

**IMPACT OF KOGI STATE SURVIVAL FARMING INTERVENTION
PROGRAMME ON CASSAVA PRODUCTION IN THREE LOCAL
GOVERNMENT AREAS, KOGI STATE, NIGERIA**

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**A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES,
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**DEPARTMENT OF AGRICULTURAL ECONOMICS AND RURAL SOCIOLOGY
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AHMADU BELLO UNIVERSITY
ZARIA, KADUNA STATE
NIGERIA**

AUGUST, 2015

DECLARATION

I hereby declare that this dissertation “**Impact of Kogi State Survival Farming Intervention Programme on Cassava Production in Three Local Government Areas, Kogi State**” has been written by me and it is a record of my research work. No part of this work has been presented in any previous application for another Degree or Diploma at any institution. All citation and sources of information are duly acknowledged by means of references.

Yakubu MUHAMMED
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Date

CERTIFICATION

This dissertation entitled: ‘Impact of Kogi State Survival Farming Intervention Programme on Cassava Production in Three Local Government Areas of Kogi State, Nigeria’ by Yakubu **MUHAMMED** meets the regulations governing the award of the Degree of Master of Science (Msc) in Agricultural Extension and Rural Sociology, Ahmadu Bello University, Zaria and is approved for its contribution to scientific knowledge and literacy presentation.

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DEDICATION

This dissertation is dedicated to Almighty Allah who had put me through all odds in life and for his blessing, mercy and protection upon my life.

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ABSTRACT

This study was on Impact of Kogi Agricultural Development Project Survival Farming Intervention Programme on Cassava Production in Adavi, Okehi and Okene Local Government Areas of Kogi State and it also determine the factors that influence participation in SFIP. A multi-stage sampling technique was used to select respondents for the study. A total of one hundred and eighty (180) respondents comprising of ninety (90) participants and ninety (90) non-participants were interviewed with the aid of structured questionnaire which was also administered on ten (10) officials of SFIP to obtained vital information. Analytical tools used were both descriptive (frequency distribution tables, percentages and mean) and inferential statistics (logit regression and chow-test statistical tool). Attitudinal measuring scale such as likert-scale was also used. The results of the analysis obtained shows that majority of the respondents, 66% of the participants, 65% of the non-participants and 70% of the officials were within the age range of 36 - 55 years. Almost all the respondents are married with just few divorced and widowed. More also, about 12.2% of the participants and 47.8% of the non-participants had no formal education, while 76.6%, 52.2% and 60% of the participants, non-participants and the officials, respectively attended primary and secondary schools with only 7.8% of the participants and 40% of the officials who attended tertiary institutions. Based on the empirical evidence emanating from this study, planting material, access to credit, extension contact and training components of SFIP ranked 1st, 2nd and 3rd respectively, among the highly aware and most used by the participants. Logit regression analysis showed R^2 of 0.67969 meaning that about 68% of the variation in the participation of SFIP are been explained by the independent variables in the model. Age (X_1), Marital status (X_2), Labour (X_4), Education (X_5), Household (X_7), Awareness (X_{10}), Extension contact (X_{12}), Cooperative (X_{13}) and Planting material (X_{14}) had positive coefficients and direct relationship with participation in SFIP implying that one unit increase in their variable coefficient will result to an increase in level of participation. Chow test F-calculated for output, yield, income and level of living were 16.31, 16.65, 21.06 and 28.01 respectively, while that of F-tabulated value for 9 degree of freedom with sample size of 180 was 1.83 at 5% level of probability, hence there was significant impact of SFIP on cassava production output, yield, income and level of living of the participants in the study area. All the null hypotheses were rejected while the alternative hypotheses were accepted. Major constraints identified by the participants were poor road network (67.8%) and poor market for products (40.0%) while majority (90.0%) of the officials attested to poor extension to farmers' ratio as a major constraint to effective implementation of SFIP in the study area. In overall, there was significant impact of SFIP on cassava production in the study area, hence it is recommended that the programme scaled-up and replicated in other LGAs and States in the country including FCT, Abuja.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Nigeria has substantial economic potential in its' agricultural sector. However, despite the importance of agriculture in terms of employment creation, its potential for contributing to economic growth is far from being fully exploited (USAID, 2005). The agricultural sector has been the mainstay of Nigeria's economy employing 70% of the active labour force and contributes significantly to the country's Gross Domestic Product (GDP) and foreign earnings. In 1960, 1970, and 1980, it contributed 55.2%, 40.7% and 18% to GDP respectively, while its contribution to GDP in 1996, 1997, and 1999 stood at 39.0%, 39.4% and 40.4% respectively (NPC and UNDP, 1999). In 2010 agricultural contribution to GDP stood at 30.0%, while currently as at first quarter of 2012, it is contributing 34.4% to the GDP (NBS, 2012). However, there have been recorded decline in agricultural contribution to the national economic growth for over three decades now since emergence of the oil sector. This decline could be associated with the gross neglect of the agricultural sector and over dependence on the oil sector (Ugwu and Kanu, 2012).

