinking only of hostile aggression, forgetting that instrumental aggression can be learned much as other instrumental behaviours are learned (Berkowitz, 1989).

Maslow (1941) maintained that the Dollard *et al*. theory held only for those frustrations seen by the afflicted individuals as a "threat to their personalities." According to Pastore (1952) only illegitimate frustrations produce aggressive reactions. When people are engaged in hostile aggression, information that their attacks on the target have hurt that person should have a

reinforcement value even when no extrinsic rewards are obtained. Furthermore, especially in the case of hostile aggression, the information about the target's suffering when provided shortly after the aggressor starts attacking the intended target, can also serve as an incentive to even stronger acts of aggression (Berkowitz, 1989). People are more strongly instigated to attack their frustraters when they think they have been deliberately and wrongly kept from reaching their goal than when they believe the interference has only been accidental, and they may be inclined to inhibit their aggressive reactions when they think the thwarting was socially proper (Berkowitz, 1989).

The frustration-aggression theory is useful in explaining the reasons behind the unprecedented attacks and pains the *Boko Haram* insurgents have unleashed on Nigerians and West Africans at large. *Boko Haram* is believed to have this dream of establishing Sharia government in Borno State, even a bigger dream of establishing an Islamic caliphate across the northeast of Nigeria. The goal of this group did not go down well with the government, and in order to frustrate this goal, the Nigeria police, Borno State command used brutal force to the extent of killing their leader in custody without giving him a fair trial. As a result of this extrajudicial approach by the government security agent, members of the group became frustrated and scattered only to re-group and re-emerge in 2010 with aggressive activities that have killed thousands and caused more than a million people to be displaced from their homes.

### 2.3.3: Social identity theory

Social identity theory (SIT) was first proposed by Tajfel (1978) and later strengthened by Tajfel and Turner (1979). It is a social-psychological theory that attempts to explain cognitions and behaviours with the help of group processes. SIT assumes that humans show all kinds of group behaviour, such as solidarity within groups and discrimination against out groups as a part of social identity process, with the aim to achieve positive self-esteem and self-enhancement (Abrams &Hogg, 1988). Social identity is the individual's self-concept derived from perceived membership of social groups (Hogg & Vaughan, 2002).

The SIT was developed by Tajfel and Turner in 1979 in order to understand the psychological basis of intergroup discrimination. The theory not only explains how groups come into conflict, but also explains a wide range of political events such as racism, ethnic conflict, nationalism, and political extremism (Cottam, 2004). Comparison among groups creates conflict over scarce social resources, economic resources, values ideology, and unmet needs regarding identity, security, status or power (Cottam & Cottam, 2001). Social Identity Theory not only aids the understanding of the causes and outcomes of conflicts, it also provides the knowledge of how to resolve these conflicts. The theory provides three conflict resolution approaches which are: *Contact Hypothesis, Decategorization, and Recategorization or Superordinate*. These three approaches all have their origins in the social identity theory (Pon, 2010).

*(a) Contact hypothesis*

Brown (2000) relates how Gordon (1954) introduced the contact hypothesis to eliminate prejudice among groups. The goal of the hypothesis is that bringing members of different groups into contact with one another in various ways is the best way of reducing any tension or hostility

that might exist between them (Brown, 2000). However, the hypothesis works only under certain conditions. One of the conditions is that the contact groups must have equal status. Therefore, the minority group should have an equal status with majority group in order for the contact hypothesis to be applicable (Brown, 2000).

*(b) Decategorization*

The idea of decategorization is introduced by Brewer and Miller (1984) as a way of reducing the intergroup discrimination and stereotyping. According to the decategorization approach, boundaries between the two groups become less rigid during contacts, and ultimately they will be dissolved altogether. In order to decrease boundaries between groups, all interactions should take place on an interpersonal level, rather than on the group level because in this 'personalized' form of contact, individuals are interested in one another's information and less attentive to the group-based information. The relationship between groups will improve when contacts are people - people, not race - race (Brown, 2000).

An example is former President Clinton's "Come Together Fellowship". This program are held for improving American racial relations by supporting black and white individuals who belong to existing clubs and groups to get to know each other better. Moreover, the approach could also lead to assimilation. According to Brown (2000) this approach has a generalization problem. It can prevent only individuals that have been in contact with individuals from other groups from becoming prejudice. It cannot prevent prejudice against individuals who have not met or contacted individuals in other groups.

*(c) Recategorization or Superordinate approach*

Instead of decategorization, Gaertner (1999) proposes a different method to reduce prejudice between groups. It is recategorization or superordinate identity. Recategorization is not trying to eliminate the categories; instead, they redraw the boundaries of categories. In other words, it recategorizes the previous in-groups and out-groups into a new superordinate category so that the former out-groupers can be perceived as fellow in-groupers. According to this approach, rather than attempting to eschew group references altogether, it allows keeping minimal group salient or identity while optimizing the various contacts. Gaertner (1999) demonstrated that through two experiments. The experimental results show that recognizing subgroups within the superordinate identity is the best method of lessening the intergroup bias. According to the author, establishing a common superordinate identity, while simultaneously maintaining the salience of subgroup identities, would be particularly effective because it permits the benefits of a common ingroup identity with arousing countervailing motivations to achieve positive distinctiveness (Gaertner, 1999).

The Social Identity Theory (SIT) focuses on causes, outcome and resolution of conflicts. The conflict resolution approaches of SIT is useful in this research for proffering possible solutions that can be used to manage the current insurgency in Nigeria and also prevent future recurrences.

## 2.4: Literature Review

### 2.4.1: Nature and frequency of insurgent attacks

An in-depth examination of the work of Agomuo (2011) on "*Boko Haram*; Off Shoot of Bad Governance" shows that the study critically reviewed works from several authors, drew out insights from their finding and came out with conclusive findings that the *Boko Haram* sect targeted serving and retired military and other security personnel, perhaps to avenge Mohammed Yusuf their leader who was allegedly killed in 2009 by some policemen. According to the study, since the sect started their operations, members of the sect have assassinated a number of high profile Islamic scholars in Maiduguri and like Afghanistan Talibans, the group has also attacked many drinking and eating rendezvous where they dispatched hundreds of souls to their early graves. As revealed by Crises Group Africa Report (CGAR) (2014), clashes with security agents in 2009 escalated in July into a full scale armed insurrection targeting police headquarters, stations and officers homes in a failed attempt to establish an Islamic state in Maiduguri and some cities in the north including Bauchi, Potiskum and Kano. And a brutal military crackdown led to the death of over 800 *Boko Haram* members.

From the work of Okoli and Iortyer (2014) on "Terrorism and Humanitarian Crisis in Nigeria: Insights from *Boko Haram* Insurgency", the method of study which was qualitative and exploratory in nature used descriptive analysis of secondary sources to draw insights from scholarly exegesis and empirical historical evidence. The outcome was analyzed to reveal that terrorists globally have adopted the following as means of executing their diabolical designs: arson, mass killing by gunfire, suicide bombing, use of improvised explosives, high-jacking of aircrafts and ships, hostage-taking (kidnapping), media propaganda and advocacy, piracy, jail

break and forced enlistment/recruitment of combatant. According to Emeasoba and Mani (2015) northern Nigeria's image is negatively affected by the activities of *Boko Haram* insurgents. Their nefarious activities have crippled the socio-economic and educational life of the entire geo-political zone. Maiming, kidnapping, suicide bombing attack, destruction of schools, killings of students and teachers greatly poses challenges to business education programme in the zone This aggravated the already deteriorated education situation. Most states of northern Nigeria experienced their dastardly activities, but the worst hit were Adamawa, Bauchi, Borno, FCT (Abuja), Kaduna, Kano, Plateau and Yobe (Nwakaudu, 2012).

Originally directed mainly at security forces and government officials, the campaign was expanded to include attacks on traditional rulers, suspected collaborators against the sect, UN agencies, bars, schools and innocent commuters (Daily Trust, 2014). From a local Nigerian group, it gradually evolved into a terrorist group with international connections with similar groups in Africa and beyond (Gilbert, 2014). And its *modus operandi* has equally grown in scope, savagery and sophistication.

Okpaga, Chijioke and Innocent (2013) in their work on "Activities of *Boko Haram* and Insecurity Questions in Nigeria" gathered reports from the media (newspapers, visual and audio stations) and quantitatively analyzed them to bring out vital findings. According to the study, Yobe State experienced eight (8) major attacks between 2009 and 2013 with the killing of over 150 people by *Boko Haram* in Damaturu on 4$^{th}$ November 2011 being the most shocking. Also, the 6$^{th}$ July, 2013 attack on Mamudo Government Secondary School and 29$^{th}$ September, 2013 attack on College of Agriculture, Gujba which left over 42 and 40 students dead respectively

were horrors the Yobe State indigenes can never forget. The study further shows that Borno State experienced not less than twenty five (25) major attacks between 2009 and 2013 with the 25th April, 2013 attack in Baga which left over 87 children and adults dead, the 19th April, 2013 massacre which left over 280 people dead and the 20th September, 2013 high way ambush attack which left over 142 people dead being the most horrible.

Joda and Olowoselu (2015) worked on "Effects of Insurgency on Girls Education in North Eastern Nigeria. A descriptive survey design was adopted for the study, questionnaire was used, simple random sampling was employed in administering it and the data gotten were analyzed using t-test, mean and standard deviation. The study revealed that the 14th April abduction of over 200 Chibok girls was the most disturbing attack unleashed by the *Boko Haram* Terrorist group in Borno in 2014 and the Potiskun Government Secondary School suicide bomb attack which left over 49 students dead and 69 students injured in Yobe State are among the 2014 major attacks by the terrorist group in these States.

The work of Joseph (2015) on "Examining the *Boko Haram* Insurgency in Northern Nigeria and the Quest for a Permanent Resolution of the Crisis" employed the historical method of research and analysis. The study built on the findings of earlier works done in the field of *Boko Haram* insurgency in Nigeria to ascertain that one of the terrible attacks by the *Boko Haram* insurgents in Borno State was on 3rd January, 2015 where over 2000 people in Baga were killed and over 7300 people fled for safety. This attack was so horrible that by 12th February 2015, the Sambisa Forest in Borno State (*Boko Haram's* Stronghold) was invaded by West African Allied Forces

of Nigeria, Cameroon, Chad and Niger. In this invasion, undisclosed numbers of insurgents were killed.

Chukwurah, Eme, and Ogbeje (2015) worked on implication of *Boko Haram* terrorism on northern Nigeria. Data for their research were obtained from secondary sources and were analyzed using content analysis. The study revealed that the northern Nigerian economy before *Boko Haram* terrorist activities was a thriving economy but has now been grounded to a halt in the transport, tourism, commercial, core service and infrastructural sectors. Their findings focused mostly on the tertiary activities (transport, schools, hospitals, hotels, parks and recreation) with negligible attention on agriculture which is the major source of livelihood of these rural dwellers.

Imasuen (2015) examined insurgency and humanitarian crises in northern Nigeria. The data for the study were acquired through questionnaire and in-depth interview (IDIS). The data from the questionnaire were analyzed quantitatively with the use of regression techniques which indicated that food insecurity, human casualty and displacement appeared to be the most disturbing humanitarian effects of *Boko Haram* insurgency. Though the work was insightful, the author concentrated more on human casualties, internally displaced persons, refugee debacles and the spread of diseases. The author left out the consequences of insurgency on income and level of living of the affected people. This was a gap in the work because when the sources of income of people who dwell in regions of insurgent attacks are not put into consideration in a research work to offer possible solutions to the challenges faced, psycho-social and physiological suffering become inevitable.

The effects of *Boko Haram* insurgency on business education in Nigerian universities was the focus of Ohimwerei (2014). The findings revealed that school dropout as a result of fear of *Boko Haram* terrorists as well as the forceful enlisting of many promising youths who eventually died or were maimed are key negative effects of *Boko Haram* sect on business education. This study did not put into consideration the fact that some children drop out of school not because of fear of insurgency but on the basis that the livelihood of their parents (sponsors) have been threatened by the insurgency activities, thereby making them unable to pay their school fees. This aspect of livelihood is what this research work seeks to address.

### 2.4.2: Perceived causes of *Boko Haram* insurgency

Several factors could be adduced as being responsible for the emergence and spread of the *Boko Haram* sect in Northern Nigeria. Some of these factors are:

*1) Rejection of western education and values*

The ideology and philosophy of the movement can best be understood through giving an explanation of the two key words Boko and Haram. According to Danjibo (2009) and Adesoji (2010) the word Boko is an equivocal term which means either "book", "western" or "foreign", while the word Haram is an Arabic derivative meaning "forbidden", "sinful" or "ungodly". Literally put together, book haram means book is sinful. But in its deeper meanings, it connotes "forbid everything Western" and western education is sinful, sacrilegious or ungodly and should therefore be forbidden (Danjibo, 2009; Adesoji, 2010). The inference from the foreign explanations is that the movement characteristically opposes and out rightly rejects western education, western values and culture as well as modern science.

*2) Religious bigotry and imposition of its ideals*

Closely related to the first factor is the issue of religious bigotry. *Boko Haram* is informed by the nature of religious belief, practice and the high capacity to impose and assert its perspective on the country's political agenda (Rasheed, 2013) The Nigerian Izala movement was rooted in Sheik Mahmud Gumi's teaching and preachings which emphasized a just and ethical order (Alanamu, 2005; Muhammed, 2009). Thus, *Boko Haram* embraces and advocates the propagation and strict adherence to Islam by all and sundry, irrespective of people's personal wishes (Abimbola and Adesote 2012). According to Burmah (2009), the movement seeks to impose Sharia across all Nigerian states. This belief was also heightened by ideological fanaticism of the movement, that any member who fights and dies – either by suicide bombing in the process of establishing a Sharia state by destroying modern state formation and government institutions or by other means would automatically go to "Aljana" – Paradise or heaven (Danjibo, 2009).

*3) Poverty, unemployment and ignorance*

Poverty, unemployment and ignorance contribute significantly to the spread of the sect's activities in Northern Nigeria. Most Nigerians agreed that the current insurgency in the North is worsened by the high level of poverty, unemployment and illiteracy prevalent in Northern Nigeria (Joseph, 2015). As opined by Joseph (2015) this reality is corroborated by Marxist proposition on religious influence on man. When a young man is poor, illiterate and unemployed he becomes a clean slate for any kind of brainwashing which is more potent when it comes from religion aided by culture. This is so because this category of people lacks the intellectual power to logically question or critique what they are told.

Also, the activity component of the brainwashing provides a quasi-equivalent of employment, and thus they feel engaged in acting out what they have been brainwashed on (Awoyemi 2012). To buttress the above standpoint, Danjibo (2009) claimed that majority of the followers of late Malam Muhammed Yusuf were largely illiterate youths who engaged in petty trading or had dropped out of school. This standpoint also accounts for why the movement has large and committed followers among the *Almajiris*. Nigeria is ravaged by underdevelopment, unemployment, illiteracy, poverty, lack of basic social amenities, corruption, increased cost of living, etcetera, all of which have instigated grievances against the system and created breeding ground for terrorism (Folarin and Oviasogie, 2015).

Salisu, Mohd, and Abdullahi (2015) examined the impact of *Boko Haram* insurgency on Nigerian national security. The researchers used structured questionnaire to gather their data, while the thematic analytic approach was used to analyze the data. Thematic data analysis consists of minimally organizing and describing the data set. The authors saw unemployment as the most important challenge that has pushed people into terrorist activities and urged the government to intervene.

*4) Income Inequality and unequal resource control*

The opportunity-cost approach incorporated in Fearon's (2008) model predicts that insurgent violence tends to increase under a situation of income inequality, as relatively poor rebels see more to gain from expropriating resources from the relatively rich (Berman, Callen, Felter, and Shapiro, 2011). For example in Borno State many wealthy and well established business men were attacked, killed and robbed by the insurgents. The appropriation or rent capture came with the idea that the greater the economic gains associated with controlling an area, the greater the

effort rebels will invest in violent conquest. Dube and Vargas (2008), for example, report evidence that violence increases in oil-rich areas of rural Colombia when the price of oil increases. Similarly, Hidalgo, Naidu, Nichter and Richardson (2010) provided empirical evidence that economic shocks drove the rural poor in Brazil to invade large landholdings and that this effect is especially pronounced in areas of high land inequality and in areas with fixed-rent tenurial arrangements, which do not provide peasants insurance against income shocks.

### 2.4.3: Socio-economic characteristics of rural dwellers influencing livelihood security

*2.4.3.1: Age, sex composition and marital status*

The ratio of males to females varies with the season in Nigeria. During the rainy season when most of the farming activities take place, the men make up 53.2% of the population, while women account for only 46.8%. On the other hand, the proportion of males is lower than females (49.1% and 50.9% respectively) in the dry season. This seasonal sex imbalance is a reflection of labour market adjustment. During the dry season, the young men move out of the village in search of jobs that are unrelated to farming (**Nyong, Dung, Osagbemi and Ihemegbulem, 2001**). From the work of Ogunmefun and Achike (2015) out of eighty (80) farmers interviewed, 55 were male farmers representing 68.8% of the total population while 16 were female farmers representing 31.3%. In a society where women are mostly not allowed to own land and other fixed assets, men have more access to own these fixed assets, which therefore gives them (men) a huge advantage over their counterparts (women) (Ogunmefun and Achike, 2015). Mustapha, Makinta, Zongoma, and Iwan (2012) also show that majority (62.20%) of the rural farmers investigated were males, while female constitutes only 37.80% of

the respondents. This implies that gender is a significant factor in agriculture because of its vital role in determining farming activities in the study area.

Accordingly, the proportion of the working age population is lower, particularly among men in the dry season (50.2%) than in the rainy season (57.4%). This results in higher age dependency ratios in the dry than in the rainy season (**Nyong, Dung, Osagbemi and Ihemegbulem, 2001**). Baiyegunhi and Fraser (2009) observe that majority (86%) of the rural farmers are within the middle age group of 26-54 years. This is within the economically productive age in population. This was contrary to the work of Nwaiwu (2015) who had the mean age of farmers to be 56.80 years; meaning that the respondents comprised mainly of the elderly farmers. Reason for this difference could be due to the fact that Baiyegunhi and Fraser carried out their work in northern part of Nigeria where agriculture is highly practiced and the tendency of youths being involved is high compared to Nwaiwu who carried out his study in southeastern Nigeria where poor soil conditions have made agriculture difficult to practice, therefore discouraging many from venturing into it; especially the youths.

The work of Ogunmefun and Achike (2015) showed that population of the respondents that were married was the highest (81.3%) with 65 respondents being married while unmarried and widowed respondents were 4 (5%) and 11 (13.8%) respectively. This was in agreement with the work of Ugwoke, Adesope and Ibe (2005) that about 53% of their respondents were either married or widowed. They noted that young people in the rural areas get married earlier than their peers in urban centers. This tendency to marry early helps in building a virile farming population. This tends to agree with the assertion of Perez-Morales (1990) who noted that young

people in rural areas get married earlier than their peers in urban centers and also become involved in adult responsibilities before urban youth.

*2.4.3.2: Household size*

The report of the Nigeria Demographic and Health Survey (NDHS, 2013) shows that the average household size in rural Nigeria is 5. Less than 20% of the households in the north are headed by women, compared to the south where more than 20% of households are headed by women (NDHS, 2013). A major reason for this is the way by which local communities in the north identify a household head (**Nyong, Dung, Osagbemi and Ihemegbulem, 2001**). Katarko, for instance, adopts three approaches based on its social organization and customs.

The first approach is the person identified by other household· members as the one who controls the maintenance of the household and exercises the authority to run the household. Without such an individual, the second option is the person who is the chief earner or supporter of the household's economy. The custom and culture of Katarko village for example preclude women from owning large farms, by that making it rare for them to be the chief earners in the households. A third choice is the person who is the oldest male resident in the household (**Nyong, Dung, Osagbemi and Ihemegbulem, 2001**). Mustapha, *et al.* (2012) show that most (42.20%) of the respondents had household size of 5-9 members. This implies that, there would be enough work force to supply the needed labour in farming activities (for example soya bean production). The mean household size of the respondents from the work of Nwaiwu (2015) was 5 persons which agree with the findings of Mustapha, *et al*. (2012).

*2.4.3.3: Level of education*

Although universal literacy is recognized as a fundamental right and as an explicit development objective, this goal remains elusive in many developing countries, including Nigeria. In 1976, Nigeria adopted a national policy on Universal Free Primary Education, which ·gave every child the right to free primary education. To complement this effort, the government launched a national mass literacy campaign in 1990 with the purpose of raising "literacy. Mustapha, *et al.* (2012) show that most (41.10%) of the respondents had formal education. This agrees with the findings of Nwaiwu (2015) which showed that most of the farmers (72.5%) had formal education and that of Ogunmefun and Achike (2015) which showed that majority of the subject studied have primary (33.8%) education while 19 (23.8%) of the respondents did not have formal education. Though, this was not in agreement with that of Apata, *et al.* (2010) who asserts that most of the Nigerian farmers have no formal education. Farmers being educated imply that they could comprehend improved technologies being disseminated to them and cope with different hazards both social and technological.

*2.4.3.4: Occupational distribution of rural dwellers*

Agriculture is the mainstay of the people living in the rural areas and so farming is the major occupation in the rural areas. As a result of high income variability of farm income of rural farmers which is attributed to the risks they routinely face, some of these rural farmers engage in multiple job holdings to ensure steady flow of income into their household (Ogunmefun and Achike, 2015). Ogunmefun and Achike (2015) further showed in their work that respondents who depend on farming alone was forty (40) representing 50% of the total number of respondents interviewed, while those with other occupations including farming was forty (40)

representing 50% of the total number of farmers interviewed. Farmers in this study area in their bid to reduce income risks engaged in other secondary activities which included office work, petty trade, crafts and service works. This was contrary to the finding of Nwaiwu (2015) which showed that more than half (62%) of the respondents had farming as their major occupation, while 38% were involved in diverse non-farming activities as their major occupation in addition to farming. Bryceson (2000) indeed reported that most countries in Africa are undergoing a process of "deagrarianisation" which is defined as long term process of occupational adjustment, income earning reorientation, social identification and spatial relocation of rural dwellers away from strictly agricultural based modes of livelihood.

### 2.4.4: Determinants of livelihood

According to Chambers and Conway (1992) there are numerous initial determinants of livelihood strategy. Many livelihoods are largely predetermined by accident of birth. Livelihood of this sort may be ascriptive. In India for instance, children may be born into a caste with an assigned role as potters, shepherds, or washerpeople. Gender as socially defined is also a pervasive ascriptive determinants of livelihood activities. Or not necessarily ascriptively, a person may be born, socialized and apprenticed into inherited livelihood- as a cultivator with land and tools, a pastoralist with animals, a forest dweller with trees, a fisherperson with boat and tackle, or a shopkeeper with shop and stock; and each of these may in turn create a new household or households in the same occupation (Chambers and Conway, 1992).

Many livelihoods are also less singular or predetermined. Some people improvise livelihoods with degree of desperation, what they do being largely determined by the social, economic and

ecological environment in which they find themselves. A person or household may also choose a livelihood, especially through education and migration. Those who are better off usually have a wider choice than those who are worse off, and a wider choice is usually generated by economic growth. In a future of accelerating change, adaptable capabilities to exploit new opportunities may be both more needed and more prevalent (Chambers and Conway, 1992). The sustainability and impact of interventions or any other phenomenon on livelihood are two important factors to consider in livelihood determination. These factors are discussed below.

*2.4.4.1: Sustainable livelihood*

A livelihood is sustainable when it can cope with and recover from stresses and shocks maintain or enhance its capabilities and assets, while not undermining the natural resource base (Chambers and Conway, 1992). The sustainable livelihoods idea was first introduced by the Brundtland Commission on Environment and Development, and the 1992 United Nations Conference on Environment and Development expanded the idea, advocating for the achievement of sustainable livelihoods as a broad goal for poverty eradication (Lasse, 2001). In any definition of livelihood sustainability, Chambers and Conway (1992) argue that such definitions must include the ability to avoid, or more usually to withstand and recover from stresses and shocks.

According to Chamber and Conway (1992) sustainable Livelihood is indicated by the following parameters:

*i) Creation of working days*

This relates to the ability of a particular combination of livelihood strategies to create gainful employment for a certain portion of the year. This may be on or off-farm, part of a wage labour system or subsistence production. Sen (1975) notes three aspects of employment – income (a wage for the employed), production (employment providing a consumable output) and recognition (where employment provides recognition for being engaged in something worthwhile). In terms of the income/production aspects, various target levels have been suggested, but 200 days a year appears to be widely used as a minimum level to create a livelihood (Lipton 1991; 1993). Overall, the number of livelihoods created will be dependent on the proportion of the population available for work.

*ii) Well-being and capabilities*

The notions of 'well-being' (Chambers, 1995; 1997) and 'capability' (Sen, 1984; 1987) provide a wider definitional scope for livelihood. Sen sees capabilities as 'what people can do or be with their entitlements', a concept which encompasses far more than the material concerns of food intake or income. Such ideas represent more than the human capital which allows people to do things, but also the intrinsically valued elements of 'capability' or 'well-being'. Chambers (1997) argues that such a well-being approach to poverty and livelihood analysis may allow people themselves to define the criteria which are important. This may result in a range of sustainable livelihood outcome criteria, including diverse factors such as self-esteem, security, happiness, stress, vulnerability, power, exclusion, as well as more conventionally measured material concerns (Chambers, 1989).

*iii) Livelihood adaptation, vulnerability and resilience*

The ability of a livelihood to be able to cope with and recover from stresses and shocks is central to the definition of sustainable livelihoods. Such resilience in the face of stresses and shocks is key to both livelihood adaptation and coping (Davies, 1996). Those who are unable to cope (temporary adjustments in the face of change) or adapt (longer term shifts in livelihood strategies) are inevitably vulnerable and unlikely to achieve sustainable livelihoods. Assessing resilience and the ability to positively adapt or successfully cope requires an analysis of a range of factors, including an evaluation of historical experiences of responses to various shocks and stresses. Different types of shock or stress, in turn, may result in different responses, including avoidance, repartitioning, resistance or tolerance mechanisms (Payne and Lipton, 1994).

