IMPACT OF THE MILLENNIUM DEVELOPMENT GOALS (MDG) ON POVERTY: A CASE STUDY OF SELECTED CROP FARMERS IN LAFIA LOCAL GOVERNMENT, NASARAWA STATE, NIGERIA

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DECLARATION

I, Tijjani Mamman hereby solemnly declare that this research work is the result of my efforts which has been carried out under the supervision of Prof. Mike Duru and Dr. Peter Njiforti and has not been presented anywhere for the award of a degree. All sources in the work have been duly acknowledged.

…… ……

Tijjani Mamman Date

CERTIFICATION

This is to certify that this thesis titled "Impact of the Millennium Development Goals (MDGs) On Poverty: Case Study of Selected Crop Farmers in Lafia Local Government, Nasarawa State" by Tijjani Mamman meets the regulations governing the award of Master of Science Degree in the Department of Economics, Ahmadu Bello University, Zaria. This thesis is this day approved for its contribution to knowledge and literary presentation.

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DEDICATION

This thesis is dedicated to my beloved parents M. M. Yakari and M. Zara Kachallah.

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ABSTRACT

One of the primary objectives of government intervention policies of every nation is to develop a mechanism which aims at improving the wellbeing of its citizenry, especially the poor. However, with all these mechanisms put in place, poverty remains a global challenge, which prompted the attention of the global community under the umbrella of the United Nations General Assembly, to develop a time – bound framework that stimulates the need to tackling the problem of poverty among other things, which led to establishment of the Millennium Development Goals (MDGs). Based on the above scenario, this study assessed the Impact of the Millennium Development Goals (MDGs) on Poverty: case Study of Selected crop farmers in Lafia Local Government, Nasarawa State, Nigeria. Data were obtained from 346 respondents which include 227 and 119 MDGs Projects beneficiary and non – beneficiary farmers respectively. The data were collected based on a subsample of respondents among the Rice farmers, Maize farmers and Yam farmers' beneficiaries and non beneficiaries respectively. Descriptive statistical tools were used to determine the socioeconomic characteristics of the farmers, net farm income difference and double difference estimator were employed to find out the level of profitability of the beneficiaries. In addition, Foster Greer Thorbecke (FGT) poverty indices were also used to assess the poverty status of the respondents while logit regression was employed to measure the determinants of poverty among the beneficiaries. Findings of the study show that 56.1% of the beneficiaries were males, 73.0% were youth, 51.1% were married and 97.5% have attended formal education at various levels. The MDGs introduced different innovations to improve on the various crop productions like land acquisition, access to improve variety, drought resistant specie etc. The result also revealed higher rate of profitability among the MDGs beneficiaries than non beneficiaries after the MDGs intervention where the rate of profit obtained by the beneficiaries increased by 129.3% for the rice farmers as against the 69.0% obtained by the non beneficiaries, 182.6% for the maize farmers as against the 63.4% obtained by the non beneficiaries as well as 180.4% for the yam farmers as against the 68.1% obtained by the non beneficiaries. The result also indicated a positive mean double profit difference of about ₦ 96,266.6 for the rice farmers, ₦121, 367.3 for the maize farmers and ₦ 152,051.4 for the yam farmers. Results from the FGT indices indicated higher poverty incidence before the MDGs intervention than during the intervention and also higher incidences among the control group than the experimental group after the intervention. Poverty incidence for the core poor and moderate poor among the beneficiaries was 40.5% and 35.2% before the intervention, 33.0% and 23.8% after the intervention respectively while the incidence among the non beneficiaries was 48.7% and 34.4% before the intervention, 44.5% and 31.1% after the intervention respectively. Poverty gap of the core poor and moderate poor among the beneficiaries was 0.33 and 0.20 before the intervention, 0.11 and 0.04 after the intervention respectively while the gap among the non beneficiaries was 0.38 and 0.15 before the intervention, 0.23 and 0.05 after the intervention respectively. Poverty severity of the core poor and moderate poor among the beneficiaries was 0.40 and 0.26 before the intervention, 0.18 and 0.10 after the intervention respectively while the severity among the non beneficiaries was 0.42 and 0.22 before the intervention, 0.32 and 0.12 after the intervention respectively. This situation implied that MDGs intervention projects have improved poverty status of the beneficiaries. Findings from the logit regression revealed larger family size and higher number of dependents in school increased the likelihood of a beneficiary being poor while access to formal education, affordability of at least three square meals a day, access to improved healthcare facilities, farming as major occupation and good dwelling reduced the likelihood of a beneficiary being poor. Therefore, the study concludes that MDGs intervention had impacted positively on poverty status of the beneficiaries. The study recommends that the project innovations should be replicated in more communities across the state. There is need to intensify public enlightenment in order to persuade the farmers to comply with some of the MDGs production innovations. Farmers should be encouraged to establish engage in agriculture related processing industries in their areas such as Rice Mills, Maize processing Factories.

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background to the Study

Millennium Development Goals (MDGs) is a set of purposive targets made by the global community under the umbrella of the United Nations declaration platform in 2000. It is aimed at institutionalizing reduction of extreme poverty and hunger, achieve universal primary education, promote gender equality, reduce child and maternal mortality, and ensure environmental sustainability among others, by the year 2015. Poverty is a global issue which depicts unprecedented distress to mankind. Poverty has a devastating influence on human beings, which humiliates and dehumanizes its victims (Obadan, 2001 and Anger, 2010). It is the situation that exists when people lack the means to satisfy their basic needs such as nutrition, housing, clothing and other essentials of life (Akindeye, 2013). World Bank (1988) observed that poverty in developing countries is on the rise. The increasing and high level of poverty in developing countries has serious implications for the world economy. Hence, reducing poverty in developing countries has become the most persistent challenge facing the world today (cited in Akindiya 2013).

In Nigeria, poverty remains a serious challenge to the government over the years, which impedes psychological and social standard of its citizens and reduces their capacity to expand their choices, express their freedom and dignity. According to Adejuwon and Tijani (2012), it has been observed that poverty pervades the Nigerian people which make it a severe task for the government to eradicate. Eradicating poverty should be an issue of greatest priority for the Nigerian government as it is an important objective in policy formulation and implementation in

the emancipation of human being (UNDP 2003). Duru (2008) observed that the state of poverty in Nigeria is permeative which is scared to be deep and wide across the country. He also maintained that a Nigerian poor is voiceless, powerless, deprived and lacked basic necessity of life.

Hence, concerns about the menace of poverty and other related maladies encountered by the global economy particularly the developing countries necessitate the desire of the world leaders under the platform of the Millennium Summit in the year 2000 to develop a strategy capable of addressing the devastating problems, which led to the establishment of the Millennium Development Goals (MDGs). As noted by Isa (2008), the prevailing mass poverty has been seen as a challenge to macroeconomic stability and a long – term growth breakage in addition to major ethical and political problems. This scenario stimulates the need to addressing the problem of poverty, promoting development and providing enabling environment for its sustainability, which triggered some potential changes in some international organizations such as the United Nations General Assembly's adoption of Millennium Declaration in September, 2000, which gave birth to the Millennium Development Goals (MDGs).

The Millennium Development Goals (MDGs) have witnessed a serious socio – political commitment from the world leaders which led to a firm agreement that poverty alleviation should be the main aim of the global development endeavour. Segun (2011) observed that the establishment of MDG represents a strategy to get out of poverty trap. The Millennium Development Goals (MDGs) were aimed at reducing excess hunger and poverty in the 189 member countries of the United Nations (UN) by the year 2015. Igbuzor (2006a) suggested that, in order to address the menace of poverty and promote sustainable development, the United Nations Millennium Declaration was adopted in September 2000 at the largest ever gathering of

heads of States committing members states in both developed and emerging economies to do all they can to eradicate poverty, promote human dignity and equality and achieve peace, democracy and environmental stability. The goals include those dedicated to eradicating poverty, achieving universal primary education, promoting gender equality and empowering women, reducing child mortality, improving maternal health, combating HIV/AIDS, malaria and other diseases, ensuring environmental sustainability and developing a global partnership for development.

In Nasarawa state, the activities of poverty alleviation efforts under the platform of the MDGs led to establishment and execution of various schemes and projects. Since the commencement of MDGs intervention projects through the Conditional Grant Scheme (CGS) in Nasarawa state, efforts have been made to address this goal. According to the Nasarawa state MDGs office (2015) the Local Government Conditional Grant Scheme (CGS – LG) had expanded the sum of N500, 000 to each of the 150 cooperative societies across the state. This is in addition to the distribution of more than 1,000 tricycles (keke Ta'al) and 1,000 motorcycles (going) to the masses for commercial purposes. The major focus of the cooperative businesses is on farming activities such as crop (Rice, Maize, Yam, Cassava and Egusi) and livestock (poultry, fishery, piggery, cattle fattening etc). The predominant beneficiaries are women and youth.

1.2 Statement of the Research Problem

Evidences from the existing literature indicate that the status and incidences of poverty situation in Nigeria have been on increase. The United Nation's Human Development Reports (2006) and National Bureau of Statistics (NBS) (2012) found that, the scenario of poverty incidences in the country increased from 28.1% to 46.3% between 1980 and 1985. The rate rose to 66% in 1996;

70% in 2000 and 70.8% in 2005. By 2010, the proportion dropped slightly to 69%. The widespread nature of poverty in the country makes Nigeria to be classified among the poorest countries in the world. According to the United Nation's Human Development Report (2003) Nigeria was positioned as 148th out of 173 countries. By 2009, Nigeria was ranked as the 19th country with poor HDI out of 177 countries and 20th out of 134 developing countries in terms of Human Poverty (UNDP, 2009).

The extent of poverty in Nigeria is amazing and critical. Despite the fact that Nigeria is blessed with abundant human and natural resources, poverty in the country was seen as an inevitable ingredient of life. Chinoso (2014) posits that the illness of poverty is the geneses of most social vices and corrupt practices at all levels in Nigeria. However, available data suggest that poverty is more pronounced in rural areas in Nigeria and the situation is more severe in some parts of the country than others. However, Clement, Eche and Terande (2013) argued that the MDGs provided a platform for eradicating poverty, the situation from the Nigerian perspective indicates that there are still glaring constraints and challenges such as corruption, infrastructural inadequacies and others.

In Nasarawa state, poverty incidence was put at 62.7% in 1996. The proportion slightly dropped to 61.59% in 2004 and then increased sharply to 71.1% by 2010 (NBS Report 2005, 2012). By this scenario, the state recorded an increase in poverty rate of about 9.51% between 2004 and 2010. In the state, various social and economic indices would attest to the high incidence of poverty. For instance, there is a high crime wave, malnutrition, high level of unemployment, low literacy rate, high level of school dropout especially girl child etc (Nasarawa State Economic Empowerment and Development Strategy, 2005).

According to Ibrahim, Bello and Ibrahim (2009) considering the recommended daily farming household of 2470 kcal, 58.9% of the farming households were food insecure. Thus, majority of the households were consuming less than daily per capita calorie requirement. Adult literacy level is low with less than 80% of school age children in school. Women who constitute about 55% of the population are largely illiterate, poor and have low access to economic and political rights and opportunities. The primary school completion rate at the State and rural sector was 13.0 per cent. Secondary school completion rate was 18.7 per cent for the State (Nasarawa State Ministry of Health 2010).

Against this background, the Nasarawa state MDGs intervention projects/programmes initiates various poverty eradication schemes with the view to addressing the prevailing poverty situation. Agricultural production is one of the main hubs of the state and the state's MDGs equally devised strategies to enhance agricultural production. Therefore, this study analyzed the extent to which Nasarawa state MDGs has been able to enhance crop production of selected crops to alleviate the poverty situation of the selected crop farmers.

In the light of the above, this study seeks to answer the following questions:

a. What are the socio economic characteristics of the selected crop farmers?
b. What is the extent of production of the selected crops farmers?
c. What is the level of profitability of the selected crops?
d. What is the impact of these crops production on the income and poverty status of the sampled farmers?

1.2 Objectives of the Study

The broad objective of this study was to determine the impact of MDGs project on poverty, with reference to selected crop farmers in Lafia Local Government, Nasarawa state.

The specific objectives were:

a. to describe the socio economic characteristics of the selected crops farmers;
b. to determine extent of production of the selected crops
c. to determine the level of profitability of the selected crops among farmers; and:
d. to determine the impact of these farm outputs on the income and poverty status of the sampled farmers.

1.4 Research Hypotheses

In order to achieve the set objectives of the study, following hypotheses were formulated

a. Ho1: The MDGs intervention projects have no impact on the output of the selected crops

b. Ho2: the selected crops farmers' output have no impact on their income and poverty status

1.5 Justification of the Study

Concerns about poverty and how it could be addressed remained the most challenging issue that dominates current debate on development in every nation. MDGs intervention projects were therefore implemented to help reduce poverty and other issues related to human well beings. MDGs are timing targets, the target period (2015) has passed and the MDGs have been transformed into SDGs. To continue with the SDGs, it is imperative to take stock of the MDGs

especially with respect to some of the key MDGs targets like poverty reduction. The issue of whether the MDGs through enhancing crop production of farmers in Nasarawa state has improved on their incomes and poverty status, if yes to what extent? Addressing these questions will clearly pave a path for the SDGs to come in and address some of the remnants of the issues as it relates to poverty.

In addition to the above, Empirical studies on the impact of anti poverty policies and projects have been carried out within and outside Nigeria. Findings and conclusions from these studies remained disputed, whereas some studies like that of Ike (2012), Simonyan and Omolehin (2012), Ifaenyi, Nwachukwu and Chima (2009), Sinyolo, Mudhara and Wale (2014), Idowu and Oyeleye (2012) etc revealed significant positive impact of poverty reduction projects on poverty status, others such as Kasali and Sowunmi (2013), Alanana (2006), Christopher (2006), Olayemi (2011) etc found significant negative impact. Therefore, the magnitude of the impact is inconclusive and opened to further investigation. Also, the available empirical evidences from these literature established that no similar study was carried out in the study area.

Moreover, most of the theoretical underpinnings of the literature do not recognize the rationale of the Basic Needs theory which served as framework of this study. The Basic Needs approach recommends that rising level of income of the poor through the provision of intervention schemes will enable them to achieve their basic human needs such as housing, healthcare, education, food, sanitation etc and subsequently improve their well being.

Therefore, it is imperative for this study to assess whether the MDGs have impacted positively on poverty, the experience of selected crop farmers in Lafia Local Government, Nasarawa state. Hence, this study seeks to bring out the result of implementing MDGs project in Lafia Local

Government in relation to poverty reduction. This is justified on the ground that, about 80% of the population in Lafia Local Government are farmers residing in the rural areas and are found to be poor because they are characterized by low income, low productivity, high unemployment and low level of standard of living.

This dimension is hoped to give distinct information and guide to the stakeholders of anti poverty policy choice and the usefulness of the information would enhance policy choice so that group targeting programmes will make policy on poverty reducing strategies more effective in Lafia Local Government, Nasarawa state and stimulate the extension of the framework to national efforts. In addition, the policy implications that would be drawn from the information will help the stakeholders in promoting effective initiations that would advance the capabilities of disadvantaged households, groups of individuals and communities in Nasarawa state and the nation at large. The study will also contribute to the knowledge of those who are willing to conduct similar researches in the area.

1.6 Scope and Limitation of the Study

The study focused on Lafia Local Government area, Nasarawa state with specific locations: Assakio East, Barikin Abdullahi (BAD), Dunama Community and Assakio west. The focus of the study was limited to some selected MDGs agricultural crop production projects – Rice farming, Maize farming and Yam farming. The study essentially considered two groups of respondents in the study area – the beneficiaries of MDGs agricultural crop production projects and those that did not participate in the scheme, but have the same or similar attributable chance of being participating in the scheme. The reason for choosing Nasarawa state is that, the state is an agrarian state and it is one of the poorest states in the country. According to the Nasarewa

state Advanced Plan Document, (cited in Akighir et el 2011), poverty has been a key attribute of the lives of plenty in Nasarawa state. Thus the reason for considering Lafia Local Government especially the four selected communities is predicated on the fact that these areas contained vast hectares of arable farmlands suitable for growing all the three selected crops. And most of the MDGs crop farming projects was concentrated in those areas in the Local Government. The selection of the three farming crops was made on the basis of widespread number of farmers and beneficiaries that were engaged in farming of these crops across the areas. In addition, the crops constitute major food stuffs commonly used in Lafia Local Government.

1.6 Structure of the Study

This thesis consists of five Chapters. Chapter one of the study consist of background of the study, statement of the problem, research objectives, Justification, and scope and limitations of the study. Chapter two deals with conceptual issues, theoretical literature, theoretical framework, review of empirical studies and overview of policies on poverty reduction programmes and sustainable development effort in Nigeria. Chapter three consist of background of the study area, analytical framework for the study, research design, sources and methods of data collection, Population and sampling method, sampling techniques, determination of sample size, and administration of questionnaire. Chapter four presents results and discussion. Chapter five consists of summary, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The central theme of literature review is to establish the relevance of major contributions in the area of study. The problem of poverty and how to eradicate poverty is one of the major issues of discussion when it comes to human development. Different authors, scholars, organizations and individuals have made immense contribution in the area under various perspectives and a lot of literatures have been documented. As such, this review has tried to look at the major developments in the area of poverty and the various anti poverty policies which include: the conceptual literature – concept of MDGs (including the concepts of NEEDS, SEEDS and LEEDS), concept of poverty, theoretical literature, theoretical framework, empirical literature, and overview of policies on poverty reduction and sustainable development.

2.1 Conceptual Issues

2.1.1 Concept of Millennium Development Goals (MDGs)

MDGs are the manifestation of the Millennium summit held in September, 2000 which committed member countries to adopt a new global accord described as "United Nations Millennium Declaration" which set out a specified and quantified time-bound targets with a deadline of 2015. According to UNDP (2003) the Millennium Development Goals and targets come from the Millennium Declaration, signed by 189 countries, including 147 heads of State and Government, in September 2000. The goals and targets are interrelated and should be seen as a whole. They represent a partnership between the developed countries and the developing

countries “to create an environment at the national and global levels alike which is conducive to development and the elimination of poverty”. The United Nations Millennium Declaration marked a strong commitment to the right to development, to peace and security, to gender equality, to the eradication of the many dimensions of poverty and to sustainable human development. Embedded in that Declaration, which was adopted by 147 heads of State and 189 states, were what have become known as the eight Millennium Development Goals, including 18 time bound targets.

The Organization for Economic Cooperation and Development (2007) perceived MDGs as an accord signed by 189 nations on September, 2000 on a vision for the future: a world with less poverty, hunger and disease, greater survival prospect for the mothers and their infants, better educated children, equal opportunities for women and a healthier environment; a world in which developed and developing countries worked in partnership for the betterment of all. This vision took the shape of eight Millennium Development Goals, which provided a framework for development planning for countries around the world, and time – bound targets by which progress can be measured. The eight MDGs range from halving extreme poverty to halting the spread of HIV/AIDS and providing universal primary education, all by the target date of 2015. The MDGs are a set of indicators, but they are also an idea or “global norm” for poverty reduction, an incentive structure for pro-poor development, and a view of “development” in themselves. The Millennium Development Goals (MDGs) were an approach born of a benign era of relative stability, strong economic growth, and fairly buoyant aid budgets (International Policy Centre for Inclusive Growth 2010).

Hence, the implementation of the MDGs framework in Nigeria commences by formulating the National Economic Empowerment Development strategy (NEEDs) in 2004 which is targeted at

eradicating poverty and bringing about sustainable development. NEEDS is a reform agenda by Nigerian Government modeled on the IMF's poverty reduction and growth facility to achieve some macroeconomic goals of stability, poverty alleviation, wealth creation, and employment generation (Bambale 2011). According to IMF Report (2005) NEEDS is Nigeria's plan for prosperity that describes the country's macroeconomic, structural, and social policies in support of growth and poverty reduction, as well as associated external financing needs and major sources of financing. NEEDS provides a framework for a nationally coordinated programme of action by the federal, state, and local governments. Most of what is articulated here refers to actions by the federal government.

The implementation of NEEDS was anchored on effective economic coordination in collaboration with the states and local Governments where equivalent programmes were developed based on the NEEDS framework at the state level called "State Economic Empowerment and Development Strategy" (SEEDS) and local government level called Local Economic Empowerment and Development Strategy (LEEDS).