The agricultural sector had been constrained with factors such as poor rural infrastructure, poor fertilizer distributions and high cost of farm inputs that could have enhance its production capacity and contribution to the national economy. The oil-boom era had lead to importation of food items in massive scale at the expense of locally produced ones because the rural farmers do not have the technological resources to compete in international market. This discourages the farmers from producing much because they no longer realized the needed profit from their effort (Ogunwole, 2004). The goal of increasing food production and reducing food import has elicited many

programmes and policies at the various levels of government (Kudi *et al.*, 2008). In order to revamp the agricultural sector, the Federal Government of Nigeria had embarked on and implemented several agricultural policies and programmes some of which are defunct or abandoned, and some restructured, while others are still in place. Presidential initiatives on cassava production and a number of new programme interventions are currently implemented to increase area of cassava production, processing and marketing across the country.

Cassava is one of the most widely cultivated crops in the country. It is generally cultivated on small-holdings in association with crops such as maize, groundnut, cowpea, plantation (such as coffee, coconut and oil palm), vegetables and cocoyam depending on the agro-ecological zone and relies on residual soil nutrients when intercropped with maize which has been fertilized or as following crop in rotation with legumes (IITA, 2004; Chukwuji, 2008). Cassava is grown mainly on impoverished soils with no soil amendments such as fertilizers. Continuous cropping of cassava particularly the high yielding varieties without adequate maintenance of soil fertility could lead to soil and environmental degradation (IITA, 2004). Nigeria is the largest producer of cassava in the World. Its production is currently put at about thirty-four (34) million metric tonnes a year (FAO, 2002).

Nigeria's cassava production was targeted at forty (40) million tonnes in 2005 and sixty (60) million tonnes by 2020 (IITA, 2002). The presidential Initiative on Cassava Production and Export has increased the awareness amongst Nigerians of the industrial crop, popularly referred to as the 'new black gold'. According to Nweke *et al.* (2002) cassava performs five main roles namely: famine reserve crop, rural food staple, cash crop, industrial raw material and earning of foreign exchange. Uses of cassava

products are enormous. Virtually, the whole plant from the leaves, stem and the roots has one use or the other. Daneji (2011) posited that, cassava is one of the most staple food crops in many households in Nigeria. The fresh peeled cassava roots are eaten raw, boiled or roasted. They can also be boiled and pounded to obtain "pounded fufu". This is most popular in the Eastern part of Nigeria. The processed cassava, either in the form of flour, wet pulp or "garrri" is cooked or eaten in three main food forms: "fufu", "eba" and "chickwange" (Adebile, 2012). Cassava leaves are rich in protein, calcium, iron and vitamins, comparing favourably with other green vegetables generally regarded as good protein sources. Cassava can be processed into several other products like chips, flour, pellets, adhesives, alcohol, starch, etc which are raw materials in livestock feed, alcohol/ethanol, textiles, confectionery, wood, food and soft drink industries (Iheke, 2008).