*iv) Natural resource base sustainability*

Most rural livelihoods are reliant on the natural resource base at least to some extent. Natural resource base sustainability refers to the ability of a system to maintain productivity when exposed to disturbing forces, whether a 'stress' (a small, regular, predictable disturbance with a cumulative effect) or a 'shock' (a large infrequent, unpredictable disturbance with immediate impact). This implies avoiding depleting stocks of natural resources to a level which results in an effectively permanent decline in the rate at which the natural resource base yields useful products or services for livelihoods (Conway, 1985). Measuring natural resource sustainability is notoriously difficult, as it is critical to link indicators of resource depletion or accumulation (e.g. soil fertility levels, vegetation cover etc.) to both the temporal dynamics of system resilience (i.e. the ability to recover from disturbance) and livelihood needs (i.e. an assessment of whether natural resource change results in 'effectively permanent declines in useful products or services') (Holling, 1993).

*2.4.4.2: Impact of insurgency on rural dwellers and their livelihoods*

Apart from the Nigerian Civil War (1967 – 1970), no other single event of complex emergency in the country has been as debilitating as the *Boko Haram* insurgency in terms of humanitarian impacts. Granted, the Niger Delta crisis (1999 – 2009) occasioned dire outcomes that threaten the national security of Nigeria (Okoli and Iortyer, 2014). Nonetheless, its humanitarian consequences could not be compared with that of the *Boko Haram* insurgency in terms of scope, degree and diversity. In effect, the humanitarian impacts and implications of the *Boko Haram* insurgency have been historically remarkable and unprecedented (Okoli and Iortyer, 2014). Some of these impacts are:

*a) Public insecurity*

Since the escalation of the *Boko Haram* insurgency in the North-east Nigeria in 2009, life in the region has been characteristically nasty, brutish and, in most cases, short (Salkida, 2012). According to Salkida (2012) since the outbreak of sectarian violence in 2009, the north-east, Borno and Yobe States in particular, has ceased to know civil normalcy. Intermittent suicide and car bombings have become the part of their daily lives. Hate-filled adherents of the extremist sect called *Boko Haram* and other criminals assuming their identity wielding semi-automatic rifles speed through streets at intervals to shoot down randomly at their targets. These scenarios have created an atmosphere of civil siege and volatility.

*b) Livelihood crisis*

The repercussions of the sectarian violence as well as government's counter-violence on the livelihood conditions of the affected States have been disastrous. Owing to public security volatility in these states, normal productive, agricultural and commercial activities have often been constrained. The enforcement of curfews and emergency rule has restricted movement and communications in a manner that hampered economic activities. In addition, the fear of attacks by the insurgents has often driven communities into hiding. Furthermore, counter-insurgency measures, such as the ban on the use of motorcycles have resulted in loss of means of livelihood and subsistence for some households. In effect, the whole trend points to debilitating livelihood cum human security crises. It is of course a truism that the insurgency in the north has had a devastating effect on families and livelihood of many economic groups (Salkida, 2012).

Even though *Boko Haram* and its impact has not been fully documented, evidence from other regions in the world can be used to appreciate the devastation of insurgency. In early 2000, the Maoists insurgents in Nepal had begun to attack the buildings and plant of the multinational and large national corporations – including Unilever Nepal, Surya Tobacco Company, Coca Cola, an Indian milk factory and several distilleries and this continued with increased vigour throughout the year that security forces in rural areas started restricting the movement of the rural dwellers so they can track the Maoists insurgents; and as such, traditional livelihood opportunities such as collecting non-timber forest produce, marketing and farming were being seriously disrupted because some of the most able-bodied household members could not engage in their daily means of livelihood due to restriction of movements (Seddon and Hussein, 2002). Conflict in the north east has made families reverted to negative and unsustainable coping strategies. Meal

consumption has reportedly decreased from three meals to one per day and many IDPs have abandoned their farms and agricultural activities due to the fear of being killed on their way to farms in the State. Under extreme circumstance, families hosting IDPs were reported to have exhausted their food stocks and resorted to eating grain reserved as seedlings for the next planting season (Imasuen, 2015).

The massive destruction of infrastructure, the destruction of telecommunication facilities, frequent attacks on markets and businesses, shortened business hours, have made many relocate to other safer parts of the country, bringing down incomes and increasing poverty levels (Salkida, 2012). The activities of the *Boko Haram* sect which metamorphosed, from being an innocuous political and religious group (Adetoro, 2012), into the most savage militant group in the annals of Nigerian history, with its unconventional strategies of haphazard devastating attacks on peoples, institutions and facilities, portends grave repercussions for the continued harmonious existence of Nigeria as a united nation. The advent of the ruinous sect and its nefarious activities has made Nigerians witness untold hardship and wanton destruction of property owned by both government and private individuals (Adetoro, 2012; Ogbonnaya and Ehigiamusoe, 2013). No doubt, rural dwellers owing to their nature are worst hit.

*c) Human rights abuses*

According to the Human Rights Watch (2012) *Boko Haram* insurgency has led to violation of human rights and commission of war crimes by both the insurgents and the government forces. The military and police, for instance, have committed human rights abuses and extra-judicial killings. In fact, a prominent case in point is the killing of the pioneer leader of the *Boko Haram* sect, Mohammed Yusuf, in 2009 by the Nigerian Police (Ngare, 2012). On the side of the

insurgents, heinous human rights abuses and war crimes have also been committed. Relevant instances include: forced conversion of people of other faiths to Islam, wanton attacks on churches and mosques, murder, torture and persecution of members of other religions, and killing of women, children and civilian (non- combatant) populations (Human Rights Watch, 2012).

*d) Population displacement and refugee debacle*

*Boko Haram* insurgency has led to the displacement of huge human population in the affected States. Available information suggest that the number of internally displaced persons and refugees associated with the insurgency has been enormous (Adebowale, 2013). Based on the recent Displacement Tracking Matrix (DTM) program report, a total of 1,235,294 internally displaced persons (IDPs) have been identified in northern Nigeria. The highest number of IDPs are in Borno (672,714 IDPs), followed by Adamawa (220,159 IDPs) and Yobe (135,810 IDPs) (DTM, 2015).

### 2.4.5: Methodological approaches used in impact studies

*i) Difference in difference (DiD) estimator (Double Difference Estimator)*

This operates by comparing a before-after estimate for participants with a before-after estimate for non-participants and regarding the difference as Treatment on Treated (TT). Specifically, the average change in the no-programme outcome measure is assumed to be the same for participants and non-participants. What this means in effect is that the Did estimator can cope with macroeconomic changes or changes in the lifecycle position so long as those changes affect both participants and non-participants similarly. A great advantage of the Did estimator is its considering for the nature of the characteristics of the unobserved variables that may affect

outcomes; Did estimator removes the trend effects, the only remaining effect is that specific to the individual but varying over time (Heckman and Smith, 1999).

Albouy (2010) reported a study conducted in 1994 by Card and Krueger on the topic: "Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania" to try to evaluate the effect of the minimum wage (the treatment) on employment (the outcome, Y). On April 1, 1992, New Jersey's minimum wage rose from $4.25 to $5.05 per hour. To evaluate the impact of the law, the authors surveyed 410 fast-food restaurants in New Jersey (the treatment group, T) and eastern Pennsylvania (the control group, C) before and after the rise. The Double Difference Estimator (DDE) model was used in the following form… (1):

$$DD^{s} = \left[\frac{1}{p} \sum_{i=1}^{i=p} (Y_{1ia} - Y_{1ib})\right] - \left[\frac{1}{c} \sum_{j=1}^{j=p} (Y_{0ja} - Y_{0jb})\right]$$

$DD^S$ = Double difference

$Y\ i^T$ = Average outcome (productivity) of the beneficiaries after the technology.

$Y\ 0^T$ =Average outcome (productivity) of the beneficiaries before the technology.

Y i° = Average outcome (productivity) of the non - beneficiaries after the technology.

Y 0° = Average outcome (productivity) of the non - beneficiaries before the technology.

$i = i^{th}$ No. of beneficiaries

$j = j^{th}$ No. of non- beneficiaries (control)

C = number of individuals in the control group (non-beneficiaries)

P = number of beneficiaries

The result revealed the effect of minimum wage on employment in New Jersey and Pennsylvania before increase as 20.44 and 21.03 respectively with a difference of 0.59 while after the increase was 23.33 for the New Jersey and 21.17 for Pennsylvania with a difference of -2.16. The difference in difference estimator shows a small increase in employment in New Jersey where the minimum wage increased. This came as quite a shock to most economists who thought employment would fall. Notice that prior to the increase in the minimum wage, Pennsylvania had higher employment than New Jersey and that it was bound to fall to a lower level. This may be a failure in the parallel trend assumption. However the small, albeit insignificant increase in employment in New Jersey makes it hard to accept the hypothesis that employment actually decreased in New Jersey over this time. Although still somewhat controversial, this study helped change the common presupposition that a small change in the minimum wage from a low level was bound to cause a significant decrease in employment.

*ii) Chow test model*

The chow test (Chow, 1960) is a method well known in econometrics. It was originally designed to analyze the same variables obtained in two different data sets to determine if they were similar enough to be pooled together. It was later explored, expanded and enhanced by Fisher (1970), Toyoda (1974) and Schmidt and Sickles (1977). The original paper by Chow considered observations (financial data) that were taken from two different time periods. Chow showed that his method could aid the researcher in determining whether or not newly collected data exhibit the same relationship between dependent and independent variables as the previous data (Howard, 2008).

According to Chow (1960), to test the equality between sets of coefficients in two linear regressions, one starts with the assumption that both are equal. A regression equation is fitted to the combined set of observations, i.e., excluded and selected, and the residual sum-of –squares is computed. Next, a regression equation is fitted to the data without assuming the sets are equal. Likewise, the residual sum-of-square is obtained. Chow shows that the ratio of the difference between these two sums to the latter sum, adjusted for the corresponding degrees of freedom, will be distributed as F-ratio under the null hypothesis (Howard, 2008)

Chow test model was used by Simoyan and Omolehin (2010) in their study of impact of Fadama II project on beneficiary farmers' income in Kaduna State. A significant change between the coefficient and intercept of the respondents' income implying that Fadama II project contributed positively to the increased income realized by the beneficiaries over the non-beneficiaries. The standard F test for the equality of two sets of coefficient in linear regression models called a chow test was used for the study. This is expressed mathematically as:

$$F = \frac{(RSSR - SSR1 - SSR2)/\ k}{(SSR1 + SSR2)/\ n - 2k}$$

Where;

RSSR3 = the sum of squared residuals from a linear regression in which b1 and b2 are assumed to be the same (pooled data).

SSR1 = the sum of squared residuals from a linear regression of sample 1 (participants)

SSR2 = the sum of squared residuals from a linear regression of sample 2 (Non- participants).

Both have dimension k and these are number of observation in total. The total number of observation is;

k = is the total number of regression estimates including intercept of

$n_1 + n_2$ = number of observation of the 1st and 2nd regression (participants and non participants).

The computed F Chow statistics was 227.09, with V1=6 and V2 =398 degree of freedom at 5% level of significant and F tabulated is 2.10 confirming the heterogeneity of slopes of beneficiaries and non-beneficiaries, hence indicating a positive impact of the project intervention on the beneficiaries income. The higher difference in net-farm income of the beneficiary over that of non-beneficiary may be attributed to income realized by the respondents from Fadama project intervention which is above the average rural household income of ₦42, 644 reported by the 2003 - 2004 living standard survey (Federal Office of Statistics (FOS), 2004). This result is consistent with the findings of Ezeh (2004) who reported that Fadama project beneficiaries were better than their non-beneficiary counterpart in terms of income and productivity.

*iii) Instrumental variables (IV)*

The IV method is possible when a variable can be identified that is related to participation but not outcomes. This variable is known as the 'instrument' and it introduces an element of randomness into the assignment which approximates the effect of an experiment. Where it exists, estimation of the treatment effect can proceed using a standard instrumental variables approach. Where variation in the impact of treatment across people is not correlated with the instrument, the IV approach recovers an estimate of impact of treatment on the treated (Imbens and Angrist, 1994). The main drawback to the IV approach is that it will often be difficult to find a suitable instrument because, to identify the treatment effect, one needs at least one regressor which determines programme participation but is not itself determined by the factors which affect outcomes (Blundell and Costa, 2000).

*iv) Randomized control trial (RCT)*

Random assignment (randomization) is generally viewed as the most robust evaluation approach (Burtless, 1995). This operates by creating a control group of individuals who are randomly denied access to a programme. Properly carried out, random assignment creates a control group comprising individuals with identical distributions of observable and unobservable characteristics to those in the treatment group (within sampling variation). Hence, the selection problem is overcome because participation is randomly determined. The mean outcome for those participating in the programme relative to that for those in the control group provides an estimate of the Treatment on the Treated (TT). While this is the parameter most commonly examined using random assignment, it is possible to design experiments in such a way as to derive estimates of Average Treatment Effect (ATE) (White and Lakey, 1992).

There are also practical problems that can bias the estimates. It may be that the implementation of the experiment itself alters the framework within which the programme operates. This is known as 'randomisation bias' and can arise for a number of reasons; for instance, if random exclusion from a programme demotivates those who have been randomised out, they may perform more poorly than they might otherwise have done, thus artificially boosting the apparent advantages of participation (Heckman and Smith, 1995).

*v) Propensity score matching (PSM)*

The method of matching has achieved popularity more recently as a tool of evaluation. It assumes that selection can be explained purely in terms of observable characteristics. Applying the method is, in principle, simple. For every individual in the treatment group, a matching individual is found from among the non-treatment group. The choice of match is dictated by

observable characteristics. What is required is to match each treatment group individual with individual sharing similar characteristics. The mean effect of treatment can then be calculated as the average difference in outcomes between the treated and non-treated (Alex, Richard and Purdon, 2002).

Psm's main advantage over random assignment is that it avoids the ethical considerations which arise when a potentially beneficial treatment is denied to those randomly assigned out. Cost is also an important practical consideration when conducting evaluations. In some cases, despite Psm's onerous data requirements, data generation may be less costly than in the case of an experiment since the latter involves substantial monitoring to secure the random allocation. That said, if outcome data are available through administrative sources, experimental evaluations can often do entirely without surveys, keeping costs low (Alex, *et al*., 2002).

Khandker, Koolwal and Samad (2010) identified several qualitative and quantitative methods being used in the literature to examine the impact of a programme or an intervention on the beneficiaries. Among these are randomization, double difference estimator, project achievement index, multivariate regression, and propensity score matching, instrumental variables, cost benefits ratio and technical efficiency. For the did estimator, it is difficult to administer the same set of respondents and use of baseline information before and after the programme intervention. Randomization has been criticized for withholding the programme from those who need it, given to those who do not (what is term as unethical). It also faces the problem of selective attrition, external validity and spill-over effects. Psm is faced with the defect of identification, which is, finding credible groups that look alike, and in practice one would rarely find two households that

are exactly similar to each other in terms of many characteristics (Khandker, Koolwal and Samad, 2010).

Other methods include the use of multivariate regression procedures that include per-capita income or consumption expenditure among some set of explanatory variables. The use of this technique had failed to deal with the problem of endogeneity in the outcome equation and also to deal appropriately with the self - selection bias (Woodldridge, 2009). Some other performance evaluation models which most researchers have used in the time past are production function measures, economic surpluses measures and project achievement index. As a result of the draw backs in some of the impact models mention earlier, this study used the chow test statistics model. This model was used in comparing various changes that has occurred among the farmers with respect to income and level of living before and during insurgent activities. The use of this model is due to its practical applicability and appropriateness for addressing the clumsiness, inaccuracies associated with other impact models.

*2.4.5.1: Regression statistics*

Regression is a statistical technique to determine the linear relationship between two or more variables. Regression is primarily used for prediction and causal inference. In its simplest (bivariate) form, regression shows the relationship between one independent variable (X) and a dependent variable (Y), as in the formula below:

$$y_i = \beta o + \beta 1\, X + u$$

The magnitude and direction of that relation are given by the slope parameter ($\beta 1$), and the status of the dependent variable when the independent variable is absent is given by the intercept

parameter ($\beta o$). An error term (u) captures the amount of variation not predicted by the slope and intercept terms. The regression coefficient ($R^2$) shows how well the values fit the data (Campbell and Campbell, 2008). Regression thus shows us how variation in one variable co-occurs with variation in another. What regression cannot show is causation; causation is only demonstrated analytically, through substantive theory. For example, a regression with shoe size as an independent variable and foot size as a dependent variable would show a very high regression coefficient and highly significant parameter estimates, but it should not be concluded that higher shoe size causes higher foot size. All that the mathematics can tell us is whether or not they are correlated, and if so, by how much.

It is important to recognize that regression analysis is fundamentally different from ascertaining the correlations among different variables. Correlation determines the strength of the relationship between variables, while regression attempts to describe that relationship between these variables in more detail (Campbell and Campbell, 2008). Below are different forms of regression model:

*i) Tobit regression model*

The Tobit model is a statistical model proposed by James Tobin (1958) to describe the relationship between a non-negative dependent variable $y_i$ and an independent variable x. The word Tobit is taken from Tobin and adding “it” to it. When the dependent variable y is statistically "limited" in some ways, ordinary least square equations such as the multiple regressions become untrustworthy and an alternative must be found. Limited-dependent variables come in several forms: one is the "truncated" variable and the other “censored”

variable. A truncated y is one whose distribution is "cut off" at some arbitrary value owing to the nature of the sample taken, while "censored" dependent variable is one in which observational differentiations is masked by the nature of the data. Economists encounter this problem primarily in consumer expenditure analyses (Douglas, 1992).

When a variable is censored, values in a certain range are all transformed to, or reported as, a single value. The process of top coding, where all values of a certain variable are given the same value, is an example of censoring. There are many other examples of censoring in economic data, including the household purchase of durable goods, the number of hours worked by females, and vacation expenditures. Censoring of explanatory variables is not a problem, but censoring of a dependent variable in a regression model leads to econometric problems (Green, 2003). The standard econometric method used in the case of censored dependent variables is the tobit model. The tobit model is typically written in terms of an index function (or latent variable) (Green, 2003).

The model is expressed based on Tobin (1958).

$yi = Yi^* = Xi\beta + ei$

$yi = 0$ if $Yi^* \leq 0$

$yi = Yi^*$ if $Yi^* > 0$

$i = 1, 2 \ldots\ldots\ldots n$

Where,

yi = limited dependent variable.

$Yi^*$ = latent variable

Xi = vector of explanatory variables,

$\beta$ = vector of unknown coefficients

ei =independently distributed error term.

The tobit regression model was used by Asogwa, Okwoche and Umeh (2012) in analyzing the determinants of poverty severity among rural farmers in Nigeria. In the Tobit regression analysis used, only poor households were considered. In other words, the limited dependent variable $y_i$ was censored at zero from below. The variable was observed for values greater than zero and censored otherwise. Hence, the dependent variable measured the intensity of poverty among households in the study area. The values of these dependent variables ranged between 0 and 1 and the farther away the value is from 0, the worse the poverty situation. Their result had a Pseudo R-square (coefficient of determination) of 0.8763, suggesting that the model has a good fit to the data. This indicates that 87.63% variation in poverty severity is explained by variations in the specified explanatory variables, suggesting that the model has good explanatory power on the changes in poverty severity among the respondents with 95% level of confidence.

In this research work, the dependent variable was censored and that makes multiple, logit and probit regressions unsuitable. Since the standard econometric method recommended for censored dependent variables is the tobit model, the tobit regression was used to determine the factors that make farmers susceptible to insurgency.

*ii) Ordered probit/logit regression model*

The analysis of dependent variables that have only two possible values, e.g. lives or dies, wins or loses, gets an A or doesn't get an A is usually best done using the probit of logit regression

model. But, there are instances where the dependent variables of interest have more than two possible categories; these categories might be unordered (doesn't move, moves South, moves East) or ordered (high, medium, low) (Richard, 2015). Many variables of interest are ordinal; that is, you can rank the values, but the real distance between categories is unknown. Diseases are graded on scales from least severe to most severe. Survey respondents choose answers on scales from strongly agree to strongly disagree. Students are graded on scales from A to F. This view of ordinal variables can also apply to variables that are often treated as continuous but might be better viewed as ordinal. Counted variables, such as grades of school completed, number of children ever born, or number of voluntary-association memberships, may be regarded as ordinal realizations of underlying continuous variables (Christopher and Robert, 1984).

To be specific on model to use, it is necessary to select a probability distribution for the unobserved continuous dependent variable (y*). If the probability that the observed ordinal variable (y) takes on successively higher values rises (or falls); slowly at small values of observed independent variable ($x$), more rapidly for intermediate values of $x$, and more slowly again at large values of $x$, then either the normal or logistic distribution is appropriate. The normal distribution yields the ordered probit model while the logistic distribution yields the ordered logit model (Christopher and Robert, 1984). Ordered probit regression model has its origins in bio-statistics (Aitchison and Silvey 1957) but was brought into the social sciences by two political scientists (McKelvey and Zavoina, 1975) (Jackman, 2000).

The ordered probit model is a latent regression where:

$$y^* = \sum_{k-1}^{k} \beta_k x_k + \varepsilon$$

Where y* is the unobserved latent index determined by observed factors ($x$s) and unobserved factors (ε) and ε is normally distributed

$$y = 1 \quad \text{if} \quad y^* \leq \mu 1 \ (= 0),$$

$$y = 2 \quad \text{if} \quad \mu 1 < y^* \leq \mu 2,$$

$$y = 3 \quad \text{if} \quad \mu 2 < y^* \leq \mu 3,$$

$$y = J \quad \text{if} \quad \mu j\text{-}1 < y^*,$$

Where y is observed in J ordered categories. The unknown threshold levels (μs) are to be estimated with the βs. The probability that the observed y is in category j is shown as follows:

$$\text{Prob}(y=J) = 1 - \Phi \left[\mu_{j-1} - \sum_{k-1}^{k} \beta_k x_k\right]$$

The Prob(y = J) is obtained by taking the difference between two adjacent cumulative probabilities (Liao, 1994). This is with the exception of the first and last categories where:

$$\text{Prob}(y \leq 1) = \text{Prob}(y=1) \text{ and } \text{Prob}(y \leq J) = 1$$

Ordered probit was used by Amanda (2003) in her study of "Probit and Ordered Probit Analysis of the Demand for Fresh Sweet Corn". The ordered probit model was used to analyze purchasing behavior in the winter, spring, summer, and fall seasons. For respondents buying fresh sweet corn in the season, the model examines the effects of explanatory variables on the dependent variable. Findings from result showed that respondents cited good taste, freshness and tenderness

as the most important reason why they purchased fresh sweet corn during the winter. This was significant at 95% level with a coefficient of 0.5328. Consumers' satisfaction with fresh sweet corn purchased during the spring was an important factor in the frequency of purchase and was significant at 99% confidence level with a t-value of 4.6664. Newspaper advertisements promoting the sale of fresh sweet corn were more common during the summer months. This was statistically significant at 95% confidence level with a coefficient of 0.2274. The ordered probit model for the fall season revealed that rac2 (white race) had a negative effect on the frequency of purchase. Rac2 had a coefficient of –0.4246 and was statistically significant at 95% confidence level.

*iii) Generalised ordered logit regression model*

When dependent variables are ordinal rather than continuous, conventional OLS regression techniques are inappropriate. The ordered logit model, also known as the proportional odds model, is a popular method in such cases. However, in many instances, generalized ordered logit (gologit) models may be a superior alternative. Gologit models can be less restrictive than proportional odds models, whose assumptions are often violated, and more parsimonious than methods like multinomial logit (mlogit) that ignore the ordering of categories altogether (William, 2006). For the proportional odds assumption which is often violated by the data, standard advice in such situations is to go to a non-ordinal model such as mlogit. Unfortunately, such models can be far less parsimonious and more difficult to interpret than the proportional odds model. Gologit provides an alternative by estimating partial proportional odds models. With such models, the parallel lines/proportional odds assumption can be relaxed for some explanatory variables while being maintained for others (William, 2006). This model is expressed

mathematically as:

$$\pi_{ij} = \frac{\exp(\alpha_j + \delta_j Z_i - X_i\beta)}{(1+\exp(\alpha_j + \delta_j Z_i - X_i\beta))} - \frac{\exp(\alpha_{j-1} + \delta_{j-1} Z_i - X_i\beta)}{(1+\exp(\alpha_{j-1} + \delta_{j-1} Z_i - X_i\beta))}$$

Where,

$\boldsymbol{\pi ij}$ is the probability that individual *i* sustains an injury severity level *j*

$\boldsymbol{Z}_i$ is a set of exogenous variable (without a constant).

$\boldsymbol{\delta}_j$ is a vector of parameters to be estimated

$\boldsymbol{\beta}$ is a vector of unknown parameters to be estimated

$\boldsymbol{X}_i$ is a vector of exogenous variables (excluding a constant)

To view public perception about the attitudes of working mothers towards their child, Long and Freese (2006) presented data from the 1977/1989 general social survey. Respondents were asked to evaluate the following statement: "A working mother can establish just as warm and secure a relationship with her child as a mother who does not work." Responses were coded as 1 = Strongly Disagree (SD), 2 = Disagree (D), 3 = Agree (A), and 4 = Strongly Agree (SA). Explanatory variables are yr89 (survey year; 0 = 1977, 1 = 1989), male (0 = female, 1 = male), white (0 = nonwhite, 1 = white), age (measured in years) ed (years of education) and prst (occupational prestige scale). Based on the analysis gotten from the ordered logit (ologit), Long and Freese concluded that the parallel lines assumption was violated with these data and suggested that an alternative ordinal regression model or a multinomial logit model be used. Williams (2006) used the gologit to: a) reproduce ologit's estimates by using the parallel line parameter, i.e. estimated a model in which all variables are constrained to meet the proportional

odds/ parallel regressions/ parallel lines assumption. b) estimate a model in which no variable has to meet the parallel lines assumption. c) do a global likelihood ratio chi-square test of the parallel lines assumption and (d) use autofit to estimate a model in which some variables are constrained to meet the parallel lines assumption while others are not.