SEEDS and LEEDS therefore, are strategies for Value Change and service Delivery that will impact positively on poverty reduction and economic growth at the state and grass root levels respectively. They consist of principles, plans, procedures and course of actions at reaching stated goals (Ogunnubi 2011).

2.1.2 Concept of poverty

Various authors, scholars, experts and organizations made different attempts based on their own perceptions and views on what constitutes poverty. These views are too diverse and dynamic, as such the concepts lack precise and generally accepted definition. According to Alemagiri,

(1983), the outlook of income poverty definition noticeably makes absolute poverty different from relative poverty. Absolute poverty demonstrates a situation of an income level below which minimum standards of nutrition, shelter and personal amenities cannot be attained, while relative poverty deals with income inequality within a given society. Relative poverty implied the circumstances of inferiority complex, dependence and/or exploitation.

Based on the above definition, Sen (1983), described poverty in terms of absence of given capabilities and/or entitlements which are taken to be the various bundles of goods and services over which one has command, considering the means by which such goods are acquired and the availability of the needed goods.

In addition to defining poverty based on the measurement of income and consumption, other viewed poverty in broader terms to include a measure of purchasing power and physical health and education as indicators of human life deterioration. As such, poverty denotes a living condition in which an individual is faced with economic, social, political, cultural and environmental deprivation which implies not having enough to eat, a high rate of infant mortality, low life expectancy, low educational opportunities, poor water, inadequate health care, unfit housing and lack of active participation in the decision making (Ajakiye and Olomola (1999), Englama and Bamidele (1997). World Bank (2001) described poverty in terms of inability to attain a minimum standard of living as a consequence of being unable to meet basic needs requirements for a meaningful life. The reports take into account some key elements of poverty which provides sufficient conditions to exhibit the state of poverty. These include inadequate access to resources, lack of political freedom, voice and participation, insufficient or absence of shelter, poor access to safe drinking water food and sanitation, poor access to health

care delivery and education, vulnerability to shocks, violence and crime, political discrimination and marginalization.

For the purpose of this study, poverty is seen as a general state of lacking the necessary means (material possessions or money) to satisfy the basic necessities of human needs such as food, shelter, health, education, clothing, sanitation, transport and so on. That is, deprivation of the primary requirements that makes a good living standard. Poverty therefore consist of both income and non income deprivation which include other things as lack of access to social services, lack of certain capability to participate respectfully in economic, political, social and cultural decision making processes in a society.

2.2 Theoretical Literature

Studies on poverty eradication policies/programmes and other poverty related issues have adopted different poverty theories in order to provide a solid foundation and supportive solution to prevailing problems on the subject matter. The theoretical underpinning of this study will be rationalized within the following approaches namely: the Basic Needs approach, the capability approach, Cumulative and Cyclical Interdependencies Theory, Elite Theory and the Individualistic Theory

2.2.1 The Basic Needs Approach

Literature on basic needs approach could be traced as far back as late 1970s, which gave rise to a number of issues related to poverty reduction policies and programmes. This concept of poverty has replaced the former approaches by providing a more positive concept than the double negatives of eliminating or reducing unemployment, alleviating poverty, or reducing inequality.

Thus, it was significant in encouraging more proactive anti-poverty policies (Streeten 1979). Basic needs approach explicates the desire to attain the basic necessities of life as a way of talking poverty.

Streeten (1979) posits that Basic needs may be interpreted in several different ways which is summarized as follows: They may be interpreted objectively in terms of minimum specified quantities of such things as food, clothing, shelter, water and sanitation that are necessary to prevent ill-health, undernourishment, and so on. This narrow, physiological interpretation has the strongest moral appeal, but the problem is that of the most effective way of providing the income to satisfy the needs. It may be interpreted subjectively as the satisfaction of peoples' wants as perceived by the people themselves. This interpretation leads to the conclusion that people should be given opportunities to earn the incomes necessary to purchase the basic goods and services. This leaves open the demarcation of the domain of the public sector - and of policy interventions. But whatever the process by which individual needs are expressed, the freedom to define one's needs is itself a basic need. Another interpretation emphasizes the non-economic, non-material aspects of human autonomy which embraces individual and group participation in the formulation and implementation of projects or policies and in some cases political mobilization.

However, shing (2012) argued that the primary notion of the basic needs approach is essentially materialistic. The general impression is that the package should contain commodities that are universally needed, such as shelter, sanitation, clean water, food etc. He also maintained that, proponents argue that such package would essentially guarantee a person's subsistence. That is, any person that has inadequate access to these commodities may be considered as poor, and vice versa.

According to Shing (2012) one of the shortfalls of the basic needs approach is that it is a consumption-based approach. Since people are considered as non-poor once they meet the bundle's prescriptions, critics argue that it places too much emphasis on material deprivation. In particular, the monetary aspects have been overstated. Also, it does not connect the concept of poverty with values and aspirations.

The relevance of this theory to the study is that, the poor can easily get out of poverty if a purposive effort is made which aimed at improving earnings of the poor in order to satisfy their basic needs. According to Archibong, (1997), the poor may remain poor except if the society is able to increase his/her income significantly through deliberate efforts aimed at pulling him out of poverty.

2.2.2 The Capability Approach

This approach was first developed and made popular by Amartya Sen (1985). Capability approach shunted the concept of poverty from the basic human necessities to a broader perspective based on human development. The capability approach considered monetary resource as means that can help to enhance people's well-being. The monetary resource is viewed as a necessary, but not sufficient condition to prevent the casual chain of poverty (Laderchi, Saith & Stewart, 2003).

The basic characteristic of the capability approach is its focus on what people are effectively able to do and to be; that is, on their capabilities. This is in addition to the philosophical approaches that concentrate on people's happiness or desire-fulfillment, or on income, expenditures, or consumption (Ingrid Robeyns 2005). According to Alkire (2002), the primary impression is that people should not only achieve valuable functionings, but also should have the freedom to

pursue those values. Sen argues that evaluations and policies should focus on what people are able to do and be, on the quality of their life, and on removing obstacles in their lives so that they have more freedom to live the kind of life that, upon reflection, they have reason to value (Ingrid Robeyns, 2005).

A key analytical distinction in the capability approach is that between the means and the ends of well-being and development. Only the ends have intrinsic importance, whereas means are instrumental to reach the goal of increased well-being, justice and development. The ends of well-being, justice and development should be conceptualized in terms of people's capabilities to function; that is, their effective opportunities to undertake the actions and activities that they want to engage in, and be whom they want to be. These beings and doings, which Sen called functionings, together constitute what makes a life valuable. Functionings include working, resting, being literate, being healthy, being part of a community, being respected etc (Ingrid Robeyns 2005).

Given that poverty (or low human development) is interpreted as the lack of capabilities, the genuine way of lifting the poor is to expand their capabilities. Anti-poverty would therefore implies the enlargement of choices, such as the opportunities to lead a long, healthy, creative life and to enjoy a decent standard of living, freedom, dignity, self-respect and the respect of others (UNDP, 1997).

The importance of this theory to the study is that it provides a structure for the evaluation and assessment of individual well-being, through formulation of policies and programmes (such as the MDGs) that can be used to evaluate several aspects of people's living condition, such as inequality, poverty situation and so forth. According to Ingrid Robeyns (2005), the capability

approach evaluates policies according to their impact on people's capabilities. It asks whether people are being healthy, and whether the means or resources necessary for this capability are present, such as clean water, access to doctors, protection from infections and diseases, and basic knowledge on health issues. It asks whether people are well-nourished, and whether the conditions for this capability, such as having sufficient food supplies and food entitlements, are being met. It asks whether people have access to a high-quality educational system, to real political participation, to community activities that support them to cope with struggles in daily life and that foster real friendships. For some of these capabilities, the main input will be financial resources and economic production, but for others it can also be political practices and institutions, such as the effective guaranteeing and protection of freedom of thought, political participation, social or cultural practices, social structures, social institutions, public goods, social norms, traditions and habits. The capability approach thus covers all dimensions of human well-being.

2.2.3 Cumulative and Cyclical Interdependencies Theory

The Cumulative and cyclical interdependencies theory was developed by Myrlad (1957). The theory looks at the mutual relationship between individuals and their community as a spiral of opportunity and problems, hence individual and community resources are mutually dependent. Myrdal coined his work as "interlocking, circular, interdependence within a process of cumulative causation" the theory is a multi-causal approach where the core variables and their linkages are delineated. Myrdal argued that personal and community well being are closely linked in a cascade of negative consequences, and that closure of a factory or other crises can lead to a cascade of personal and community problems including migration of people from a community.

Thus the interdependence of factors creating poverty actually accelerates once a cycle of decline starts. For example, at the community level, a lack of employment opportunities leads to out migration, closing retail stores and declining local tax revenue which lead to deterioration of schools and lead to poorly trained workers, resulting in firms not being able to utilize technology fully, which in turn leads back to a greater lack of employment. This cycle also repeats itself at the individual level. The lack of employment leads to lack of consumption and spending due to inadequate incomes, and to inadequate savings, which means that individuals can not invest in training, and individuals also lacks the ability to invest in businesses, or to start their own businesses, which leads to lack of expansion, erosion of market and disinvestment, all of which feed back to inadequate opportunities. Health problems and the inability to afford preventive medicine, a good diet, and a healthy living environments become reasons the poor fall further behind.

Muktar (2011) observed that, the intricate nature of the cycle of poverty means that anti-poverty progarmmes or policies need to be equally complex, since poverty is not just from one cause but many. There is the need to follow steps in order to break the cycle. Brandshaw (2006) suggests the following programmes as cycle-breaking efforts for alleviating poverty:

(a) Income and economic assets.

(b) Education and skills.

(c) Housing and surrounding (safe, attractive)

(d) Access to health care and other needed services.

(e) Close personal ties, as well as network to others.

(f) Personal resourcefulness and leadership abilities.

The rationale behind this comprehensive approach to helping individuals from poverty is that there is no way the government can do all of this for every person without first increasing social capital and economic base among the poor. Anti – poverty programmes and policies should focus their efforts around three focal points for breaking the cycle of poverty.

1. Comprehensiveness. The first strategy to breaking the cycle of poverty is to develop comprehensive programmes. Comprehensive programmes are ones that include a variety of services and that try to bridge the individual and community needs.

2. Collaboration. The key to executing extensive programmes without becoming too uncontrolled is collaboration among different organizations to provide complementary services so that by their combination of efforts, the output is greater than could be done by each one alone. Collaboration involves networks among participants, though the coordination can vary from formal to informal.

3. Community Organizing. Finally, community organizing is a tool by which local people can participate to understand how their personal lives and the community's well being are intertwined. Breaking the cycle of poverty must include individuals to participate actively and meaningfully in the process, just like individuals create the spiral downward when they and their community interact in a cycle of failure. For the poor, empowerment is central to this issue.

2.2.4 Elite Theory

This theory posits that decision makers usually influence the government policy – planning network toward determining the main goals for all important public policies in their own favour. They consider themselves as "men of action" possibly they are. Dye (2000) observed that public

policies are conceived as policy output which reflects only the preference of the governing elite at the detriment of those of the general citizens or the masses. This theory suggests that the people are impassive and ill informed about public

Policy, that elite actually shape masses views on policy questions more than masses shape elite views. Their power is seen as based most fundamentally on their personal economic resources and does not really depend upon their ability to garner mass support through efforts to "represent" the interests of broader social groups.

Hence, the structure of political power in the society determines the degree and distribution of poverty among the population. Since poverty is seen as a necessary features of any scenario in which the elites possesses so much political power that they can organize the economic system to their own interest poverty will remain prevalent for as long as there is no effective pressure from the masses to restructure the distribution of political power in society in favour of plenty. This theory virtually replicates poverty situation in Nigeria. Many Nigerians are poor not because Nigeria is a poor country; it is blessed with huge human and material resources. Unfortunately, the bulk wealth of this country is in the hands of those who happened to be in the corridor of power.

The poor who are the majority lack the means to fight or to restructure the system to their own advantage, as well as purposive consciousness to resist the elite. However, government is the only machinery put in place through deliberate poverty alleviation effort to get the masses out of poverty.

2.2.5 Individualistic Theory

This theory which is also referred to as functionalist theory is conceived from the angle of the individual's inability to be productive so as to get out of poverty. It emphasizes that a poor is responsible for his poverty. O'Donnel (1997) attributed poverty to individual pathology or weakness. The poor were poor because they did not work hard, they had disorder of family life; they had no ambitions, no inner call for work, were fatalistic and suffered an 'intractable in-educability' (Islam 2005).

The poor person is poor because he is lazy, and unable or unwilling to work hard to cater for his well being. In addition to being lazy, poverty in this case results from such a person's choice to expend his income on unproductive ventures. The individual attribute theory is of the view that the poor are the architects of their misfortune. Uniamikogbo (1997) argues that the attributes exhibited by the poor, are sometimes within a structure of possibilities and limits defined by forces outside the scope of the individual. The poor under this condition may remain poor except if the society is able to increase his/her income significantly through deliberate efforts aimed at puling him out of poverty (Archibong, 1997). In order to support the poor to get out of poverty, various Programmes and projects in line with the MDGs poverty reduction target were established.

2.2.6 Theoretical Framework of the Study

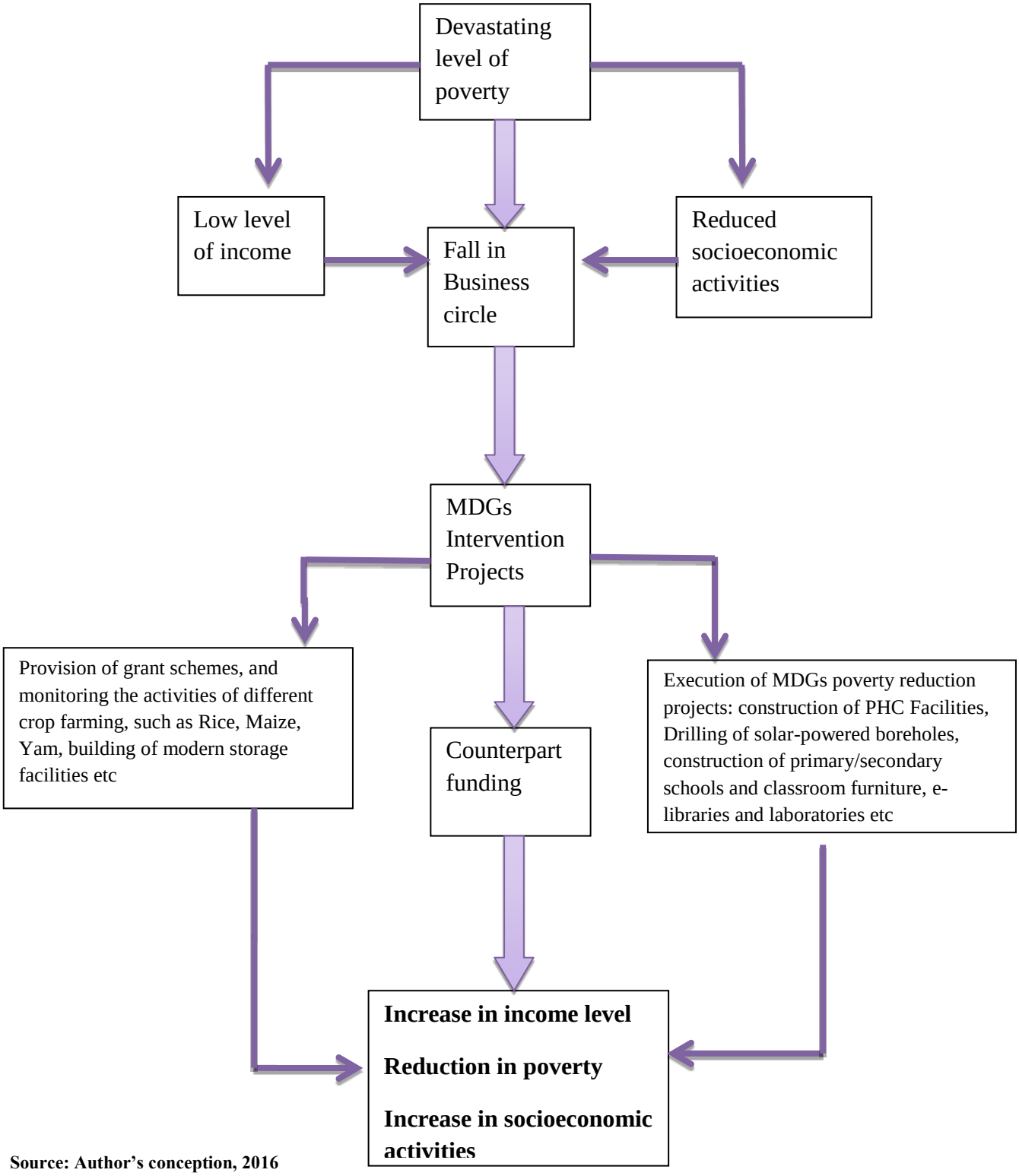
The basic needs approach emphasized that everyone should be able to pursue well- being by the desire to satisfy their basic human needs through engaging in various activities. This basic needs approach tries to identify the poor and uses heterogeneous policies and programmes to meet such needs which would enable the poor to live a decent life. The components of basic needs include all or some of such basic socioeconomic necessities as food and nutrition, healthcare, education, shelter, clothing, transport and employment (Okpo and Ntunde 2011). The basic needs theory recommends that if there exists problems of poverty situation in a society, measures have to be taken to improve their living conditions through employment generation, credit schemes, skill acquisition as well as the provision of healthcare, education, housing, sanitation, water supply etc to live a decent life and to achieve sustainable growth and development.

One possible solution to the problem is for the government (at all levels) in collaboration with other sponsored agencies to make adequate provision of all the necessary ingredients for poor population groups to rise above the poverty line. This will result in improved performance of socioeconomic activities with the assumption that if properly harnessed, the activities will lead to rapid and widespread proliferation of poverty status in a society.

When poverty persists in a society, the society is hampered with undue socioeconomic distress. This is because a huge portion of its population are economically inactive and heavily dependents. Consequently, with an increase in poverty level in a state, the state is negatively affected and eventually, its socioeconomic activities are systematically retrogressed.

In order to address the tremendous obstacles brought about by poverty, articulation of anti poverty mechanism is necessary. This could be achieved through government intervention in

setting up various poverty reduction strategies as a roadmap through which the MDGs poverty eradication target could be actualized. According to Human development report of the UNDP (2003) the MDGs can be a development manifesto for the ordinary citizens of the world seeking to hold their governments and the wider international community accountable for their achievement. Theoretically, by improving the socioeconomic living condition of the masses, through the provision of the basic human needs by the MDGs poverty intervention initiatives in Lafia Local Government, Nasarawa state, economic situation of the state is improved. Consequently, the improvement attracts upward trend in economic activities of the society given that the mechanisms used in addressing the poverty situation are effective.



Source: Author's conception, 2016

Fig 2.1: Transmission channel for poverty alleviation through MDGs

The above diagram deduced the importance of poverty reduction through the establishment and execution of various MDGs poverty eradication intervention schemes. From the schematic conceptual framework, there are logical sets of dimensions viz, poverty incidence, policy orchestration, reduction in poverty and improved socioeconomic condition. Presence of MDGs poverty reduction intervention projects will lead to the reduction in the level of poverty in Lafia Local Government, Nasarawa state through execution of MDGs projects and provision of grant schemes in the area. The execution of MDGs projects, provision of grant schemes and monitoring the activities of the farmers' beneficiaries will raise their income base and improve their social and economic status. Hence, economic situation of the state will also to improve.

2.3 Review of Empirical studies

Studies on poverty reduction through development intervention programmes provide different empirical evidences on the issues related to the effectiveness of the programmes. Several empirical studies on the efficacy of the interventions were reviewed. Evidences are found in the works of Matthew and Asoloka (2014), Verner and Verner (2005), Ike (2012), Simonyan and Omolehin (2012), Umar and John (2012), Magaji, Aliyu and ojo (2013), Oni and Olaniran (201).Ifeanyi, Nwachukwu and Chima (2009).

Specifically, Ike (2012) in his study "An Analysis of the Impact of Fadama III Project on Poverty Alleviation in Delta State, Nigeria". 152 participating households in Fadama III Project and 50 non participating households were used as respondents. Data were collected through the use of well structured questionnaire and analyzed through the use of Descriptive and Inferential statistical tools. The Double-Difference (DD) Estimator was used to compare changes in outcome measures. Findings revealed that the mean increase in income for participants in

Fadama III was significantly different from that of non participants at p = 0.05. The study recommends that the state government should make it mandatory for all the 20 LGAs participating in Fadama III project to pay their counterpart funds. Also, there should be appropriate policy to ensure proper education of rural populace is advocated.