In a similar vein, Adebayo (2009) stated that processing the bulky, perishable crop is an obstacle to its full commercialization in sub-Saharan Africa. To motivate farmers, especially women who are the main processors of food in the village, to grow and process their cassava, we need to provide them with labour-saving implements such as graters, peelers, and crushers. There is also need to link them to markets. Cassava roots are bulky and with about 70.0% moisture content, are very perishable. It is therefore, expensive to transport cassava especially along poor access roads. Therefore, a well-developed market access infrastructure is crucial for cassava marketing (Adeniji *et al.*, 2006). However, focus should not be on the exportation of cassava but to develop the enormous local and regional markets for cassava that exist in the country, West African sub-region and Africa as a whole rather than start exporting the industrial raw material to Europe. According to Food and Agriculture Organization Statistics (2008) Nigeria's cassava export in 2005, was 2,100 tonnes compared to the leading exporter, Thailand,

with 4,384,350 tonnes. The performance evaluation of marketing component of cassava initiative include, establishment of cassava processing centers in each Local Government Area(LGA) of the cassava producing States (Yisa, 2009). In this regard, rural people are encouraged to add value to cassava products by processing it for industrial application and human consumption. Processing of cassava into various shelf-stable and semi-stable products is a widespread activity in Nigeria carried out by traditional cassava processors and small-scale commercial processing units (Henk *et al.*, 2007).

1.2 Problem Statement

Nigeria has a huge agricultural resource endowment and yet the population is facing hunger and poverty. The agricultural sector is facing the problem of sustaining food production to meet up the need of increasing population in the country (Okolo, 2004; Ironkwe, 2005). Various governments in Nigeria have consistently declared policies aiming at self-sufficiency in food. The means toward achieving this objective has always been an expansion in cultivated area and improvement on the yield. Cassava is one of the major staple crops grown in Kogi State particularly in the study area. Government intervention programmes and policies, and the efforts of Non-Governmental Organizations (NGOs) in support of production, processing and marketing of cassava date back to the 1970s (Adeniji *et al.*, 2006).

Some of the Government agricultural intervention programmes and policies aimed at increasing agricultural production especially cassava production include the Farm Settlement Scheme, National Accelerated Food Production Programme (NAFPP), Agricultural Development Projects (ADPs), River Basin Development Authorities (RBDAs), National Seed Service (NSS), National Centre for Agricultural

Mechanization (NCAM), Agricultural and Rural Management Training Institute (ARMTI) and Agricultural Credit Guarantee Scheme Fund (ACGSF). Others were the Nigerian Agricultural Cooperative and Rural Development Bank (NACRDB), Agricultural Banks, Operation Feed the Nation (OFN), Green Revolution (GR), Directorate of Foods, Roads and Rural Infrastructure (DFFRI), Nigerian Agricultural Insurance Company (NAIC), National Agricultural Land Development Authority (NALDA) and Specialized Universities for Agriculture.

Agricultural Development Projects (ADPs) is an integrated approach which came into being as a result of the failure of special crop programmes to achieve rural development and food security objectives of government in Nigeria. As intervention strategies, these programmes have been designed to increase productivity in cassava sub-sector, as well as enhancing farmers' income from agriculture (Yisa, 2009). The NGOs efforts include Sustainable Agriculture and Rural Development Project (SARDP), Rural Poverty Eradication Project (RPEP), Cassava Enterprise Development Project (CEDP) and others. All these programmes and policies due to one reason or the other have failed to meet the objective of self-sufficiency in food production.

A number of new initiatives are also currently being implemented to increase area of cultivation, yields, processing and marketing of cassava products in the country. These include the presidential initiatives on cassava production, the National Special Programme for Food Security (NSPFS), Root and Tuber Expansion Programme (RTEP) and Rural Banking Scheme (Ugwu and Kanu, 2012). The Root and Tuber Expansion Programme (RTEP) was formulated between 1995 and 1997 to consolidate the gains made under the Cassava Multiplication Project (CMP) of ADP in order to enhance

national food self-sufficiency and improve rural household food security and income of poor farmers within the southern and middle belt States of the country.

At the expiration of the Root and Tuber Expansion Programme time-frame in 2007, the Kogi State Agricultural Development Projects (KADP) formulated an intervention programme in Okehi LGA termed Survival Farming Intervention Programme (SFIP) with the aim of enhancing cassava production, adding value to cassava products through processing and creating markets for the processed products especially “*garri*” which are packaged into various categories for sales, though, other finish products of cassava such as starch, flour, pellet and chips are also still under consideration. The programme was in later years expanded to include other LGAs.