From the result gotten from the gologit, Williams (2006) explained that the coefficients for yr89 which were consistently positive but declined across cut-points means that respondents in 1989 were more supportive of working mothers than respondents in 1977, with the greatest differences being that 1989 respondents were less likely to put themselves in the strongly disagree and disagree categories. Contrary to yr89, the coefficient for the male effect was negative but gets larger across cut-points. Hence, males tend to be less supportive of working mothers than are females, with the greatest differences being that males are less likely to place themselves in the Strongly Agree and Agree categories (Williams (2006).

For this work, the dependent variable that was used in validating the perception of farmers on causes of insurgency was discrete, more than two and ordinal. Under this circumstance, conventional regression analysis is not appropriate. If the ordered probit does not meet up with the parallel line assumption, the generalized ordered logit becomes a better model to use. Unfortunately the ordered probit could not meet the parallel line assumption, so the generalized ordered logit was used for this study

### 2.4.6: Strategies for coping and mitigating insurgency

*2.4.6.1: Strategies for mitigating insurgency*

*i) Use of military force*

Use of military force over bearing application of force is a less useful element in fighting terrorism. The military force was used severally in Nigeria to stop the Niger Delta Militants but gave no peace until in 2009 when an amnesty was proclaimed by President Umaru Musa Yar'Adua in the Niger Delta region of Nigeria. The president gave a 60 day unconditional amnesty period for militants in the Niger Delta to surrender their arms, unconditionally renounce militancy and sign an undertaking to this effect. In return, the government pledged its commitment to institute programme to assist their disarmament, demobilization, rehabilitation and provision of reintegration assistance to the militants. The amnesty is presently the current track on the pathway to peace building in the Niger Delta (Ekumaoko, 2013).

Force is only relevant in two instances and is intended to provide peaceful atmosphere needed for talks or conflict resolution to proceed and achieve result (Ruby, Keven and Eric, 2002). The first situation that may require application of force is during initial stages of peacekeeping where force helps to achieve or allows for a cooling off period to occur before the start of the rest of strategic conflict resolution processes. The second is during the implementation of peace-enforcement processes. Outside the two scenarios, force is mostly counter-productive as an instrument against terrorist groups. Above all, there must be strict adherence to applicable rules of engagement in situations where military force is used. The time frame for military action must not be protracted to reduce casualties (especially on the part of terrorist group) which might negatively affect their appetite for peace talks (Egbue, Nwankwo, and Alichie, 2015).

*ii) Equipping of civilian joint task force (civilian JTF)*

Civilian JTF as part of the mechanisms for combating the menace of *Boko Haram* terrorism in Nigeria represents a veritable example of citizen-driven communal response to security challenge and an indication of how terrorism can be tackled and prevented. The civilian JTF group exploits their knowledge of the communities to identify suspected *Boko Haram* members or other suspicious individuals (Okereke, 2013). Civilian JTF members have been successful in stopping many attacks through swift identification of strange faces in their communities and have also helped the security agencies to arrest *Boko Haram* members (Okereke, 2013).

According to Hassan (2015) the civilian JTF may become an effective alternative to the government's military JTF, which has been accused of rights violations. Unlike the civilian JTF, the government's military JTF is comprised of all forms of security agencies (e.g. Nigerian Army, Nigerian Air Force and Nigerian Navy and Para-Military institutions such as the Police, and State Security Service (SSS)) from all over Nigeria, who may not speak the local languages of the north-east region of Nigeria (Hausa, Kanuri, and Shuwa Arabic), or understand the local culture, religion, or geography. In contrast, the civilian JTF is believed to be comprised of as many as five hundred young Muslims from Borno" (Hassan, 2015). By virtue of their deep knowledge of the local environment, their being enmeshed in the socio-cultural life of the locality, the civilian JTF have, on many occasions, been effective in capturing hundreds of *Boko Haram* terrorists as well as repelling of their invasion and outright liberation of a number of towns and villages captured by *Boko Haram* (Hassan, 2015).

*iii) Pacifism and anti violent approach*

Pacifism in its purest form categorically opposes application of any forms of war or violence as means of settling disputes. This strategy is not popular globally, as a means of conflict or dispute resolution due to erroneous belief that it is a sign of weakness on the part of the recognized individual or sovereign state that applies it. Yet it is adjudged as a very effective strategy given impressive results that Ghandi achieved with it in India (Egbue, Nwankwo, and Alichie, 2015). It is worthy of note that Gandhi's vision of a free India based on religious pluralism was challenged in the early 1940s by a new Muslim nationalism which demanded that a separate Muslim homeland be carved out of India. The demand gave rise to religious violence in the Punjab and Bengal areas of India, similar to the current *Boko Haram* insurgence in Nigeria (Egbue, Nwankwo, and Alichie, 2015). Ghandi used this non-violent strategy to manage the violence.

In Nigeria, the British dominated the Niger Delta trade without developing the region owing to its fragile, delicate and swampy topography. Oil was first discovered in commercial quantities in August 1956 at Oloibiri, Bayelsa State and exploration began in February 1958. There were 24 oil fields by 1967 and a production of 582, 025 barrels per day (bpd) (Etekpe, 2007). The inception of oil exportation got the accompaniment of high hopes for massive development of the region. Pathetically the joy has become dysphoria as the natural endowed blessing has earned agony and penury to the people. The Niger Deltans used a plethora of means to decry their plight which include petitions, civil agitations and now militant agitation. As a result, Adaka Boro resorted to revolts and nationalism in order to seize the state power to effect the development of Niger Delta. On February 23, 1966 he went far miles to declare the Niger Delta Republic which

the federal government declared war against him, wrestled and conquered the insurrection within twelve days.

In the 1990s, the emergence of Ken Saro-Wiwa and the activities of his group, Movement for the Survival of Ogoni People (MOSOP) gave a much leeway to the conflict. The arrest and death of the author Ken Saro-Wiwa gave the Niger Delta struggle an international status and instead of deterring others, myriad of militant groups started emerging (Ekumaoko, 2013). Amnesty which is a form of pacifism guarantees an interregnum of peace and cessation of hostility which necessitates a post conflict scenario for peace building. This was applied to improve the peace recorded so far in the Niger Delta region of Nigeria.

Pacifism covers a spectrum of views ranging from the belief that international disputes can and should be peacefully resolved; to calls for the abolition of institutions of the military and war; to opposition to any organization of society through governmental force (anarchist or libertarian pacifism); to rejection of the use of physical violence to obtain political, economic or social goals; to opposition to violence under any circumstance, including defense of self and others. The philosophy or strategy of pacifism sees means and ends as inseparable. By implication, it is contradictory to try to use violence to obtain peace. Principled pacifism also holds that violence of any form is an inappropriate response to conflict, and is morally wrong. Pragmatic pacifism holds that the costs of war and inter-personal violence are so substantial that better ways of resolving disputes must be found (Egbue, Nwankwo, and Alichie, 2015).

*iv) Human rights*

The security of the people must be assured as a basic need, along with food, water, shelter, health care, and a means of living. These are human rights, along with freedom of worship, access to education, and equal rights for women. The failure of counter-insurgencies and the root cause of the insurgencies themselves can often be traced to government disregard of these basic rights, as in Kuomintung, China; French Indochina; Batista's Cuba; Somoza's Nicaragua; and Soviet-occupied Afghanistan, among others. Recognition and assurance of these rights by the government has been essential to turning a population away from insurgents and their promises (Sepp, 2005). During the 1950s Malaya Emergency, British High Commissioner Sir Gerald Templer; a declared anti-racist strived for political and social equality of all Malays. He granted Malay citizenship en masse to over a million Indians and Chinese; required Britons to register as Malay citizens; elevated the public role of women; constructed schools, clinics, and police stations; electrified rural villages; continued a 700-percent increase in the number of police and military troops; and gave arms to militia guards to protect their own communities. In this environment, insurgent terrorism only drove the people further from the rebels and closer to the government (Sepp, 2005).

*v) Securing borders*

Strict measures on border crossings have been used to restrict movement of terrorist/ insurgents to enhance national sovereignty. **The countries of Morocco, Algeria, and Tunisia in the Maghreb region have faced pressure from terrorists and other organized criminal networks that were empowered to expand their operations since the Arab Uprising. The collapse of the Libyan State contributed to increase in the flow of weapons throughout**

**these regions as a result of loose** borders (United States Institute of Peace (USIP), 2016). Series of workshops were held with border officials from Morocco, Algeria, and Tunisia. The workshops applied an operations-driven approach to the development of a joint strategic vision for regional border security cooperation that is grounded in human security and rule of law principles.

The outcomes from the workshops provided important lessons for developing a plan for border security cooperation in other regions, which in turn provided critical support to peace building efforts where borders are used opportunistically by terrorists, militants, and criminals to evade law enforcement and create tension between neighboring states (USIP, 2016). Indeed, this approach resulted in the **establishment of at least two cross-border organizations, INTERPOL and the Southeast European Law Enforcement Center. Both organizations emerged from law enforcement officials identifying a need to cooperate across borders on specific criminal issues. This further secured the borders of Morocco, Algeria, and Tunisia from terrorists and weapon proliferation (USIP, 2016).**

*2.4.6.2: Strategies for coping with insurgency*

*i) Subsistence agriculture and other low-risk activities*

Most households affected by violence or that expect being exposed to violence during armed conflict tend to minimize risk either by moving somewhere safer, or by resorting to activities that will not attract unduly attention from armed groups. Rural households tend to resort to subsistence farming in the face of armed conflict (Deininger, 2003). This strategy is adopted not only by households that typically hold limited or no liquid assets (such as livestock), but also by

those that anticipate being potential targets of violence. Brück (2004) shows that subsistence farming led to improvements in the economic security of households living in extreme poverty during the civil war in Mozambique because market and social exchange entailed limited welfare gains. McKay and Loveridge (2005) report that during the genocide and civil war in Rwanda in the 1990s the adaptation of more autarkic modes of production and the focus on subsistence crops was associated with improved nutritional status of children in the post-conflict period. These potentially positive effects of subsistence modes of production during conflict must, however, be balanced against the long-term effects of violence on household economic vulnerability.

*ii) Intra-household reallocation of labour*

As a result of the impact of conflict and violence on the composition of households, one of the most significant livelihood adaptation strategies adopted by households in conflict-affected countries is a change in customary gender divisions of labour. Most conflict-affected countries and areas within countries experience significant increases in female participation in labour markets (Iyer and Santos, 2012). This is a result of two factors: the increase in the number of female-headed households due to the death and disappearance of male workers, and the fact that income generating opportunities men relied on before the conflict (such as land, animals and other assets) may be no longer available (Justino, Cardona, Mitchell and Müller, 2012). Despite increases in female labour market participation in conflict-affected areas, women are particularly active in low skilled jobs and in the informal sector (Justino *et al.*, 2012 and Kumar, 2000), and tend to lose their jobs once the conflict is over, especially in the organized formal sector (Kumar, 2000). The use of children as a form of economic security is common in many developing

countries in times of economic difficulties (Duryea, Lam and Levinson 2007). Shemyakina (2010) attribute the reduction in education outcomes observed in contexts of armed conflict to household economic insecurity and need to resort to children to generate further income, or to join in domestic activities in order to release adult labour.

*iii) Non-forced migration*

Migration has been one of the most important forms of household coping strategy in times of crisis across human history. There are **some** evidences that migration play an important role in conflict-affected countries. Individuals in conflict areas migrate in order to avoid violence (Moore and Shellman 2004) and also for economic reasons (Czaika and Kis-Katos 2009). Wealthier and healthier households are more likely to migrate from conflict-affected areas, whereas more vulnerable people may move to IDP camps (Czaika and Kis-Katos 2009). Migration from conflict areas may be long-term or permanent when household members settle in another location, or can take on a more temporary nature with individuals moving frequently between their home and urban environments, fleeing at night and retuning during day or moving only part of the family (Raeymaekers, 2011).

*iv) Asset sales in conflict settings*

One of the most devastating impacts of armed conflicts is the deliberate destruction and plundering of properties, markets and assets (Shemyakina, 2011). This limits the ability of households to rely on assets sales as a coping strategy, affects their productive capacity and constrains their access to (formal or informal) credit and insurance markets (Shemyakina, 2011). The sale of livestock is one common form of coping strategy used by rural households in developing countries in times of crisis since it can be easily stolen or killed. Bundervoet (2006)

reports that during the Burundi civil war, almost 20% of households in conflict areas reported they lost their livestock due to theft and looting. Rather than keeping livestock, households that remain in rural areas tend to resort to the cultivation of low-risk low-return crops that can feed their families.

# CHAPTER THREE

# THE STUDY AREA AND METHODOLOGY

## 3.1: The Study Area

### 3.1.1: Location and size

Yobe State is located from Latitudes $11^{O}$ 45'N - $13^{O}$ 30'N of the Equator and Longitudes $9^{O}$ 30'E - $12^{O}$ 30'E of the Greenwich meridian. The State shares borders with three States; to the eastern boundary is Borno State, to the west is Jigawa and Bauchi States while to the north is international border with Niger Republic (Chinedu and Olaolu, 2010). Borno State lies between Latitudes $10^{0}30'$ and $14^{0}30'$ N, and Longitudes $11^{0}30'$ and $14^{0}45'$ E. The State occupies the greatest part of the Chad Basin and shares boundary with the Republics of Niger to the north, Chad to the north-east and Cameroon to the east. Within the country, its neighbours are Adamawa to the south, Yobe to the west and Gombe to the south-west (Ijere and Daura, 2000). The study area is in Figure 3.1., the specific LGAs studied area is in Figure 3.2. and the villages selected under each LGA are in Figures 3.3, 3.4, 3.5 and 3.6.

This study was conducted in four local government areas (LGAs) of northeastern Nigeria, namely: Gaidam LGA in Yobe state, has its headquarters in Gaidam Town with an area of 4,311km²; Gujba LGA in Yobe state, has its headquarters in Buni Yadi with an area of 3,871km²; Magumari LGA in Borno state, has its headquarters in Magumari Town with an area of 4,856km² and Gubio LGA in Borno state, has its headquarters in Gubio Town with an area of 2,464 km² (National Population Commission (NPC), 2007). Yobe State has area coverage of about 45,502 $km^2$, while Borno State has area coverage of about 92,898 $km^2$ (NPC 2007).

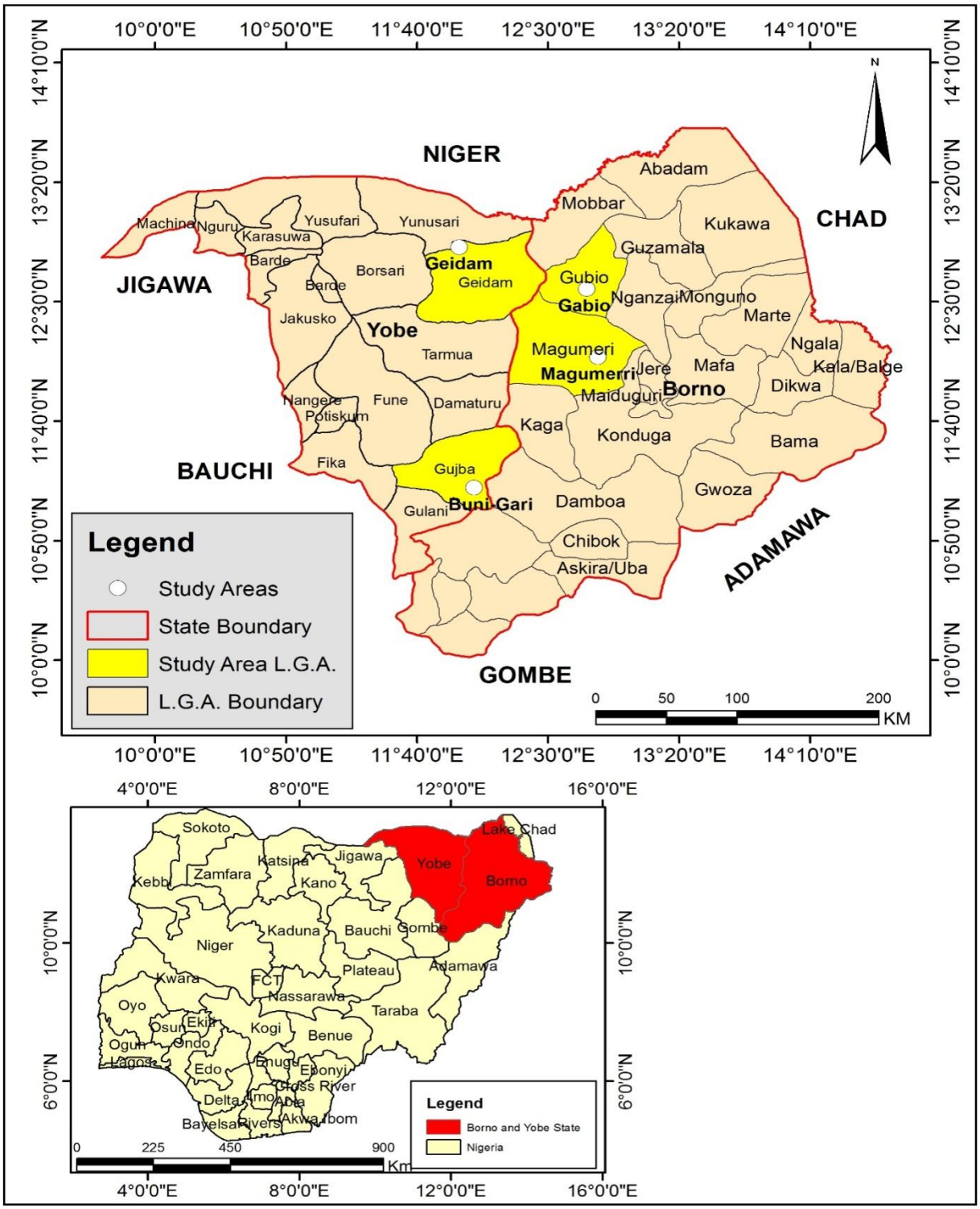

10°0'0"E
10°50'0"E
11°40'0"E
12°30'0"E
13°20'0"E
14°10'0"E
14°10'0"N
13°20'0"N
12°30'0"N
11°40'0"N
10°50'0"N
10°0'0"N
N
NIGER
CHAD
JIGAWA
BAUCHI
ADAMAWA
GOMBE
Machina
Nguru
Karasuwa
Yusufari
Yunusari
Abadam
Mobbar
Kukawa
Guzamala
Barde
Borsari
Geidam
Gubio
Nganzai
Monguno
Marte
Jakusko
Yobe
Tarmua
Magumeri
Ngala
Kala/Balge
Jere
Mafa
Dikwa
Maiduguri
Borno
Nangere
Potiskum
Fune
Damaturu
Kaga
Konduga
Bama
Fika
Gujba
Buni Gari
Gulani
Damboa
Gwoza
Chibok
Askira/Uba
Legend
Study Areas
State Boundary
Study Area L.G.A.
L.G.A. Boundary
0
50
100
200
KM
4°0'0"E
8°0'0"E
12°0'0"E
16°0'0"E
10°0'0"N
6°0'0"N
Sokoto
Lake Chad
Katsina
Jigawa
Yobe
Borno
Kebbi
Zamfara
Kano
Kaduna
Bauchi
Gombe
Niger
Plateau
Adamawa
Kwara
FCT
Nassarawa
Taraba
Oyo
Ekiti
Osun
Kogi
Benue
Ogun
Ondo
Lagos
Edo
Enugu
Ebonyi
Cross River
Delta
Imo
Abia
Bayelsa
Rivers
Akwa Ibom
Legend
Borno and Yobe State
Nigeria
0
225
450
900
Km

**Figure 3.1:** Borno and Yobe States
**Source:** Adapted From Administrative Map of Nigeria

### 3.1.2: Relief and drainage

In terms of topography, Yobe State is relatively flat and the elevation is approximately between 450 to 480 meters above sea level (Ali, Brian, Richard and Peter, 2014). The rock formation also contains water bearing aquifers from which much of the water supply in the State is derived. The River Yobe, from which the State derived its name, is the biggest river in the State. It flows eastwards and drains into Lake Chad. It has a few tributaries, one of the most important being River Alkalam, where the famous yearly Bade fishing and cultural festival takes place (Komadugu Yobe Basin Project, 2006). Borno State is divided into two broad relief regions, namely, the hilly/mountainous area of generally over 600m above sea-level and the plains of less than 600m above sea-level. The highlands dominate the south and southeastern parts of the State, covering about one-third of the total land area of Borno. The remaining two-thirds of the land area are dominated by plains of generally less than 600m above sea-level (Kogbe, 1989). The Borno region is drained by two groups of rivers; one is bound towards the south draining to the Benue system, while the other is towards Lake Chad. The region is generally drained by seasonally flowing rivers, whose peak flows are recorded during the rainy season in the months of July and August. The Biu Plateau to the south is largely drained by the Hawul River, which flows southwards and discharges its waters into the Gongola River (Ijere and Daura, 2000). Compared to the relatively flat topography of Yobe State, Borno State has hilly features in some of its parts which could serve as very good hideouts for insurgents.

### 3.1.3: Climate

Yobe State has hot and dry climatic features in the northern part for most of the year. In the southern part, especially in the rocky area of Gujba and Fika LGAs, it is hot between the months of March and June and cooler for most part of the year. The hottest months are March, April and

May with temperatures ranging from 39°C – 42°C. The period of rainy season in the State varies from place to place, but generally lasts for about 120 days in the north and more than 140 days in the south. Annual rainfall ranges from 500mm-1000m and the rainy season is normally from June to September in the north and May to October in the south. The two vegetation zones in the state, namely, the Sahel in the north and the Sudan Savannah in the south have been severely under threat of desert encroachment thereby creating arid and semi-arid conditions (Ali, Brian, Richard and Peter, 2014). Borno State is hot and dry for the greater part of the year, although the southern part is slightly milder. It has an annual mean minimum temperature of $21.7^0$C and an annual mean maximum temperature of $36.0^0$C (National Bureau of Statistics (NBS), 2012). The majority of the State is however in the Sahel and Sudan Savanna where rainfall is limited. The rains start with some showers in June, stabilize in July and ends in September. Typically rainfall ranged from about 900 mm in the southern part of the state to about 450 in the northern parts (Women Farmers Advancement Network (WOFAN), 2007).

### 3.1.4: People and economic activities

Gaidam LGA in Yobe State has a 2015 projected population of 208,849 from the 2006 population census figure of 157,295; Gujba LGA in Yobe State, has a 2015 projected population of 172,725 from the 2006 population census figure of 130,088; Magumari LGA in Borno state, has a 2015 projected population of 186,192 from the 2006 population census figure of 140,231,

and Gubio LGA in Borno state, has a 2015 projected population of 202,851 from the 2006 population census figure of 152,778; (NPC, 2007). Yobe State has a 2015 projected population of about 3,362,395 from the 2006 population census figure of about 2,532,395 people, while Borno State has a 2015 projected population of about 5,511,759 from the 2006 population census figure of about 4,151,193 people (NPC 2007).

The climatic conditions in Yobe and Borno State make it very suitable for cereal crop production since most cereals don't require heavy rainfall to get established. Also, low prevalence of animal diseases as a result of limited disease carrying insects which are usually high in forest and water logged regions of the country have made both States more conducive for animal production. The people are mainly farmers with a significant livestock population. Their main crops are sorghum, millet, maize groundnut, cowpea and vegetable while rice and wheat are grown in the Fadamas (inland valleys) and in irrigated areas (WOFAN, 2007). Borno State possesses great potentials for fish production both from inland fisheries and aquaculture. The inland fisheries of Lake Chad are reputed to be one of the most productive lake systems in Africa (Raji, 1992).

Northeastern Nigeria exhibits a wide range of subsistence systems generally incorporating both pastoral and agricultural elements. Dry-season farming is practiced in the Valley of the Komadugu, Yobe along the Republic of Niger border and on the swampy areas of Lake Chad. The Komadugu was originally the basis for an elaborate irrigation scheme established in the late 1950s to produce wheat and residues for livestock feed. The swampy grasslands between Hadejia and Gashua have traditionally been a significant resource for Fadama cropping, fishing and livestock feed (Adams and Hollis, 1987). However, the construction of the Tiga Dam in the

mid-1980s has drawn off water into the Hadejia-Jama'are River Basin in Kano State, reducing the flooded area west of Gashua and leaving the Komadugu Yobe virtually dry in its upper reaches for most of the year (Adams and Hollis, 1987).

### 3.1.5: Historical development and culture

Yobe State is mainly an agricultural state created out of the old Borno State on 27th August 1991, by the military government of General Ibrahim Babangida. It has seventeen Local Government Areas which include: Bade, Bursari, Damaturu, Fika, Fune, Geidam, Gujba, Gulani, Jakusko, Karasuwa, Machina, Nangere, Nguru, Potiskum, Tarmua, Yunusari and Yusufari. The State is blessed with tourism potentials, such as, the Gogaram Fishing and Cultural Festival, Ruins of Mai Gazargamo and the Barakau Fishing Festival, among others. Yobe State is home to the largest cattle market in the West African sub-region in addition to having one of the major grains and fish markets in the country (Ibrahim, Ahmad, Laily and Sarjit, 2015). Ethnic composition of Yobe Stae is rich and diverse. There are five major ethnic groups in the state which include the Kanuri, Fulani, Karekare, Bade and Hausa (Adole, 2015). The people of Yobe are well known for their Durbar – rich culture and traditions arising from their historical connection with North Africa and Eastern Arabian. The Durbar provides illuminating perspective to the display of horses, regalia and spectacular horseman ship to bring about colour, pump and pageantry to the joy of spectators (Ibrahim, *et al.*, 2015).