Similarly, Simonyan and Omolehin (2012) assessed the Impact of Fadama II Projects on Beneficiary Farmers Income in Kaduna State. Data were obtained from two hundred and six (206) project beneficiary and non beneficiary farmers respectively. Net farm income, double difference method and paired – t and chow test statistical tools were used for the analysis. Findings of the study indicated that the net income of the project beneficiaries increased from N302, 796.95 before the program to N709, 492.52 after the program. Also, the net income of non beneficiaries rose from N314, 702.04 to 478, 564.73 over the period. The result indicated a positive mean income difference values between beneficiaries and non beneficiaries at 10% level of significance. Consequently, the study recommends intensive advisory services by the Kaduna Agricultural Development Programmes (KADP) Fadama II project on resource allocation and utilization and other means of increasing farmers' beneficiary income further.

However, Umar and John (2012) made an impact analysis using accessibility to Fadama II Road Development Project in Adamawa State, Nigeria. The data were obtained from 300 respondents who were randomly selected from Fadama II beneficiaries, non-beneficiaries within Fadama II communities and non-beneficiaries outside Fadama II communities. Based on propensity score matching (PSM) and double difference estimator (DD), the data were analyzed using frequencies, percentages and balancing test (t-test). The results showed that most of the roads were constructed and rehabilitated after the establishment of the project. Fadama II roads were found to be important for the beneficiaries' activities. The analysis established that beneficiaries'

travel distance, travel time, waiting time and transport fares were reduced relative to non-beneficiaries. Road development has boosted marketing services for both farm and non-farm economic activities. Spill-over effect also manifests in the adjoining communities.

Nguezet, Diagne Okoruwa, and Ojehomon, (2011) studied Impact of Improved Rice Technology on Income and Poverty among Rice Farming Household in Nigeria. Instrumental Variables (IV) – based estimator was used to estimate the Local Average Treatment Effect (LATE) of the adoption of the new variety on income and poverty reduction. Cross sectional data of 481 farmers from the three major rice ecologies of Nigeria namely upland, lowland and irrigated. The study concludes that there was a positive and significant impact of the adoption of the improved variety on farm households' income and welfare measured by per capita expenditure. The study suggests that intensification of investment on the new variety is a reasonable policy instrument to raise income and reduce poverty among rice farming households.

While the study by Verner and Verner (2005) which investigated the Economic Impact of the Labor Force Training Program in the Informal Sector of Côte d'Ivoire revealed a mixed results among the chosen sectors. The data collected are a subsample of the participants in three selected sectors, namely the agricultural sector, tailoring sector, and the electronics sector, and a comparable comparison group of nonparticipants. By the use of standard econometric tools developed for this kind of data, namely "difference-in-difference" (or double difference) estimators, the data have been analyzed in order to detect potential program impacts. The conclusions drawn were that positive economic impacts are found for some groups as a result of training received, namely the agricultural and electronics sectors, while no impact were found tailors from participating in the programme. The study recommended that allocation of public funds should be done on a competitive basis (i.e., with public vocational training institutes

competing with private institutions) can reduce costs and increase responsiveness of public spending on skills development. Also, there is need for linking subprojects better with other projects and interventions.

In the same vein, evidences reviewed in the work of Matthew and Asoloka (2014) "evaluating Poverty in Development Intervention: A Case Study from Nigeria". Using the quasi experimental design, the NAPEP beneficiaries were compared to a group of non-project beneficiaries. Findings of the study also exhibited different results. The objective quantitative evaluation indicates that poverty reduction through NAPEP is not statistically significant while the subjective evaluation indicates otherwise. Moreover, a supplementary analysis shows that the headcount index is 0.42. This is a move away from perfect targeting at the core poor. The work recommends that NAPEP interventions should be directed wholly at the core poor as a step towards enhancing its impact on poverty eradication

Kalat and Adunni (2015) analyzed the level of participation in family (*Gandu)* farming and its influence on the poverty status of farmers in northern Nigeria. Primary data obtained from a sample of 396 farmers using structured questionnaire were utilized. Descriptive statistics, Foster Greer and Thorbecke measures of poverty and the logit regression model were used to analyse the data. The results showed a mean per capita expenditure of the farmers to be N 93279.84 ($465), while the poverty line was found to be N 62186.50 ($310). The poverty profile showed that 57.77% of the farmers were poor while 42.22% of the farmers were non poor. Out of the poor farmers, 23.33% were core poor while 34.44% were moderately poor. The poverty headcount index was 58%, poverty gap index was 37% and poverty squared gap index was 24%. Estimates of the logit regression model revealed that participation in family farming, age of farmers, land size, farming experience, household size and extension contact were variables that

significantly influenced the farmers' likelihood of being poor at different levels of significance ($P<0.1$, $P<0.05$, $P<0.01$). Furthermore, a high and significant R2 (0.72) and F-value (53.27) were obtained implying the correctness of the model. The study recommends measures to encourage participation in family farming as a means to improve livelihood of farmers, reduce poverty and enhance food security as well.

Another study by Kasali and Sowunmi (2013) examined the effect of NAPEP loan on socioeconomic development of Ogun state, Nigeria. Using the differences of means and probit analysis, their findings reveals that there was no significant difference in the business worth of the loan beneficiaries and non beneficiaries. While Shawulu, Adebayo and Binbol (2008) in their studies "An Empirical Appraisal of the Impact of the National Poverty Eradication Programme (NAPEP) in Jalingo Local Government Area of Taraba State, Nigeria". They concluded that beneficiaries' income after the intervention was significantly higher than what it was before the intervention. For instance, the mean monthly income of Mandatory Attachment Programme (MAP) beneficiaries rose from N8, 790 before NAPEP intervention to N17, 010 thereafter.

Another similar argument found from the work of Ifeanyi and Chima (2009). The work investigated "Impact of Selected Rural Development Programmes on Poverty Alleviation in Ikwuano LGA, Abia State, Nigeria". A well-structured questionnaire was used to elicit responses on socio – economic characteristics and other relevant variables from a random sample of 160 respondents comprising beneficiaries and non-beneficiaries from the study area. The results showed that the rural development programmes which had poverty alleviation objectives impacted significantly on productivity and farm income at 5% level of probability. The study recommend that, Programme planners and implementers are therefore urged to intensify

awareness creation among rural dwellers and adopt the use of community driven development approach (CDD) in the execution of rural development projects with poverty alleviation thrust.

Funing, Hua and Qi (2007) examined "Reassessment of Poverty Status and Performance of Poverty Alleviation Measures". Using grouped data, the study focused on the changes of different poverty measures in rural China since 1985. The results find that different poverty measures have various impacts on values option and the evaluation of poverty reduction policies. Possible policy implication is that some policy to increase farm income will reduce the status of poverty, and some policy to increase non-farm income will possibly reduce poverty incidence and make poverty depth and poverty severity serious.

Sinyolo, Mudhara and Wale (2014) conducted an investigation on the Impact of Smallholder Irrigation on Household Welfare: The case of Tugela Ferry irrigation scheme in KwaZulu-Natal, South Africa. The study employed both descriptive and econometric techniques. Descriptive analysis was performed using the t-test for continuous variables and $\chi 2$ test for categorical variables. The Foster Greer Thorbecke (FGT) poverty indices were also used to give a summary of the incidence, depth and severity of poverty in the study area. Using a sample of 251 farmers, this study found that the treatment effect model indicated that access to irrigation plays a positive role in the welfare of rural households. The study, therefore, concluded that government investments in smallholder irrigation for poverty reduction are justified. The study recommends that investments in smallholder irrigation continue for poverty reduction, and that priority should also be on finding other feasible rural micro-projects and development initiatives to complement smallholder irrigation and significantly reduce rural poverty.

In addition to Sinyolo et el (2014), Bacha, Namara, Bogale and Tesfaye (2009) analysed the impact of small-scale irrigation on household poverty: empirical evidence from the Ambo district in Ethiopia. The study was based on a survey of representative farm households with and without access to irrigation. The total sample size for the study was 222 (107 households with access to irrigation and 115 without). Data were analysed using descriptive statistics, the Foster, Greer and Thobeck poverty indices, and Heckman's selectivity model. Results indicate that the incidence, depth, and severity of poverty are significantly lower among those farm households with access to irrigation. In addition to irrigation, other variables such as farm size, livestock holding size, land productivity, and family size significantly influence the level of household consumption expenditure.

Samuel, Tamarauntari and Steve (2014) examined the incidence, depth and severity of poverty, and poverty correlates in Bayelsa state using the FGT decomposable class of poverty measures and a logit regression model as analytical tools on the 2009-10 NLSS data. Results from the FGT model showed that about 25 percent of households are income poor. To escape poverty the averagely poor has to mobilize financial resources to be able to meet 14 percent of N22393.62 household per capita expenditure monthly and the core poor has to mobilize financial resources up to 9 percent more of N22393.62 household per capita expenditure monthly than that required for the averagely poor. Results from the logit regression showed that agriculture and household size increases the probability that a household will be poor while dwelling in the urban area, being headed by male, a naira increase in households' per capita expenditure on education and per capita expenditure on health and a year's increase in the number of years spent schooling by household head reduces the probability that a household will be poor.

Alanana (2006) undertook 'An Appraisal of Poverty Alleviation in Nigeria: A Case Study of Benue, Nasarawa and Plateau States'. The study used a descriptive approach supported by the Foster, Geer and Thorbecke (FGT) poverty index as well as the Z test distribution at 5% level of significance. The findings reveal that the programmes have not been able to significantly reduce the level of poverty in the study area. The study therefore recommends that the involvement of the poor themselves in the conception, planning and implementation of programmes meant for them as well as the institution of good governance in the administration of pro-poor programmes are crucial in the efforts towards reducing poverty in Nigeria. The involvement of beneficiaries in the programmes ensures ownership and commitment that help to promote sustainability of such programmes which makes the programmes more effective towards attaining the set goals.

Christopher (2006) conducted a study on An Assessment of Poverty Alleviation Policies in Reducing Rural Poverty, using Obubra LGA as case study. A total of 200 questionnaires were administered on two selected clans of the local government area. Descriptive statistical tools such as tables, percentages and poverty indices using Watts Index were employed. The results show that 46.0% of the population in the study area fell below the set poverty line. The research concludes that poverty alleviation policies implemented in the area did not benefit over 70% of the population. The study therefore, recommends a more effective and encompassing programme design and implementation through a bottom – up approach, integrated poverty alleviation approach as well as transparency in the process of selecting the participants.

Idowu and Oyeleye (2012) studied the Impact of Microfinance Banks on Poverty Alleviation in Selected Local Government Areas of Oyo State, Nigeria. 150 customers of microfinance banks were selected. Primary data were analyzed using Foster Greer Thorbecke; Matching Framework Analysis and Partial Correlation. The results revealed that poverty index of the respondents

reduced from 0.1668 to 0.1551 after collection of loans which implied that microfinance banks has impacted positively on their living standards. The result indicated that women are increasingly benefitting from microfinance activities. Moreover, the relationship between size of loan, asset acquisition and profit after loan revealed that as the size of loan increases, asset acquisition and profit also increases. It was recommended that the size of loans given to customers should be increased in order to enhance their standard of living and consequently alleviate poverty.

Enitan, Idowu and Abiona (2012) examined the Contribution of Co-operative Organizations to Poverty Alleviation in Yewa North Local Government Area of Ogun State, Nigeria. A multistage random sampling technique was used to select 100 members of co-operative societies in the study area. A questionnaire was used to collect data from the respondents. Descriptive statistics were used to analyze the personal characteristics of the respondents. The Foster-Greer-Thorbecke (FGT) Poverty Measure Model was used to assess poverty level and its variation across socio-economic characteristics. The result revealed that cooperatives had significantly contributed to poverty reduction among the respondents. It was recommended that co-operative members should encourage others to join co-operative societies so that they could have access to adequate financial and technical assistance and provision of basic farm inputs to alleviate their level of poverty.

Olayinka, Kehinde, Jelili (2015) examined the impact of entrepreneurship training and education on poverty reduction in Nigeria. 500 entrepreneurs and apprenticeships were chosen from six recognized Local Governments in Lagos State. The best linear unbiased estimator (BLUE) was used to test the relationship between entrepreneurship training and poverty reduction Nigeria. The result emanated from the findings suggests that there exist a positive and significant

relationship between entrepreneurship and poverty reduction and this was confirmed by the value of R^2, the coefficient of determination. The study therefore recommends that the government should be wary of encouraging entrepreneurship training in all level of government as well entrenching it primary schools, tertiary institutions and inculcating it in the National University Commission curriculum.

Sarma, Raha and Mia (2015) examined the impact on income of small-scale beef cattle enterprise in Pabna and Sirajganj districts. Data were obtained from 180 cattle fattening participant farmers and 180 non participant farmers from two areas in January and December 2014. Data were collected through the use of structured survey schedules and analyzed by the use of descriptive statistical tools such as means and percentages and also paired t-statistics and chow test were used for the data analysis The Double-Difference (DD) estimator was used to estimate changes in income from before to after benefiting from beef cattle agribusiness between participant farmers and non-participant farmers. Result shows that on the average, the net farm income of participant farmers increased by 51.52% and non-participant increased by only 25.0%. The mean increased income was significantly different between participants and non-participant farmers of beef cattle fattening at 10% level of significance. The study concludes that beef cattle agribusiness has positive impact on income of the farmers. The study recommends intensive support services from government and non government institutions to improve the performance of the beef cattle agribusiness.

Agbaeze and Onwuka (2014) examined empirically the effect of micro-credit on poverty alleviation in Nigeria using some selected rural farm households in Enugu East Local Government of Nigeria. Primary data were collected on the sources and access to micro credit; the incidence, depth and severity of poverty among the selected rural households. Foster Greer

and Thorbecke (FGT) and Logit regression methods were employed in the analysis of the data. The results of the study show that poverty level is still high among the rural populace; but those that have access to micro-credit seems to have fared better than those who have no access to micro-credit. That is, access to micro-credit has positive but not significant impact on poverty alleviation among the rural populace. The study recommends that government should intensify effort in its recent financial inclusion strategy to ensure that the rural populace has greater access to micro credits. Government should also ensure that interest rate on micro credits are affordable, the terms of the credits flexible and the conditions attached to the credit well liberalized

Olayemi (2011) studied Impact of Poverty Reduction Programs on Multidimensional Poverty in Rural Nigeria by using the 2006 Core Welfare Indicator Survey (CWIQ) data. Fuzzy set approach was used to compute the multidimensional poverty index of rural Nigeria. Tobit regression was used to examine the impact of poverty alleviation programs on multidimensional poverty index of rural Nigeria. Findings show that the multidimensional poverty index for rural Nigeria is 0.3796. It is also reflected that some development programs had negative impact on multidimensional poverty index of rural Nigeria. Household head in the South South region were multidimensionally poor than those in other regions. The study recommends that government should intensify efforts on programmes that had positive impact on multidimensional poverty index of rural Nigeria.

From the above literature reviewed, some of these empirical studies such as Kasali and Sowunmi (2013), Shawulu, Adebayo and Binbol (2013) used simple differences in means instead of double difference. By implication, this approach could not address the problem of endogeneity which may lead to biased in estimation. Also, Bacha, Namara, Bogale and Tesfaye (2009) emphasized much on the accessibility to facilities contributing to poverty reduction and how that

reflects on their welfare instead of having direct access to welfare packages such as credit schemes, distribution of farm inputs, rehabilitation and skill acquisition centres etc, and how or to what extent they were able to reduce poverty. In addition, results from the literature revealed mixed findings, while some studies such as Ike (2012), Simonyan et al (2012), Ifaenyi et al (2009), Sinyolo et al (2014) and Idowu et al (2012) showed that anti poverty intervention projects have significantly impacted positively on poverty reduction, others like Kasali et al (2013), Alanana (2006), Christopher (2006) and Olayemi (2011) revealed significant negative impact, also Agbeaze et al (2014) showed insignificant positive impact. Therefore, the course and the magnitude of the impact remained inconclusive and debatable in poverty reduction policies. Moreover, these studies focused on other intervention programmes and policies rather than MDGs; as such studies on impact of MDGs on poverty are sparse.

In the light of the above, the fundamental unit of problem which this study seeks to address is to examine Impact of the Millennium Development Goals (MDGs) on Poverty, Case Study of Selected Crop Farmers in Lafia Local Government, Nasarawa State. The study chooses to follow Verner and Verner (2006) to adopt the double difference estimator. Data were collected on both the beneficiaries and non – beneficiaries for the periods before and after the MDGs intervention projects. Information were collected not only on income variable of the respondents, but also on other aspects like socioeconomic characteristic of the respondents, respondents' productivity, access to education, health, good drinking water etc.

2.4 An Overview of Policies on Poverty Reduction Programmes and Sustainable Development Effort in Nigeria

In response to the direful poverty situation in Nigeria, successive administrations have initiated various sustainable development programmes/policies over the years, which aimed at eradicating or minimizing the unprecedented scourge of the poverty phenomenon. Archibong (1997) opined that there exist two opposing measures (direct measures which tackle poverty issues and indirect measures of promoting welfare through economic growth). The direct approach states that economic growth by itself is too slow to provide substantial benefits to the poor in a reasonable period. Hence, government should provide goods and services directly to the population in order to ensure that the poor receive an equitable share. The indirect measures paradoxically suggest that policy makers should reduce government role in the provision of goods and services and emphasized much on increasing long - term economic growth. He added that, poverty alleviation programmes adopted so far in Nigeria reflect a mixture of the direct and indirect approaches.

According to Egware (1997) and Ekong (1997), various governments in Nigeria have attempted to tackle the problem of poverty through various programmes in the past having identified poverty as the main obstacle to rural development in the country. The Nigerian government (In an attempt to overcome this impediment to rural development) , responding to World Bank's recommendations coupled with its agricultural survey, embarked on the implementation of three pilot integrated agricultural and rural development projects by early 1970s in Funtua, Gusau and Gombe but later spread to other states of the federation.

These projects aimed at stimulating increase in food production and enhance the income of the rural inhabitants. Ekong (1997) further argued that, an integrated rural development strategy

proposed by the United Nations made up of three main components (rural-urban integration, intersectional and/or zonal coordination, and the package approach) was adopted. This development strategy led to the establishment of Operation Feed the Nation (OFN) in 1976 which later became Green Revolution by the civilian administration in 1979 and the Agricultural Credit Guarantee Scheme (ACGS) in 1977. He concluded that this strategy neither meets the food dreams of the nation nor did it uplift the poor class.

Other programmes established with the view to facilitate rural development include: River Basin Development Authorities (RBDA) of 1973, the National Agricultural Land Development Authority (NALDA) of 1991 and the Directorate of Food, Roads and Rural Infrastructures (DFRRI) of 1986. While Archibong (1997) and Egware (1997) argued that the anti-poverty effect of these projects remains marginal, Egware (1997) opined that NALDA has encouraged small holder farmers to bring more land under cultivation thereby improving agricultural output which (other things being equal) reduced households' expenditure on food, thereby reducing poverty.

During and after the Structural Adjustment Programme (SAP) which was introduced in 1986, there have been special relief package projects targeted at alleviating poverty Egware (1997). these projects include the National Directorate of Employment (NDE); Family Support Programme which was later renamed as the Better Life Programme and subsequently changed to Family Economic Advancement Programme; the People's Bank; Community Banks; Rural Health Schemes and the Expanded Programme on Immunization as well as National Orientation Agency whose purpose among others is to mobilize and encourage the participation of rural people in their development.

Recently, efforts by the nation's government to tackle the poverty situation (Agbu, 1997 argued) have been addressed within the broader policy objectives of national development as the following set goals were outlined in the 1996 - 1998 rolling plan.

a. reduction of overall incidence of poverty to 20 per cent by the year 2010;
b. ensuring adequate availability of infrastructure and access of the poor to land, credit and technology;
c. ensuring increase in primary school enrolment from the current level of 69 per cent to 100 per cent and adult literacy rate from 52 percent to 76 per cent by the year 2010.

However, Agbu (1997) lamented that very little was done towards achieving these targets, one year after these recommendations were made as part of the 1996-98 rolling plan.