The SFIP was formulated in October, 2007 with the major objective centered on improving cassava production through the provision of planting materials and other inputs, processing and packaging, and marketing along the value-chain approach to improve the production capacity of the cassava stakeholders and their level of living. The main thrust of the survival farming intervention programme is on the development of cassava processing industry that converts fresh cassava root tubers into primary cassava-based commodities that are tradable in domestic and international markets. The long-term objective is to commercialize cassava production in order to improve the income, food security and living conditions of small-holder households in Kogi State. So far, huge amount of money and human resources have been expended on the programme.

However, since the inception of the programme, no studies have been conducted to assess its impact on the target population. This constitutes a gap in knowledge that need to be filled making this study very imperative. Moreover, according to Delta State

Ministry of Agriculture (2004) research findings show that one of the reasons for failure of past government sponsored agricultural development programmes was lack of data base for policy formulation, programme implementation, monitoring and impact evaluation. The study further states that without adequate evaluation, one cannot be sure whether the objectives of a programme have been achieved or not. It was against the backdrop of the aforementioned reasons that this study was conceived to assess the impact of the Kogi Agricultural Development Project Survival Farming Intervention Programme in Adavi, Okehi and Okene Local Government Areas of Kogi State. The study, therefore, provides answer to the following research questions:

- i. What are the socio-economic characteristics of the programme participants and non-participants in the study area?
- ii. What is the level of awareness of survival farming intervention programme components?
- iii. What are the factors influencing participation of respondents in survival farming intervention programme on cassava production in the study area?
- iv. What is the impact of survival farming intervention programme on cassava production of the participants and non-participants in the study area?
- v. What is the impact of survival farming intervention programme on income and level of living of the participants and non-participants in the study area?
- vi. What are the constraints to effective implementation of survival farming intervention programme in the study area?

1.3 Objectives of the Study

The broad objective of this study was to assess the Impact of Kogi Agricultural Development Project Survival Farming Intervention Programme on Cassava Production in Adavi, Okehi and Okene Local Government Areas of Kogi State. The specific objectives are to;

- i. describe the socio-economic characteristics of the programme participants and non-participants in the study area;
- ii. assess the level of awareness of the survival farming intervention programme components by the respondents in the study area;
- iii. determine the factors influencing participation of respondents in survival farming intervention programme on cassava production in the study area;
- iv. assess the impact of the survival farming intervention programme on cassava production of the participants and non-participants in the study area;
- v. assess the impact of the survival farming intervention programme on income and level of living of the participants and non-participants in the study area, and
- vi. identify the constraints associated with effective implementation of survival farming intervention programme in the study area.

1.4 Justification of the Study

It is important to note that a lot of work has been done on cassava as a crop in terms of its production, processing and packaging but there have been great variation in the scope of coverage (Adeniji *et al.*, 2006; Adebayo, 2009; Yisa, 2009 and Chikezie *et al.*, 2012). This study assessed the impact of survival farming intervention programme which is involve in production, processing and packaging of cassava produce. It is hoped to provide relevant information about SFIP that will be of benefit to both small and medium scale processing firms of cassava products. The findings are also expected

to be useful to agricultural project/programme planners and implementers, donor agencies, project/programme supervising agencies, the Federal Ministry of Agriculture and Mineral Resources (FMAMR), researchers and beneficiary of a project/programme in term of policy formulation and design of programme that better the life of rural people.

1.5 Hypotheses

The following null hypotheses were tested in this study:

- i. There is no significant difference between the participants and non-participants of survival farming intervention programme in terms of cassava output in the study area.
- ii. There is no significant difference between the participants and non-participants of survival farming intervention programme in terms of cassava yield in the study area.
- iii. There is no significant difference between the participants and non-participants of survival farming intervention programme in terms of income from cassava in the study area.
- iv. There is no significant difference between the participants and non-participants of survival farming intervention programme in terms of level of living in the study area.

CHAPTER TWO

LITERATURE REVIEW

2.1 Socio-Economic Characteristics of Farmers

Socio-economic characteristics play significant role in the farmers' lives in the sense that they influence willingness to accept changes which contributed significantly in raising farm productivity and ultimately their standard of living. Some of the most commonly used socio-economic variables includes age, sex, marital status, level of education, household size, farm size, farming experience, land acquisition, labour, access to credit, member of cooperative, extension contact and other estimated economic variables like income, output and standard of living. In a study of Indian farm households, Sharma *et al.* (2003) reported that all male-headed with an average family size did not vary significantly across the regions where the study was conducted. Likewise, average age of household heads was above 40 years old. However, average age of commercial farmers was lower compared to other farm size categories which indicated that younger farmers have strong preference for production activity.