The second State, Borno State was created out of the defunct North Eastern Nigeria in 1976 and it is divided into twenty seven local government areas which include Abadam, Askira-Uba, Bama, Bayo, Biu, Chibok, Damboa, Dikwa, Gubio, Guzamala, Gwoza, Hawul, Jere, Kaga, Kala/Balge, Kukawa, Konduga, Kwaya-Kusar, Mafa, Maiduguri, Magumeri, Marte, Mobbar,

Monguno, Ngala, Nganzai and Shani (Ijere,1993). Borno State, known as the Home of Peace is the largest State in the Federation in terms of land mass (NBS, 2012). There are many ethnic groups and about 30 languages spoken by people in the State of which Kanuri is the dominant ethnic group while other ethnic groups are Mafa, Babur Bura, Fulani and Kibaku. Smaller ethnic groups such as Hausa, Tiv, Jukun and Igbo are also found scattered over the State (Yusuf, 2014).

The State is endowed with lots of tourist attractions such as The Shehu's Palace (in Maiduguri), Sanda Kyarimi Park (zoo) (in Maiduguri), Lake Alau (about 14 km from Maiduguri along Maiduguri – Bama Road), The Gwoza Hills (in Gwoza LGA, 130 km from Maiduguri), Sambisa Game Reserve (14 km off Kawuri village along Maiduguri – Bama Road), Rabeh's Fort at Dikwa (about 80 km north-east of Maiduguri) and Tombs of the First Four Shehus of Borno at Kukawa (Ijere and Daura, 2000).

The loose border between Yobe and Niger Republic has predisposed the State to attacks from insurgents as these insurgents gain easy entrance and exit through the border. The conducive nature of the state for agriculture especially the cultivation of cereals and rearing of livestock has made many of the rural dwellers engage in agriculture as their major source of livelihood. Similar to Yobe State, Borno State has climatic conditions that make it very suitable for cereal crop production. Also, low prevalence of animal diseases as a result of limited disease-carrying insects have made the State equally conducive for animal production, thereby making crop and animal production the major source of livelihood among the rural dwellers. Presence of borders with Republics of Niger to the North, Chad to the north-east and Cameroon to the east has made

the State more prone to attacks by insurgents as these insurgents have multiple borders to gain easy entrance and exit out of the State.

## 3.2: Methodology

### 3.2.1: Reconnaissance survey

The reconnaissance survey was done between 26th and 29th April, 2016. It was done with the aid of extension workers from Borno State Agricultural Development Project (BOSADP) and Yobe State Agricultural Development Project YOSADP. The fact that some farmers had fled the communities necessitated the manual counting of farming household heads which was done with the assistance of village heads so as to get a fairly accurate estimate of farmers in the area; this was done in order to avoid working with wrong data of farmers' population as was given by BOSADP and YOSADP. The survey revealed that Magumari and Gubio towns had 800 and 1000 farming household heads respectively, while Geidam and Buni-Gari towns had 700 and 485 farming household heads respectively. Cereals crops like millet, sorghum and maize were mostly grown in these villages. Also, animal rearing was a common means of livelihood among some of the farmers.

### 3.2.2: Types of data utilized

The study made use of primary and secondary data.

### 3.2.3: Sources of data utilized

*3.2.3.1: Primary sources of data*

The primary data were obtained from structured questionnaire (see appendix 1). The data collected include:

i) Socio-economic variables such as age, sex, marital status, educational level, household size, farming experience, farm size, main occupation and contacts with extension workers;
ii) Nature of insurgency and their frequency;
iii) Perceptions by the farmers on causes of the insurgency in the area;
iv) Sources of income of the respondents, their incomes and asset possession for the year 2009 and 2015,
v) The coping strategy adopted by the respondents in handling the insurgency.

*3.2.3.2: Secondary sources of data*

Secondary data were gotten from the Borno and Yobe State Agricultural Development Programme reports of the year 2009. Some of the data collected include:

i) population of farmers in selected villages
ii) the crops grown

Also, secondary sources of information were gotten from literature materials; these materials were sourced from text books, journals, conference, proceedings, magazines, internet and other articles relevant to the study.

### 3.2.4: Sample size and sampling technique

In Borno State from Magumari LGA, a sample size of 95 farmers was selected from the sample frame of 800 farming household heads and from Gubio LGA, a sample size of 118 farmers was selected from the sample frame of 1000 farming household heads. In Yobe State from Geidam LGA, a sample size of 83 farmers was selected from the sample frame of 700 farming household heads and from Gujba LGA, a sample size of 57 farmers was selected from the sample frame of 485 farming household heads. See Table 3.1.

Yamane (1967) formula was used to calculate the sample size with 95% confidence level and 5% sampling error assumption.

$$n = \frac{N}{1 + N(e)^2}$$

**Table 3.1: Population and sample size of farmers**

| State | LGAs | Villages | Sample frame** | Sample size |
|---|---|---|---|---|
| Borno | Magumari | Magumari***<br>Gajeganna*<br>Furam*<br>Yasku*<br>Zumtur*<br>Ngamma* | 800 | 95 |
| | Gubio | Gubio***<br>Karauwa*<br>Moleram*<br>Kanguri*<br>Isaram*<br>Musari* | 1000 | 118 |
| Yobe | Geidam | Geidam***<br>Funchimeram*<br>Balle*<br>Kellor*<br>Gumsa* | 700 | 83 |

| | | | | |
|---|---|---|---|---|
| | Gujba | Buni-Gari***<br>Buni-Yadi*<br>Goneri*<br>Katarko*<br>Ambiya* | 485 | 57 |
| **Total** | **4** | **4** | **2985** | **353** |

**Source: Field work, (2016).

*** Insurgency affected communities in which data were collected from because they were most accessible

* Insurgency affected communities that were not accessible

Where,

n= Sample size (Total sample size)

N= Population size (Total sample frame)

e= Level of significance (set at 0.05 for this study)

To determine further the proportion of the respondents (sample size per village), Yamane (1967) sampling method for determining of respondents was also used, ie

$$\text{Sample size of village} = \frac{\text{Sample frame of village x Total sample size of all villages}}{\text{Total sample frame of all villages}}$$

Multi-stage sampling technique was employed in selecting the respondents for this study. In the first stage, out of all the Northeastern States in Nigeria, Borno and Yobe were purposively selected because these are the two most affected states by the insurgency. In the second stage, out of the 17 LGAs and 27 LGAs in Yobe and Borno State accordingly, four LGAs were purposively selected from the two States; Gaidam and Gujba from Yobe and Magumari and Gubio from Borno.

These LGAs were selected not just because they were affected by the insurgency, but because they are most accessible for questionnaire administration. In the third stage, a total of four villages were purposively selected; one village from each Local Government Area. These villages were selected on the fact that they were affected by the insurgency and are most accessible for data collection. In the fourth stage, the systematic random sampling technique was employed in selecting respondents from these villages so as to avoid being bias.

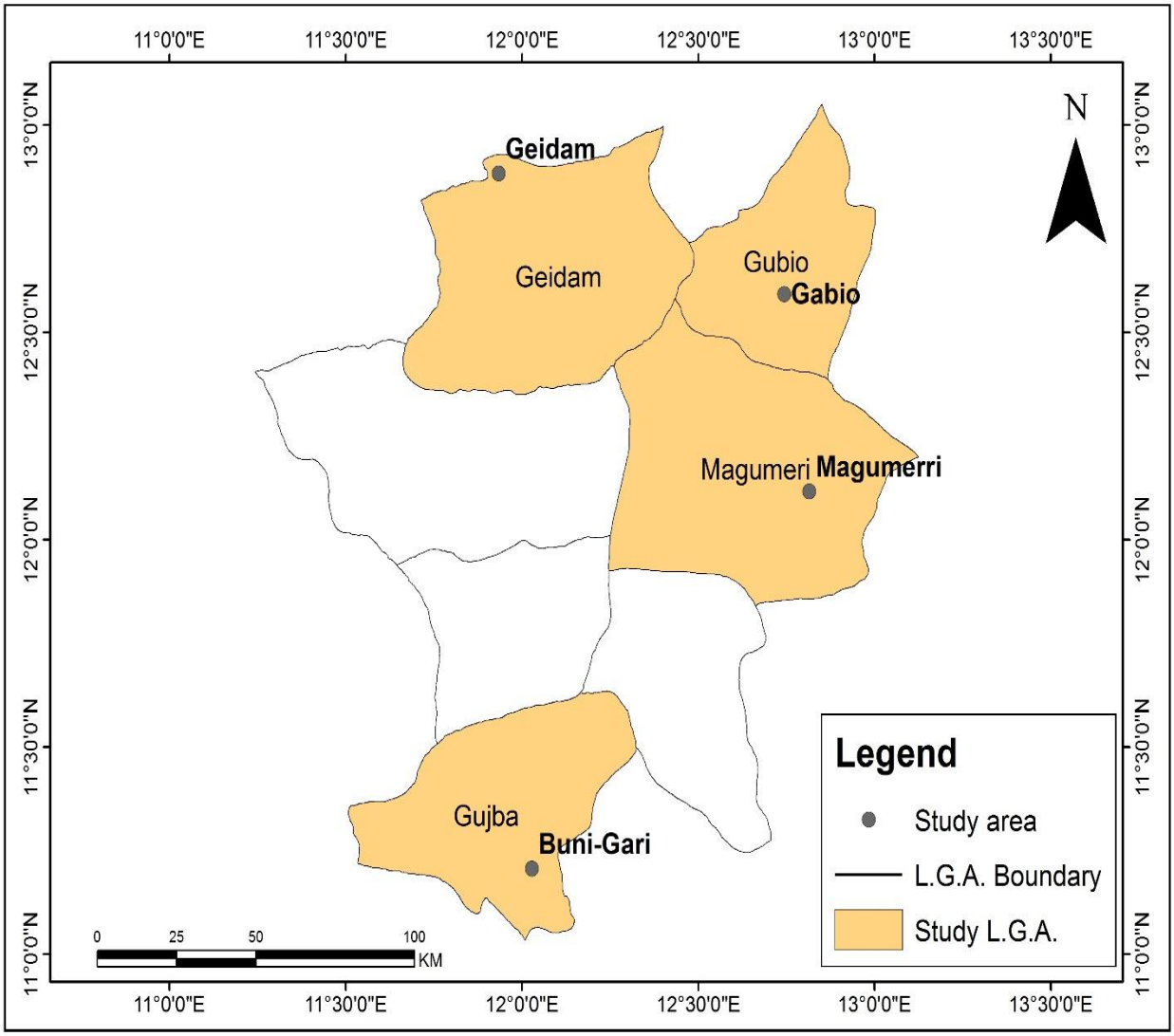


**Figure 3.2:** Selected LGAs in Borno and Yobe States
**Source:** Adapted from Administrative map of Nigeria

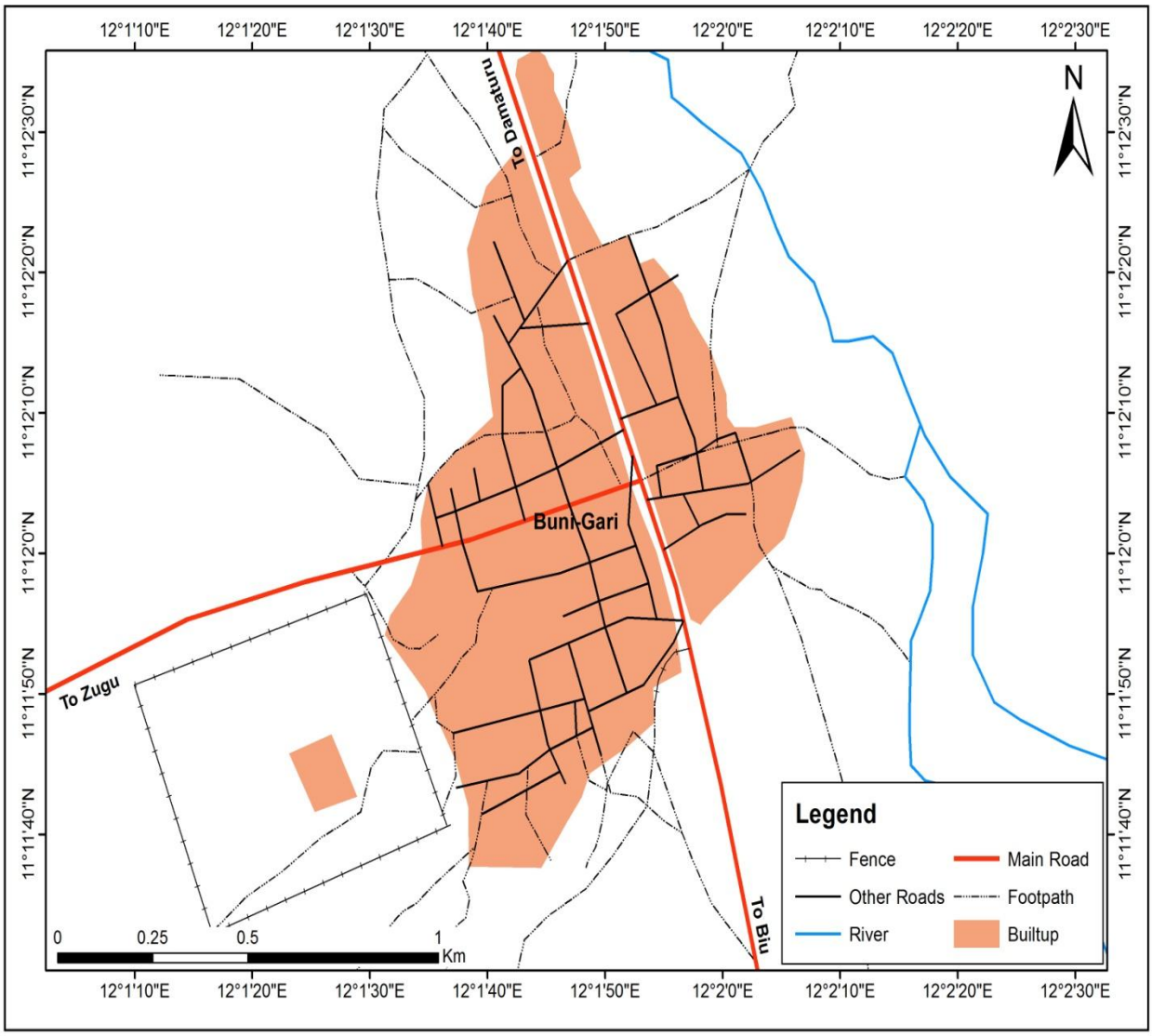



**Figure 3.3:** Buni-Gari village in Gujba LGA
**Source:** Adapted from Administrative map of Nigeria

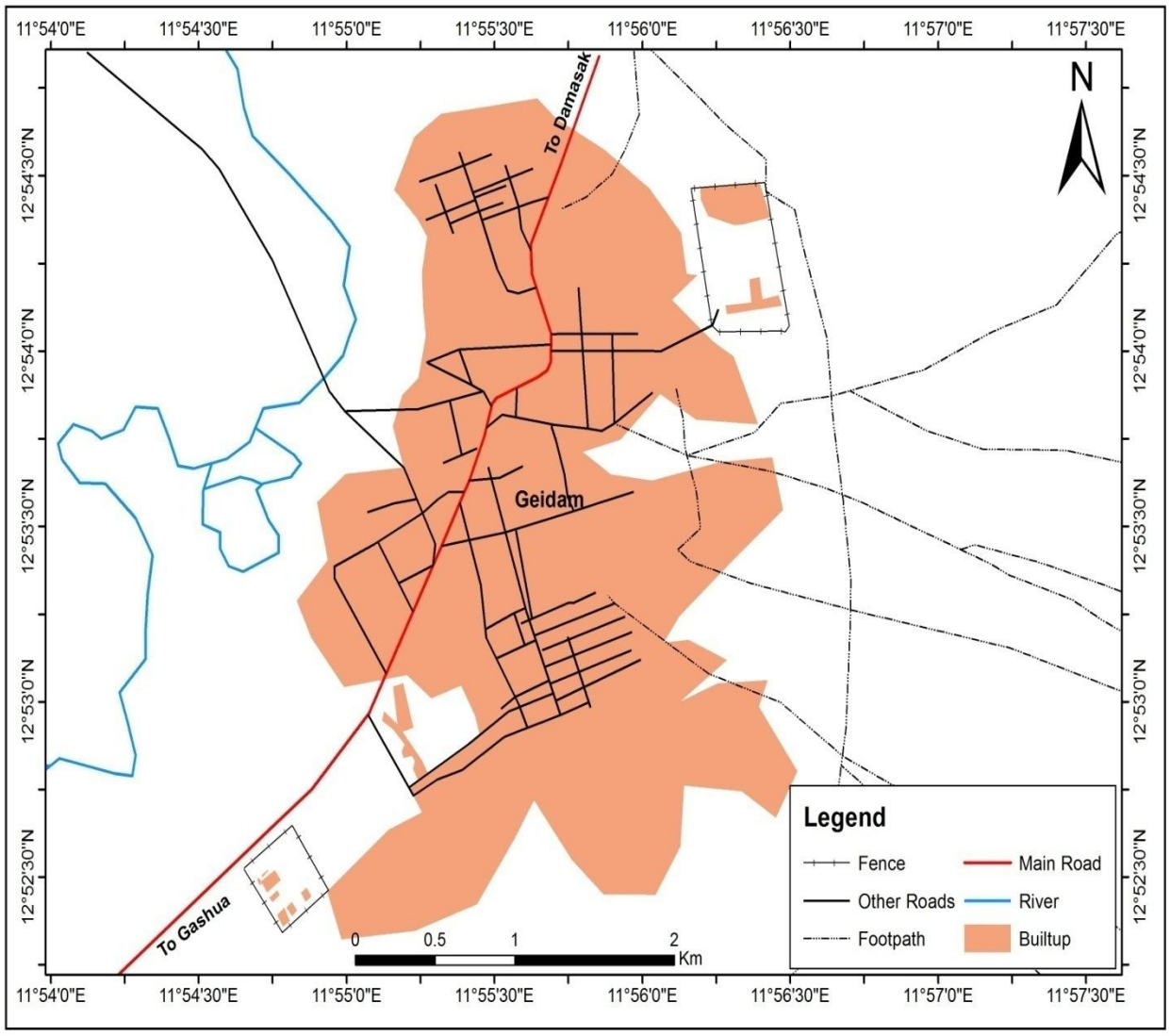



**Figure 3.4:** Geidam village in Geidam LGA
**Source:** Adapted from Administrative map of Nigeria

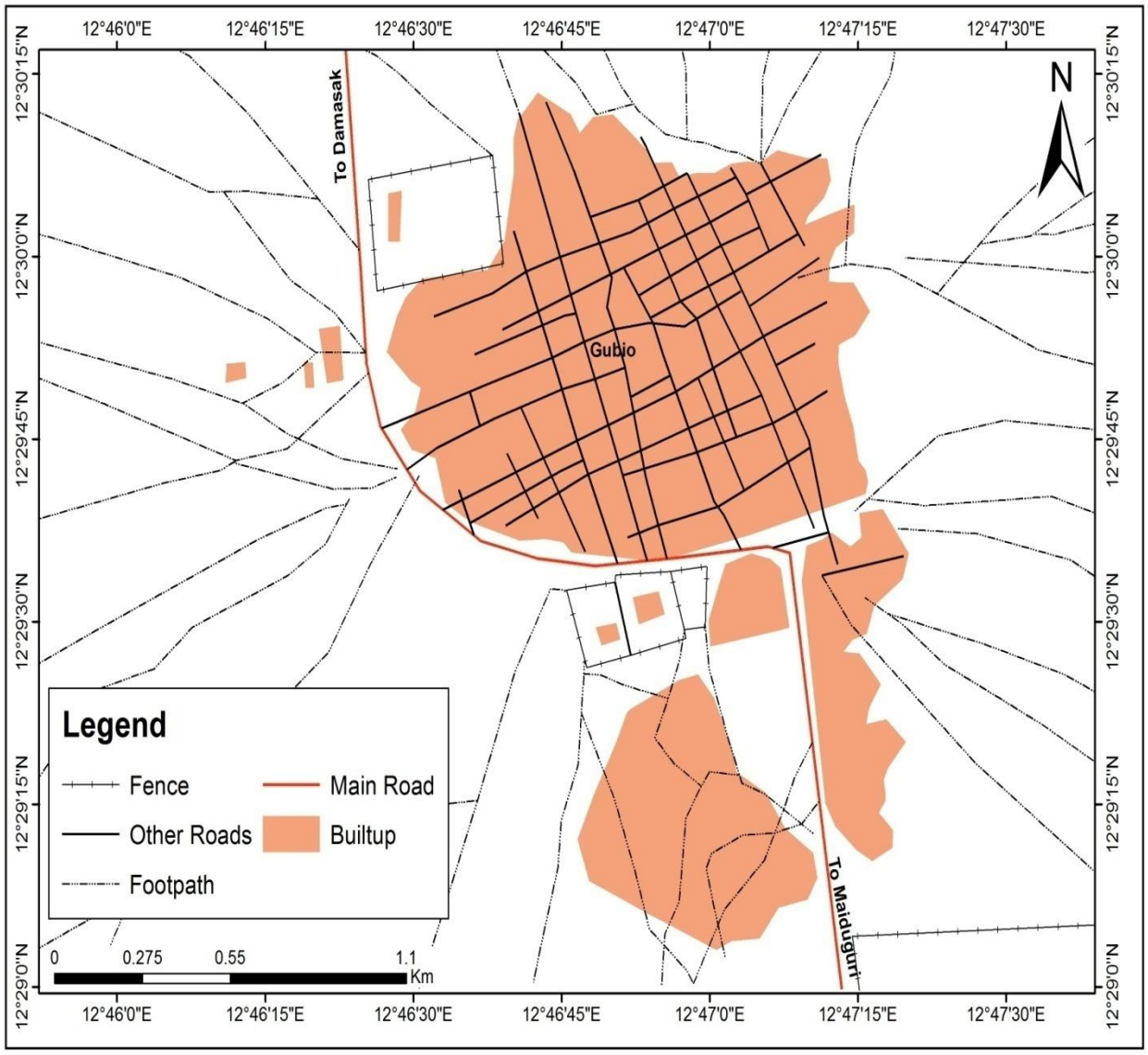



**Figure 3.5:** Gubio village in Gubio LGA
**Source:** Adapted from Administrative map of Nigeria

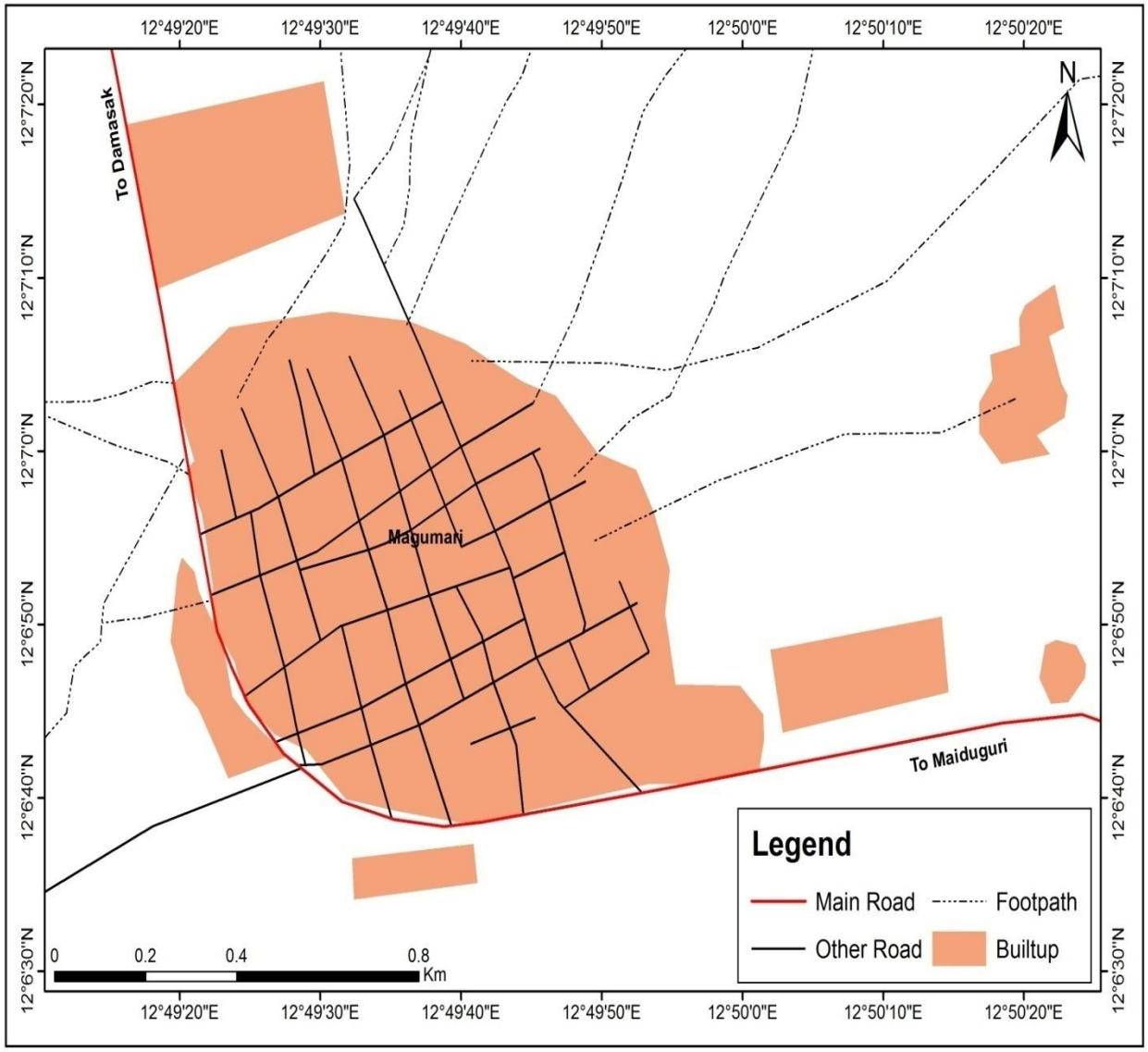



**Figure 3.6:** Magumari village in Magumari LGA
**Source:** Adapted from Administrative map of Nigeria

### 3.2.5: Questionnaire administration

A total of 353 copies of the questionnaire were administered in Borno and Yobe States; the number of questionnaire administered in Borno and Yobe States were 213 and 140 copies respectively. With the help of the civilian JTF and the military, farmers cooperated and responded to the questions being asked. In order to make sure the farmers understood the questions and answered it rightly, the farmers were asked the questions in Hausa Language which they understood better than English Language and the answers given were written down. Not leaving the farmers with the questionnaire to answer and later coming back to collect it was the major reason why 93.20% (329 out of 353 copies) of the questionnaire were successfully retrieved. Three male research assistants were used for the questionnaire administration; the most senior of them, an M.Sc degree holder from geography department, ABU Zaria, was 35years old, while the remaining two had only first degree with a mean age of 30years. The three research assistants being still single were all born and raised in Borno State.