In 1997, the government formed a new policy known as the Community Action Programme for Poverty Alleviation (CAPPA) (Ekong, 1997 noted) to help alleviate poverty with the following objectives:

i. Improvement of the living conditions of the poor through a targeted cost-effective, demand-driven and promptly delivered programme;
ii. Enhancement of the productivity of the poor through skills improvement;
iii. Improvement of the nutritional status of the poor through improved household food-security and health practices.

Ekong (1997) observed that both the basis and the framework of the programme were not clear even though, the programme had strict and solid objectives.

Despite the various efforts made by different governments to fight against poverty in the past, poverty has consistently been on the increase in the country, indicating the ineffectiveness of the

strategies and programmes. The policies of the pre-SAP and SAP eras obviously failed to alleviate poverty in Nigeria. During these periods, the poverty situation in Nigeria was steadily increasing. The failure of these measures has been attributed to lack of targeting mechanisms for the poor; political and policy instability; inadequate coordination of various programmes; several budgetary, management and governance problems; lack of accountability and transparency; and lack of mechanisms for the sustainability of the programmes (Obadan, 2001, Oshewolo, 2010).

More recently, with the commencement of civilian administration and inauguration of Nigeria's fourth republic in 1999, the Poverty Alleviation Programme (PAP) emerged as an interim antipoverty measure (Nwaobi, 2003). The programme was aimed at affecting the deficiencies of the past efforts of alleviating poverty through the objective of providing direct jobs to 200,000 unemployed people (Chukwuemeka, 2009, Obadan, 2001). The aftermath of the introduction of the Poverty Alleviation Programme reveals that poverty incidence in Nigeria remained perpetually high. Consequently, the federal government on Nigeria established the National Poverty Eradication Programme (NAPEP) in 2001 (Omotola, 2008), which was established in January, 2001. It was designed to coordinate and monitor poverty alleviation effort and ensure that Nigerians were provided with steady sources of income, high purchasing power, quality education, water, healthcare and housing; stable and affordable power supply, among others (Barne 2010). The blueprint was structured to integrate four sectoral schemes which include Youth Empowerment Scheme (YES), Rural Infrastructure Development Scheme (RIDS), Social Welfare Service Scheme (SOWESS) and Natural Resources Development and Conservation Scheme (NRDCS) (Elumilade, Asaolu and Adereti (2006). However, they also opined that, NAPEP appears to be well crafted but the prevalence of poverty in Nigeria and the various dimensions it has taken place the performance of NAPEP in the realm of prospective analysis.

In 2004, the Federal Government of Nigeria set up the National Economic Empowerment and Development Strategy (NEEDS) with a view to fighting the poverty scourge which it described as the most difficult challenge facing Nigeria and its people and the greatest obstacle to the pursuit of socio-economic growth (Barne A. 2010). NEEDS was described as a medium term strategy. The implementation of NEEDS rests on four major strategies.

First, it aims at reforming government and institutions by fighting corruption, ensuring transparency and promoting rule of law and strict enforcement of contracts. The second strategy is to grow the private sector as the engine of growth and wealth creation, employment generation and poverty reduction. The third strategy seeks to implement a social charter with emphasis on people's welfare, health, education, employment, poverty reduction, empowerment, security, and participation. The fourth key strategy is value reorientation (Omotola, 2008, Chukwuemeka, 2009,). NEEDS is a national framework of action, which has its equivalent at the state and local government levels as State Economic Empowerment and Development Strategies (SEEDS) and Local Economic Empowerment and Development Strategies (LEEDS) respectively (AFPODEV, 2006). The implementation also stresses collaboration and coordination between the federal and state governments, donor agencies, the private sector, civil society, NGOs and other stakeholders (Action Aid International, 2005). As a home-grown strategy, NEEDS has been described as the Nigerian version of the MDGs (AFPODEV, 2006).

Hence, all the poverty alleviation initiatives in Nigeria since independence have yielded very little fruit (Garba 2006). He also claims that the programmes were mostly not designed to alleviate poverty; they lacked clearly defined policy framework with proper guidelines for poverty alleviation; they suffer from political instability, interference, policy and macroeconomic dislocations; and are riddled with corruption, political deception, outright kleptomania and

distasteful looting. Moreover, Oshewolo (2010) maintained that the underdeveloped nature of inter-sectoral governance system built on institutional interaction among sectors constitutes a serious challenge. The uncoordinated collaborative efforts between the states, market and civil society is hampering government's interventionist programmes. The challenges above have made government's policies to be largely unproductive. More worrisome is even the susceptibility of the MDGs to the same factors that dislocated and impaired previous interventions.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter consists of information of the study area, the analytical framework for the study, research design, sources of data, population and sampling techniques, administration of questionnaire etc.

3.1 The Study Area

Lafia Local Government was created on the 3rd February, 1976 by the Administration of Gen Ramat Murtala Muhammad under plateau state. The local government lies within the middle belt region of Nigeria. It is bounded by Nassarawa Eggon local government on the north, Doma local government to the south, Kokona local government in the East, Shandam local government on the west and Keana local government on the South-west. Lafia Local Government is currently the headquarters of Nasarawa state. It is one of the most populous local governments in Nasarawa state, Nigeria. It has a landmass of 2,264 sq. km with a population of 431,400 people (N P C 2016 projected population). Out of this population, about 80% are farmers residing in the rural areas of the local government. Lafia local government lies in the savannah region of Nigeria with typical savannah vegetation. It has two distinct seasons, the rainy and dry seasons. The rainy season lasts from April to October and the dry season begins in November and ends in March. The local government has a vast fertile landmass which is tilled by the farming population that treasures agriculture as their sources of livelihood. The local government is richly blessed with abundant natural and human resources.

Lafia local government area as administrative headquarters has Kanuri/Hausa as the predominant occupants. The local government also harbours various tribes like Eggon, Gwandara, Ake, Fulani, Alago, Yoruba, Ibo, etc. Many of the rural people of the local government are traditional farmers growing yams, cassava, maize, rice, beniseed, soya beans, tomatoes, groundnuts, etc. Many farmers and their family members also engage in some craft or petty trading activities. The local government is politically composed of thirteen (13) council wards which include Chiroma; Gayam, Assakio; Wakwa; Agyragutofa; Adogi; Kafiwambai; Ashige; Zanwa; Shabu/kwandare; Arikya, Akurba and Makama. Each ward has a councilor at the local government. The local government is divided into two constituencies namely: Lafia East and Lafia Central state constituencies respectively and representing two members at the state House of Assembly. The local government shared the Federal Constituency with Obi local government and is one among the local governments in the southern Senatorial district of the state.

Lafia local government populace is characterized by low income earners, since majority of the people are small scale rural farmers and lacked the capacity to expand their output due to inadequate capital, the level their earnings is also low. In addition to low income, Lafia local government is also attributed by high rate of crime, high level of illiteracy, poor environmental sanitary, lack of infrastructural facilities and high rate of infant and maternal mortality.

3.2 Analytical framework for the study

This study employed the use of double difference (Difference - in - Difference) estimator, Foster, Greer and Thorbecke (FGT) index and Logit Regression. Double difference estimator is one of the methods used in determining impact of a given intervention programme which involved selection of respondents that participated in the programme (beneficiary) and those that did not

participate (non-beneficiary) from the same location who have similar observable characteristics and then compare the change in their outcome variables (income) before and after programme for participants and non-participants. FGT index measures different dimensions of poverty among MDGs beneficiaries which include poverty head count index (incidence of poverty), poverty gap index (income shortfall) and severity of poverty. The specification of the tools are as follow:

3.2.1 Double Difference Estimator

Let's assume that we have two set of individuals labelled T = 0, 1 where 0 indicates group which did not receive the MDGs treatment, (i.e. the control group) and 1 indicates individuals who received the MDGs treatment (i.e. the experimental group). Suppose that individuals are to be observed in two time periods, t = 0, 1 where 0 indicates a time period before the experimental group receives the treatment (i.e. pre-treatment) and 1 indicates a time period after the experimental group receives the treatment (i.e. post-treatment). Let i = 1, ..., N represent all observations and the total revenue or profits at time t=a,b (after, before) such that Y_{it} be the outcome variable.

Note: NMI = TMR – TME be the net income generated from participating in MDGs intervention programme

Where:

NMI = net income from participating in MDGs intervention programme

TMR = total revenue generated from participating in MDGs intervention programme

TME = total expenditure on participating in MDGs intervention programme

Specification of the general version of Double Difference model was adopted from the work of Verner and Verner, (2006) as follows:

$$DD = \left[\frac{1}{P}\sum_{i=1}^{P} Y_{1ia} - Y_{1ib}\right] - \left[\frac{1}{c}\sum_{j=1}^{c} Y_{0ia} - Y_{0ib}\right] \text{----------3.1}$$

Where:

DD = Income difference between the respondents

P = number of participants

C = number of individual control group (non –participant)

Y_{1ia} = Income variable of participant after the programme

Y_{1ib} = Income variable of participant before the programme

Y_{0ja} = Income variable of non-participant after the programme

Y_{0jb} = Income variable of non-participants before the programme

$\frac{1}{P}\sum_{i=1}^{P} Y_{1ia} - Y_{1ib}$ = $\bar{Y}$P = net average income difference between the treatment group

$\frac{1}{c}\sum_{i=1}^{P} Y_{1ia} - Y_{1ib}$ = $\bar{Y}$C = net average income difference between the control group

Thus, the estimator is the difference between the net average changes in the outcome variable for the two groups. This can be done by taking the average income difference between the two

estimators (ie, $\bar{Y}_{P \text{ and }} \bar{Y}_C$) both before and after the MDGs and subtracting the control group's estimator from the treatment group's estimator ($\bar{Y}_p - \bar{Y}_C$) to get the DD.

3.2.2 Measurement of Poverty Indices Adopted

Foster, Greer and Thorbecke (FGT) index was used to determine the poverty status of the farmers before and after the MDGs intervention project. The estimates assumed the following equations:

a. Headcount index

This measure the proportion of the poor farmers in the study area, denoted as P_o stated as follows:

$P_o = \frac{N_P}{N}$ ----------3.2

Where

N_p is the number of farmer considered as poor

N is the total population

b. Poverty gap index

This measures the extent to which individual farmer on average fall below the poverty line. Specifically, poverty gap (G_i) represents poverty line (z) less actual income (y_i) for poor farmers express as follows:

$G_i = (z - y_i)$ $(y_i < z)$ ----------3.3

Where:

G_i is the poverty gap

Z is the poverty line

y_i is the average income of the poor farmers

Then poverty gap index (P_I) is presented as follows

$$P_I = \frac{1}{N}\sum_{i=1}^{N}\frac{G_i}{Z} \quad \text{----------3.4}$$

c. Poverty severity (Squared poverty gap) index

This measures a weighted sum of poverty gaps as a proportion of the poverty line in such a way that more weight would be put on farmers that fall far below the poverty line. Squared poverty gap denoted as P_2 is formally written as

$$P_2 = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{G_i}{z}\right)^2 \quad \text{----------3.5}$$

All these indices can be put as one family of measures as proposed by Foster, Greer and Thorbecke (1984), which is written

$$P\alpha = \frac{1}{N}\sum_{i=1}^{N}\left(\frac{G_i}{z}\right)^{\alpha}, (\alpha \geq 0) \quad \text{----------3.6}$$

Where:

$P\alpha$ is a class of additively decomposable measures

α is the FGT index and takes the values of 0,1 or 2

Here, Pα is replaced by P_0, P_1 and P_2 which denote headcount (incidence), depth and severity respectively.

3.2.3 Model specification of the Study

Binary logit regression was used to estimate the determinants (or correlates) of poverty of MDGs beneficiaries in the study area. Logit model determines the likelihood that MDGs beneficiary is poor if its per capita consumption expenditure (annual average income) is below the constructed poverty line given its socioeconomic characteristics. The model specification of this study is in line with Gowon *et al* (2014) specified as

$ln\ L\ (P_i) = \beta_k X^1 + u_i$ ----------3.7

Equation 3.7 is a log-likelihood function showing the log-likelihood that a household is poor given its socioeconomic characteristics X, where:

P_i =1 if per capita expenditure < Z and P_i = 0 if otherwise.

β_k = vector of parameters to be estimated

X = vector of explanatory variables (poverty correlates)

Thus, for the purpose of this study annual average farm income was used as proxy to per capita expenditure and the model for this study is stated as follows:

$Pov=\beta_o+\beta_1 shh+\beta_2 fme+\beta_3 sqm+\beta_4 ihc+\beta_5 mjo+\beta_6 nds+ \beta_7 tph+ u_i$----------3.8

Where:

Pov is dependent variable (poverty status), calculated as:

$$\text{Pov} = \frac{Average\ annual\ income\ of\ household\ from\ MDGs\ intervention\ Project}{Total\ number\ of\ days\ in\ year(365\ days)} \text{----------3.9}$$

If a beneficiary's income is less than 1.9 dollars (naira equivalent) a day, it means the beneficiary is poor in which case we assign 1. If the income is 1.9 dollars and above (naira equivalent), it mean the beneficiary is non-poor, in which case we assign 0.

β_0= constant intercept

β_1- β_7= coefficients

shh,fme,sqm,ihc,mjo,nds,tph = Explanatory variables

u_i = Error term

Where:

shh = size of Household is a dummy variable that takes 1 if at most there are 6 persons per household or 0 if otherwise

fme = Respondent's access to formal education is a dummy variable that takes the value of 1 if respondent had attended to formal education or 0 if otherwise

sqm = Number of square meals taken per day is a dummy variable that takes the value of 1 if a household takes at least three meals per day or 0 if otherwise

ihc = Access to improved health care facilities is a dummy variable that takes the value of 1 if a beneficiary visits General hospital, Specialist hospital or 0 if otherwise

mjo = major occupation is a dummy variable that takes the value of 1 if beneficiary's major occupation is agric or 0 if otherwise

nds = Number of dependents a respondent sponsor in school is a dummy variable that takes the value of 1 if a respondent sponsors at most 3 people or 0 if otherwise

tph = Type of house used is a dummy variable that takes the value of 1 if respondent uses a house with cement walls and zinc roofs or 0 if otherwise

Here, only β_1 and β_6 are expected to have positive relationship with poverty status (Pov) predictor variables. This implies that increase in household size and Number of dependents sponsor in school would result to an increase in their likelihood of being poor and vice versa. Likewise, β_2, β_3, β_4, β_5 and β_7, are expected to have negative relationship between poverty status and the respective predictor variables.

The results of the log likelihood ratio was used to test the null hypothesis that all the slope coefficients are simultaneously equal to zero (i.e. β_1, β_2 β_3, β_4, β_5, β_6, $\beta_7 = 0$). That is, if the likelihood ratio (LR) is greater than the probability value, the null hypothesis will be rejected and vice versa.

3.3 Research Design

This section presents the structural outline of the research, which basically deals with generation of data. The research design would enable the research work to be properly focused and it is divided into three stages. Stage one deal with generation of data and it is designed to capture the objectives of the research. Stage two involved the collection and analysis of data, which aimed at establishing the approaches to be adopted to obtain the data needed for the research, while Stage

three entails the outcomes of the research based on the data that would be collected. This research is designed to examine the impact of selected agricultural crop projects of the MDGs in the study area. In doing this, variables that relate to the administration of the projects were carefully assessed.

3.4 Sources and Methods of Data Collection

The main data for this study were generated through the instrument of questionnaire administration (primary data) from the MDGs beneficiaries (experimental group) as well as non – beneficiaries (control group). The questionnaire for this research was primarily close ended questions for easy coding, tabulation and subsequent analysis. Data were collected on the respondents' demography, output, income and non-income variables such as square meals, size of household, access to improved healthcare facilities, access to formal education etc.

3.5 Population and Sampling Method

The population used for this study encompasses 9 (nine) funded MDGs Community Associations in Lafia Local Government area. The 9 (nine) funded MDGs community Associations are Dunama community, Barikin Abdullahi (B.A.D), Assakio East, Haske, Aminci, Akurba, Assakio West and Kauna. In each of these MDGs Community, there are MDGs User Groups that constitute different cooperatives, and each of these cooperatives comprise about 15-25 members. The target populations are the male and female small holders of farmers, including the disadvantaged and physical challenged groups (widows/widowers, the handicapped, the unemployed youths, PLWHV etc).These groups of people are characterized by low productivity, low income, unemployment and low standard of living. A pilot survey showed that there were about 46 MDGs cooperatives formed out of the three farming crops (ie, Rice, Maize and Yam

farmers cooperatives) from the 9 funded MDGs Community Association. Also, these cooperative societies constituted a total number of 938 beneficiaries which formed the total population of participants for the study. The number of funded MDGs Communities and the beneficiaries in Lafia local government area is shown in Table 3.1

Table 3.1 Population Distribution of the Study area

S/N	**MDGs Community Association**	**Number of MDGs User Groups (cooperatives)**	**Total Number of Beneficiaries**	**Percentage Share**
1	Dunama Community	4	80	8.6%
2	B.A.D	7	142	14.9%
3	Assakio East	9	190	20.3%
4	Aminci	4	82	8.7%
5	Haske	3	60	6.4%
6	Assakio West	11	234	25.1%
7	Akurba	3	50	5.3%
8	Kauna	3	60	6.4%
9	Sabon Pegi	2	40	4.3%
Total		**46**	**938**	**100**

Field Survey, 2016

3.7 Sampling Techniques

A two stage sampling of multi – stage techniques and purposive sampling procedure was employed in the selection of respondents. The first stage involved purposive selection of four MDGs Community Associations in the study area which comprised 31 MDGs User Groups with total beneficiaries of 646. The communities that were purposively selected include Assakio East, B.A.D, Dunama Community and Assakio West. The selection was made based on the intensity of the MDGs farming projects in those areas. The second stage involved selection of respondents based on the proportion drawn from the user groups in each of the three categories of farmers using appropriate formula.

3.7 Determination of Sample Size

Yamane's (1967) formula was used to determine the sample size of the beneficiaries for the study. Yamane's formula provides a simplified formula used to calculate sample sizes. The study also adopted Boyle's (1964) formula so as to determine the sub-sample (proportionate distribution) from each of the MDGs Community Associations and in each of the three categories of crop farmers.

Yamane's (1967) formula is stated as:

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

Where:

n is the sample size

N is the population size

e is the level of precision

A 95% confidence level and P = 0.5 are assumed for this study. Thus

$$n = \frac{938}{1+938(0.05)^2} = \frac{938}{3.2575} = 277$$

Given the sample size of 277 respondents drawn from the population, beneficiaries were proportionately sub – sampled based on the selected crops, using the Boyle's (1964) formula. The formula is stated as:

$$nh = \frac{nNh}{n}$$

Where:

nh= desired selected allocation

n= sample size

Nh = sectoral population (sub-population from each of the selected crops)

(Notice that out of the 938 total numbers of the beneficiaries, 532 beneficiaries are Rice farmers, 132 beneficiaries are Maize farmers while 274 beneficiaries are Yam farmers)

Given that, n = 277, the computation of the sub – sample for each crop is as follows:

Rice Farmers:

$$\frac{277\ x\ 532}{938} = 157$$

Maize Farmers:

$$\frac{277\ x\ 132}{938} = 39$$

Yam Farmers:

$$\frac{277\ x\ 274}{938} = 81$$

Also, the same procedure was used to determine the sub sample for each of the selected MDGs communities. In this case,

n = **157** for rice farmers, **39** for maize farmers and **81** for yam farmers

Table 3.2 Sub – Sample Size Determination for the Selected Study Areas

MDGs Community Association	Number of MDGs User Group	Rice Farmers	Maize Farmers	Yam Farmers
		Sub-sample Determination	Sub-sample Determination	Sub-sample Determination
Assakio East	9 (190)	$\frac{157 \times 190}{646} = 46$	$\frac{39 \times 190}{646} = 11$	$\frac{81 \times 190}{646} = 24$
Barikin Abdullahi	7 (142)	$\frac{157 \times 142}{646} = 35$	$\frac{39 \times 142}{646} = 9$	$\frac{81 \times 142}{646} = 18$
Dunama	4 (80)	$\frac{157 \times 80}{646} = 19$	$\frac{39 \times 80}{646} = 5$	$\frac{81 \times 80}{646} = 10$
Assakio West	11 (234)	$\frac{157 \times 234}{646} = 57$	$\frac{39 \times 234}{646} = 14$	$\frac{81 \times 234}{646} = 29$
Total	31 (646)	157	39	81

Field Survey, 2016
Values in parenthesis are total number of beneficiaries

In addition to the 277 sampled beneficiaries, 137 respondents of the comparable group of non beneficiaries were randomly selected proportionately across the areas. In all, 414 households (277 + 137) were selected for the study.