According to Emmanuel *et al.* (2006) farmers participating in irrigation project had some type of formal education and not all of them are illiterate. In survey of pigeon pea production systems utilization and marketing in semi-arid lands of Kenya, the average age of farmers in both locations was 46.5 years with over 40.0% having attended at least 4 years school and average family size was 8.6 people (Mergai *et al.*, 2001). Muhammed-Lawal *et al.* (2009) also reported that 82.7% of the youth in agriculture are male. Chikezie *et al.* (2012) revealed in his findings of factors constraining rural youth involvement in cassava production that majority of the youths in Onu-Imo local government area of Imo State were at the productive age where their energies could be harnessed and utilized for productive venture in agriculture especially cassava

production. More so, 9.2% of the respondents were less than 20 years, 43.3% and 33.3% were between 21–25 years and 26–30 years, respectively, while only 14.2% of the respondents were more than 30 years of age. He also revealed that 81.7% of the respondents were male, while 18.3% were female. According to Adewale *et al.* (2005) gender is no barrier to active involvement in cassava production activities.

However, Oladeji *et al.* (2003) observed that it is generally believed that males are often more energetic and could readily be available for energy demanding jobs like cassava farming. Respondents' education revealed that 52.5%, 38.3% and 4.2% had primary, secondary and higher education respectively. While only 5.0% of the respondents had no formal education. In terms of farming experience, his study showed that 66.7% of the respondents had been in cassava farming for less than 10 years, 20.8% and 12.5% had been in cassava farming for between 11 – 25 years and more than 25 years respectively. The farming experience shows that farmers will be able to make sound decisions as regards resources allocation and management of their cassava farms. Furthermore, the size of the farm cultivated is a function of population pressure, family size and financial background of the farmers.

One major characteristic of small-scale farming is fragmented land holding. The results of Oladeji *et al.* (2003) revealed that 63.3% of the respondents farmed on less than one hectare, while 33.3% and 3.3% farmed on between 1 - 2 hectares and more than two hectares respectively. According to Nsoanya and Nenna (2011) majority of farmers (60.0%) were aged between 31 – 40 years, with a mean age of 37.5 years, indicating that the cassava producers were relatively young. They also indicate that majority (85.0%) were females while only few (15.0%) were males. This shows that women play a significant role in the production of cassava in the area even though they are not

allowed to own lands especially by inheritance for cultural reasons. This finding supports Adisa and Okunade (2005) and Akinnagbe *et al.* (2008) who asserted that women are the backbone of Agricultural sector, and being responsible for 80.0% of food production. A recent study on gender and cassava commercialization in Nigeria showed that as cassava is commercialized, households in cassava producing areas invest more on the education of their children (Kormawa and Asumugha, 2003).

Nweke *et al.* (2002) identified five important gender relevant issues related to cassava. He stated that both men and women make significant contributions of their labour to the cassava industry, with each specializing in different tasks; men work predominantly on land clearing, ploughing and planting, while women specialize in weeding, harvesting, transporting and processing. Secondly, both men and women play strategic, but changing roles in the cassava transformation process. Thirdly, as cassava becomes a cash crop, men increase their labour contribution to each of the production and processing tasks. The introduction of labour saving technologies in cassava production and processing has led to a redefinition of gender roles in the cassava food systems. Finally, women who want to plant cassava are usually constrained by the lack of access to new cassava production technologies and other resources.

Ayoada *et al.* (2011) in their study on “Impact of the National Special Programme for Food Security (NSPF) on Poverty Alleviation among Women in Oyo State” revealed that most of the participants (71.1%) had between 1 - 5 people in each of their households and 28.9% had between 6 -10 people, while 25.5% of the non-participants had between 1 - 5 people in each of their households, 69.1% had between 6 - 10 people in their households and 5.4% had between 11 - 15 people. They also show that all the respondents reported increase in their farm size, output and income. This implies that

the participants' involvement in NSPFS has enabled them to expand their farm size as well as increase their output and income. An increase in level of participation decreases the intensity of poverty more than its probability was also indicated in their study.