The only community where challenges were encountered was Buni-gari in Gujba LGA of Yobe State. The first day the community was visited for data collection, 33 copies of questionnaire were successfully administered, but on going to the community the second day to complete the remaining 24 unanswered questionnaire, the military stopped the research team from entering with the reason that the community leaders complained to them on how farmers in the area were quarreling over whose turn it was to be interviewed because they thought the team was made up of government officials assessing the level of damage done by the insurgents to the farmers so as to compensate them. The soldiers pleaded with us never to come back to the community as it will

endanger our lives and also create more struggle and in- house fighting among the people. The distribution of the questionnaire in each community is presented in Table 3.2

**Table 3.2: Questionnaires administration**

| State | LGAs | Villages | Number of Questionnaire Proposed | Questionnaire Actually Administered |
|---|---|---|---|---|
| Borno | Magumari | Magumari*<br>Gajeganna<br>Furam<br>Yasku<br>Zumtur<br>Ngamma | 95 | 95 |
| | Gubio | Gubio*<br>Karauwa<br>Moleram<br>Kanguri<br>Isaram<br>Musari | 118 | 118 |
| Yobe | Geidam | Geidam*<br>Funchimeram<br>Balle<br>Kellori<br>Gumsa | 83 | 83 |
| | Gujba | Buni-Gari*<br>Buni-Yadi<br>Goneri<br>Katarko<br>Ambiya | 57 | 33 |
| **Total** | **4** | **4** | **353** | **329** |

**Source**: Field work, (2016).

* Insurgency affected communities from where data were collected because they were most accessible

### 3.2.6: Method of data analysis

Descriptive, Chow test and Regression Statistics were the analytical techniques used to achieve the objectives of the study, while F-test statistics was used to test the hypotheses of the study. This is presented based on objectives for clarity of purpose.

**Objective i:** To describe the socio-economic characteristics of the farmers.

Simple descriptive statistics which comprise of percentages, means and frequency was used to achieve this.

**Objective ii:** To examine the nature and frequency of the insurgency.

Simple descriptive statistics which comprise of percentages, means and frequency was used to achieve this.

**Objective iii:** To examine the perceptions of the farmers on causes of insurgency.

The Likert-scale and generalized ordered logit regression model were used to achieve this objective. Generalized ordered logit model was applied to validate and explain variation among the farmers in the choice of perception on causes of insurgency.

Explicit form of generalized ordered logit regression model is specified as:

$$\pi_{ij} = \frac{\exp(\alpha_j + \delta_j Z_i - X_i\beta)}{(1+\exp(\alpha_j + \delta_j Z_i - X_i\beta))} - \frac{\exp(\alpha_{j-1} + \delta_{j-1} Z_i - X_i\beta)}{(1+\exp(\alpha_{j-1} + \delta_{j-1} Z_i - X_i\beta))}$$

**Source:** Williams, (2006).

Where,

$\pi ij$ is the probability that individual $i$ has different perception level $j$

$Z_i$ is a set of exogenous variable (without a constant).

$\delta_j$ is a vector of parameters to be estimated

$\boldsymbol{\beta}$ is a vector of unknown parameters to be estimated

$\boldsymbol{X}_i$ is a vector of exogenous variables (excluding a constant)

**Objective iv:** To determine the factors that make farmers susceptible to insurgency.

The Tobit Regression Model was used to achieve this objective. The Tobit regression, a hybrid of the discrete and continuous dependent variables was used to determine the factors that make farmers susceptible to insurgency. The empirical model is specified as follows:

$Y_i = 0$ if $Y^*_i < 0$

$Y_i = Y^*_i$ if $Y^*_i >= 0$

$$Y^*_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{11} + e \ldots\ldots (2)$$

$i = 1, 2 \ldots 10$

**Source:** Tobin, (1958).

Where

$Y_i$ = Insurgent activities

$Y_i^*$ = Unobserved Insurgent activities

$e_i$ = Truncated error term

$\beta_0$ = Intercept term

$\beta_1 \ldots \beta_{11}$ = Slope coefficients

$X_{1i}$ = Age of household head

$X_{2i}$ = Educational level

$X_{3i}$ = Household size

$X_{4i}$ = Labour

$X_{5i}$ = Farm size

$X_{6i}$ = Marital status

$X_{7i}$ = Extension contact

$X_{8i}$ = Credit

$X_{9i}$ = Years of livelihood experience

$X_{10i}$ = Income

$X_{11i}$ = Major livelihood occupation

**Objective v:** To analyze the impact of insurgency on livelihoods of the farmers

Khandker, *et al.* (2010) identified several qualitative and quantitative methods being used in the literature to examine the impact of a programme or an intervention on the people. Among these are randomization, double difference estimator (did), project achievement index, multivariate regression, and propensity score matching (psm), instrumental variables, cost benefits ratio and technical efficiency. For the did estimator, it is difficult to administer the same set of respondents and use of baseline information before and after the programme intervention. Randomization has been criticized for withholding the intervention from those who need it, giving to those who do not (what is term as unethical). It also faces the problem of selective attrition, external validity and spill-over effects. Psm is faced with the defect of identification, which is, finding credible groups that look alike, and in practice one would rarely find two households that are exactly similar to each other in terms of many characteristics (Khandker, *et al.* 2010).

As a result of the draw backs in some of the impact models mentioned earlier, this study used the chow test statistics model. This model was used in comparing various changes that occurred among the farmers with respect to income and level of living before and during insurgent activities. This model was used due to its practical applicability and appropriateness for addressing the clumsiness, inaccuracies associated with other impact models. Chow test is an econometric test to determine structural change in slope and equality in intercept of the income function between two groups. According to Williams (2011) the standard F test for the equality

of two sets of coefficient in linear regression models is called a Chow test. In impact evaluation, the chow test is often used to determine whether the independent variables have different impact on different sub groups of the population (Mohammad, 2014). It requires the sum of squared residuals from three regressions, one from each sample group and one for the pooled data. If the F-chow is greater than the F-table, then there was activity impact on the participants otherwise no impact. This test was used to determine the impact of insurgency on livelihood (income and level of living for 2009 was compared with that of 2015) of respondents. The level of living of a farmer was the financial equivalent of all his visible assets (for 2009 and 2015). So, two results were gotten here: one showing the impact of insurgency on income of farmers and the other showing the impact on level of living. For income, it is expressed mathematically as:

$$F = \frac{(RSSR - SSR1 - SSR2)/\ k}{(SSR1 + SSR2)/\ n - 2k}$$

**Source**: Mohammad, (2014).

Where;

F= F-statistic

RSSR = the sum of squared residuals from a linear regression in which income of farmers before and during the insurgency are assumed to be the same, the income has dimension k, and there are n observations in total.

$SSR_1$ = the sum of squared residuals from a linear regression of income of sample 1

$SSR_2$ = the sum of squared residuals from a linear regression of income of sample 2.

The total number of observation is $n = n_1 + n_2$ and the number of parameters is k.

For level of living (monetary equivalent of assets), it is expressed mathematically as:

$$F = \frac{(RSSR - SSR1 - SSR2)/k}{(SSR1 + SSR2)/n - 2k}$$

**Source**: Mohammad, (2014).

Where;

F= F-statistic

RSSR = the sum of squared residuals from a linear regression in which level of living (visible and durable assets) of farmers before and during the insurgency are assumed to be the same, the level of living has dimension k, and there are n observations in total.

$SSR_1$ = the sum of squared residuals from a linear regression of sample 1

$SSR_2$ = the sum of squared residuals from a linear regression of sample 2.

The total number of observation is $n = n_1 + n_2$ and the number of parameters is k.

**Objective vi:** Characterize the strategies employed by the farmers in mitigating and coping with insurgency. Simple descriptive statistics which comprise of percentages, means and frequency was used to achieve this.

**Hypothesis Testing**

In regression analysis, multiple tests are used to determine if variables are statistically significant. Whereas the t-test is used to test a single variable for statistical significance, the F-test is used to test a set of multiple restrictions (the t-test is a special case of the F-test where only a single variable is being tested) (Wooldridge, 2009). The F-test depends upon an F-statistic. While this statistic may be computed in multiple ways, it is always a ratio between two chi-squared distributed variables divided by their respective degrees of freedom. F-statistic is used to investigate whether there is a significant difference between restricted and unrestricted

regression models. In statistics, regression analysis is used to examine the relationship between a dependent variable and one or more independent variables (Wooldridge, 2009).

**i) hypothesis 1**: There is no significant relationship between household-related socio-economic factors and farmers susceptibility to insurgency. The F-test statistics was used to test this hypothesis. The specific expression used to determine the F- test statistic is:

$$F = \frac{R^2/k-1}{(1-R^2)/(n-k)}$$

where:

F= F calculate or F value

$R^2$= Coefficient of determination

n= Sample size

k= Number of independent variables (such as education, marital status, age, sex, household size, location and so on)

**ii) hypothesis 2**: There is no significant relationship between insurgency and livelihoods of farmers. The F- test statistic was also used to test this hypothesis.

The specific expression used to determine the F- test statistic for impact on income and level of living which are the two parameters used to measure livelihood in this study is as follows:

$$F \equiv \frac{(RSS_r - RSS_{ur})q}{(RSS_{ur})(n-(k+1))}$$

**Source**: Wooldridge, (2009).

Where:

F = F calculate or F value

$RSS_r$ = the residual sum of squares for income/level of living of restricted equation (this is a measure of deviation between the data and an estimation model; a small RSS indicates a tight fit of the model to the data)

$RSS_{ur}$ = the residual sum of squares for income/level of living of unrestricted equation,

n = number of observations,

q = the number of restrictions (or the number of coefficients being jointly tested), and

k = the total number of variables in the unrestricted equation

### 3.2.7: Operational definitions and measurement of variables

*3.2.7.1: Dependent variables*

*i. Insurgency (Y)*

This refers to the means (kidnapping, arson, suicide bombing, etc) used by the insurgents in executing their terror attacks. The number of means of attacks experienced by a farmer was divided by the total number of means of attacks in that area to get an index "Y" value for each farmer.

*ii Livelihood*

Though there are several parameters being used to measure livelihood, this study used income and level of living as a proxy for livelihood measurement since they can easily be quantified.

*iii. Income*

This refers to proceeds, returns or earnings of respondents. This includes both the income earned in farming and that earned outside farming. The income was calculated by knowing the number of bags (or standard unit of measurement) of crop (or farm produce) harvested by the farmer in

the season under consideration and then converted to naira (₦) equivalent. The amount gotten was added to the income the farmer got outside agricultural activities.

*iv. Level of living*

It is the way an individual lives, not the way he wants to live. Level of living is concerned with the consumption or use of economic goods such as food, fuel, and other non durable goods, domestic expenses, automobiles, clothing, and other goods varying of durability (Benjamin, 2010). Benjamin (2010) stated that US census of agriculture data to measure the rural famers' level living was based on seven living items (possession of telephone, electricity, Television, piped running water, freezers, automobiles, and tractors). Level of living in this study was measured by the value of durable assets the farmers own such as motor cycle, bicycle, car, tractors, house, farm equipment, radio, television, livestock, motorized pump, knapsack and thresher; these values of assets obtained were computed in monetary terms (naira). The works of Momoh (2015) and also that of Ebenehi (2014) measured level of living by computing the value of farmers' asset in monetary terms (naira) before analyses were done.

*3.2.7.2: Independent variables*

The independent variables below were chosen for this work because they are the key variables of farmers that influence productivity and production. It has been used by several authors such as Mustapha, *et al.,* (2012), Ogunmefun and Achika, (2015) and Nwaiwu, (2015).

*i. Age:* This refers to the number of years an individual attained from birth till date and it is believed to be capable of influencing the perception, view, interest and conduct of a person. This was measured in years.

*ii. Literacy level:* This is the ability of an individual to read and write, which is acquired in a formal or informal organized means or through schooling. This was measured on the scale scored from 0-4. Thus, farmers were scored 0 with no formal education, while those with Arabic and Adult education were scored 1, those with primary education were scored 2 and those with secondary education were scored 3. Finally, those with tertiary education were scored 4.

*iii. Household size:* This refers to the number of individuals in the household, which include wives, children and dependants who reside within the same family unit and eat from the same pot. This was measured in numbers.

*iv. Sex:* This means the male or female category of respondents. This was given a dummy variable of 0 or 1, such that males were scored 1 and females were scored 0.

*v. Farming experience:* This is the number of years a farmer has been engaging in farming. Farming experience was measured in years.

*vi. Farm size:* This is the total land area under cultivation by the farmer. This was measured in hectares (ha).

*vii. Marital status*

This is the present state of the farmer as either married, separated, divorced, single or widowed. This was categorized and measured as Married = 1, Widowed/Divorced/Separated/Single = 0.

*viii. Impact of insurgency on income and level of living*

In this study, impact of insurgency on income and level of living was measured in two ways: by computing the farmers' mean income and then using the Chow test to compare for difference between two periods (2009 and 2015) and also by calculating mean monetary equivalent of the farmers' visible assets and then using the Chow test to compare for variation between 2009 and 2015.

# CHAPTER FOUR

# RESULTS AND DISCUSSION

## 4.1: Introduction

This chapter presents and discusses the results of the analysis of the research which were estimated using various statistical applications; three hundred and twenty nine (329) questionnaires were administered and the data gotten from them were coded, analyzed and interpreted. The results are discussed under the following sub-themes: the socio-economic characteristics of the respondents, nature and frequency of insurgency, perception on causes of insurgency, factors making farmers susceptible to insurgency, impact of insurgency on income and level of living and finally, the coping and mitigating strategies employed by the respondents in fighting insurgency.

## 4.2: Socio-economic Characteristics of the Respondents

This section deals with the socio-economic characteristics of the respondents. Knowledge of the respondents' socio-economic background will allow for good examination to possibly see if they have any linkage with insurgent attacks. This will further help in giving a good recommendation. It is noteworthy that 329 questionnaires were retrieved; hence discussion is based on 329 respondents.

### 4.2.1: Sex distribution

In Table 4.1, the respondents were of both sex but males were more. Specifically, in the sample the male respondents were 89.36% while the female respondents are 10.64%. This finding agrees

Table 4.1: Frequency distribution of respondents' socio-economic characteristics

| Variable | Insurgent attacks sustained | | | | | | Pooled (n=329) | |
|---|---|---|---|---|---|---|---|---|
| | Low (n1=116) | | Moderate (n1=78) | | High (n3=135) | | | |
| **Sex** | **F** | **%** | **F** | **%** | **F** | **%** | **F** | **%** |
| Male | 109 | 93.97 | 65 | 83.33 | 120 | 88.89 | 294 | 89.36 |
| Female | 7 | 6.03 | 13 | 16.67 | 15 | 11.11 | 35 | 10.64 |
| **Age** | | | | | | | | |
| 14-30 | 77 | 66.38 | 41 | 52.57 | 77 | 57.04 | 195 | 59.27 |
| 31-39 | 12 | 10.34 | 18 | 23.08 | 26 | 19.26 | 56 | 17.02 |
| 40-49 | 14 | 12.07 | 8 | 10.26 | 16 | 11.85 | 38 | 11.55 |
| 50-75 | 13 | 11.21 | 11 | 14.10 | 16 | 11.85 | 40 | 12.16 |
| Mean | 29.22 | (12.95) | 31.63 | (12.39) | 31.07 | (12.3) | 30.52 | (12.6) |
| **Education** | | | | | | | | |
| No formal | 48 | 41.38 | 34 | 43.59 | 85 | 62.96 | 167 | 50.76 |
| Adult | 0 | 0 | 0 | 0 | 3 | 2.22 | 3 | 0.91 |
| Primary | 12 | 10.34 | 10 | 12.82 | 10 | 7.41 | 32 | 9.73 |
| Secondary | 42 | 36.21 | 20 | 25.64 | 32 | 23.71 | 94 | 28.57 |
| Tertiary | 14 | 12.07 | 14 | 17.95 | 5 | 3.70 | 33 | 10.03 |
| **Marital status** | | | | | | | | |
| Never married | 60 | 51.72 | 12 | 15.38 | 46 | 34.07 | 118 | 35.87 |
| Married | 53 | 45.69 | 66 | 84.62 | 86 | 63.71 | 205 | 63.31 |
| Widowed | 2 | 1.72 | 0 | 0 | 1 | 0.74 | 3 | 0.91 |
| Divorced | 1 | 0.86 | 0 | 0 | 2 | 1.48 | 3 | 0.91 |
| **Household size** | | | | | | | | |
| 1-4 | 28 | 24.14 | 30 | 38.46 | 40 | 29.63 | 98 | 29.79 |
| 5-8 | 34 | 29.31 | 24 | 30.77 | 49 | 36.30 | 107 | 32.52 |
| 9-11 | 36 | 31.03 | 18 | 23.08 | 22 | 16.30 | 76 | 23.10 |
| 12-32 | 18 | 15.52 | 6 | 7.69 | 24 | 17.77 | 48 | 14.59 |
| Mean | 8 | (7.62) | 8 | (11.43) | 9 | (7.14) | 8 | (2.77) |
| **Coop. membership** | | | | | | | | |
| Yes | 43 | 37.07 | 22 | 28.21 | 56 | 41.48 | 121 | 36.78 |
| No | 73 | 62.93 | 56 | 71.79 | 79 | 58.52 | 208 | 63.22 |

**Source**: Author's estimates from field survey (2016)
1 attack =low, 2 attacks = moderate , above 2 attacks = high
Standard deviations in parentheses

with the work of Ogunmefun and Achike (2015) which more male farmers than females were seen in their study area; Ogun State and also that of Mustapha, *et al.* (2012) whereby more than 62.20% of the farmers were males. The similarities could be attributed to the fact that the target respondents were all rural farmers; and many studies on farmers have shown that they averagely possess similar characteristics, also, Mustapha *et al.* worked in northeastern Nigeria, so the closeness in the culture of the people could also account for the similarities. The presence of more males among the respondents could be as a result of the Nigerian culture where ownership of land favours men more than women and as a result encourages more men to go into farming than women. More males in the study area could mean a stronger opposition to the insurgents.

### 4.2.2: Age distribution of the respondents

Age is a critical factor when it comes to wars, conflicts and the other martial activities because it is expected that the younger a participant in a conflict is, the greater is his agility or likelihood to resisting the enemies and launching systematic retaliations since winning a war substantially boils down to having enough strength and skills to combat the enemy. The modal class is 14-30 years and the sample mean of age is about 31 years with a standard deviation of 13years. This is in line with the findings of Baiyegunhi and Fraser (2009) that majority (86%) of the farmers studied in Kaduna State were within the middle age group of 26-54 years. This similarity is best explained by the fact that both studies were conducted in the northern part of Nigeria. However, this result was contrary to the finding of Nwaiwu (2015) which revealed the mean age of farmers in southeastern Nigeria to be 57 years. This difference could be due to the regional variation in the areas of study which may be attributed to the fact that the more fertile lands for agriculture in

the north encourage youths to go into farming compared to southeast where gully erosion and floods have destroyed many farm lands, thereby, making faming very unattractive to the youths.

It can be inferred that the respondents were typically young and active but with also important variation around the mean age. The advantage of youths during insurgent attacks can be seen in their ability to collaborate with the army of the republic and also provide some level of community defense while waiting for the support of the Nigerian armed forces. Given that the study area is rural in nature, the usefulness of the youth during and after the insurgency period could also be in terms of facilitating the transformation of agriculture through their willingness to adopt improved technologies such as improved seed varieties and agrochemicals in order to increase their productivity and ultimately improve their standard of living. This is because, studies on adoption of innovations like improved seed varieties, chemicals and agronomic practices emphasize that youths are more risk oriented and often adopt more than their older counterparts.

### 4.2.3: Educational level of the respondents

The importance of education in every aspect of human endeavors cannot be over emphasized because it is a significant factor of human capital that can be used to trigger changes. According to the result as seen in the pooled data, respondents with no formal education had the highest proportion with a little above 50%. That many of the rural dwellers were still not formally educated is more worrisome if especially the mean age (31years) was considered.

It means that educational attachment of the study area is still low which will affect future possibility of diversified rural livelihood in the study area. This finding was in agreement with

the research of Apata, *et al*., (2010) which assert that most of the Nigerian farmers had no formal education. This similarity could be attributed to the reason that respondents in both studies were not selected based on what they cultivated; be it livestock or crop production, but disagrees with the findings of Nwaiwu (2015) which showed that most of the farmers (72.5%) had formal education. The difference is not only because of variation in the study area but also because the study of Nwaiwu was specific to only arable crop farmers while this work targeted farmers irrespective of what they produced. Selection of farmers based on what they cultivate will limit the variation in the sample compared to farmers selected without being crop-specific; this selection method could account for variation in educational level.

### 4.2.4: Marital status of the respondents

The analysis revealed that about 62.31% were married and 35.87% never married. This finding is not different from the assertion made by Ogunmefun and Achike (2015) in their work that majority (81.3%) of the respondents were married. This tends to also agree with the assertion of Perez-Morales (1990) which revealed that young people in rural areas get married earlier than their peers in urban cities and also become involved in adult responsibilities before urban youth; younger people marrying earlier will produce a high percentage of married persons in the population. The similarities as observed in the works of the aforementioned authors could be attributed to the fact that all the works were conducted in rural areas which in most cases do have people marry at early age so as to increase man power for farming. The implication of having more married people in a rural area means more procreation which helps in building a virile farming population and invariably increasing food production.

### 4.2.5: Household size of the respondents

The household size of the respondents varies from 1 member to 32 with a mean of 8 members and a standard deviation of 3. This was contrary to the report of the Nigeria Demographic and Health Survey (NDHS, 2013) which showed that the average household size in rural Nigeria is 5. A reason for this contrast could be attribute to the time of research; Nigerian households had lesser diversification of rural livelihood years back and as such were limited in income which affected household expansion, but in recent times, households are diversifying their means of livelihood which has enabled them make more money to cope with a larger household sizes The frequency distribution of household size shows that the class 5-8 is the modal class with the highest percentage (32.52%) of the respondents. The work of Mustapha, *et al.*, (2012) in Kaduna State which showed that 42.20% of the respondents had household size of 5-9 members was similar to the finding of this work and this could be due to the fact that the studies were all conducted in the northern region of Nigeria where cultural similarities are obvious. Typically, it can be said based on the analysis as seen from the pooled data that the mean household size was high but with substantial variation around it. The implication here is that family labour which would be beneficial for the respondents in carrying out some farm operations could be high among the respondents, which implies more available hands to increase production.

### 4.2.6: Cooperative membership

Cooperative membership is often used as a proxy for social capital and can be useful especially when the issues dealt with during meetings with the members are relevant to the challenges they are facing. Some of the respondents were members of cooperatives among which the most common ones were the Azonto and Super star cooperatives. But, the majority (63.22%) of the

respondents in the analysis as seen in the pooled data was not members of any cooperative in their communities or outside of their communities. This is contrary to Nwaiwu (2015) which showed that over three-quarter (80.70%) of farmers in southeast Nigeria belonged to cooperative organizations and this difference could be as a result of variation in study area; the south east people as a result of limited lands live more closer to each other and this closeness could influence them into joining cooperatives unlike in the northern part of Nigeria, where there are vast lands which could directly or indirectly influence people into living far apart from each other thereby discourage them from joining cooperatives. The benefits derived by the respondents were in terms of inputs, credit, irrigation and training among which access to credit was the most important benefits they derived from the cooperatives. This implies that cooperative membership which could play a major role in improving farmers' efficiency and productivity and ultimately their livelihood will be beneficial to a few since majority of the respondents are not part of any cooperative. Also, cooperative associations allow for dissemination of information on pressing and sensitive issues and how best they should be handled; for the study area, insurgency was a major challenge and being a member of a cooperative would be beneficial in the sense that awareness may be created for members on insurgent attacks and how best to defend themselves .

### 4.2.7: Main livelihood activities of the respondents

Table 4.2 presents the distribution of the respondents' livelihood activities, assets and income. The main livelihood activities observed among the respondents were farming, business and civil service. Some of the respondents were operating up to three livelihood activities at a time. Among the three categories of livelihood activities, farming was found to have the highest percentage (46.81%). This suggests that farming was the predominant occupation of most of the

respondents. This was in agreement with the study of Ogunmefun and Achike (2015) which showed that 50% of the respondents had farming as their major occupation. The reason for this similarity could be due to the fact that both studies were conducted in rural areas where farming is high among dwellers. The next important categories of workers were business men and women (37.99%) followed by civil servants (15.20%). This was in conformity with Bryceson (2000) which reported that most countries in Africa are undergoing a process of "deagrarianisation" which is defined as long term process of occupational adjustment, income earning reorientation, social identification and spatial relocation of rural dwellers away from strictly agricultural based modes of livelihood. This further suggests that the respondents were more self employed.