3.8 Administration of Questionnaire

Questionnaire administration was the major instrument for data collection. The questionnaire was structured to collect data on both financial and non-financial aspect of the households. It was designed to seek information from the households such as demographic data about the households, sources of earning, revenue and income as well as the entire households' access to improved health care, access to formal education, square meals per day and so on. The questionnaire was administered by the researcher with the aid of research assistants.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF RESULTS

4.0 Introduction

This chapter presents the results of the findings. The analysis and reporting of the results are in line with the study objectives. Among these include the socioeconomic characteristics of the respondents, the MDGs farming innovations introduced, production analysis, profitability analysis and analysis poverty status. Two observations were made on each respondent. Each set of questionnaire about the conditions of the respondents before and after the MDGs intervention project.

In all, about 414 questionnaires were distributed and 346 questionnaires were retrieved. From these numbers, 277 questionnaires were distributed to the beneficiaries and 227 questionnaires were retrieved while 137 questionnaires were distributed to the non beneficiaries and 119 questionnaires were retrieved. The distribution and retrieval of the questionnaires for the various categories of farmers is summarized and presented in Table 4 below

Table 4.1 Distribution and retrieval of questionnaire

	Rice Farmers		**Maize Farmers**		**Yam Farmers**	
	Questionnaires Administered	Questionnaires Retrieved	Questionnaires Administered	Questionnaires Retrieved	Questionnaires Administered	Questionnaires Retrieved
Beneficiaries	157	122	39	33	81	72
Non Beneficiaries	78	69	19	15	40	35
Total	**235**	**191**	**58**	**48**	**121**	**107**

Field Survey by the author, 2016

4.1 Socio economic Characteristics of Respondents

Table 4.2 presents the socio demographic characteristics of the respondents. These included sex, age, occupation, level of education, marital status and religion.

From results presented in Table 4.2, most of the respondents (both for the control and the experimental groups) were male. For instance among the rice farmers, about 56.6% were male and 43.4% were female. This same observation was not different for the non beneficiaries. Also, the same pattern was observed for the other two crops where males dominate in the activities. The reason for male dominance is probably because of the culture of the people in the study area, whereby most economic activities are carried out by male. This finding agrees with the study of Ike (2012).

On marital status, about 54.9% beneficiaries and 52.2% non beneficiaries, 48.5% beneficiaries and 53.4% non beneficiaries as well as 50% beneficiaries and 57.1% non beneficiaries were married among the rice farmers, maize farmers and yam farmers' respectively. This shows that majority of the beneficiaries were married, however, the analysis also revealed high proportion of widows among the respondents in all the three selected crops. The widows have about 28.6% beneficiaries and 40.6% non beneficiaries, 33.3% beneficiaries and 33.3% non beneficiaries as well as 37.5% beneficiaries and 25.7% non beneficiaries were widowed among the rice farmers, maize farmers and yam farmers' respectively. By implication, MDGs projects in relation to the selected crops favours married ones and widows. This could attest to high level of responsibilities in terms of household tasks shouldered on them.

Concerning the age of the respondents, the age group of 19-34 was the dominant group among the respondents with about 68.0%, 78.8% and 72.2% for the rice, maize and yam farmers

respectively that participated in MDGs farming projects, and about 69.6%, 66.7% and 68.6% for the respective farming groups that did not participate in MDGs farming projects. This age group is followed by the age bracket of 35-50 among all the respondents, while age bracket of ≤18 had the least proportion of respondents. This implies that MDGs farming projects offered greater opportunity for the youth and that provided better potentials for farming in terms of labour force.

Table 4.2 Distribution of Respondents by their Demographic Characteristics

Sex	Rice Farmers		Maize Farmers		Yam Farmers	
	Beneficiaries	Non Ben.	Beneficiaries	Non Ben.	Beneficiaries	Non Ben.
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
Male	69 (56.6)	38 (55.1)	19 (57.6)	9 (60.0)	39 (54.2)	20 (57.1)
Female	53 (43.4)	31 (44.9)	14 (42.4)	6 (40.0)	33 (45.8)	15 (42.2)
Total	**122 (100.0)**	**69 (100.0)**	**33 (100.0)**	**15 (100.0)**	**72 (100.0)**	**(100.)**
Age Category						
≤18	4 (3.3)	3 (4.3)	00.0 (00.0)	1 (6.6)	3 (4.2)	2 (5.7)
19-34	83 (68.0)	48 (69.6)	26 (78.8)	10 (66.7)	52 (72.2)	24 (68.6)
35-50	23 (18.9)	18 (26.1)	7 (21.2)	4 (26.7)	15 (20.8)	7 (20.0)
51 and above	12 (9.8)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	2 (2.8)	2 (5.7)
Total	**122 (100.0)**	**69 (100.0)**	**33 (100.0)**	**15 (100.0)**	**72 (100.0)**	**35 (100.0)**
Marital Status						
Married	67 (54.9)	36 (52.2)	16 (48.5)	8 (53.4)	36 (50.0)	20 (57.1)
Single	11 (9.1)	5 (7.2)	4 (12.1)	2 (13.3)	7 (9.7)	4 (11.4)
Divorced	9 (7.4)	00.0 (00.0)	2 (6.1)	00.0 (00.0)	2 (2.8)	2 (5.7)
Widowed	35 (28.6)	28 (40.6)	11 (33.3)	5 (33.3)	27 (37.5)	9 (25.7)
Total	**122 (100.0)**	**69 (100.0)**	**33 (100.0)**	**15 (100.0)**	**72 (100.0)**	**35 (100.0)**
Level of Education						
No formal Edu.	2(1.6)	00.0(00.0)	2(6.1)	00.0(00.0)	3(4.2)	00.0 (00.0)
Primary Edu.	24(19.7)	15(21.7)	9(27.3)	4(26.7)	17(23.6)	9 (25.7)
Secondary Edu.	52(42.6)	28(40.6)	11(33.3)	7(46.7)	28(38.9)	12 (34.3)
Post Sec Edu	23(18.9)	18(26.1)	9(27.3)	3(20.0)	17(23.6)	10 (28.6)
First Degree	21(17.2)	8(11.6)	2(6.1)	1(6.6)	4(5.6)	3 (8.6)
Post Graduate	00.0(00.0)	00.0(00.0)	00.0()	00.0(00.0)	3(4.2)	1 (2.8)
Total	**122 (100.0)**	**69 (100.0)**	**33 (100.0)**	**15 (100.0)**	**72 (100.0)**	**35 (100.0)**
Religion						
Islam	57 (46.7)	31 (44.9)	16 (48.5)	6 (40.0)	34 (47.2)	16 (45.7)
Christianity	61 (50.0)	33 (47.8)	14 (42.4)	7 (46.7)	35 (48.6)	19 (54.3)
Traditional	4 (3.3)	5 (7.3)	3 (9.1)	2 (13.3)	3 (4.2)	00.0 (00.0)
Total	**122 (100.0)**	**69 (100.0)**	**33 (100.0)**	**15 (100.0)**	**72 (100.0)**	**35 (100.0)**

Field Survey, 2016
Values in parenthesis are percentage

Distribution of respondents based on level of education shows that a higher proportion of the respondents have attended various level of formal education ranging from primary education to first degree. Put together, about 98.4% beneficiaries and 100.0% non beneficiaries for the rice farmers, 94% beneficiaries and 100.0% non beneficiaries for the maize farmers as well as 91.7% beneficiaries and 97.1% non beneficiaries for the yam farmers have attended minimum of primary education and maximum of first degree. This means that majority of MDGs beneficiaries have different educational background which can be used to improve on their productivity.

4.2 Extent of Crop Production

Various innovations were introduced by the MDGs to improve on the various crop productions such as land acquisition, access to seed and improved varieties and drought resistant specie, cropping pattern etc.

Table 4.3.1 shows that number of plots of farm land acquired by the beneficiaries have generally increased for all the groups of farmers after the intervention than before. Similarly, the average (mean value) number of farmland acquired by all the beneficiaries after the intervention have also increased by 26.3% for the rice farmers, 25.2% for the maize farmers and 28.6% for the yam farmers.

Table 4.3.1 Number of Farmland before and after the MDGs Intervention Projects

Variables	Rice Farmers			Maize Farmers			Yam Farmers		
	Frequency (%)			Frequency (%)			Frequency (%)		
	Before		After	Before		After	Before		After
Beneficiaries With One Plot of Farmland	67 (54.9)		38 (31.1)	16 (48.5)		8 (24.2)	42 (58.3)		22 (30.6)
Beneficiaries With Two Plot of Farmland	47 (38.5)		57 (46.7)	16 (48.5)		19 (57.6)	26 (36.1)		36 (50.0)
Beneficiaries With Three Plot of Farmland	8 (6.6)		26 (21.3)	1 (3.0)		6 (18.2)	4 (5.6)		14 (19.4)
Beneficiaries With Four Plot of Farmland	00.0 (00.0)		1 (0.8)	00.0 (00.0)		00.0 (00.0)	00.0 (00.0)		00.0 (00.0)
Total	**122 (100.0)**		**122 (100.0)**	**33 (100.0)**		**33 (100.0)**	**72 (100.0)**		**72 (100.0)**
	before	**after**	**Mean change (%)**	**before**	**after**	**Mean change (%)**	**before**	**After**	**Mean change (%)**
Mean	1.52	1.92	**26.3%**	1.55	1.94	**25.2%**	1.47	1.89	**28.6%**
Std. Deviation	0.620		0.745	0.564		0.659	0.604		0.703
Variance	0.384		0.555	0.318		0.434	0.365		0.495
Minimum	1		1	1		1	1		1
Maximum	3		4	3		3	3		3

Field Survey, 2016
Values in parenthesis are percentage

Consequently, the sizes of hectares of farmland cultivated by the beneficiaries have also increased for all the crops farmers after the intervention projects than before (see Table 4.3.2).

The proportional mean of the farmland size (in hectares) have also increased for all the beneficiaries by 46.6% among the rice farmers, 42.2% among the maize farmers as well as 59.5% among the yam farmers. From the analysis, it is evidenced that MDGs intervention projects enabled the beneficiaries to acquire more plots of farmland. The reason for the increase in numbers and sizes of farmland for the beneficiaries is because the project assisted the farmers and also encourages them to acquire more farmlands to increase on their production. This is done through arrangement made by the MDGs, the respective host communities and appropriate authorities to allow the farmers to use their farm reserved areas and part of their grazing areas for farming.

Table 4.3.2 Size of Farmland (in Hectare) before and after the MDGs Intervention Projects

Variables	Rice Farmers			Maize Farmers			Yam Farmers		
	Frequency (%)			Frequency (%)			Frequency (%)		
	Before		After	Before		After	Before		After
Ben. With 0.5 Hectare of Farmland	8 (6.6)		00.0 (00.0)	4 (12.1)		00.0 (00.0)	6 (8.3)		00.0 (00.0)
Beneficiaries With 1 Hectare of Farmland	78 (63.9)		35 (28.7)	16 (48.5)		8 (24.2)	48 (66.7)		17 (23.6)
Beneficiaries With 2 Hectare t of Farmland	30 (24.6)		68 (55.7)	9 (27.3)		18 (54.5)	15 (20.8)		42 (58.3)
Beneficiaries With 3 Hectare of Farmland	4 (3.3)		13 (10.7)	3 (9.1)		4 (12.1)	2 (2.8)		10 (13.9)
Beneficiaries With 4 Hectare Farmland	2 (1.6)		4 (3.3)	1 (3.0)		2 (6.1)	1 (1.4)		2 (2.8)
Beneficiaries With 5 Hectare Farmland	00.0 (00.0)		1 (0.8)	00.0 (00.0)		00.0 (00.0)	00.0 (00.0)		00.0 (00.0)
Beneficiaries With More than 5 Hectare Farmland	00.0 (00.0)		1 (0.8)	00.0 (00.0)		1 (3.0)	00.0 (00.0)		1 (1.4)
Total	**122 (100.0)**		**122 (100.0)**	**33 (100.0)**		**33 (100.0)**	**72 (100.0)**		**72 (100.0)**
	before	**after**	**Mean change (%)**	**before**	**after**	**Mean change (%)**	**before**	**after**	**Mean change (%)**
Mean	1.33	1.95	**46.6%**	1.49	2.12	**42.2%**	1.26	2.01	**59.5%**
Std. Deviation	0.6611		0.8986	0.8522		1.0535	0.6334		0.8474
Variance	0.437		0.807	0.726		1.110	0.401		0.718
Minimum	0.5		1.0	0.5		1.0	0.5		1.0
Maximum	4.0		7.0	4.0		6.0	4.0		6.0

Field Survey, 2016
Values in parenthesis are percentage

Distribution of respondents based on sources of farmland shows that farmland could either be inherited, purchased, rented or leased. Table 4.3.3 revealed that most of the farmlands for cultivating the various crops before the MDGs intervention were inherited before the intervention. After the intervention, the proportion of respondents that inherited their farmlands dropped in favour of those that purchased. A few of the farmers rented, while some few leased. This shows that, MDGs project beneficiaries were able to raise fund to purchase more plots of farmlands as a result of participating in the programme.

Table 4.3.3 Sources of Farmland before and after the MDGs Intervention Projects

Variables	Rice Farmers		Maize Farmers		Yam Farmers	
	Frequency (%)		Frequency (%)		Frequency (%)	
	Before	After	Before	After	Before	After
Inherited	64 (52.5)	49 (40.2)	14 (42.4)	11 (33.3)	32 (44.4)	25 (34.7)
Purchase	26 (21.3)	60 (49.2)	6 (18.2)	21 (63.6)	14 (19.4)	42 (58.3)
Rent	25 (20.5)	12 (9.8)	11 (33.3)	1 (3.0)	23 (31.9)	5 (6.9)
Lease	7 (5.7)	1 (0.8)	2 (6.1)	00.0 (00.0)	3 (4.2)	00.0 (00.0)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**

Field Survey, 2016
Values in parenthesis are percentage

Table 4.3.4 shows that majority of beneficiaries got their farm seeds at home before the intervention where 56.6% for the rice farmers, 63.6% for the maize and about 61.1% for the yam farmers. With the presence of the intervention projects, MDGs served as major source of farm seeds for the rice and maize farmers, however, due to the nature of their crop, most of the yam farmers still used seeds that were preserved at home.

Table 4.3.4 Sources of Farm Seeds before and after the MDGs Intervention Projects

Variables	Rice Farmers		Maize Farmers		Yam Farmers	
	Frequency (%)		Frequency (%)		Frequency (%)	
	Before	After	Before	After	Before	After
At Home	69 (56.6)	1 (0.8)	21 (63.6)	2 (6.1)	44 (61.1)	51 (70.8)
In the Market	53 (43.4)	15 (12.3)	12 (36.4)	2 (6.1)	28 (38.9)	6 (8.3)
Farmers Association	00.0 (00.0)	30 (24.6)	00.0 (00.0)	8 (24.2)	00.0 (00.0)	3 (4.2)
MDGs	00.0 (00.0)	76 (62.3)	00.0 (00.0)	21 (63.6)	00.0 (00.0)	12 (16.7)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72**	**72 (100.0)**

Field Survey, 2016
Values in parenthesis are percentage

This implies that, MDGs played a significant role in the supply of farm seeds to the beneficiaries for the rice and maize farmers.

Pertaining to the kind of farm seeds, Table 4.3.5 shows that the proportion of the farmers that used improved seeds increased sharply from 24.6% before to 72.1% after for the rice farmers; 24.2% before to 84.8% after for the maize farmers. However, most of the beneficiaries among the yam farmers used local seeds with about 93.1% before and 72.2% after the intervention

projects. Hence, as a result of the intervention projects, good numbers of the rice and maize farmers' beneficiaries were exposed to the use of improved seed, except the yam farmers where the nature of their crops dictates unavailability of improved seed even after the intervention projects.

Table 4.3.5 Kinds of Farm Seeds before and after the MDGs Intervention Projects

Variables	Rice Farmers		Maize Farmers		Yam Farmers	
	Frequency (%)		Frequency (%)		Frequency (%)	
	Before	After	Before	After	Before	After
Improved Seeds	30 (24.6)	88 (72.1)	8 (24.2)	28 (84.8)	5 (6.9)	11 (15.3)
Local Seeds	92 (75.4)	1 (0.8)	25 (75.8)	5 (15.2)	67 (93.1)	52 (72.2)
Both Improved and Local	00.0 (00.0)	33 (27.1)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	9 (12.5)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72**	**72 (100.0)**

Field Survey, 2016
Values in parenthesis are percentage

The distribution of the respondents based on sources of farm labour shows that prior to the MDGs intervention, family members served as the primary source of farm labour among all the beneficiaries, about 50.0% of the rice farmers, 57.6% of the maize farmers and 50.0% of the yam farmers used their families (see Table 4.3.6).

Table 4.3.6 Sources of Farm Labour before and after the MDGs Intervention Projects

Variables	Rice Farmers		Maize Farmers		Yam Farmers	
	Frequency (%)		Frequency (%)		Frequency (%)	
	Before	After	Before	After	Before	After
Family	61 (50.0)	18 (14.8)	19 (57.6)	4 (12.1)	36 (50.0)	9 (12.5)
Hired Labour	22 (18.0)	10 (8.2)	4 (12.1)	2 (6.1)	12 (16.7)	4 (5.6)
Tractor	10 (8.2)	51 (41.8)	2 (6.1)	12 (36.4)	5 (6.9)	31 (43.1)
Both family and Hired	29 (23.8)	43 (35.2)	8 (24.2)	15 (45.5)	19 (26.4)	28 (38.9)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**

Field Survey, 2016
Values in parenthesis are percentage

Thus, as a result of participating in the scheme, beneficiaries often used more of tractor as a major source of their farm labour after the intervention projects to the detriment of the use of family members and hired labour as obtained prior to the intervention scheme. This is because

MDGs, through the ministry of Agriculture and Rural Development provided subsidized tractor hiring services. In addition, most of the family members have been enrolled to schools mostly established by MDGs in their areas.

Table 4.3.7 shows that there is significant improvement in terms of the use of fertilizer among all the farmers after the MDGs intervention. About 80.3% among the rice farmers, 78.8% among the maize farmers and 77.8% among the yam farmers used fertilizer after the intervention. The pattern of the distribution was similar to that of the use of herbicide. This development could be due to the supply and distribution of the farm inputs by the MDGs. Similarly, the mean quantities of fertilizer used by the beneficiaries increased among all the group of farmers the average bags of fertilizer applied on a hectare of farmland increased to 9.20, 8.97 and 9.14 after the intervention projects from the average bags of 5.34, 5.55 and 5.85 prior to the intervention among the rice farmers, maize farmers and yam farmers respectively.

Concerning the nature of cropping pattern, there wasn't any considerable change even after the MDGs intervention. Both before and after the intervention, single cropping dominates the cropping pattern among all the farmers. This innovation does not influence the choice of the respondents because single cropping remained the best in terms of high yield.

All the respondents relied heavily on rain fed as the primary source of water to their crops. However, the proportion of the respondents that used irrigation among the rice and maize farmers increased to 36.1% and 30.3% after the intervention from 13.9% and 21.2% respectively before the intervention, while the proportion of the respondents that used irrigation among the yam farmers decreased from 5.6% to 2.8%. Hence, it is evidenced the innovation favours only rice and maize farmers' participants but has no meaningful influence on yam farmers. This is

because, the process of yam farming does not go well with the kind of irrigation (sub-surface) introduced by the MDGs in the study area.

Similarly, MDGs innovation in relation to use of high yielding variety shows that there is greater improvement for the rice and yam farmers as about 71.3% used the variety among the rice farmers and about 75.8% among the maize farmers after the intervention. Nevertheless, the innovation does not make any significant difference in terms of rice farming. In addition, the innovation based on the use of drought resistant variety does not seem to be adequate among all the beneficiaries even after the intervention projects. However, the rate was higher among the maize farmers than the rice and yam farmers. The reason could be improved yam seedling were not commonly found while MDGs did not make adequate provision for it due to difficulties associated with its preservation.