In the same vein, Kudi *et al.* (2008) in their study “Analysis of the Impact of National Fadama Development Project II (NFDP II) in Alleviating Poverty among Farmers in Giwa Local Government Area of Kaduna State” posited that farm size, labour (family and hired) and fertilizer were the most important factors of production and efficiencies are positively and significantly correlated with years of irrigation farming, number of visit by extension agents, level of education, household size and ownership of water pump. Therefore, NFDP II programme had increased the income, enhanced access to farm inputs at subsidized rate and increased training and knowledge of participants in the study area.

Chikaire *et al.* (2011) in their study on “Landholding Inequality among Smallholder Farmers in Imo State, Nigeria” found that greater degrees of inequality in land holding exist in the study area. This is as a result of differences in access to farm land. Farm land ownership structure shows wide variations in the size of holdings in the study area. Majority of holdings however, tend to be in small sizes. The distribution of farms by size of holdings in the study area shows that majority falls within 0.25 - 2 hectare. Data from the field revealed that among these groups are the widows who acquired land by rent especially, farmers with small family size and new entrants in farming business.

Mohammad *et al.* (2011) in their study “Assessment of Factors Influencing Beneficiary Participation in Fadama II Project in Niger State, Nigeria” revealed the following socio-economic characteristics of respondent in the study area that 54.7% of the respondents were within age bracket of 45-59 years while 26.6% and 16.0% were within age

brackets of 30 – 44 years and 60 years and above respectively. In respect with marital status, 66.7%, 13.3% and 9.3% of the respondents were married, widows and divorced respectively while 46.7% of the beneficiaries possessed primary school education, 22.7% had secondary school education while 9.3% had tertiary education. On cooperative membership experience, majority (70.7%) of the respondents had between 3-4 years of experience. This implies that cooperative society is not new among the respondents and level of participation can be categorize into different stages such as problem identification, decision making, project implementation and project evaluation.

Oruche *et al.* (2012) in their study of “Impact of the National Special Programme for Food Security on Livestock Farmers” showed that sources of income of the farmers in the study area was predominant from personal savings which was common to both participants and non-participants. Cooperatives and banks recorded low percentages with 0.8 and 10 percent respectively. This could simply be due to low income earning of the farmers, inability of meeting the demands of the banks such as provision of collateral or could also be due to the high interest rate.

2.2 Level of Awareness of Agricultural Innovations by Small-holder Farmers

To determine the level of awareness of agricultural innovations, there is need to understand the concept of awareness which according to Rogers (1983) is the first stage of adoption process and involves the individual learning of the existence of an innovation. However, at this stage he has little knowledge about it. He may have heard about the innovation from other family members, friends, neighbours, the mass media, change agents, sales promoters or local cooperative organization. Depending upon individual’s felt need, he might want to go on and find out more about the innovation (Ekong, 2003). It is the knowledge of an individual or group about the existence of an

innovation, project or programme. Akgul and Macaroglu (2011) defined agricultural awareness as understanding basic concepts related to agricultural issues and their societal impacts including the definition of agriculture. Lots of studies have been conducted to determine the level of awareness of agricultural innovations and programmes all over the world (Yahaya and Olayide, 2006; Emma, 2010; Akgul and Macaroglu, 2011 and Ajala *et al.*, 2012).

According to Emma (2010) in his study on improving rural livelihoods in South Africa – an impact assessment report posited that, the level of awareness among households about various aspects of cassava production, such as seed selection, planting time, plant spacing, and weeding time was generally good. Most cassava growers were aware of the good management practices that had been promoted. About 70.0% of farmers in Malawi were aware of how they should select good seeds, when they should plant, at what spacing, and when they should weed their cassava field. A slightly lower proportion in Zambia and Mozambique was aware of good management practices. Awareness of pests and diseases was relatively low at 33.3% of the cassava growers. Slightly more cassava growers (39.0%) in Malawi were aware of the major diseases and pests compared with 20.0% in Zambia and 34.0% in Mozambique. He also stated that few farmers were aware of the cassava processing machines in all countries. The technology commonly known was the grater (34.0%) compared to others. More farmers in Mozambique (73.0%) were aware of the grater than in Zambia (14.8%) and Malawi (23.5%). The level of awareness of the role of cassava in the economic development of southern Africa and the Chinyanja Triangle (CT) in particular was enhanced. In Malawi, large farms in cassava production emerged during the implementation of the project under review (Emma, 2010).