### 4.2.8: Experience in main livelihood activities of respondents

The respondents were quiet experienced in farming, business and civil service irrespective of the level of insurgency. Specifically, an average respondent in the analysis as seen in Table 4.2 with farming as his or her major livelihood activity had 23 years of experience with standard deviation of 13.8 years. Ogunmefun and Achike (2015) stated in their work that the average number of years of farming experience was 13years. This was contrary to the finding of this work; reason could be due to the variations in age of respondents, probably Ogumefun and Achike (2015) had younger respondents in their study. A typical respondent with business and civil service as his or her major livelihood activity had about 10 and 5 years of experience with standard deviation of 7.25 and 2.87 years respectively. The implication of this finding is that the experience of the respondents in their major livelihood activities is sufficiently high to bring about improvement and efficiency in their various livelihood activities.

Table 4.2: Distribution of respondents' livelihood activities, land, assets and income

| Variable | Insurgent attacks sustained | | | Pooled (n=329) |
|---|---|---|---|---|
| | Low (n1=116) | Moderate (n2=78) | High (n3=135) | |
| **Main live. Activity** | | | | |
| Farming | 51 (43.97) | 37 (47.44) | 66 (48.89) | 154 (46.81) |
| Business | 49 (42.24) | 29 (37.18) | 47 (34.81) | 125 (37.99) |
| Civil servant | 16 (13.79) | 12 (15.38) | 22 (16.30) | 50 (15.20) |
| **Mean live. exp. (Yrs)** | | | | |
| Farming exp. | 22.97 (14.78) | 24.11 (12.69) | 22.52 (13.81) | 23 (13.8) |
| Business exp. | 7.39 (5.1) | 13.65 (10.63) | 9.53 (5.78) | 9.57 (7.25) |
| Civil service exp. | 2.63 (5) | 6.22 (3.73) | 4.63 (2.58) | 5.12 (2.87) |
| **Land culti. (ha)** | | | | |
| 1-2.49 | 77 (66.38) | 15 (19.23) | 26 (19.26) | 118(35.87) |
| 2.5-7.49 | 38 (32.76) | 39 (50.00) | 100 (74.07) | 177 (53.80) |
| 7.5-14 | 1 (0.86) | 24 (30.77) | 9 (6.67) | 34 (10.33) |
| Mean | 2.93 (2.26) | 5.52 (2.65) | 4.19 (2.68) | 4.18 (2.71) |
| **Mean Assets (₦)** | | | | |
| 2009 hhs' assets | 42,534.57 | 90,473.9 | 42,401.05 | 53,950.6 |
| | (28,273.25) | (352,054.68) | (184,465.59) | (212,463.82) |
| 2015 hhs' assets | 39,109.61 | 43,051.9 | 26,514.54 | 34,331.73 |
| | (33,310.69) | (34,257.77) | (27,985.54) | (31,965.38) |
| 2009 livestock's assets | 15,815.39 | 72,723.08 | 26,030.81 | 37,182.44 |
| | (31,990.03) | (69,064.61) | (22,494.78) | (48,314.14) |
| 2015 livestock's assets | 16,244.12 | 166,505.77 | 32,743.12 | 61,583.73 |
| | (25,494.69) | (287,402.78) | (30,439.66) | (155,669.17) |
| **Mean income (₦)** | | | | |
| 2009 income | 300,044.04 | 350,540.95 | 390,485.96 | 360,309.04 |
| | (33,530.1) | (37,753.69) | (30,490) | (33,201.86) |
| 2015 income | 240,155.79 | 279,198.1 | 300,005.57 | 280,164.62 |
| | (35,463.94) | (31,602.31) | (32,339.34) | (33,423.92) |

Source: Author's estimates

Percentages in parentheses for discrete data (values that are in whole numbers).

Standard deviations in parentheses for continuous data (values that are in decimals)

1 attack=low, 2 attacks=moderate, above 2 attacks=high

### 4.2.9: Land cultivated

Earlier findings showed that the respondents were majorly farm operators; meaning that, land is an important asset they need for agricultural production. It was observed from the respondents that the land cultivated varied from 1 to 14 ha with mean of 4.18 ha and a standard deviation of 2.71 ha. In other words, the smallest land cultivated was 1 ha while the largest was 14 ha. Akinyosoye (2006) and National Bureau of Statistics (2009) classified marginal farms to be farms less than a hectare, small farms to be between 1-2ha, semi-medium farms to be between 2-4ha, medium farms to be between 4-10ha and large farms to be above 10ha. Using this as a yard stick, marginal lands were not cultivated by the respondents. Specifically, based on the analysis as seen in the pooled data, about 90% of the respondents had their farm sizes ranging from 1-7.49ha; this means that the respondents were predominantly small and medium scale farmers. This totally contradicts the work of Nwaiwu (2015) who had majority (74.9%) of the respondents having farm sizes less than 1 hectare. The reason for this could be due to the fact that the limited lands in southeastern Nigeria which was the study area of Nwaiwu (2015) greatly limit the average land cultivated unlike in northeastern Nigeria where lands are vast and farmers have more areas for cultivation. The respondents being majorly small and medium scale farmers imply that large scale farmers are few and commercial agriculture is limited. If interventions targeted at boosting agriculture are introduced into such areas, more incentives should be given to farmers into large scale farming. This will encourage more people to venture into large scale farming thereby creating a boost in agricultural production.

### 4.2.10: Assets owned by respondents

The assets of the respondents were grouped into both households' assets which include cell phones, televisions, grinding machine, bike, motorcycle, wheel barrow, axes, cutlass, etc; and livestock assets such as cows, sheep, pigs, ducks, goats, turkeys, etc. According to the analysis, the households' assets were estimated at ₦53, 950.6 on average with a standard deviation of ₦212, 463.82 in 2009. This shows that there was over dispersion in households' assets among the respondents in 2009. In 2015, the average households' assets were estimated at ₦34, 331.73 with a standard deviation of ₦31, 965.38. Thus between 2009 and 2015 which coincides with the insurgency period, the assets of the respondents decreased at the rate of about 36.4 percent which in value represents about ₦19, 618. This difference can be viewed as the impact of insurgency on the respondents' assets based on comparison method of impact evaluation. However, it is possible that other factors may have also contributed to this decrease such as loss in performance in the economy as a whole. As such, difference in assets between the intervals of time should only be viewed as being partly caused by insurgency unless other factors such as the socioeconomic factors of the respondents are being accounted for.

In terms of livestock ownership, it was observed that the respondents' livestock assets in 2009 was ₦37, 182.44 on average with standard deviation of ₦48, 314.14 which also shows that there was over dispersion in livestock assets in that year among the respondents. However, in 2015, the livestock assets were observed to be ₦61, 583.73 which implies that livestock assets increased between 2009 and 2015. The reason for the positive change between 2009 and 2015 in livestock ownership emphasized the fact that investing in livestock was seen by the respondents as a safer way to invest their money probably because most of the livestock could be reared at

home or within confines of the house and community and as such would enable the respondents reduce exposure to attacks by terrorists as a result of going into bushes to farm. Once again, a more sound impact analysis would require that other influencing factors of assets holding are accounted for which is done in later part of this study.

### 4.2.11: Income distribution of respondents

Beside the assets owned by the respondents, their level of income was also considered as another indicator of their livelihood status. Specifically, in the analysis, the average income relative to 2009 was estimated at ₦360,309.04 with a standard deviation of ₦33,201.86 while the average income in 2015 was estimated at 280,164.62 with a standard deviation of 33,423.92 which implies that between 2009 and 2015, the respondents experienced a decrease in income. The drop in income could be that the insurgency made farmers unable to farm frequently and also sell their farm produce which could get spoilt if not sold on time and this would mean more loses for them.

## 4.3: Nature and Frequency of Insurgency

In recent time, the *Boko Haram* terrorists have targeted men and women in carrying out major operations against civilians in Northern Nigeria. Therefore, examining the nature and frequency of insurgency could lead to efficient policy implications regarding the fight against insurgency. Thus, this section examines the nature and frequency of insurgency across respondents.

### 4.3.1: Nature of insurgency encountered by respondents

The nature or commonest forms of attacks by the terrorists in the study area is categorized into seven which are arson, sporadic shooting, kidnapping, suicide bombing, bombing with improvised explosive devices (IEDs), forced recruitment and threats. Of all the forms of attacks observed among the respondents as seen in the Table 4.3, sporadic shooting (45.62%) was the most prevalent followed by arson (30.54%) and bombing with IEDs (13.41%) while the least common nature of the attacks was kidnapping. Such forms of attacks agree with Okoli and Iortyer (2014) which in their findings reported that terrorists adopted arson, mass killing by gunfire, suicide bombing, use of improvised explosives, hostage-taking (kidnapping), jail break and forced enlistment/recruitment of combatant in executing their diabolical designs. The similarity to the work of Okoli and Iortyer (2014) could be attributed to the fact that both studies were conducted in northeastern Nigeria on *Boko Haram* insurgency.

### 4.3.2: Frequency of insurgent attacks experienced by respondents

The frequency of the attacks by the terrorists defer from one form of attack to another with important variation among the respondents. As seen in Table 4.3, a respondent averagely experienced arson once, sporadic shooting twice, kidnapping once, suicide bombing thrice, bombing with improvised devices twice, forced recruitment once and threats 10 times. Threat being the most frequent implies that the terrorists derive joy in psychologically weakening their victims through instilling of fear which invariably makes them avoid going to farms, markets, social gatherings and carrying out other livelihood activities.

Table 4.3: Nature and frequency distribution of insurgency based on sex

| Variable | Female (n1=35) | | Male (n2=294) | | Pooled (n=329) | |
|---|---|---|---|---|---|---|
| **Nature of insurgency** | **F** | **%** | **F** | **%** | **F** | **%** |
| Arson | 11 | 20.37 | 153 | 31.68 | 164 | 30.54 |
| Sporadic shooting | 28 | 51.85 | 217 | 44.93 | 245 | 45.62 |
| Kidnapping | 0 | 0.00 | 2 | 0.41 | 2 | 0.37 |
| Suicide bombing | 4 | 7.41 | 36 | 7.45 | 40 | 7.45 |
| Bombing with improvised explosive devices | 8 | 14.81 | 64 | 13.25 | 72 | 13.41 |
| Forced Recruitment | 0 | 0.00 | 7 | 1.45 | 7 | 1.30 |
| Threats | 3 | 5.56 | 4 | 0.83 | 7 | 1.30 |
| **Average number of occurrences** | **Mean** | **S.D** | **Mean** | **S.D** | **Mean** | **S.D** |
| Arson | 1 | 0 | 1.18 | 0.5 | 1.17 | 0.48 |
| Min | 1 | | 1 | | 1 | |
| Max | 1 | | 3 | | 3 | |
| Sporadic shooting | 2.93 | 2.81 | 2.16 | 1.86 | 2.25 | 2.01 |
| Min | 1 | | 1 | | 1 | |
| Max | 10 | | 11 | | 11 | |
| Kidnapping | 0 | | 1.42 | 0.84 | 1.38 | 0.8 |
| Min | 0 | | 1 | | 1 | |
| Max | 0 | | 3 | | 3 | |
| Suicide bombing | 3.25 | 0.5 | 2.83 | 1.44 | 2.87 | 1.38 |
| Min | 3 | | 1 | | 1 | |
| Max | 4 | | 6 | | 6 | |
| Bombing with improvised devices | 1.86 | 1.25 | 1.59 | 1.1 | 1.63 | 1.11 |
| Min | 1 | | 1 | | 1 | |
| Max | 4 | | 4 | | 4 | |
| Forced Recruitment | 0 | | 1.33 | 0.82 | 1.33 | 0.82 |
| Min | 0 | | 1 | | 1 | |
| Max | 0 | | 3 | | 3 | |
| Threats | 1 | 0 | 10.67 | 7.5 | 9.67 | 5.5 |
| Min | 1 | | 2 | | 2 | |
| Max | 1 | | 700 | | 700 | |

**Source**: Author's estimates from survey data (2016)
SD=Standard deviation
F=Frequency

It is noteworthy that, household heads are used as the respondents hence their responses covered their household. As such, it means that though they may not have been directly kidnapped, forcefully recruited or shot, a member of their household has suffered such attacks.

### 4.4: Farmers' Perception of the Causes of Insurgency

This section is concerned with the examination of farmers' perception on the causes of insurgency. Five factors (unemployment, poverty, ignorance, religious bigotry and loose borders) were first posted as potential causes of insurgency in the study area. The respondents were expected to state their perceived factors influencing insurgency using a five-point likert scale type of question. This section is therefore organized as follows: first, the description of the perception of farmers on the causes of insurgency and then the determination of factors influencing the farmers' perception on the causes of insurgency. The essence of determining factors influencing farmers' perception is to actually validate the descriptive aspect of farmers' perception.

#### 4.4.1: Farmers' perception of the causes of insurgency

The causes of insurgency were considered in terms of individual causes and joint or simultaneous causes of insurgency. According to Table 4.4 on an individual basis, all the respondents (100%) agree and strongly too, that unemployment was a cause of insurgency and about 90% of the respondents perceived that poverty was a cause of insurgency. The finding of this work strongly agrees with the work of Joheph (2015) and also with Folarin and Oviasogie (2015) which lamented and stated in their studies that Nigeria is ravaged by underdevelopment, unemployment, illiteracy and poverty; all of which have instigated grievances against the system and created breeding ground for terrorism. According to Joseph (2015) the current insurgency in

the north is caused by the high level of poverty, unemployment and illiteracy prevalent in northern Nigeria.

In terms of joint causes of insurgency; that is, unemployment, poverty, ignorance, religious bigotry and loose borders as jointly causing insurgency, it was observed that 46.81% of the respondents are indifferent to these cumulative causes of insurgency. Also, 43.46% of the respondents believe that unemployment, poverty, ignorance, religious bigotry and loose borders are combined causes of insurgency while only 9.73% of the respondents do not agree that the combination of unemployment, poverty, ignorance, religious bigotry and loose borders are causes of insurgency.

Table 4.4: Farmers' perception on causes of insurgency

| **Cause** | **SD** | **D** | **I** | **A** | **SA** |
|---|---|---|---|---|---|
| **Individual cause** | | | | | |
| Unemployment | 0 | 0 | 0 | 92 | 237 |
| (%) | 0 | 0 | 0 | 28.00 | 72.00 |
| Poverty | 0 | 0 | 33 | 156 | 140 |
| (%) | 0 | 0 | 10.03 | 47.42 | 42.55 |
| Ignorance | 0 | 67 | 65 | 98 | 99 |
| (%) | 0 | 20.36 | 19.76 | 29.79 | 30.09 |
| Religious bigotry | 238 | 44 | 4 | 40 | 3 |
| (%) | 72.34 | 13.37 | 1.22 | 12.16 | 0.91 |
| Loosed borders | 0 | 18 | 161 | 110 | 40 |
| (%) | 0 | 5.47 | 48.94 | 33.43 | 12.16 |
| **Joint cause** | 14 | 18 | 154 | 103 | 40 |
| (%) | 4.26 | 5.47 | 46.81 | 31.31 | 12.15 |

**Source:** Author's estimates
Percentage in parentheses. SD = Strongly Disagree, D=Disagree, I = Indifferent, A=Agree, SA= Strongly Agree

### 4.4.2: Determinants of farmers' perception on the causes of insurgency

Modeling ordered data has gained more weight in recent years especially because this type of data is usually used in social sciences. Ordered dependent variables models vary from one to another in terms of efficiency and the choice of one over the other is dependent on the assumptions that we can make or accept given the data available. The ordered probit or logit are very common in the literature but their assumptions are too restrictive especially in terms of the parallel-lines assumption. In order to obtain robust results, ordered probit was fitted and also the more general model called generalized ordered logit was also fitted. This section first presents the description and choice of the most appropriate model and then the factors affecting farmers' choice on perception on the causes of insurgency.

One of the fundamental assumptions in modeling ordered data is the parallel-lines (PL) assumption (Long and Freese, 2006) also known as the partial odds assumption (Wolfe and Gould, 1998). Given the categorization of farmers' perception, the assumption states that the effect of the covariates across equation 2 (Eq2) and equation 3 (Eq3) is constant in which case the parsimonious ordered probit (Oprobit) model is adequate to model farmers' perception on the causes of insurgency (Table 4.5). However, this assumption was violated on the basis of the Likelihood Ratio (LR) test. In effect, although the Oprobit model was statistically significant at 5 percent level of probability based on LR test1, the LR test2 for the PL assumption was strongly rejected at 1 percent level of probability. In other words, at least one or more of the model's covariates differ across the equations. Specifically, the effects of three covariates – the assets, Gubio LGA and sex of the respondents - in the model were found to differ across Eq2 and Eq3.

William (2006) suggests that a partial odds model should be fitted in the presence of violation of the PL assumption which is achievable through a Generalized Ordered Logit (Gologit) model. The Gologit model was estimated by the Maximum Likelihood (ML) estimator and was statistically significant at 5 percent level of probability on the basis of the Wald test which implies that all the coefficients in the model are jointly different from zero. In other words, the model's covariates jointly influence farmers' perception on the causes of insurgency. On the basis of the estimate of the Pseudo $R^2$ also known as McFadden's likelihood ratio index (McFadden, 1974) it can be said that the model explains 16 percent of variation in farmers' perception on the causes of insurgency which appear to be low. However, the dependent variable is a categorical variable; meaning that, the dependent variable observably does change much. As such, the Pseudo $R^2$ is not a good enough statistic to judge the goodness of fit of the model because it is not connected to the proportion of variation explained (Greene, 2009). Thus, the significant difference between the value of Log likelihood function for the full model (with all the covariates included) and the restricted model (with intercept alone) shows that the model is important enough to predict farmers' perception on the causes of insurgency.

The farmers' perception on the causes of insurgency is a non-linear function of the respondents' age and assets according to the findings in Table 4.5. The interactions between sex and revenue, sex and age and finally sex and Gubio LGA were equally included in the model. All the covariates in the models were considered based on their contribution in terms of predicting farmers' perception on the causes of insurgency. Variables such as education, household size and cooperative membership were dropped due to their insignificant contribution in improving the fit of the model. According to the Gologit, it can be summarized that sex, age, land, other assets, the

interactions between sex and revenue, and then sex and Gubio LGA were significantly important in explaining and predicting farmers' perception of the causes of insurgency.

Based on the Gologit model in Table 4.5, it can be said that male farmers were more in support of unemployment, poverty, ignorance, religious bigotry and loose borders as joint causes of insurgency compared to their female counterparts. The older famers tend to be more supportive than their younger counterparts on the joint causes of insurgency. Farmers with large farms tend to be more supportive of the joint causes of insurgency than those with smaller farms. The respondents with large assets (household and livestock) tend to be less in support of the joint causes of insurgency than those with little assets. Male farmers with large revenue are less likely to perceive that unemployment, poverty, ignorance, religious bigotry and loose borders are joint causes of insurgency compared to female farmers with great revenue. Male farmers in Gubio LGA tended to be less supportive than the male farmers in Geidam, Gujba and Magumeri LGAs in perceiving unemployment, poverty, ignorance, religious bigotry and loose borders as joint causes of insurgency. Although, the sign and significance of the covariates in the model have enable us to uncover some findings, the result is still limited in terms of specifically giving the magnitude of the difference in a particular group's likelihood to have a given perception. This is corrected through average marginal effect.

Table 4.5: Maximum likelihood estimates of generalized ordered logit and ordered probit for determinants of farmers' perception on the causes of insurgency

| | **Oprobit** | **Gologit** | |
|---|---|---|---|
| **Variables** | **Eq1** | **Eq2** | **Eq3** |
| Male ($x_1$) | 3.78*** | 7.46*** | 4.77** |
| | (1.25) | (2.31) | (2.17) |
| Age squared ($x_2$) | 0.04 | 0.0009* | 0.0009* |
| | (0.06) | (0.0005) | (0.0005) |
| Edu ($x_3$) | 0.0002 | 0.24 | 0.24 |
| | (0.0007) | (0.37) | (0.37) |
| Married ($x_4$) | 0.2 | -0.05 | -0.05 |
| | (0.22) | (0.41) | (0.41) |
| Male#Revenue ($x_5$) | -0.14 | -0.000007*** | -0.000007*** |
| | (0.25) | (0.000002) | (0.000002) |
| Male#Age ($x_6$) | -0.000003*** | -0.05 | -0.05 |
| | (0.000001) | (0.04) | (0.04) |
| Male#GubioLGA ($x_7$) | -0.04 | -3.06** | -3.06** |
| | (0.03) | (1.46) | (1.46) |
| Land size($x_8$) | -2.39*** | 0.37*** | 0.37*** |
| | (0.77) | (0.13) | (0.13) |
| Ln asset ($x_9$) | 0.1* | -4.45*** | -0.61** |
| | (0.06) | (1.52) | (0.25) |
| Gubio LGA ($x_{10}$) | 0.24 | 4.57** | 2.09 |
| | (0.15) | (1.86) | (1.38) |
| Constant | 1.94*** | 44.63*** | -9.85*** |
| | (0.72) | (16.04) | (3.16) |
| Cutpoint 1 | 4.03* | | |
| | (2.18) | | |
| Cutpoint 2 | 5.85*** | | |
| | (2.2) | | |
| *LR test 1* | 20.69** | | |
| *Wald test* | | 25.62** | |
| *LnL* | -116.86 | | |
| $LnL_0$ | -106.49 | | |
| *LR test 2* | 50.43*** | | |
| *Pseudo* $R^2$ | 0.08 | 0.16 | |

Source: Author's estimate from survey data (2016)

***<0.01, **<0.05, *<0.1. LR = Likelihood Ratio, *LnL* = Log Likelihood of the unrestricted model, $LnL_0$= Log Likelihood function of the restricted model. Eq1=1 if indifferent or agree and 0 if disagree, Eq2 = 1 if indifferent or agree and 0 if disagree, Eq3 = 1 if agree and 0 if indifferent or disagree. Standard errors in parentheses.

Table 4.6 presents the effects of the selected independent variables by the Stata 13 application on farmers' perception and the probability that a particular farmer will disagree, be indifferent or agree that unemployment, poverty, ignorance, religious bigotry and loose borders are joint causes of insurgency in the study area. Male farmers are 31% point less likely to disagree on the joint causes of insurgency, 61% less likely to be indifferent on the joint causes of insurgency and 98% point likely to agree on the joint causes of insurgency than the female farmers. Older farmers are 0.02% point less likely to be indifferent on the joint causes of insurgency than the younger farmers and are 0.02% point more likely to agree on the joint causes of insurgency than the younger farmers. A male farmer with higher revenue is 0.00003 and 0.00011% point more likely to disagree and to be indifferent respectively on the joint causes of insurgency than a female farmer with higher income to disagree. Also, a male farmer with larger revenue is 0.00014% point less likely to agree on the joint causes of insurgency than their female counterparts with higher revenue.

A male farmer in Gubio LGA is 13% point more likely to disagree and 50% point more likely be indifferent on the joint causes of insurgency than those in Geidam, Gujba and Magumeri LGAs. Also, a male farmer in Gubio LGA is 63 percent point less likely to agree on the joint causes of insurgency. Farmers with greater land cultivated are 2 percent point and 6 percent point less likely to disagree and be indifferent respectively on the joint causes of insurgency than those with smaller land cultivated. Also, they are 8% point more likely to agree on the joint causes of insurgency than those with smaller land cultivated. A farmer with larger assets is 31% point less likely to be indifferent and 13% point less likely to be indifferent on the joint causes of

insurgency than those with smaller assets. Also, a farmer with greater assets is 19% point more likely to disagree on the joint causes of insurgency than those with smaller assets.

Table 4.6: Maximum likelihood estimates of average marginal effect of the determinants and their probability to perceive that unemployment, poverty, ignorance, religious bigotry and loose borders are joint causes of insurgency

| | **Perception** | | |
|---|---|---|---|
| **Variables** | **Disagree** | **Indifferent** | **Agree** |
| Male (x1) | -0.31*** | -0.67* | 0.98** |
| (SD) | (0.11) | (0.36) | (0.43) |
| Age (x2) | -0.00004** | -0.0002** | 0.0002** |
| (SD) | (0.00002) | (0.0001) | (0.0001) |
| Edu (x3) | -0.01 | -0.04 | 0.05 |
| (SD) | (0.02) | (0.06) | (0.08) |
| Married (x4) | 0.002 | 0.01 | -0.01 |
| (SD) | (0.02) | (0.07) | (0.08) |
| Male#Revenue (x5) | 0.0000003*** | 0.0000011*** | -0.0000014*** |
| (SD) | (0.0000001) | (0.0000003) | (0.0000004) |
| Male#Age (x6) | 0.0021 | 0.01 | -0.01 |
| (SD) | (0.0019) | (0.01) | (0.01) |
| Male#GubioLGA (x7) | 0.13* | 0.5** | -0.63** |
| (SD) | (0.07) | (0.23) | (0.29) |
| Land (x8) | -0.02** | -0.06*** | 0.08*** |
| (SD) | (0.01) | (0.02) | (0.02) |
| Asset (x9) | 0.19*** | -0.31*** | -0.13*** |
| (SD) | (0.03) | (0.05) | (0.05) |
| Gubio LGA (x10) | -0.19*** | -0.24 | 0.43 |
| (SD) | (0.06) | (0.23) | (0.28) |

Source: Author's estimate from survey data (2016)
***<0.01, **<0.05, *<0.1. LR = Likelihood Ratio.
SD=Standard errors; SD are the values in parentheses

### 4. 5: Factors Influencing Farmers' Susceptibility to Insurgency

This section deals with the factors that make farmers susceptible to insurgent attacks. Susceptibility to insurgency is viewed as a left-censored variable since the smallest number of insurgent activities experienced by a farmer is 1; given that all the farmers experienced at least a nature of insurgent activities but with varying intensity. Therefore, the left-censored Tobit model was rightfully chosen to fit farmers' susceptibility to insurgency in relation to their socioeconomic characteristics. However, given the number of insurgent activities that were observed to right skew and the logarithm of the number of insurgent activities obtained, two Tobit models were fitted where the first Tobit used the logarithm of the number of insurgent activities (Eq1) as the dependent while the second used the number of insurgent activities (Eq2) measured at the original scale as the dependent variable as shown in Table 4.7.