Table 4.3.7 Sustainable Land Management and Degree of Compliance with MDGs Innovations

	Rice Farmers		**Maize Farmers**		**Yam Farmers**	
	Frequency (%)		**Frequency (%)**		**Frequency (%)**	
	Before	**After**	**Before**	**After**	**Before**	**After**
Use of Fertilizer before and after the MDGs Intervention Projects						
No	49 (40.2)	6 (4.9)	15 (45.5)	1 (3.0)	31(43.1)	6 (8.3)
Yes	67 (54.9)	107 (87.7)	18 (54.5)	30 (90.9)	38(52.7)	63 (87.5)
Missing	6 (4.9)	9 (7.4)	00.0 (00.0)	2 (6.1)	3(4.2)	3 (4.2)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**
Use of Herbicide before and after the MDGs Intervention Projects						
No	67 (54.9)	17 (13.9)	14 (42.4)	5 (15.2)	49 (68.1)	13 (18.1)
Yes	49 (40.2)	98 (80.3)	18 (54.5)	26 (78.8)	20 (27.8)	56 (77.8)
Missing	6 (4.9)	7 (5.7)	1 (3.0)	2 (6.1)	3 (4.2)	3 (4.2)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**

Table 4.3.7 Cont'd

Quantity of fertilizer (per bag) used in a hectare and after the MDGs Intervention Projects						
Mean	5.34	9.20	5.55	8.97	5.85	9.14
Std. Deviation	2.70	3.27	2.54	3.36	2.35	3.23
Minimum	0	3	0	6	1	3
Maximum	10	16	10	16	10	15
MDGs	00.0 (00.0)	58 (47.5)	00.0 (00.0)	16 (48.5)	00.0 (00.0)	39 (54.2)
Government Agencies	34 (27.9)	9 (7.4)	8 (24.2)	1 (3.0)	22 (30.6)	8 (11.1)
Farmers Association	00.0 (00.0)	29 (23.8)	00.0 (00.0)	11 (33.3)	2 (2.8)	10 (13.9)
Market	88 (72.1)	26 (21.3)	25 (75.8)	5 (15.2)	45 (62.5)	15 (20.8)
Others	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	3 (4.2)	00.0 (00.0)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**
Nature of Cropping Pattern before and after the MDGs Intervention Projects						
Single Crop	83 (68.0)	85 (69.7)	14 (42.4)	23 (69.7)	48 (66.7)	55 (76.4)
Mixed/ Intercropping	39 (32.0)	37 (30.3)	18 (54.5)	9 (27.3)	24 (33.3)	17 (23.6)
Missing	00.0 (00.0)	00.0 (00.0)	1 (3.0)	1 (3.0)	00.0 (00.0)	00.0 (00.0)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**
Other Crops for Mixed or Intercropping						
Corn	13	35.1	00.0	00.0	3	17.6
Maize	24	64.9	00.0	00.0	9	53.0
Beans	00.0	00.0	5	62.5	00.0	00.0
Groundnut	00.0	00.0	3	37.5	00.0	00.0
Cassava	00.0	00.0	00.0	00.0	5	29.4
Total	**37**	**100.0**	**8**	**100.0**	**17**	**100.0**
Use of Rain fed before the MDGs Intervention Projects						
No	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)
Yes	112 (91.8)	115 (94.3)	31 (93.9)	31 (93.9)	67 (93.1)	69 (95.8)
Missing	10 (8.2)	7 (5.7)	2 (6.1)	2 (6.1)	5 (6.9)	3 (4.2)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**
Use of Irrigation before and after the MDGs Intervention Projects						
No	100 (82.0)	73 (59.8)	25 (75.8)	23 (69.7)	65 (90.3)	65 (90.3)
Yes	17 (13.9)	44 (36.1)	7 (21.2)	10 (30.3)	4 (5.6)	2 (2.8)
Missing	5 (4.1)	5 (4.1)	1 (3.0)	00.0 (00.0)	3 (4.2)	4 (5.6)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**
Use of High Yielding Variety before and after the Intervention Projects						
No	95 (77.9)	29 (23.8)	24 (72.7)	6 (18.2)	65 (90.3)	59 (81.9)
Yes	20 (16.4)	87 (71.3)	8 (24.2)	25 (75.8)	5 (6.9)	11 (15.3)
Missing	7 (5.7)	6 (4.9)	1 (3.0)	2 (6.1)	2 (2.8)	2 (2.8)
Total	122 (100.0)	122 (100.0)	33 (100.0)	33 (100.0)	72 (100.0)	72 (100.0)

Table 4.3.7 Cont'd

Use of Drought Resistant Specie before and after the MDGs Intervention						
No	102 (83.6)	76 (62.3)	25 (75.8)	12 (36.4)	64 (88.9)	59 (81.9)
Yes	11 (9.0)	39 (32.0)	6 (18.2)	19 (57.6)	5 (6.9)	12 (16.7)
Missing	9 (7.4)	5 (4.1)	2 (6.1)	2 (6.1)	3 (4.2)	1 (1.4)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**
Fertilizer Application before and after the MDGs Intervention Projects						
No	53 (43.4)	11 (9.0)	16 (48.5)	1 (3.0)	50 (69.4)	8 (11.1)
Yes	63 (51.6)	102 (83.6)	17 (51.5)	30 (90.9)	19 (26.4)	61 (84.7)
Missing	6 (4.9)	9 (7.4)	00.0 (00.0)	2 (6.1)	3 (4.2)	3 (4.2)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**
Application of Herbicide before and after the MDGs Intervention Projects						
No	69 (56.6)	16 (13.1)	13 (39.4)	5 (15.2)	41 (45.9)	10 (13.9)
Yes	46 (37.7)	98 (80.3)	18 (54.5)	26 (78.8)	28 (38.9)	58 (80.6)
Missing	7 (5.7)	8 (6.6)	2 (6.1)	2 (6.1)	3 (4.2)	4 (5.6)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**
Access to Extension Workers before and after the MDGs Intervention Projects						
No	107 (87.7)	10 (8.2)	29 (87.9)	3 (9.1)	64 (88.9)	4 (5.6)
Yes	9 (7.4)	104 (85.2)	3 (9.1)	27 (81.8)	7 (9.8)	62 (86.1)
Missing	6 (4.9)	8 (6.6)	1 (3.0)	3 (9.1)	1 (1.3)	6 (8.3)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**
Rate of meeting the Extension Workers in a season before and after the MDGs Intervention Projects						
Weekly	00.0 (00.0)	9 (8.7)	00.0 (100.0)	5 (18.5)	00.0 (00.0)	4 (6.5)
Monthly	3 (33.3)	70 (67.3)	1 (33.3)	17 (63.0)	3 (42.9)	42 (67.7)
Seasonally	6 (66.7)	25 (24.0)	2 (66.7)	5 (18.5)	4 (57.1)	16 (25.8)
Total	**9 (100.0)**	**104 (100.0)**	**3 (100.0)**	**27 (100.0)**	**7 (100.0)**	**62 (100.0)**
Sources of the Extension Service						
MGDs	89	85.6	20	74.1	52	83.9
Farmers Association	1	0.9	3	11.1	1	1.6
Government	14	13.5	4	14.8	9	14.5
Others	00.0	00.0	00.0	00.0	00.0	00.0
Total	**104**	**100.0**	**27**	**100.0**	**62**	**100.0**
Degree of Compliance with MDGs Recommended Production Innovations: Single Cropping						
Not Applicable	00.0	00.0	00.0	00.0	1	1.8
Non Compliant	9	10.6	1	4.3	7	12.7
Compliant	76	89.4	22	95.7	47	85.5
Total	**85**	**100.0**	**23**	**100.0**	**55**	**100.0**

Table 4.3.7 Cont'd

Inter Cropping					2	
Not Applicable	00.0	00.0	00.0	00.0	2	11.8
Non Compliant	26	70.3	8	88.9	12	70.6
Compliant	11	29.7	1	11.1	3	17.6
Total	**37**	**100.0**	**9**	**100.0**	**17**	**100.0**
Use of Fertilizer						
Not Applicable	1	0.9	00.0	00.0	00.0	00.0
Non Compliant	6	5.2	3	9.4	13	19.7
Compliant	109	93.9	29	90.6	53	80.3
Total	**116**	**100.0**	**32**	**100.0**	**66**	**100.0**
Use of Herbicide					3	
Not Applicable	3	2.9	00.0	00.0	3	5.2
Non Compliant	17	16.2	2	7.1	15	25.9
Compliant	85	80.8	26	92.9	40	68.9
Total	**105**	**100.0**	**28**	**100.0**	**58**	**100.0**
High Yielding Seed						
Not Applicable	3	3.3	2	7.4	1	7.7
Non Compliant	17	18.5	7	25.9	4	30.8
Compliant	72	78.2	18	66.7	8	61.5
Total	**92**	**100.0**	**27**	**100.0**	**13**	**100.0**
Drought Resistant Variety						
Not Applicable	6	13.0	4	19.0	1	8.3
Non Compliant	30	65.3	13	62.0	9	75.0
Compliant	10	21.7	4	19.0	2	16.7
Total	**46**	**100.0**	**21**	**100.0**	**12**	**100.0**
Access to Modern Storage Facilities before and after the MDGs Intervention Projects						
No	98 (80.3)	15 (12.3)	26 (78.8)	4 (12.1)	55 (76.4)	9 (12.5)
Yes	13 (10.7)	96 (78.7)	5 (15.2)	27 (81.8)	11 (15.3)	58 (80.6)
Missing	11 (9.0)	11 (9.0)	2 (6.1)	2 (6.1)	6 (8.3)	5 (6.9)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**
Provision of Modern Storage Facilities before and after the MDGs Intervention Projects						
MDGs	00.0 (00.0)	59 (55.7)	00.0 (00.0)	21 (80.8)	00.0 (00.0)	43 (70.5)
Self	9 (69.2)	16 (15.1)	4(80.0)	5 (19.2)	6 (54.5)	6 (9.8)
Government	00.0 (00.0)	00.0 (00.0)	1(20.0)	00.0 (00.0)	3 (27.3)	00.0 (00.0)
Farmers Association	00.0 (00.0)	16 (15.1)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	9 (14.8)
Others	00.0 (00.0)	00.0 (00.0	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)
Missing	4 (30.8)	15 (14.1)	00.0 (00.0)	00.0 (00.0)	2 (18.2)	3 (4.9)
Total	**13 (100.0)**	**106 (100.0)**	**5 (100.0)**	**26 (100.0)**	**11 (100.0)**	**61 (100.0)**

Table 4.3.7 Cont'd

Marketing of farm products before and after the MDGs Intervention Projects						
MDGs	00.0 (00.0)	69 (56.5)	00.0 (00.0)	22 (66.7)	00.0 (00.0)	43(59.7)
Self	93 (76.2)	23 (18.9)	29 (87.9)	5 (15.2)	58 (80.6)	14(19.4)
Government	29 (23.8)	21 (17.2)	00.0 (00.0)	5 (15.2)	00.0 (00.0)	9(12.5)
Farmers Association	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)
Others	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)	00.0 (00.0)
Missing	29 (23.8)	9 (7.4)	4 (12.1)	1 (3.0)	14 (19.4)	4(5.6)
Total	**122 (100.0)**	**122 (100.0)**	**33 (100.0)**	**33 (100.0)**	**72 (100.0)**	**72 (100.0)**

Field Survey, 2016
Values in parenthesis are percentage

With the MDGs innovation on extension services, majority of the beneficiaries with about 85.2% of the rice farmers, 81.1% of the maize farmers and about 86.1% of the yam farmers had access to extension workers after the intervention projects. Most of the farmers met the extension workers once in a month. Also, MDGs provided the extension services to about 85.6% of the rice farmers, 71.4% of the maize farmers and about 83.9% of the yam farmers. Thus, adequate provision of the extension services under the MDGs farming scheme enabled the farmers to have easy access to extension workers and also meet the extension workers more frequently.

Distribution of respondents based on degree of compliance with the MDGs recommended innovations shows that the respondents had complied with single cropping system. Unlike inter cropping/mixed cropping where only few among the practicing farmers had complied. It is evidenced that single cropping was the best choice of the respondents, therefore adhering to MDGs innovative recommendation on single cropping gives more yield than inter cropping/mixed.

Furthermore, the level of compliance based on fertilizer application shows high degree of adoption among all the farmers where at least about 93.9% of the rice farmers, 90.6% of the maize farmers and 80.3% of the yam farmers had complied. In the same vein, the pattern of

compliance among those that used herbicide was also high across all the crop farmers. Thus, complying with the recommended way of fertilizer application among the farmers is necessary because it enhances output while the use of herbicide reduces cost of production in terms of demand for labour.

In addition, there was high level of conformity with the MDGs recommended production innovations among the beneficiaries that used high yielding variety as about 78.2% of the rice farmers, 66.7% of the maize farmers and about 61.5% of the yam farmers had complied. However, the level of compliance based on the use of Drought resistant specie was low where only 21.7% among the rice farmers, 19.0% among the maize farmers and 16 7% among the yam farmers had complied. Compliance with MDGs innovation on the use of high yielding variety could attract bumper harvest among the farmers.

The distribution of the respondents in terms of access to modern storage facilities shows a significant improvement among the beneficiaries following the MDGs intervention projects, the proportion increased sharply from 10.7% before to 78.7% after among the rice farmers; from 15.2% before to 81.1% after among the maize farmers and from 15.3% before to 80.6% after among the yam farmers. Most of these facilities were provided by the MDGs farming scheme. In addition, MDGs intervention scheme had played a considerable role in marketing the products of the beneficiaries where the farmers were guaranteed of selling their products at a given price. MDGs served as a mediator between the farmers and different sources of markets where a minimum price for each product will be set at the beginning of each harvesting period.

4.3 Profitability Analysis

The results of the profitability analysis of the various farm enterprises are presented in Tables 4.4.1 and 4.4.2. The analysis shows that the income (per hectare) of the beneficiaries for the rice, maize and yam farmers were higher during the MDGs intervention than before while the profit of the beneficiaries were generally higher than the non beneficiaries. For instance, the net farm income (per hectare) of the beneficiaries increased by 62.4% (from ₦106,691.4 before to ₦173,285.0 after) for the rice farmers, 97.9% (from ₦87,410.9 before to ₦172,972.0 after) for the maize farmers as well as 75.9% (from ₦115,818.4 before to ₦203,793.2 after) for the yam farmers. While the net farm profit margin (per hectare) of the non beneficiaries increased by 24.4% (from ₦95,007.7 before to ₦118,151.4 after) for the rice farmers, 18.1% (from ₦124,685.9 before to ₦147,200.9 after) for the maize farmers as well as 24.1% (from ₦101,182.6 before to ₦125.540.3 after) for the yam farmers.

Table 4.4.1 Net Farm Income of MDGs Beneficiaries (Per Hectare) before and after the Projects

Variables	Rice Farmers			Maize Farmers			Yam Farmers		
	Before (₦)	After (₦)	% change	Before (₦)	After (₦)	% change	Before (₦)	After (₦)	% change
Average Costs Per Hectare	24266.33	36825.8	51.8%	18117.13	37881.65	109.1%	25317.01	40106.13	58.4%
Average Revenue Per Hectare	130957.7	210110.8	60.4%	105528	210853.6	99.8%	141135.5	243899.3	72.8%
Net Farm Income per Hectare	106691.4	173285	62.4%	87410.88	172972	97.9%	115818.4	203793.2	75.9%

Field Survey, 2016

Table 4.4.2 Net Farm Income of Non – Beneficiaries (Per Hectare) before and after the Projects

Variables	Rice Farmers			Maize Farmers			Yam Farmers		
	Before (₦)	After (₦)	% change	Before (₦)	After (₦)	% change	Before (₦)	After (₦)	% change
Average Costs Per Hectare	21596.52	22676.16	5.0%	19723.37	27765.13	40.8%	19436.14	25583.7	31.6%
Average Revenue Per Hectare	116604.2	140827.6	20.8%	144409.2	174966.1	21.2%	120618.8	151111	25.3%
Net Farm Income per Hectare	95007.66	118151.4	24.4%	124685.9	147200.9	18.1%	101182.6	125540.3	24.1%

Field Survey, 2016

The reason for the higher difference of the beneficiaries' net farm income over the non beneficiaries could be attributed to the increase in the farm output realized by the beneficiaries as a result of participating in MDGs farming project as well as adhering to the MGDs farming innovative requirements.

In addition, Table 4.4.3 shows double difference estimates which determined the average profit of the control and experimental groups and the mean profit margin between the two groups. the mean profit difference of the beneficiaries before and after the intervention projects was ₦190, 631.6, ₦237, 068.4 and ₦264, 045.0 for the rice farmer, maize farmer and yam farmer respectively, while the average profit difference of the non beneficiary farmers was ₦94,365.0, ₦115, 701 and ₦111, 993.6 for the rice farmers, maize farmers and yam farmers respectively. Based on these information, the double difference could be computed as:

Rice Farmers

$$DD = \left[\frac{1}{122}\ (41{,}245{,}650 - 17{,}988{,}600)\right] - \left[\frac{1}{69}\ (15{,}938{,}034 - 9{,}426{,}850)\right]$$

$$= 0.008197\ (23{,}257{,}050) - 0.014493\ (6{,}511{,}184)$$

$$= 96{,}266.6$$

Maize Farmers

$$DD = \left[\frac{1}{33}\ (12{,}106{,}827 - 4{,}283{,}570)\right] - \left[\frac{1}{15}\ (4{,}462{,}396 - 2{,}726{,}880)\right]$$

$$= 0.030303\ (7{,}823{,}257) - 0.066667\ (1{,}735{,}516)$$

$$= 121{,}367.3$$

Yam Farmers

$$DD = \left[\frac{1}{72}\ (29{,}551{,}640 - 10{,}540{,}400)\right] - \left[\frac{1}{35}\ (9{,}670{,}996 - 5{,}751{,}220)\right]$$

= 0.013889 (19,011,240) – 0.028571 (3,919,776)

= 152,051.4

Table 4.4.3 Simple Double difference estimates of the impact of MDGs on the Income of the Beneficiary

Variables	Rice Farmers Mean Difference (₦)	Maize Farmers Mean Difference (₦)	Yam Farmers Mean Difference (₦)
Beneficiaries	190,631.6	237,068.4	264,045.0
Non –Beneficiaries	94.365.0	115,701	111,993.6
Double Difference	96,266.6	121,367.3	152,051.4

Field Survey, 2016

The estimated double mean profit difference between the experimental and the control groups shows positive profit margin of about N96,266.6 for the rice farmers, N 121,367.3for the maize farmers and N152,051.4 for the yam farmers. Positive double average difference depicts positive impact of MDGs on income of the beneficiaries due to increase in output. This finding is consistent with the findings of Simonyan et al (2012) and Ike (2012).

4.4 Analysis of Poverty Status of the farmers

4.4.1 Foster, Greer and Thorbecke (FGT) Poverty Indices

Table 4.5.1 shows the FGT poverty index. The proportion of farmers with mean annual income greater or equal to 2/3rd of their respective average annual income was considered as non poor, which shows that 24.4% and 43.2% before and after the project respectively among the beneficiaries, 16.8% and 24.4% before and after the project respectively among the non beneficiaries were non poor. Farmers with mean annual income less than 2/3rd but greater than the lower poverty line (1/3rd of their average annual income) were considered as moderate poor

such that 35.2% and 34.4% before the project among the beneficiaries and non beneficiaries respectively, also 23.3% and 31.1% after the project among the beneficiaries and non beneficiaries respectively were moderate poor. Moreover, the proportion of farmers with mean annual income below the lower poverty line were among the core poor (extremely poor), where about 40.5% before the project and 33.0% after the project among the beneficiaries as well as 48.7% before the project and 44.5% after the project were extremely poor.

This situation implied high poverty incidence among the farmers, however the proportion of the incidence before the MDGs project was higher than after the MDGs project and also the proportion was higher among the non beneficiaries. This means that MDGs project intervention had improved the poverty status of the beneficiaries due to increase in crop production.