The parameters' estimates of the Tobit models in Table 4.7 were estimated by Maximum Likelihood estimator. Eq1 and Eq2 were both statistically significant on the basis of the F-test at 1 percent level of probability. However, Eq1 was observed to have the best fit based on information criteria as the estimates of the Akaike Information Criterion (AIC), and Bayesian Information Criterion (BIC) were lower than those of Eq2. Moreover, the Pseudo $R^2$ and $R^2$ were greater for Eq1 than for Eq2; thus, the discussion of the findings was based on Eq1. The F-test estimate is 5.51 and statistically significant at 1 percent level of probability which implies that all the coefficients in the model were jointly different from 0. In other words, all the 12 regressors in the model jointly affect farmers' susceptibility to insurgency. Individually, only Magumeri LGA, marital status, experience in livelihood activities and farming were the only farmers' characteristics that affect their susceptibility. Specifically, farmers in Magumeri LGA have lower level of susceptibility to insurgency. In other words, farmers in Magumeri LGA are 47% point

less susceptible to insurgency than those in Gubio and other LGAs, all things being equal. It can also be said that farmers in Magumeri LGA had 47% lower numbers of insurgent activities experienced than those in Gubio and other LGAs. An explanation to this could be because Magumari LGA is 50km away from Maiduguri town and much further away from the State borders compared to other LGAs which are much closer to their State borders, thereby making them more prone to insurgent attacks.

A respondent who is married is 29% point more susceptible to insurgent activities than those unmarried. This means that a married person will experience 29% point more number of insurgent activities than the unmarried. An explanation to why married people are more exposed to insurgent attacks could be due to the fact that married people now have more responsibilities and will therefore purchase more assets in their houses than the unmarried, thereby finding it difficult to leave such communities with their families when being attacked; this will mean more spoils to cart away with by the insurgents during attacks. An increase in year of the number of experience in livelihood activities will reduce the number of insurgent activities experienced by 2% point, all things being equal. This could be a pointer revealing that respondents who have more years of experience in their livelihood activities understand the terrain and their locality better and are able to take adequate precaution against insurgent attacks than respondents who had lesser experience in livelihood activities.

The respondents having farming as their major livelihood activity were 24% point more susceptible to insurgency than civil servants and those whose main livelihood activities were business. It can also be said that the respondents having farming as their major livelihood activity

Table 4.7: Maximum likelihood estimates of the tobit regression model for factors affecting farmers' susceptibility to insurgency

| Variable | Eq1 | Eq2 |
|---|---|---|
| Male | -0.23 | -1.6 |
| | (0.18) | (1.11) |
| Gubio LGA | -0.05 | -0.18 |
| | (0.11) | (0.68) |
| Magumeri LGA | -0.47*** | -2.41*** |
| | (0.12) | (0.72) |
| Married (Marital Status) | 0.29*** | 1.86*** |
| | (0.08) | (0.49) |
| Livelihood Experience | -0.02*** | -0.1*** |
| | (0.004) | (0.03) |
| Age | 0.002 | 0.01 |
| | (0.01) | (0.03) |
| Ln asset | -0.05 | -0.04 |
| | (0.04) | (0.23) |
| Land size | -0.01 | -0.02 |
| | (0.02) | (0.08) |
| Farming | 0.24** | 1.2 |
| | (0.11) | (0.61) |
| Cooperative | 0.11 | 0.44 |
| | (0.09) | (0.51) |
| Ln revenue | -0.1 | -0.95** |
| | (0.07) | (0.43) |
| Community | 0.001 | 0.01 |
| | (0.01) | (0.04) |
| Constant | 3.17*** | 17.46*** |
| | (0.69) | (4.41) |
| F-test | 5.51*** | 4.30*** |
| AIC | 1.24 | 4.77 |
| BIC | -338.88 | 45.67 |
| $R^2$ | 0.76 | 0.74 |
| Pseudo $R^2$ | 0.52 | 0.29 |

Source: Author's estimates from survey data (2016)
***<0.01, **<0.05. AIC= Akaike Information Criterion, BIC= Bayesian Information Criterion. Eq1 = Log insurgency, Eq2= Insurgency

have 24% point more number of insurgent attacks than civil servants and those whose main livelihood activities were business. This could be because some of these respondents with farming as their major occupation have their farms located in bushes far from where people

reside and that made them more prone to ambush by insurgents on their way to farms. Targeting farmers is the easiest way of weakening an agricultural dependent economy because the manufacturing sector and ultimately the consumers will be affected. The finding is unsurprising since food security and poverty have been on the increase in the study area.

### 4.6: Impact of Insurgency on Livelihood (Income and Level of Living) of Farmers

An impact analytical tool is a tool of analysis that seeks to know if the change in a treatment variable has resulted in a change in a given outcome of interest. Although literature has discussed several tools that can be used to assess the impact of a treatment on an outcome, all the methods are dependent on a number of assumptions. In this study, the outcome variables which are income and assets were collected in form of panel data therefore making it suitable to a number of approaches to impact evaluation. As a result of some drawbacks associated with the use of several impact tools, the Chow test method of impact assessment was considered for this study.

As indicated in the methodology, three multiple regression models were estimated where the first is based was on the pooled data - combination of income and assets before and after insurgency – the second was based on 2009 data only and then the third model was based on the 2015 data only. In terms of the summary of the variables used in the regression models as presented in Table 4.8, it can be seen that 5 independent variables were included in the models; 3 dummy variables (sex, Gubio LGA and Magumeri LGA) and 2 continuous variables (age and years of experience in community). There was huge variation in farmers' assets.

The residual variation for the 3 regression models was collected and reported in Table 4.9 in order to compute the F-chow value which provides the test for the null hypothesis that the

parameters in the second (based on 2009 data) and third model (based on 2015 data) are statistically and significantly equal; that is, there is no parameter instability in farmer's income and level of living across 2009 and 2015 given their socioeconomic characteristics (age, sex, number of years spent in community, Gubio and Magumeri LGAs).

Table 4.8: Summary of variables used in the regression models

| Variables | Definition and measurement | Mean | SD |
|---|---|---|---|
| **Pooled** | | | |
| Assets | Deflated value of assets in naira | 75,949.2 | 176,812.3 |
| Income | Deflated value of income in naira | 300,444.13 | 20,178.76 |
| Age | Age of the respondents in years | 32 | 13.07 |
| Sex | 1 if male and 0 otherwise | 0.91 | 0.29 |
| Com | Number of years spent in community | 23 | 12.23 |
| Gubio LGA | 1 if lives in Gubio LGA and 0 otherwise | 0.37 | 0.48 |
| Magumeri LGA | 1 if lives in Magumeri LGA and 0 otherwise | 0.41 | 0.49 |
| **2009 Data** | | | |
| Asset | Deflated value of assets in naira | 74,144.31 | 206,407.5 |
| Income | Deflated value of income in naira | 360,309.04 | 33,201.86 |
| Age | Age of the respondents in years | 25 | 12.71 |
| Sex | 1 if male and 0 otherwise | 0.91 | 0.29 |
| Com | Number of years spent in community | 14 | 12.15 |
| Gubio LGA | 1 if lives in Gubio LGA and 0 otherwise | 0.37 | 0.48 |
| Magumeri LGA | 1 if lives in Magumeri LGA and 0 otherwise | 0.42 | 0.49 |
| **2015 Data** | | | |
| Asset | Deflated value of assets in naira | 77,630. | 138,749.6 |
| Income | Deflated value of income in naira | 280,164.62 | 33,423.92 |
| Age | Age of the respondents in years | 31 | 12.6 |
| Sex | 1 if male and 0 otherwise | 0.91 | 0.29 |
| Com | Number of years spent in community | 20 | 11.71 |
| Gubio LGA | 1 if lives in Gubio LGA and 0 otherwise | 0.38 | 0.49 |
| Magumeri LGA | 1 if lives in Magumeri LGA and 0 otherwise | 0.40 | 0.49 |

**Source**: Author's estimates (2016)

In other words, the F-chow value is used to test that there is no fluctuation in farmers' income and level of living given the socioeconomic characteristics across the period 2009 and 2015. The hypothesis if not accepted would mean insurgency has had an impact on income and level of living. The analysis of the impact of insurgency on income as presented in Table 4.9 shows that there is great variation in income residuals across the three models (pooled data, 2009 data and 2015 data). The F-chow value estimates was 92.59 which was statistically significant at 1 percent level of probability. The implication is that parameters' estimates of the conditional mean of income differ across 2009 and 2015 which technically suggests that there was instability in income across 2009 and 2015. Thus, it can be said that insurgent activities have had an impact on income. This finding totally agrees with Salkida (2012) who stated that insurgency in the north has had a devastating effect on families and livelihood of many economic groups which has resulted to the bringing down of incomes and increasing poverty levels.

The analysis of the impact of insurgency on level of living where asset is used as proxy also presented in Table 4.9 shows practically the same pattern in residual variation as in the case of income only that the difference between the residual variation due to the unrestricted and restricted models was narrow therefore resulting to a low F-chow value which is statistically insignificant. The implication is that the famers' assets given their socioeconomic characteristics were stable across 2009 and 2015 which suggests that insurgency did not have a statistically significant impact on farmers' assets. This finding contradicts that of Adetoro (2012) and also Ogbonnaya and Ehigiamusoe (2013) which emphasized that the advent of the ruinous sect and its nefarious activities has made Nigerians witness untold hardship and wanton destruction of assets owned by both government and private individuals. The finding of this work is quite disturbing

because insurgency is expected to have negative impact on assets (household and livestock assets) of individuals. Reason for this contradiction could be because the respondents were chosen based on the fact that they were victims of insurgent attacks and were most accessible, so it is very possible that the inaccessible farmers probably because they fled their communities had their assets stolen, destroyed and burnt by insurgents. If the respondents were gotten from IDP camps, the impact of insurgency on their assets may have been more likely different. Most dwellers in IDP camps are people who had their assets destroyed and in order to escape for dear lives, found their ways into the camps.

Table 4.9: Chow test estimates of the impact of insurgency on income and level of living (using assets as proxy) among farmers in the study area

| **Source of residual variation** | **SS** | **Rdf** | **F-chow** |
|---|---|---|---|
| **Income** | | | 92.59*** |
| RSS due to pooled data | 169,111,978,181.30 | 568 | |
| RSS due to 2009 data | 43,932,087,023.17 | 287 | |
| RSS due to 2015 data | 40,659,205,321.74 | 275 | |
| RSS due to unrestricted model | 84,591,292,344.92 | 556 | |
| RSS due to restricted model | 169,111,978,181.30 | 568 | |
| **Assets** | | | 0.15 |
| RSS due to pooled data | 16,464,126,757,357 | 505 | |
| RSS due to 2009 data | 11,649,219,467,874.5 | 247 | |
| RSS due to 2015 data | 4,784,834,360,719.84 | 252 | |
| RSS due to unrestricted model | 16,434,053,828,594.30 | 499 | |
| RSS due to restricted model | 16,464,126,757,357 | 505 | |

Source: Author's estimates from survey data (2016)
***<0.01. SS=Sum of Squares, RSS=Residual Sum of Squares, rdf=residual degree of freedom

### 4.6.1: Non-monetary examination of impact of insurgency on agricultural activities

Though the impact analysis of this research is basically quantitative in nature, some level of qualitative information if added will give more meaning to the quantitative results. This section views the impact of insurgence on agricultural activities since farmers were the target of this research. Firstly, it examines some basic farming activities and the percentages of farmers that had their activities affected by insurgency and secondly, it examines the reasons given by farmers for the affected activities.

#### *4.6.1.1: Farmers and farming activities affected by insurgency*

In Figure 4.1, about 91% of the farmers stated that they had difficulties in purchasing inputs as a result of insurgent attacks, about 96% claimed insurgent attacks made it difficult for them to hire labour and about 97% of the farmers were of a strong opinion that insurgency affected sales of their farm produce. This agrees with the finding of Thompson (2010) which indicates that agricultural development cannot occur in the absence of peace and security. This finding further justifies why insurgency had an impact on the farmers' incomes.

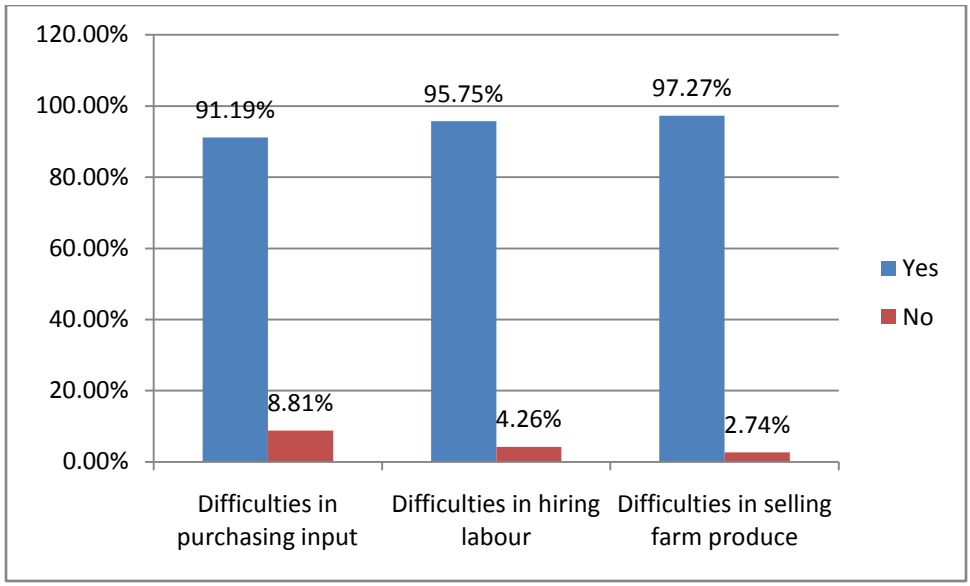



**Figure 4.1:** Farming Activities directly affected by insurgency
**Source:** Author's estimates from survey data (2016)

*4.6.1.2: Reasons for specific farming activities being affected by insurgency*

In Fig. 4.2, 50% of the farmers attributed high prices of input due to scarcity as a major obstacle to the purchase of farm inputs and 35% of the farmers stated destruction of agro-allied shops as a reason limiting their access to farm inputs. This implies that insurgent attacks made farm input scarce owing to disruption of marketing activities and destruction of agro-allied shops where these farmers could have easy access to farm inputs. Limitation in input supply will affect the overall output realized by the farmers at harvest period.

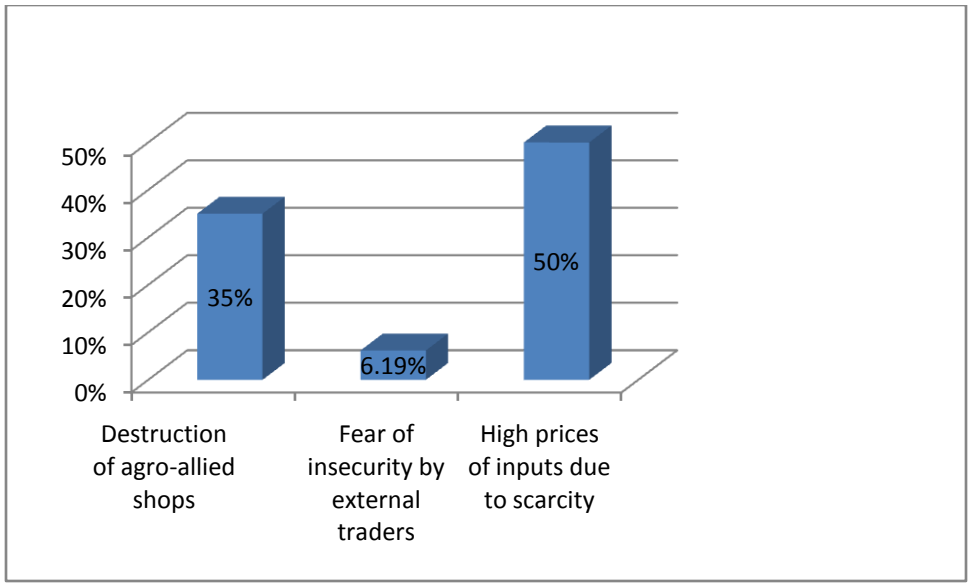



**Figure 4.2:** Reasons for difficulties in purchasing input (n=300)
**Source:** Author's estimates from survey data (2016)

Fig. 4.3 shows that 60% of the farmers had difficulties in hiring labour; because of insecurity, labourers were scared of being attacked by insurgents and so avoided farm works. This implies that the farmers had lesser labour (man power) which invariably will limit area of cultivation thereby resulting to decrease in productivity. In Fig 4.4, 65% of the farmers vehemently stated the fear of being killed at market places as a reason why they had challenges in selling their farm produce. These reasons given by the farmers which were as a result of insurgent attacks are strong enough to influence their output negatively.

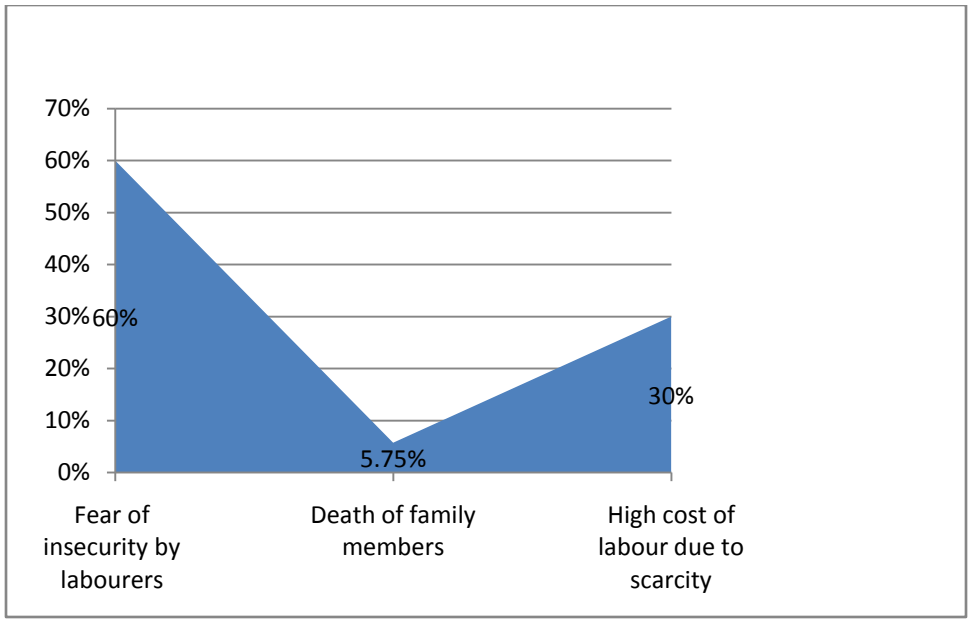



**Figure 4.3:** Reasons for difficulties in hiring labour (n=315)
**Source:** Author's estimates from survey data (2016)

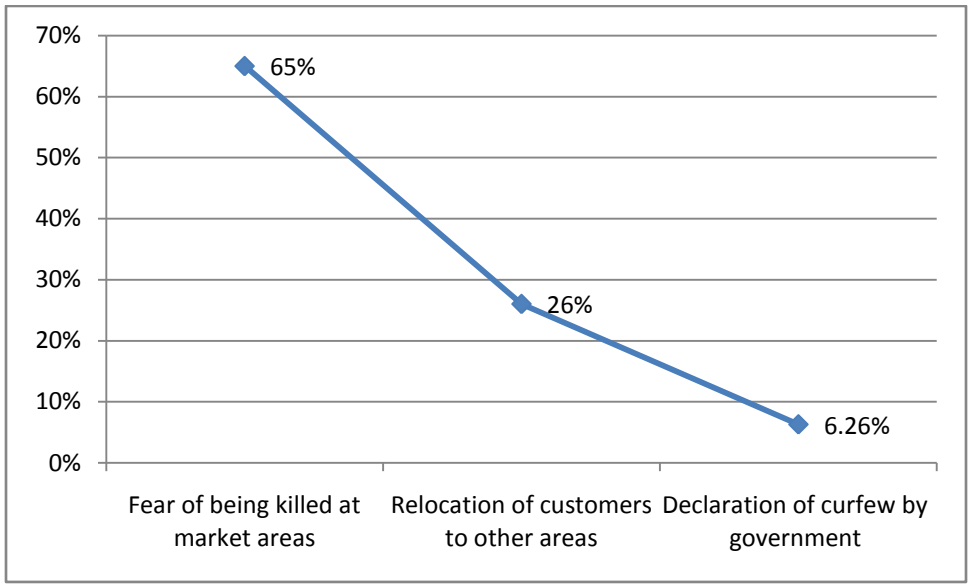



**Figure 4.4:** Reasons for difficulties in selling farm produce. (n=320)
**Source:** Author's estimates from survey data (2016)

### 4.7: Strategies Employed by Farmers in Mitigating and Coping with Insurgency

The negative impact of insurgency on farmers' income is a reality in the study area based on the empirical evidences of this study. Therefore mitigating or coping with it is one of the primary steps to undertake if poverty is to be alleviated in northeastern Nigeria in particular and Nigeria in general. Beside the problems of unemployment, ignorance, religious bigotry and loose borders, poverty was perceived among the farmers as one of the most important individual cause of insurgency. However, the direction of the relationship between insurgency and its causal factors is bilateral because insurgency has the ability to increase poverty, unemployment, ignorance, loose borders and religious bigotry.

#### 4.7.1: Strategies employed by farmers in mitigating insurgent attacks

According to Figure 4.5, 50% of the farmers stated that the use of civilian joint task force was a strategy being employed to shield them from insurgent activities, about 39% of the respondents claimed that dialogue with the terrorists was the strategy they used in fighting insurgency and only about 11% of the farmers indicated temporal reallocation to safer places as a strategy to resist insurgency. Both Okereke (2013) and Hassan (2015) stressed on the effectiveness of the civilian joint task force as a strategy in tackling *Boko Haram*, and are corroborated by this work as 50% of the respondents employed this same approach as a strategy to fight insurgency. All the strategies were actually adopted by the farmers during the period of insurgency which unfortunately is still ongoing but at a much reduced rate.

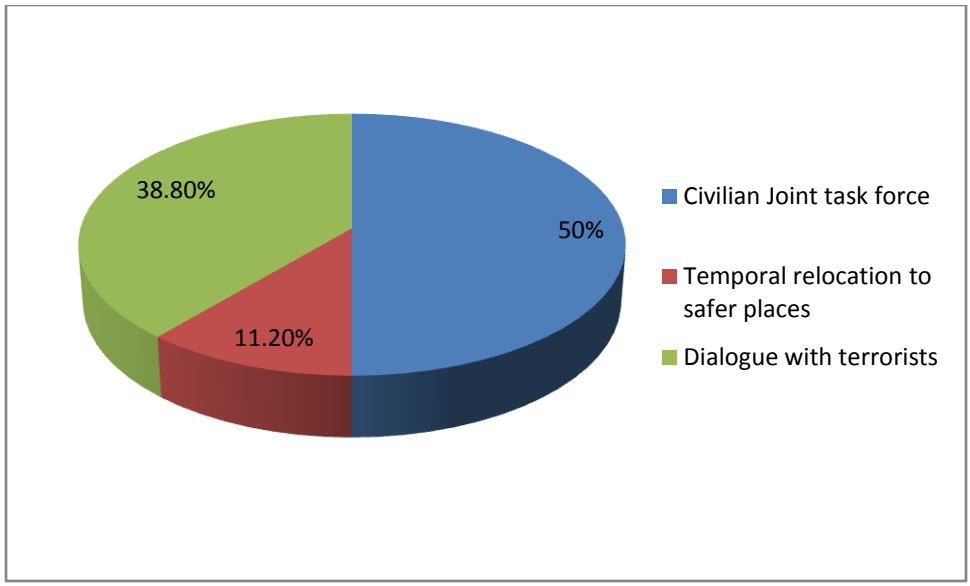



**Figure 4.5:** Strategies employed by farmers in mitigating insurgent attacks
**Source:** Author's estimates from survey data (2016)

### 4.7.2: Coping strategies employed by farmers in surviving after insurgent attacks

In Fig. 4.6, about 55% of the respondents stated they ate from their grain reserves so as to cope after insurgent attacks, about 34% of respondents claimed reduced entering into forest to get fire wood and wild fruits was the means they used in surviving after attacks from insurgent, 6% of the respondents admitted sending their family members to distant relations was how they survived after insurgent attacks and only 5% of the farmers stated avoidance of religious gatherings as their survival strategy after insurgent attacks. This finding totally agrees with Imasuen (2015) who's work revealed that northeastern region of Nigeria has reverted to negative and unsustainable coping strategies whereby meal consumption is decreasing from three meals to one per day and many families had exhausted their food stocks and had resorted to eating grain reserved as seedlings for the next planting season.