Table 4.5.1 Annual Income and Poverty Status of the Farmers

Index	**Beneficiaries**		**Non Beneficiaries**	
	Before	**After**	**Before**	**After**
Mean Annual Income 2/3rd of Mean Income 1/3rd of Mean Income	₦144, 548.8 ₦96, 365.9 ₦48,182.9	₦150, 461.8 ₦243, 477.6 ₦121,738.8	₦365, 216.4 ₦100, 307.8 ₦50,153.9	₦ 252, 701.1 ₦168, 467.4 ₦84,233.7
Headcount Index				
Core Poor	40.5%	33.0%	48.7%	44.5%
Moderate Poor	35.2%	23.8%	34.4%	31.1%
Non Poor	24.3%	43.2%	16.8%	24.4%
Poverty Gap Index				
Core Poor	0.33	0.11	0.38	0.23
Moderate Poor	0.20	0.04	0.15	0.05
Poverty Severity				
Core Poor	0.40	0.18	0.42	0.32
Moderate Poor	0.26	0.10	0.22	0.12

Field Survey, 2016

Poverty Gap Index (FGT_1) shows poverty indices of the core poor before the MDGs project to be 0.33 and 0.38 among the participants and non participants respectively and the indices of averagely poor to be 0.20 and 0.15 among the participants and non participants respectively. This implies that moderately poor were 20% below the poverty line among the beneficiaries and 15%

among the non beneficiaries before the project, while core poor were 33% worse among the beneficiaries and 38% worse among the non beneficiaries. In order to get out of poverty, an averagely poor among the participants need additional income of 20% of ₦144, 548.8 (₦28, 909.8) annually and a core poor has to mobilize financial resource of about 33% more of ₦144, 548.8 than it was needed for the moderate poor. Similarly, a moderate poor among the non participants need additional income of 15% of ₦100307.8 (₦15046) annually and a core poor has to raise fund of about 38% more of ₦100307.8 (₦38117.0) than it was needed for the moderate poor.

Furthermore, the indices revealed lower poverty gap among the core poor of about 0.11 or 11% for the beneficiaries and 0.23 or 23% for the non beneficiaries after the MDGs intervention project. Likewise, the indices among the averagely poor had dropped to 0.04 or 4% for the beneficiaries and 0.05 or 5% for the non beneficiaries. The results implied lower poverty gap for the beneficiaries than non beneficiaries both among the core poor and moderate poor, indicating that the participants were better off. The result also indicates that to escape poverty a moderate poor among the beneficiaries required 4% of ₦365216.4 annual income and a core poor needed about 11% more of ₦365216.4 annual income in addition to what was required for a moderate poor. Equally, a moderate poor among the non participants needed about 5% of ₦163, 467.4 annual income and a core poor has to raise fund of about 23% more of ₦163, 467.4 than it was needed for the moderate poor.

Lastly, FGT_2 revealed lower poverty severity among the beneficiaries than non beneficiaries after the intervention project. The indices for the core poor was about 0.18 among the beneficiaries as against the 0.32 among the non beneficiaries, while the indices for the moderate poor was about 0.10 among the beneficiaries as against the 0.12 among the non beneficiaries.

Hence, the lower poverty severity among the participants implied that MDGs intervention project has contributed toward improving poverty status of the beneficiaries.

4.4.2 Logit Regression Results

The study also considers other determinants of income poverty based on social aspects of livelihood of the beneficiaries. These determinants using logits regression are presented and discussed in Table 4.5.2.

Table 4.5.2 Logit Regression of Determinants of Income Poverty

Variables	Coefficient	Std. Error	Z-Statistics	Prob.	Odds Ratio
Size of Hhold	0.959216	0.365378	2.625267	0.0087	2.610
Formal Edu	-1.673113	0.377978	-4.426480	0.0000	0.188
Square Meals	-1.396384	0.376608	-3.707791	0.0002	0.247
Imprvd Hlthcare	-0.891313	0.357612	-2.492405	0.0127	0.410
Major Occuptn	-1.447890	0.380558	-3.804648	0.0001	0.235
No of Depnts in SchL	1.286041	0.369735	3.478278	0.0005	3.618
Type of House	-0.701307	0.356692	-1.966144	0.0493	0.496
C	1.934697	0.540746	3.577826	0.0003	6.922
McFadden R-squared		0.363888	S.E. of regression		0.387291
LR Statistics		113.3402	Log likelihood		-99.06479
Prob.(LR statistic)		0.000000			
Number of observation		227			

Source: Output from E-views 9

Results from the logit regression show that the coefficients of the size of household and number of dependents in school were significantly positive which is in line with a priori expectation while the coefficients of access to formal education, square meals, improved healthcare, major

occupation and type of house were significant negative (at 5% level of significance) which were also in conformity with a priori expectation. These results revealed that while beneficiaries with larger family size and beneficiaries with higher number of dependents in school were more likely to be poor, beneficiaries with formal education, beneficiaries that could afford at least three square meals a day, beneficiaries that have access to improved healthcare facilities, beneficiaries that considered farming as their major occupation and beneficiaries that lived in a good house with cement wall, cement floor and zinc roof were less likely to be poor. This implies that all the variables under investigation were found to be significant determinants of poverty in the study area.

To be precise, we consider the odds ratios of the binary model which revealed that larger family household sizes were 2.610 times more likely to be poor compared to households with smaller family sizes and households with higher number of dependents in school were 3.618 times more likely to be poor compared to those with less number of dependents in school. This shows that increase in household sizes of MDGs beneficiaries as well as increase in the number of dependents sponsored by the beneficiaries in school increase their likelihood of being poor. That is, if the number of dependents in a family increase more burdens would be on the household in terms of feeding, clothing, housing, health etc which increases household's expenditure without a corresponding increase in his disposable income, therefore increases his chance of being poor. Similarly, the more the number of dependents a beneficiary sponsors to school, the higher his likelihood of being poor.

Similarly, beneficiaries with formal education were 0.188 times less likely to be poor. That means a unit increase in access to formal education reduces the likelihood of the beneficiaries being poor by 18.8%. This is because education is a tool that gives the beneficiaries necessary

skills capable of improving their productivity and enhancing their output. Also, beneficiaries that could afford at least three square meals were 0.247 times less likely to be poor. That is, a unit increase in at least three square meals affordability reduces the probability of the beneficiaries being poor by 24.7%. Food is an important element in human life that improves their productive capacity, because people that were adequately fed have the choice and the ability to mobilize productive resources unlike those that could not afford three square meals a day whose desire is always to make every effort to get enough food.

In addition, beneficiaries that had access to improved healthcare were 0.410 times less likely to be poor. Poverty and improved healthcare are linked up together, access to improved healthcare of MDGs users implies good health condition which in turns increases the productive capacity and enables them to earn more income. Finally, beneficiaries that considered farming as their major occupation were 0.235 times less likely to be poor. This implies that a unit increase in farming as a major occupation reduces the likelihood of the beneficiaries being in poverty by 23.5%. Beneficiaries that have farming as their major occupation produced more output than those that have other things rather than farming, because all their times and their resources have been dedicated to farming. Hence, more output would mean more income and more income reduces the chance of being poor. Also, type of house used by the beneficiaries was found to be a significant determinant of poverty. That is, beneficiaries that lived in a house with cement walls and zinc roofs were 0.496 times less likely to be poor. This result implies that a better house has higher live span that could be used for a number of years (other things been equal) and reduces the tendency of frequent spending on repairing or building new houses, hence reduces pressure on beneficiaries' income. This agrees with findings of Kalat *et at* (2015) and Samuel *et al* (2014).

Given the robustness check of the overall significance of the model, the Likelihood Ratio (LR) test revealed that the model is robust considering that all the included variables were together statistically significant as indicated by 0.00 probability of the LR value of 113.34 . The results therefore reject the null hypothesis of no significant impact of MDGs projects on poverty status of the participants. This implies that MDGs intervention has significant impact on poverty status of the beneficiaries. Also, McFadden R-Squared of 0.363888 shows that MDGs intervention project in the study area has reduce poverty status by 36.4%.

Further analysis was drawn from the Hosmer-Lemeshow test of Goodness of fit (GOF) of the logistic regression model (see Appendix III). GOF test whether there is a linear relationship between the predictor variables and the log odds of the criterion variable. A chi-square statistic was computed comparing the observed frequencies with those of expected under the linear model. A high Chi-square value of 0.5366 at 5% level of significance implies that the data fit the model very well. This could be due to the fact that MDGs intervention project was able to improve the earnings of the beneficiaries which enable them to have better access to basic necessities of life thereby improving their poverty status.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The study assessed the impact of the Millennium Development Goals (MDGs) on poverty, case study of selected crop farmers in Lafia Local Government, Nasarawa State. Two stage multistage sampling and purposive random sampling techniques were used. Using Yamane's (1967) formula, a sample size of 277 farmers was drawn from the population of 938 beneficiaries of MDGs intervention projects and 137 comparable group of non participants. Data were collected from Rice farmers, Maize farmers and Yam farmers. Similar data were equally collected from the same categories of farmers who did not take part in the MDGs programme. The analytical techniques used included descriptive statistics such as frequency tables. Percentage, ratio; accounting techniques such as the net farm income for the measure of profitability, FGT of measure of poverty and the econometrics logistics model for measuring the determinants of poverty.

The study revealed that majority of the respondents were male and the intervention projects favoured the married ones followed by widows. Also, most of the respondents had attended at least primary school.

The study found that the farming innovations introduced by MDGs included high yielding seedling, land management, cropping pattern etc and the level of adoption among the beneficiaries of these innovations were high. Other findings suggest that there is an increase in the net farm income (per hectare) of both beneficiaries and non beneficiaries after the intervention project, however the proportionate increase in the net farm income (per hecter) of

the beneficiaries was higher than that of the non beneficiaries. The net income (per hectare) of the beneficiaries increased by 62.4% for the rice farmers as against the 24.4% obtained by the non beneficiaries, 97.9% as against the 18.1% among the maize farmers' beneficiaries and non beneficiaries respectively and75.9% as against the 24.1% among the yam farmers' beneficiaries and non beneficiaries respectively.

The mean income difference of the beneficiaries was ₦190, 631.6 for the rice farmers, ₦237, 068.4 for the maize farmers and ₦264, 045.0 for the yam farmer while the mean income difference of non beneficiaries was ₦94,365.0, ₦115, 701 and ₦111, 993.6 for the rice farmers, maize farmers and yam farmers respectively. In the light of the above, the estimated double mean income difference was about ₦96, 266.6 among the rice farmers, ₦121, 367.3 among the maize farmers and ₦152, 051.4 among the yam farmers.

Findings on the farmers' poverty status revealed that there was high poverty incidence among the farmers, although the proportion of the incidence was higher among the non beneficiaries. Poverty gap index (FGT_1) shows lower poverty gap for the beneficiaries than non beneficiaries both among the core poor and moderate poor, likewise FGT_2 revealed lower poverty severity among the beneficiaries than non beneficiaries after the intervention project.

Furthermore, the study shows that social poverty variables such as square meals, size of household, improved healthcare, education, occupation and better shelter significantly influenced poverty status of the beneficiaries.

5.2 Conclusion

From the results of the study, it has been found that MDGs intervention projects have significantly improved the income of the beneficiaries and enhanced the quality of their livelihood. Incidence, depth, and severity of poverty were comparably low among the beneficiaries after the intervention project, meaning that MDGs intervention project has contributed toward improving poverty status of the beneficiaries. Besides, food, education, family size, good health and good housing confirmed significant determinants of income poverty among the beneficiaries. It has been observed that the general improvements realized by the beneficiaries were attributed to their participation in the MDGs intervention scheme as well as their compliance with most of the MDGs farming innovations.

5.3 Recommendations

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

i) As a result of the success of MDGs farming innovations on improved output and income, the project should be extended to more communities in the state.

ii) Although the levels of adoption of the MDGs farming innovations among the beneficiaries were high, some beneficiaries doubted and resisted some of the innovations probably due to lack of enlightenment and low level of education. As such the state government should intensify public enlightenment to persuade the farmers to comply with some of the MDGs production innovations through, particularly components like drought resistant species, cropping pattern and irrigation where the level of adoptions were generally poor among the farmers.

iii) It has been observed that the farm output realized by the beneficiaries increased drastically as a result of participating in the MDGs farming project from 151,100kg to 388,800kg among the rice farmers, from 45,200kg to 131,000kg among the maize farmers and from 838 tons to 2,257 tons among the yam farmers. However, MDGs did not take into account adequate provision of sources of markets and marketing activities to absorb the excesses. In some cases, the situation is escalated due to absence of some functional facilities such as good road networks and modern means of communication. For example, it was discovered that there was bumper harvest in the communities around Assakio West and Assakio East but there was no good road networks to transport the products. Therefore, government should consider provision of these facilities so as to enable easy access to source of market for the farmers.

iv) The MDGs focused more attention on production without much considering other livelihood supportive facilities such as good education and improved healthcare facilities. Therefore, more public schools (especially primary and secondary) and modern healthcare facilities should constructed in the study area with particular attention to areas like Assakio west and Barikin Abdullahi (B.A.D) communities. In order to complement this effort, there should be compulsory and free basic education for all by the govwernment and provision of modern healthcare equipment to the existing rural healthcare centres.

v) The farmers always think of the possible ways to boost their outputs without considering the necessary ways to add value to the products in order to earn higher income. For example, in the study area only Barikin Abdullahi (B.A.D) had access to rice processing factory (Rice Mills). Therefore, the farmers should be encouraged to

engage in value chain production through establishing agriculture related processing industries in their areas such as Rice Mills, maize processing factories etc. Value chain production will provide an off – farm employment opportunities for all types of labour and will also augment the earnings of the beneficiaries.

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APPENDICES

APPENDIX I: FARMERS' QUESTIONNAIRE

Dear Respondent,

I am an M.Sc student, Department of Economics, Ahmadu Bello University, Zaria. I am carrying out a study titled "An Analysis of the Impact of Selected Agricultural crop Projects of the Millennium Development Goals (MDGs) on Poverty Alleviation in Lafia Local Government, Nasarawa State". This questionnaire intends to acquire information that will be used to assess the above topic in your community. Your responses will help to facilitate the process and make meaningful contribution toward achieving the objective of this study. Kindly fill in the enclosed questionnaire as all information provided will be treated as confidential.

Thanks for your anticipated cooperation

QUESTIONNAIRE TO THE BENEFICIARIES

SECTION A: PERSONAL DATA

1. Sex: (a) male ( ) (b) female ( )

2. How old are you?.....

3. Marital status: (a) married ( ) (b) Single ( ) (c) Divorced ( ) (d) Widowed ( ) (e) Others (specify) ……..

4. Occupation ……

5. Household Size…….

6. Location of Residence

(b) Village/Town ……..

(c) Local Government Area …….

(d) State ……

7. Religion: (a) Islam ( ) (b) Christianity ( ) (c) Traditional ( ) (d) Others (specify) …….

8. Educational Qualification: (a) No Formal Education ( ) (b) Qur'anic Education ( ) (c)

Primary Education ( ) (d) Secondary Education ( ) (e) Post Secondary Education

( ) (f) First Degree ( ) (g) Post Graduate Degree ( ) (h) Others (specify) …….

SECTION B: MDGs and Innovative Crop Production for High Yield and Enhanced Income

9. Are you a beneficiary of the MDGs? (a) Yes ( ) (b) No ( )

10. For how long are you a beneficiary MDGs? (yrs)……..

11. Were you a farmer before becoming beneficiary of MDGs? (a) Yes ( ) (b) No ( )

12. For how long were you farming (yrs)……..

13. The table 12 below is for locations and size of farmland acquisition, please fill it as appropriate

Table 12

Variables	**Before MDGs Intervention**	**After MDGs Intervention**
No of Farmland		
Size of Farmland (in hectare)		

14. Use the tables 13a, 13b and 13c below to fill the information concerning the sources of farmland, sources of seeds and kinds of seeds.

Table 13a:

Sources of farmland	**Before MDGs Intervention**	**After MDGs Intervention**
Inherited		
Purchase		
Rent		
Lease		

Table 13b:

Sources of seeds	**Before MDGs Intervention**	**After MDGs Intervention**
At home		
In the Market		
Farmers association		
MDGs		
Others (specify)		

Table 13c:

Kinds of seeds	**Before MDGs Intervention**	**After MDGs Intervention**
Improved seed		
Local seed		
Both Improved and local seeds		

15. Please indentify the number of each the following sources of farm labour in the table 14 below

Table 14

Variables	**Before MDGs Intervention**	**After MDGs Intervention**
Family		
Hired labour		
Tractor		
Both family and hired		

16. Use the following farm inputs to fill in the tables 15 below

Table 15

Variables	**Before MDGs Intervention**	**After MDGs Intervention**
Use of Fertilizer		
Use of Herbicide		
Use of Insecticide		

17. Specify the Quantity of fertilizer used (per hectare) in the table 16 below

Table 16

Variables	**Before MDGs Intervention**	**After MDGs Intervention**
Quantity of Fertilizer (htr)		

18. Which of the following sources do you get fertilizer before the MDGs project intervention (a) government agencies (b) farmers association (c) market (d) others specify……

19. Which of the following sources do you get fertilizer after the MDGs project intervention (a) MDGs (b) government agencies (c) farmers association (d) market (e) others specify……

20. Indicate the nature of your cropping pattern in the table 19 below

Table 19

Variables	**Before MDGs Intervention**	**After MDGs Intervention**
Single crop		
Mixed crop		
Intercropping		

21. If you used mixed or intercropping indicate the other crops…….

22. Please fill in the blank spaces based on the Sustainable Land Management Practice (SLMP) in the table 21 below

Table 21

Variables	**Before MDGs Intervention**	**After MDGs Intervention**
Rainfed		
Irrigation		
High Yielding Variety		
Drought Resistant Specie		
Fertilizer Application		
Herbicide		
Pesticide		

23. Do you have access to extension workers before the MDGs project intervention (a) yes ( ) (b) no ( )

24. If the answer to question 22 is yes, how frequent do you meet extension workers in a season (a) weekly (b) monthly (c) seasonally (d) others specify…….

25. Do you have access to extension workers after the MDGs project intervention (a) yes ( ) (b) no ( )

26. If the answer to question 24 is yes, how frequent do you meet extension workers in a season (a) weekly (b) monthly (c) seasonally (d) others specify…….

27. who provides you the extension services (a) MDGs (b) farmers association (c) government (d) others (specify) ……

28. MDGs has recommended the following production innovations. The score board scale 1 – 5 shows the least compliance to maximum compliance by the farmers. Please rate the following innovations based on the level of compliance, where 5 is highly compliant, 4 is compliant, 3 is fairly compliant, 2 is less compliant and 1 is least compliant. While 0 means not applicable.

Innovations	**5**	**4**	**3**	**2**	**1**	**0**
Single cropping						
Inter cropping						
Use of fertilizer						
Use of Herbicide						
High yielding seed						
Drought resistant variety						

29. Do you have access to modern storage facilities to hoard farm produce before the MDGs intervention projects (a) yes ( ) (b) no ( )

30. If answer to question 28 is yes, who provides the storage facilities (a) self ( ) (b) government ( ) (c) farmers association ( ) (d) others (specify)……

31. Do you have access to modern storage facilities to hoard farm produce after the MDGs intervention projects (a) yes ( ) (b) no ( )
32. If answer to question 30 is yes, who provides the storage facilities (a) MDGs (b) self ( ) (c) government ( ) (d) farmers association ( ) (e) others (specify)……
33. Who takes the decision on marketing the farm produce before the MDGs intervention projects (a) self ( ) (b) government ( ) (c) farmers association ( ) (d) others (specify) ……
34. Who takes the decision on marketing the farm produce after the MDGs intervention projects (a) MDGs (b) self ( ) (c) farmers association ( ) (d) others (specify) ……..
35. Please, specify the costs of each of the farm inputs incurred on production in the table 34 below

Table 34

Costs of Inputs	**Before MDGs Intervention**			**After MDGs Intervention**		
	Quantity	Unit Price (₦)	Total costs (Q*P)	Quantity	Unit Price (₦)	Total costs (Q*P)
Labour						
Seed						
Fertilizer						
Pesticide						
Herbicide						

36. Please indicate the quantity of farm yield (in bags/tons), the unit price of output per bag/ton (₦) and the total revenue in the table 35 below

Table 35

Before MDGs Intervention			**After MDGs Intervention**		
Total Output	Unit Price (₦) per bag/ton	Total revenue (₦)	Total Output	Unit Price(₦) per bag/ton	Total revenue (₦)

SECTION D: DATA ON SOCIAL POVERTY INDICES

37. What type of dwelling used by you and your family before the MDGs intervention projects (a) Mud house with mud floor and thatched roof ( ) (b) Mud house with cement floor and thatched roof ( ) (c) Mud house with cement floor and zinc roof ( ) (d) cement wall with cement floor and zinc roof ( ) (e) others (specify)…….
38. What type of dwelling used by you and your family after the MDGs intervention projects (a) Mud house with mud floor and thatched roof ( ) (b) Mud house with cement floor and thatched roof ( ) (c) Mud house with cement floor and zinc roof ( ) (d) cement wall with cement floor and zinc roof ( ) (e) others (specify)…….

39. What was the nature of square meals per day that you and your family take before the MDGs intervention projects (a) one square meal ( ) (b) two square meal ( ) (c) three square meal ( ) (d) others (specify)……..

40. What is the nature of square meals per day that you and your family take after the MDGs intervention projects (a) one square meal ( ) (b) two square meal ( ) (c) three square meal ( ) (d) others (specify)……

41. What was your major source of drinking and cooking water before the MDGs intervention projects (a) tap water (connection to houses) ( ) (b) tap water (communal) ( ) (c) Borehole ( ) (d) Well ( ) (e) Stream/Pond/River ( ) (f) Others (specify)……

42. What is your major source of drinking and cooking water after the MDGs intervention projects (a) tap water (connection to houses) ( ) (b) tap water (communal) ( ) (c) Borehole ( ) (d) Well ( ) (e) Stream/Pond/River ( ) (f) others (specify)……

43. What was the distance to the source of water before the MDGs intervention projects (a) less than one kilometer ( ) (b) one to two kilometers ( ) (c) more than two kilometers ( )

44. What is the distance to the source of water after the MDGs intervention projects (a) less than one kilometer ( ) (b) one to two kilometers ( ) (c) more than two kilometers ( )

45. What types of health care facility do you and your family visit before the MDGs intervention projects (a) specialist hospital ( ) (b) general hospital ( ) (c) dispensary ( ) (d) clinic ( ) (e) traditional health care ( ) (f) faith-healing (g) other (specify)……..

46. What types of health care facility do you and your family visit after the MDGs intervention projects (a) specialist hospital ( ) (b) general hospital ( ) (c) dispensary ( ) (d) clinic ( ) (e) traditional health care ( ) (f) faith-healing (g) other(specify)……..

47. What was the distance to the nearest health care source before the MDGs intervention projects (a) Less than one kilometer ( ) (b) one to two kilometers ( ) (c) two to three kilometers ( ) (d) three to four kilometers ( ) (e) more than four kilometers ( )

48. What is the distance to the nearest health care source after the MDGs intervention projects (a) Less than one kilometer ( ) (b) one to two kilometers ( ) (c) two to three kilometers ( ) (d) three to four kilometers ( ) (e) more than four kilometers ( )

49. Do your children go to school before the MDGs intervention projects (a) yes ( ) (b) no ( )

50. If answer to question 52 is yes, were they in (a) public school ( ) (b) private school ( ) (c) non formal education ( )

51. What was the estimated distance to the school (a) Less than one kilometer ( ) (b) One to two kilometers ( ) (c) two to three kilometers ( ) (d) three to four kilometers ( ) (e) above four kilometers ( )

52. Do your children go to school after the MDGs intervention projects (a) yes ( ) (b) no ( )

53. If answer to question 55 is yes, were they in (a) public school ( ) (b) private school ( ) (c) non formal education ( )

54. What is the estimated distance to the school (a) less than one kilometer ( ) (b) one to two kilometers ( ) (c) two to three kilometers ( ) (d) three to four kilometers ( ) (e) above four kilometers ( )

55. How many persons did you sponsor in school before the MDGs intervention projects?

a) 1 ( ) b) 2 ( ) c) 3 ( ) d) 4 ( ) e) 5 above ( )

56. How persons did you sponsor in school after the MDGs intervention projects?

a) 1 ( ) b) 2 ( ) c) 3 ( ) d) 4 ( ) e) 5 above ( )

QUESTIONNAIRE TO NON – BENEFICIARIES

SECTION A: PERSONAL DATA

1. Sex: (a) male ( ) (b) female ( )

2. How old are you?.....

3. Marital status: (a) married ( ) (b) Single ( ) (c) Divorced ( ) (d) Widowed ( ) (e) Others (specify) ……..

4. Occupation ……

5. Household Size……..

6. Location of Residence

(b) Village/Town ……..

(c) Local Government Area …….

(d) State ……

7. Religion: (a) Islam ( ) (b) Christianity ( ) (c) Traditional ( ) (d) Others (specify) …….

8. Educational Qualification: (a) No Formal Education ( ) (b) Qur'anic Education ( ) (c)

Primary Education ( ) (d) Secondary Education ( ) (e) Post Secondary Education

( ) (f) First Degree ( ) (g) Post Graduate Degree ( ) (h) Others (specify) …….

SECTION B: Crop Production for High Yield and Enhanced Income: Rice Farmers

9. Were you a farmer before the MDGs intervention projects? (a) Yes ( ) (b) No ( )

10. For how long were you farming (yrs)……..

11. The table 10 below is for locations and size of farmland acquisition, please fill it as appropriate

Table 10

Variables	Before MDGs Intervention	After MDGs Intervention
No of Farmland		
Size of Farmland (in hectare)		

12. Use the tables 11a, 11b and 11c below to fill the information concerning the sources of farmland, sources of seeds and kinds of seeds.

Table 11a:

Sources of farmland	Before MDGs Intervention	After MDGs Intervention
Inherited		
Purchase		
Rent		
Lease		

Table 11b:

Sources of seeds	Before MDGs Intervention	After MDGs Intervention
At home		
In the Market		
Farmers association		
MDGs		
Others (specify)		

Table 11c:

Kinds of seeds	Before MDGs Intervention	After MDGs Intervention
Improved seed		
Local seed		
Both Improved and local seeds		

13. Please indentify the number of each the following sources of farm labour in the table 12 below

Table 12

Sources of Farm Labour	Before MDGs Intervention	After MDGs Intervention
Family		
Hired labour		
Tractor		
Both family and hired		

14. Use the following farm inputs to fill in the tables 13 below

Table 13

Variables	**Before MDGs Intervention**	**After MDGs Intervention**
Use of Fertilizer		
Use of Herbicide		
Use of Insecticide		

15. Specify the Quantity of fertilizer used (per hectare) in the table 14 below

Table 14

Variables	**Before MDGs Intervention**	**After MDGs Intervention**
Quantity of Fertilizer (htr)		

16. Which of the following sources do you get fertilizer before the MDGs project intervention (a) government agencies (b) farmers association (c) market (d) others specify……

17. Which of the following sources do you get fertilizer after the MDGs project intervention (a) government agencies (b) farmers association (c) market (d) others specify……

18. Indicate the nature of your cropping pattern in the table 17 below

Table 17

Variables	**Before MDGs Intervention**	**After MDGs Intervention**
Single crop		
Mixed crop		
Intercropping		

19. If you used mixed or intercropping indicate the other crops…….

20. Please fill in the blank spaces based on the Sustainable Land Management Practice (SLMP) in the table 19 below

Table 19

Variables	**Before MDGs Intervention**	**After MDGs Intervention**
Rainfed		
Irrigation		
High Yielding Variety		
Drought Resistant Specie		
Fertilizer Application		
Herbicide		
Pesticide		

21. Do you have access to extension workers before the MDGs project intervention (a) yes ( ) (b) no ( )

22. If the answer to question 20 is yes, how frequent do you meet extension workers in a season (a) weekly (b) monthly (c) seasonally (d) others specify…….

23. Do you have access to extension workers after the MDGs project intervention (a) yes ( ) (b) no ( )
24. If the answer to question 22 is yes, how frequent do you meet extension workers in a season (a) weekly (b) monthly (c) seasonally (d) others specify…….
25. Who provides you the extension services (a) farmers association (b) government (c) others (specify) ……
26. Do you have access to modern storage facilities to hoard farm produce before the MDGs intervention projects (a) yes ( ) (b) no ( )
27. If answer to question 25 is yes, who provides the storage facilities (a) self ( ) (b) government ( ) (c) farmers association ( ) (d) others (specify)……
28. Do you have access to modern storage facilities to hoard farm produce after the MDGs intervention projects (a) yes ( ) (b) no ( )
29. If answer to question 27 is yes, who provides the storage facilities (a) self ( ) (b) government ( ) (c) farmers association ( ) (d) others (specify)……
30. Who takes the decision on marketing of Maize produce before the MDGs intervention projects (a) self ( ) (b) government ( ) (c) farmers association ( ) (d) others (specify) ……
31. Who takes the decision on marketing of farm produce after the MDGs intervention projects (a) self ( ) (b) farmers association ( ) (c) others (specify) ……..
32. Please, specify the costs of each of the farm inputs incurred on production in the table 31 below

Table 31

Costs of Inputs	**Before MDGs Intervention**			**After MDGs Intervention**		
	Quantity	Unit Price (₦)	Total costs (Q*P)	Quantity	Unit Price (₦)	Total costs (Q*P)
Labour						
Seed						
Fertilizer						
Pesticide						
Herbicide						

33. Please indicate the quantity of farm yield (in bags/tons), the unit price of output per bag (N) and the total revenue in the table 32 below

Table 32

Before MDGs Intervention			**After MDGs Intervention**		
Total Output	Unit Price (₦) per bag/ton	Total revenue (₦)	Total Output	Unit Price(₦) per bag/ton	Total revenue (₦)

SECTION D: DATA ON SOCIAL POVERTY INDICES

34. What type of dwelling used by you and your family before the MDGs intervention projects (a) Mud house with mud floor and thatched roof ( ) (b) Mud house with cement floor and thatched roof ( ) (c) Mud house with cement floor and zinc roof ( ) (d) cement wall with cement floor and zinc roof ( ) (e) others (specify)…….

35. What type of dwelling used by you and your family after the MDGs intervention projects (a) Mud house with mud floor and thatched roof ( ) (b) Mud house with cement floor and thatched roof ( ) (c) Mud house with cement floor and zinc roof ( ) (d) cement wall with cement floor and zinc roof ( ) (e) others (specify)…….

36. What was the nature of square meals per day that you and your family take before the MDGs intervention projects (a) one square meal ( ) (b) two square meal ( ) (c) three square meal ( ) (d) others (specify)……..

37. What is the nature of square meals per day that you and your family take after the MDGs intervention projects (a) one square meal ( ) (b) two square meal ( ) (c) three square meal ( ) (d) others (specify)……

38. What was your major source of drinking and cooking water before the MDGs intervention projects (a) tap water (connection to houses) ( ) (b) tap water (communal) ( ) (c) Borehole ( ) (d) Well ( ) (e) Stream/Pond/River ( ) (f) others (specify)……

39. What is your major source of drinking and cooking water after the MDGs intervention projects (a) tap water (connection to houses) ( ) (b) tap water (communal) ( ) (c) Borehole ( ) (d) Well ( ) (e) Stream/Pond/River ( ) (f) others (specify)……

40. What was the distance to the source of water before the MDGs intervention projects (a) less than one kilometer ( ) (b) one to two kilometers ( ) (c) more than two kilometers ( )

41. What is the distance to the source of water after the MDGs intervention projects (a) less than one kilometer ( ) (b) one to two kilometers ( ) (c) more than two kilometers ( )

42. What types of health care facility do you and your family visit before the MDGs intervention projects (a) specialist hospital ( ) (b) general hospital ( ) (c) dispensary/ clinic ( ) (d) traditional health care ( ) (e) faith-healing (f) other (specify)……..

43. What types of health care facility do you and your family visit after the MDGs intervention projects (a) specialist hospital ( ) (b) general hospital ( ) (c) dispensary/clinic ( ) (d) traditional health care ( ) (e) faith-healing (f) other(specify)……..

44. What was the distance to the nearest health care source before the MDGs intervention projects (a) Less than one kilometer ( ) (b) one to two kilometers ( ) (c) two to three kilometers ( ) (d) three to four kilometers ( ) (e) more than four kilometers ( )

45. What is the distance to the nearest health care source after the MDGs intervention projects (a) Less than one kilometer ( ) (b) one to two kilometers ( ) (c) two to three kilometers ( ) (d) three to four kilometers ( ) (e) more than four kilometers ( )

46. Do your children go to school before the MDGs intervention projects (a) yes ( ) (b) no ( )

47. If answer to question 52 is yes, were they in (a) public school ( ) (b) private school ( ) (c) non formal education ( )

48. What was the estimated distance to the school (a) Less than one kilometer ( ) (b) One to two kilometers ( ) (c) two to three kilometers ( ) (d) three to four kilometers ( ) (e) above four kilometers ( )

49. Do your children go to school after the MDGs intervention projects (a) yes ( ) (b) no ( )

50. If answer to question 55 is yes, were they in (a) public school ( ) (b) private school ( ) (c) non formal education ( )

51. What is the estimated distance to the school (a) less than one kilometer ( ) (b) one to two kilometers ( ) (c) two to three kilometers ( ) (d) three to four kilometers ( ) (e) above four kilometers ( )

52. How many persons did you sponsor in school before the MDGs intervention projects?

a) 1 ( ) b) 2 ( ) c) 3 ( ) d) 4 ( ) e) 5 above ( )

53. How persons did you sponsor in school after the MDGs intervention projects?

a) 1 ( ) b) 2 ( ) c) 3 ( ) d) 4 ( ) e) 5 above ( )

APPENDIX II: Logit Regression Results

Dependent Variable: POV
Method: ML - Binary Logit (Newton-Raphson / Marquardt steps)
Date: 04/03/17 Time: 03:24
Sample: 1 227
Included observations: 227
Convergence achieved after 4 iterations
Coefficient covariance computed using observed Hessian

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	1.934697	0.540746	3.577826	0.0003
SIZE_OF_HH	0.959216	0.365378	2.625267	0.0087
FORMAL_EDU	-1.673113	0.377978	-4.426480	0.0000
SQR_MEALS	-1.396384	0.376608	-3.707791	0.0002
IMPRVD_HLTHCARE	-0.891313	0.357612	-2.492405	0.0127
MAJOR_OCCUPTN	-1.447890	0.380558	-3.804648	0.0001
DEPNTS_IN_SCHL	1.286041	0.369735	3.478278	0.0005
TYPE_OF_HOUSE	-0.701307	0.356692	-1.966144	0.0493

McFadden R-squared	0.363888	Mean dependent var	0.440529
S.D. dependent var	0.497548	S.E. of regression	0.387291
Akaike info criterion	0.943302	Sum squared resid	32.84868
Schwarz criterion	1.064005	Log likelihood	-99.06479
Hannan-Quinn criter.	0.992008	Deviance	198.1296
Restr. deviance	311.4698	Restr. log likelihood	-155.7349
LR statistic	113.3402	Avg. log likelihood	-0.436409
Prob(LR statistic)	0.000000		

Obs with Dep=0	127	Total obs	227
Obs with Dep=1	100		

APPENDIX III: Hosmer-Lemeshow Goodness of Fit Test Result

Goodness-of-Fit Evaluation for Binary Specification
Andrews and Hosmer-Lemeshow Tests
Equation: UNTITLED
Date: 04/03/17 Time: 03:29
Grouping based upon predicted risk (randomize ties)

	Quantile of Risk		Dep=0		Dep=1		Total	H-L
	Low	High	Actual	Expect	Actual	Expect	Obs	Value
1	0.0151	0.0386	22	21.4789	0	0.52108	22	0.53372
2	0.0386	0.1008	22	21.4991	1	1.50092	23	0.17885
3	0.1008	0.1458	19	20.0743	4	2.92569	23	0.45198
4	0.1458	0.2584	16	17.3411	6	4.65893	22	0.48974
5	0.2584	0.3817	14	15.6364	9	7.36365	23	0.53488
6	0.3817	0.5377	14	12.6165	9	10.3835	23	0.33603
7	0.5418	0.6892	9	8.35619	13	13.6438	22	0.07998
8	0.7071	0.8094	9	5.65802	14	17.3420	23	2.61802
9	0.8246	0.9113	2	3.06378	21	19.9362	23	0.42612
10	0.9113	0.9849	0	1.27573	23	21.7243	23	1.35065
		Total	127	127.000	100	100.000	227	6.99998

H-L Statistic	7.0000	Prob. Chi-Sq(8)	0.5366
Andrews Statistic	44.1286	Prob. Chi-Sq(10)	0.0000

APPENDIX IV: Distribution of Some Funded MDGs User Groups by MDGs Community Associations in the Study Area

Assakio West MDGs Community Association

S/N	NAME OF FUG	MEMBERS		TOTAL
		MALE	FEMALE	
1	Kurmin Kiki Yam Production	24	-	24
2	Mbaswa Yam producers	15	5	20
3	Banmur Yam Production	13	7	20
4	Agya Gimba Rice farming	18	7	25
5	Sule-Doo Rice farming	10	5	15
6	Mbaikya Rice farming	16	4	20
7	Ashangwa F/111 Rice Farming	20	5	25
8	Adogi Rice processors/ farmers	7	8	15
9	Agbi F/111 rice farming	10	15	25
10	Kiguna Rice Farming	16	9	25
11	Mbaswa Maize Producers	14	6	20
	TOTAL	**163**	**71**	**234**

Dunama MDGs Community Association

S/N	NAME OF FUG	MEMBERS		TOTAL
		MALE	FEMALE	
1	Doka Yam Farmers	15	5	20
2	Liman Liman Yam Farmers	6	14	20
3	Kaura Widows Maize Farmers	-	20	20
4	Birawa Rice Farmers	17	3	20
	TOTAL	**38**	**42**	**80**

Barikin Abdullahi (B.A.D) MDGs Community Association

S/N	NAME OF FUG	MEMBERS		TOTAL
		MALE	FEMALE	
1	B.A.D Rice farmers	16	11	27
2	Ayimon F/111 Rice production	11	8	19
3	New Millennium F/111 Rice production	14	10	24
4	Widows Women F/111 Rice production/processing	-	15	15
5	Awange B Rice production	12	8	20
6	Mbanyagba Maize farmers	12	5	17
7	B.A.DYam farmers	16	4	20
	TOTAL	**81**	**61**	**142**

Assakio East MDGs Community Association

S/N	NAME OF FUG	MEMBERS		TOTAL
		MALE	FEMALE	
1	Amoa Aklo Amoa Rice production	13	7	20
2	Oseta F/111 Rice production	15	10	25
3	Ugah Youth Rice production	15	5	20
4	Gwayaka F/111 Rice production	24	1	25
5	Kugyo Rice production	25	-	25
6	Dibama F/111 Yam Production	20	-	20
7	Akoma Gona Yam production	19	1	20
8	Abenewa Maize Farming/Processing	-	20	20
9	Iganki Maize Farming/Processing	12	3	15
	Total	**143**	**47**	**190**

Haske MDGs Community Association

S/N	NAME OF FUG	MEMBERS		TOTAL
		MALE	FEMALE	
1	Hyaku-Tiev Rice farmers	17	3	20
2	Akaajime Maize processors	12	8	20
3	Mbanev Rice farmers	18	2	20
	TOTAL	**47**	**13**	**60**

Aminci MDGs Community Association

S/N	NAME OF FUG	MEMBERS		TOTAL
		MALE	FEMALE	
1	Himma F/111 Rice production	13	7	20
2	B.A.D. motor park Rice Production	13	9	22
3	kwarofi Yam farmers	9	6	15
4	Haske F/111 Yam Production	17	8	25
	Total	**52**	**30**	**82**

Akurba MDGs Community Association

S/N	NAME OF FUG	MEMBERS		TOTAL
		MALE	FEMALE	
1	Dogara ga Allah F/111 Yam Farmers	20	-	20
2	Nanaco F/111 Yam Farmers	11	4	15
3	Rahama F/111 Yam Farmers	15	-	15
	Total	**46**	**4**	**50**

Kauna MDGs Community Association

S/N	NAME OF FUG	MEMBERS		TOTAL
		MALE	FEMALE	
1	Sarkin Noma Maize Production	20	-	20
2	Beloved Sisters F/111 Rice Production/Processing	-	20	20
3	Shatima Zumunta F/111 Rice Production/Processing	11	9	20
	Total	**31**	**29**	**60**

Sabon Pegi MDGs Community Association

S/N	NAME OF FUG	MEMBERS		TOTAL
		MALE	FEMALE	
1	Agudu Youth Yam Production	20	-	20
2	Brotherhood Rice Production	13	7	20
	Total	**33**	**7**	**40**