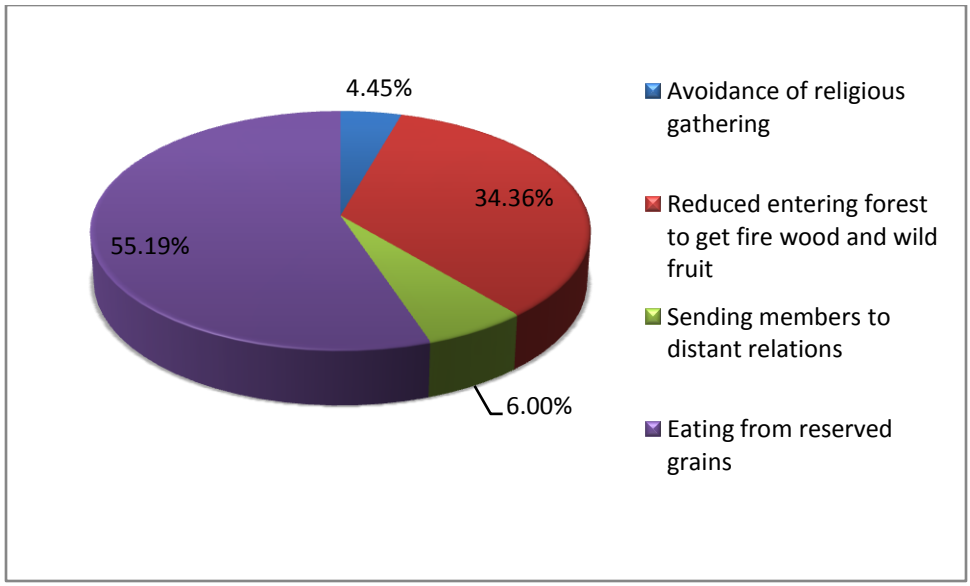



**Figure 4.6:** Coping strategies employed by farmers in surviving after insurgent attacks
**Source:** Author's estimates from survey data (2016)

## 4.8: Test of Hypotheses

### 4.8.1: Null hypothesis 1: There is no significant relationship between socio-economic factors of farmers and their susceptibility to insurgency

From Table 4.10, in testing the hypothesis that there is no significant relationship between socio-economic factors of farmers and their susceptibility to insurgency, the F-calculated was found to be greater than the F-tabulated and also significant at 1 percent. As a result of this finding, the hypothesis was rejected. In other words, there is significant relationship between factors associated with farmers and their susceptibility to insurgency; meaning Magumeri LGA, marital status, experience in livelihood activities and farming which are factors associated with farmers, affect their susceptibility to insurgency. Magumeri LGA and experience in livelihood activities made the farmers less susceptible to insurgent attacks while farming occupation and respondents who had married as their marital status were more susceptible to insurgent attacks.

Table 4.10: Test of significance of the relationship between socio-economic factors of farmers and their susceptibility to insurgency:

| Hypothesis | Test-statistic | F-calculated | F- tabulated |
|---|---|---|---|
| $H_{01}$ | F-test | 5.51*** | 2.37 |

Source: Author's estimates from survey data (2016)

$H_{01}$=there is no significant relationship between socio-economic factors of farmers and their susceptibility to insurgency. ***<0.01

### 4.8.2: Null hypothesis 2: There is no significant relationship between insurgency and livelihoods of farmers

The test for this hypothesis was achieved by considering the income and level of living of the farmers which were used as proxies for measuring their livelihoods. Therefore, test was done on two sub-hypotheses: firstly, there is no significant relationship between insurgency and farmers' income ($H_{o2}$) and secondly, there is no significant relationship between insurgency and farmers' level of living ($H_{o3}$). On testing for the null hypothesis that there is no significant relationship between insurgency and farmers' income ($H_{o2}$), the F-calculated as seen in Table 4.11 was found to be greater than the F-tabulated and statistically significant at one percent level of probability, so the null hypothesis was rejected; meaning that, insurgency has a significant impact on farmers' income in the study area. Therefore, it can be authoritatively claimed that farmers' sources of livelihood were affected by the insurgency which further culminated into affecting their income negatively.

On testing for the null hypothesis that there is no significant relationship between insurgency and farmers' level of living using asset as proxy ($H_{o3}$), the F-calculated as seen in Table 4.11 was found to be lower than the F-tabulated and hence statistically insignificant. Therefore, the null hypothesis was not rejected; meaning that, insurgency does not have a significant impact on

farmers' assets in the study area. This means that the assets of the farmers such as cutlass, hoes, tractors, motor bikes, animals and so on had no significant variation between 2009 and 2015 of the insurgency; see Tables 4.12 and 4.13. Being contrary to expectation, the areas (Magumari, Gubio, Geidam and Buni-Gari communities) in which respondents were selected could be a major pointer for this contradiction. The aforementioned areas were accessible and could still have farmers retaining their assets compared to inaccessible areas (Buni-Yadi, Goneri, Isaram and Ngamma) where the assets of farmers might have been stolen and destroyed by insurgents.

Table 4.11: Test of significance of the relationship between insurgency and farmers' livelihood (income and level of living are used as proxies)

| **Hypothesis** | **Test-statistic** | **F-calculated** | **F-tabulated** |
|---|---|---|---|
| $H_{o2}$ | F-test | 92.59*** | 2.83 |
| $H_{o3}$ | F-test | 0.15 | 1.785 |

Source: Author's estimates from survey data (2016)
**<0.05. $H_{o2}$=there is no significant relationship between insurgency and farmers' income $H_{o3}$= there is no significant relationship between insurgency and farmers' level of living( assets are used as proxy)

From the household and animal assets of farmers as seen in Tables 4.12 and 4.13, it can be clearly seen that the variations in asset possessions by the farmers between years 2009 and 2015 were very narrow and thus insignificant; though the variations were more obvious in animal asset possessions as the year 2015 recorded farmers having more animals than the year 2009. This may be due to the fact that insurgency made it difficult for farmers to sell their assets in markets, it could also be that farmers who do most times use their assets as security for income carefully hid them beyond the reach of the insurgents.

Table 4.12: Household assets of respondents

| Total Household Assets | Total number owned in 2009 (Before insurgency) | Total number owned in 2015 (During insurgency) |
|---|---|---|
| Cell phone | 497 | 593 |
| Video | 71 | 42 |
| Radio | 409 | 399 |
| Television | 150 | 181 |
| Grinding Machine | 15 | 14 |
| Motor cycle | 299 | 253 |
| Bicycle | 222 | 213 |
| Wheel barrow | 177 | 119 |
| Hoes | 501 | 412 |
| Machetes/cutlasses | 552 | 510 |
| Axes | 77 | 81 |
| Spade/Shovel | 171 | 134 |
| Sprayers | 120 | 99 |
| Car | 20 | 29 |
| Tractor | 0 | 0 |
| Refrigerator | 56 | 43 |

**Source:** Author's estimates from survey data (2016)

Table 4.13: Animal assets of respondents

| Total Livestock Type | Total number owned in 2009 (Before insurgency) | Total number in 2015 (During insurgency) |
|---|---|---|
| Bull | 100 | 150 |
| Cows | 111 | 117 |
| Goats | 398 | 420 |
| Sheep | 246 | 300 |
| Ducks | 50 | 72 |
| Chickens | 1050 | 2000 |
| Turkey | 100 | 178 |
| Pigs | 67 | 77 |
| Rabbits | 450 | 555 |

**Source:** Author's estimates from survey data (2016)

# CHAPTER FIVE

# SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 5.1: Introduction

This chapter presents the summary of major findings and the, conclusions and recommendation drawn from the findings. Also, contribution to knowledge and suggestions for further research are also stated in this chapter.

## 5.2: Summary of Findings

This research assesses the impact of insurgency on livelihood (using income and level of living as surrogates) of farmers in northeastern Nigeria. Multi-stage sampling technique was employed in this study. Borno and Yobe states were purposely selected and from these states, Magumari, Gubio, Geidam and Gujba LGAs were also purposively selected. For data collection, one village was purposively selected from each of the LGAs from where systematic random sampling technique was employed in selecting respondents. In all, 353 farmers were randomly selected for enumeration and the data were collected through questionnaire. Descriptive and inferential statistics were used to analyze the data.

The socio-economic characteristics of the respondents revealed from the analysis that majority of the respondents were male (89.36%) and had a mean age of 31years with a standard deviation of 13years. About half (51%) of the respondents had no formal education, 62.31% of respondents were married and the mean of respondents' household size was 8. About 63% of the respondents were not members of any cooperative and among the three categories of main livelihood activities, farming was found to have the highest percentage (46.81%) with 23years

average experience and a standard deviation of 13.8years. Households' assets of respondents were estimated at ₦53, 950.6 kobo on average with a standard deviation of ₦212, 463.82 kobo in 2009 and ₦34, 331.73 kobo on average with a standard deviation of ₦31, 965.38 in 2015. Also, in terms of livestock, the respondents' assets were estimated at ₦37, 182.44 kobo on average with standard deviation of ₦48, 314.14 kobo in 2009 and ₦61, 583.73 kobo on average with a standard deviation of ₦155,669.17 kobo in 2015. The respondents' average income in 2009 was estimated at ₦360,309.04 kobo with a standard deviation of ₦33,201.86 kobo while the average income in 2015 was estimated at ₦280,164.62 kobo with a standard deviation of ₦33,423.92 kobo.

On the nature and frequency of insurgency, findings from the analysis revealed that 45.62% of respondents' response stated sporadic shooting as the most prevalent form of attack while 30.54% of respondents' response claimed arson was the most prevalent form of attack. A respondent averagely experienced arson once, sporadic shooting twice, kidnapping once, suicide bombing thrice, bombing with improvised explosive devices twice, forced recruitment once and threats 10 times. Examining the perception of the farmers on the causes of insurgency revealed from the pooled data that all the respondents perceived unemployment as a cause of insurgency and about 90% of the respondents are of the opinion that poverty is a cause of insurgency. Exactly 46.81% of the respondents are indifferent or undecided whether unemployment, poverty, ignorance, religious bigotry and loose borders jointly cause insurgency while 43.46% of the respondents believe that unemployment, poverty, ignorance, religious bigotry and loose borders are joint causes of insurgency. The gologit model further shows that male farmers, older farmers and farmers with large farms strongly believed that unemployment, poverty, ignorance, religious

bigotry and loose borders are joint causes of insurgency than their female farmers, younger farmers and farmers with smaller farms respectively.

The determination of factors that influences farmers' susceptibility to insurgency revealed that Magumeri LGA, marital status, experience in livelihood activities and farming were the only factors associated with farmers that influence their susceptibility to insurgency. The F-Chow value estimate (92.59***) for income was statistically significant at 1 percent level of probability; meaning that insurgent activities had an impact on income. Also, the F-Chow value estimate (0.15) for asset was statistically insignificant; meaning that insurgent activities had no impact on level of living measured by asset. The impact of insurgency on agricultural activities was clearly obvious as about 91% of the farmers claimed their purchase of inputs was affected by insurgent activities, 96% of the farmers stated hiring of labour was affected by insurgency and 97% of the farmers were of the opinion that sales of farm produce was affected by insurgent activities. The impact of insurgency on income and agricultural activities further validates the conceptual model of this study which proposed that insurgent activities have an impact on income. Finally, findings from the study revealed that 50% of the farmers stated the use of civilian joint task force as a strategy being employed to shield them from insurgent activities and about 55% of the farmers claimed eating from reserved grains was the strategy they employed to cope after attacks from insurgents.

## 5.3: Conclusion

Poverty and unemployment were stated to be the major perceived causes of insurgency in the region. If interventions are not quickly made to salvage the situation, insurgency in the region may escalate to a level beyond the control of the government. The susceptibility of farmers to insurgency was higher among the married respondents and those who had farming as their major source of livelihood. If insurgency is not curtailed in the region, more marriages and farming activities will be targeted and this will threaten the procreative function of marriages and food supply in the region. Insurgency drastically reduced the average household income to the tune of approximately 22.24% within a space of six years. If the insurgency is to prolong, there will no doubt be further deterioration in the income of people which will worsen the already bad education attainment level and asset acquisition in the northeast zone; since finance is a major requirement for quality education and possession of productive assets.

## 5.4: Recommendations

Based on the findings of this study, it is suggested that government and other development actors/partners should put in place the following as policy measures to help in fighting insurgency and preventing future occurrence of any such.

1. It was discovered in this study that unemployment and poverty were the major perceived causes of insurgency. It is therefore recommended that government, international or local NGOs, private organization and rich public-spirited philanthropic individuals should intensify efforts in economically empowering people in the study area. This can be achieved through training of people in entrepreneurial skill acquisition, giving out soft

loans to enable people with good business ideas start up and building more industries which will help to employ more people. The conflict resolution approach of the Social Identity Theory which involves the coming together of parties concerned to sit and discuss on way forward to resolving issues should also be adopted here so as to know the poverty alleviation interventions that will be best for the people.

2. It was revealed from this study that insurgency had an impact on the income of the respondents. It is therefore recommended that the government should identify victims of these attacks and assist them financially and materially. Assisting the people will help arrest different forms of frustration amongst them which if not nipped in the bud may result to several aggressions which could birth other forms of insurgencies in future.

3. Findings from this study revealed that civilian joint task force was the major mitigating strategy being used to fight insurgent attacks by the respondents. Recommendation for this is that the government should employ these local forces and empower them with weapons so they can help the Nigerian army in locating and fighting the insurgents since they understand the terrain more than the army. If some of these civilian task force are neglected by the government, they could be bought over by other interest groups who may use them to fight the government and this justifies Dahrendorf‘s (1959) perception of conflict which pointed out that aggrieved persons could join interest groups to create conflict in the society.

4. It was also revealed in this work that farming was the major livelihood source of the respondents and a high percentage of the respondents were young. It is therefore

recommended that more agricultural innovations and incentives be introduced to these affected areas to help boost agriculture.

5. Arson and sporadic shooting were discovered to be the major forms of attacks by insurgents. It is thus strongly recommended with no remorse that laws and regulations guiding the possession of weapons in Nigeria be reviewed so that peaceful and law abiding people in troubled areas who could afford these weapons for self defense can be licensed.

### 5.5: Suggestions for Further Research

The following areas which could not be covered by this study have been suggested for further research.

i. Similar research should be replicated in other affected northern states using a different methodological approach such as the focus group discussion in data collection to further quantitatively analyze the impact of insurgency on the livelihoods of farmers.

ii. The politics behind insurgency in Nigeria to understand reasons for kidnap of some people while others are not (e.g Chibok school girls) and unmask the financiers of insurgency.

### 5.6: Contributions to Knowledge

i. Insurgency drastically reduced the average household income of the respondents to the tune of approximately 22.24% within a space of six years.

ii. Civilian joint task force and eating from reserved grains were the major strategies used by the respondents against insurgency during and after attacks respectively. About 55% of the respondents indicated that eating from reserved grains was the major coping strategy used after insurgent attacks while 50% of the respondents stated the use of civilian joint task force as the major mitigating strategy used in fighting insurgency.

iii. Purchase of farm inputs, hiring of labour and sales of farm produce were affected by insurgent activities. About 91% of farmers had their farm input purchase affected, about 96% of farmers had hiring of labour affected and about 97% of farmers had difficulties in selling their farm produce.

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## APPENDIX I

## QUESTIONNNAIRE

Dear Respondent**,**

This questionnaire is from a student of Department of Geography and Environmental Management, Faculty of Physical Sciences, Ahmadu Bello University, Zaria. Please, respond or tick where necessary. All information will be treated with utmost confidentiality and will strictly be used for the purpose of research only. Thanks for your cooperation.

## BACKGROUND INFORMATION OF THE RESPONDENT

Questionnaire No……..…..

Village…… L.G.A……State …….…….

Date……../……../2016.

## SOCIO-ECONOMIC CHARACTERISTICS OF FARMERS

1. **Sex**: (a) Male (b) Female
2. **Age:** what range below do your age fall into?
    a. (10-20)
    b. (21-30)
    c. (31-40)
    d. (41-50)
    e. (51-60)
    f. (Above 60)
3. What is the highest level of your educational attainment?
    a. No formal education
    b. Adult education
    c. Primary education
    d. Secondary education
    e. NCE/OND
    f. University education
4. **Marital Status:** (a)Never Married ( ) (b) Married ( ) (c) Widowed ( ) (d) Divorced ( )
5. What is your number of years on residence in this community? ----------yrs
6. **Household Size:** How many people are in your household?.....
7. How many members of your household contribute to your farming activities?
    a. Female Children (<18yr)…….
    b. Male Children (<18yr)…….

c. Adult Male (18yr and above)…….
d. Adult Female (18yr and above)…….

**8.** Are you a member of any cooperative group? Yes ( ), No ( )

**9.** If yes, give name(s) of such group(s): ……., ..…..……..., ……

**10.** What are the benefit(s) you derived from being a member?

a) Input ( )
b) Credit ( )
c) Irrigation Machine ( )
d) Training ( )

**11.** What is your major livelihood activity?

a. Farming
b. Trading
c. Civil/Public Service
d. Others (Specify): ……

**12.** How long have you been in this livelihood option?.....

**13.** Have you any other source(s) of livelihood? (a) Yes ( ) (b) No ( )

**14.** If yes, name it (them): using the table provided below

| **S/N** | **For Year 2009** | **For Year 2015** |
|---|---|---|
| I | | |
| Ii | | |
| Iii | | |
| Iv | | |

**15.** Answer the questions on land, extension contact, credit received and income using the table below.

| **Items** | **In Year 2009** | **In Year 2015** |
|---|---|---|
| Total farm land owned(ha) | | |
| Total farm size cultivated(ha) | | |
| Number of Extension contact | | |
| Amount of credit received (₦) | | |
| Estimated annual income (₦) | | |

**NATURE AND FREQUENCY OF INSURGENCY**

**16.** Have you experienced insurgency attack(s) in your community? (a) Yes (b) No

**17.** If yes, in which of the following forms? (Tick as many as applicable)

a) Arson
b) Sporadic shooting
c) Kidnapping
d) Suicide bombing
e) Bombing using improvised explosive devices
f) Forced recruitment
g) Threats
h) Others(specify)----------

**18.** How many times have such attacks occurred between 2010 and 2015?

a) Arson ----------times
b) Sporadic shooting----------times
c) Kidnapping----------times
d) Suicide bombing----------times
e) Bombing using improvised explosive devices-------times
f) Forced recruitment----------times
g) Threats----------times
h) Others(specify)----------times

**19.** How serious were these attacks in your community?

a) Very serious ( )
b) Serious ( )
c) Somewhat serious ( )
d) Not serious ( )
e) Not sure ( )

**20.** Give reason for answer chosen in question 19

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**21.** Did the security force intervene during the attack(s)?
(a) Yes (b) No

**22.** If yes, how successful was their intervention?

a) Very successful ( )
b) Successful ( )
c) Not sure ( )
d) Unsuccessful ( )

**23.** Give reason(s) for answer chosen in question 22

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**PERCEPTIONS OF THE FARMERS ON CAUSES OF INSURGENCY**

**24.** Which factor(s) do you think gave rise to insurgency in your community?

| **Causes** | **Strongly agreed** | **Agreed** | **Indifferent** | **Disagree** | **Strongly disagree** |
|---|---|---|---|---|---|
| Unemployment | | | | | |
| Poverty | | | | | |
| Loose borders | | | | | |
| Ignorance | | | | | |
| Religious bigotry | | | | | |
| **Joint cause** | | | | | |

**25.** Give reason(s) for the causal factor(s) you strongly agreed with for in 30.

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**IMPACT OF INSURGENCY ON INCOME AND LEVEL OF LIVING**

**26. (a)Household Assets**

| **Total Household Assets** | **Total number owned in 2009** | **Estimated monetary value(₦) in 2009** | **Total number owned in 2015** | **Estimated Monetary value in 2015** | **Give reason(s) for observed changes between 2009 and 2015** |
|---|---|---|---|---|---|
| Cell phone | | | | | |
| Video | | | | | |
| Radio | | | | | |
| Television | | | | | |
| Grinding Machine | | | | | |
| Motor cycle | | | | | |
| Bicycle | | | | | |
| Wheel barrow | | | | | |
| Hoes | | | | | |
| Machetes/cutlasses | | | | | |
| Axes | | | | | |
| Spade/Shovel | | | | | |
| Sprayers | | | | | |
| Others(specify): …… | | | | | |

**(b)Livestock Assets**

| **Total Livestock Type** | **Total number owned in 2009** | **Estimated monetary value (₦) in 2009** | **Total number in 2015** | **Estimated monetary value(₦) in 2015** | **Give reason(s) for observed changes between 2009 and 2015** |
|---|---|---|---|---|---|
| Bull | | | | | |
| Cows | | | | | |
| Goats | | | | | |
| Sheep | | | | | |
| Ducks | | | | | |
| Chickens | | | | | |
| Turkey | | | | | |
| Pigs | | | | | |
| Rabbits | | | | | |
| Others(specify) :…… …… …… ……..... **.....** | | | | | |

**(C).**Give crops grown, estimated area cultivated, output and income for the most important crops grown in 2009.

| **Crops/ mixture** | **Area(ha) cultivated** | **Output (Kg)** | **Unit price (₦)** | **Estimated total value (₦)** |
|---|---|---|---|---|
| (i) | | | | |
| (ii) | | | | |
| (iii) | | | | |
| (iv) | | | | |
| (v) | | | | |
| (vi) | | | | |

Grain = 100kg bag; Tubers and Leafy= use local unit of measurement

**(D).**Give crops grown, estimated area cultivated, output and income for the most important crops grown in 2015.

| **Crops/ mixture** | **Area (ha) cultivated** | **Output (Kg)** | **Unit price (₦)** | **Estimated total value (₦)** |
|---|---|---|---|---|
| (i) | | | | |
| (ii) | | | | |
| (iii) | | | | |
| (iv) | | | | |
| (v) | | | | |
| (vi) | | | | |

Grain = 100kg bag; Tubers and Leafy= use local unit of measurement

**(E)** List other income generating activities you engaged in 2009

| **Activities** | **Approximate income/month** | **Approximate income/annum** |
|---|---|---|
| i) | | |
| ii) | | |
| iii) | | |
| iv) | | |

**(F)** List other income generating activities you engaged in 2015

| **Activities** | **Approximate income/month** | **Approximate income/annum** |
|---|---|---|
| i) | | |
| ii) | | |
| iii) | | |
| iv) | | |

**NON –MONETARY IMPACT OF INSURGENCY ON HOUSEHOLD**

**27.** Did the insurgency activities hinder your purchase of farming inputs?
(a) Yes ( ) (b) No ( )

**28.** If yes, give reason(s):

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**29.** Did the insurgency activities affect your hiring of labour for farming?
(a) Yes ( ) (b) No ( )

**30.** If yes, give reason(s):

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**31.** Was your selling and buying of farm produce affected by insurgency activities?
(a) Yes ( ) (b) No ( )

**32.** If yes, give reason(s):

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**33.** Which of the following did the insurgency activities affect? (Tick as many as applicable)

a) getting wild food from the forest
b) getting fire wood from the forest
c) sending household members to distant relation
d) going to religious places for prayers
e) others (specify)……..

**34.** Give reason(s) for answer(s) chosen in question 33.

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**COPING STRATEGIES EMPLOYED**

**35.** How has the community handled attacks from insurgents?

a) Use of civilian JTF(Joint Task Force)
b) Dialogue with the terrorists
c) Temporal relocation to safer places
d) Others (specify)…….

**36.** How successful was the above measure used in ameliorating the situation?

a) Very successful ( )
b) Successful ( )
c) Not sure ( )
d) Unsuccessful ( )

**37. How has the community survived after attacks from insurgent activities?**

a) Avoidance of religious gatherings
b) Sending household members to distant relations
c) Reduced entering forest to gather wild food and fire wood
d) Others (Specify)……

**38. How successful was the above measure in question 37?**

a) Very successful ( )
b) Successful ( )
c) Not sure ( )
d) Unsuccessful ( )

**39.** Would you say the Buhari government has reduced insurgency activities in your community? (a) Yes (b) No

**40.** If yes, what aspect of insurgency activities has the Mohammadu Buhari's government reduced?

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**THANK YOU FOR YOUR TIME**

**Appendix 2:** Distribution of respondents based on farming activities directly affected by insurgency

| Activities | Frequency | | Percentage | |
|---|---|---|---|---|
| | Yes | No | Yes | No |
| **Difficulties in purchasing input** | 300 | 29 | 91.19 | 8.81 |
| **Difficulties in hiring of labour** | 315 | 14 | 95.75 | 4.26 |
| **Difficulties in selling farm produce** | 320 | 9 | 97.27 | 2.74 |

**Appendix 3:** Distribution of respondents based on reasons for specific farming activities being affected by insurgency

| Activities | Frequency | Percentage |
|---|---|---|
| **Difficulties in purchasing input** | | |
| Destruction of agro-allied shops | 115 | 35.00 |
| Fear of insecurity by external traders | 20 | 6.19 |
| High prices of inputs due to scarcity | 165 | 50.00 |
| **Difficulties in hiring of labour** | | |
| Fear of insecurity by labourers | 197 | 60.00 |
| Death of family members | 19 | 5.75 |
| High cost of labour due to scarcity | 99 | 30.00 |
| **Difficulties in selling farm produce** | | |
| Fear of being killed at market areas | 214 | 65.00 |
| Relocation of customers to other areas | 85 | 26.00 |
| Declaration of curfew by Government | 21 | 6.26 |

**Appendix 4:** Strategies Employed by Farmers in Mitigating and Coping with Insurgency

| Strategies | Frequency | Percentage |
|---|---|---|
| **Strategies for mitigating insurgency** | | |
| Civilian Joint Task | 164 | 50.00 |
| Temporal relocation to safer places | 37 | 11.20 |
| Dialogue with terrorists | 128 | 38.80 |
| **Strategies for coping with insurgency** | | |
| Eating from reserved grains | 181 | 55.19 |
| Reduced entering forest to get fire wood and wild fruit | 113 | 34.36 |
| Sending members to distant relations | 20 | 6.00 |
| Avoidance of religious gatherings | 15 | 4.45 |