Nwachukwu and Ezeh (2007) in their study, impact of selected rural development programmes on poverty alleviation reported that in terms of awareness, 66.6% of the respondents were aware of the existence of the programmes while 34.4% were not aware of their existence. This implies a weak grass – root governmental information dissemination system. The fact that most of these programmes have been implemented for more than 2 decades and a good proportion (34.4%) of the rural people were still not aware of their existence is an unfortunate situation. Posited by Oruche *et al.* (2012) in their study impact of the national special programme for food security on livestock farmers, participating farmers were interviewed to ascertain their level of awareness of NSPFS management practices before the programme was introduced, 80.0% of them said that they were not aware of any of the NSPFS management Practices, while 20.0% agreed that they were aware of few of the practices. This is due to the fact that not all farmers are aware of programme at initial stage until later stage of a programme.

Ajala *et al.* (2012) in their work of assessing the effectiveness of improved cassava production technologies among cassava farmers revealed that 46.0% of cassava farmers had medium level of awareness of improved technologies, while 33.0% had high level of awareness. The mean awareness score for the respondents' level of awareness was 8.21 with standard deviation of 4.57. They therefore concluded that, despite the rigorous efforts of the extension agents towards dissemination of the improved technologies, farmers level of awareness is still at medium level. The achievement of a high level of farmer awareness (of the new technologies) will not necessarily result in a high level of adoption. The farmer will only adopt those innovations which he judges to be useful / beneficial to his particular situations. According to Yahaya and Olayide (2006) despite the ongoing cassava revolution in Nigeria and the high level of awareness of associated technologies, lower levels of cassava technologies use still predominates.

2.3 Factors Influencing Adoption of Recommended Practices

Socio-economic characteristics of farmers influence the adoption of innovations in project implementation. A lot of research had been conducted to identify socio-economic characteristics of rural farmers in relation to adoption and agricultural development in general. Socio-economic factors such as age, household size, formal education, income, social status, family size, social participation and extension contact were all found to be significantly related to adoption (Voh, 1979; Atala, 1980 and Eneh, 2008). However, other factors like political and environmental could have a strong influence on the potential for meaningful local-level participation. Onu and Madukwe (2002) stated that the most important factors affecting adoption behaviour of farmers are their personal and socio-economic characteristics such as age, education, farming experience, income and social status. Adesina *et al.* (1995) posited that older farmers may have more resources at their disposal that might make it likely for them to try new technologies. But, Adeniji (1996) confirmed a negative relationship between farmers' age and his adoption behavior.

Nsoanya and Nenna (2011) in their study, adoption of improved cassava production technologies revealed that majority of farmers (60.0%) were aged between 31 – 40 years, with a mean average age of 37.5, indicating that the cassava producers were relatively young. This is an advantage for the adoption and spreading of innovative practices since young people are likely to accept and serve better as agents of innovation transfer (Onu and Madukwe, 2002). However, Ojuekaiye (2001) posited that, education is an important socio-economic factor that influences farmer's decision because of its influence on farmer's awareness, perception, reception and the adoption of innovation that can bring about increase in production. Maiangwa (2006) in his study of socio-

economic factors associated with adoption of agro-forestry in north-west zone of Nigeria reported that off-farm income and land security have significant effects on adoption.

According to International Fund for Agricultural Development (1999) poorest segment of the population in Nigeria is characterized by below-average household size, limited labour and no access to fertilizer or credit. They have low crop yields, no marketable surplus and depend on low income off-farm activities for their economic survival. The relatively less-poor segment of the target group has enough family labour to produce sufficient marketable surplus but remains vulnerable. These families can afford small quantities of fertilizer when available and hire some labour. Ekenta (2004) stated that, adoption of improved technologies is influenced by certain factors and is a function of farmer's characteristics, extension agency and the new technologies themselves as material components. Overall farmers' response to agricultural innovations is attributed to a number of institutional, national, economic and environmental factors like credit, extension agent, input delivery, land tenure and source of information. Information source have been reported as important stimulus to individuals in the adoption process (Rogers, 1995).

More so, Nsoanya and Nenna (2011) in their study adoption of improved cassava production technologies stated that high yielding, resistance to diseases, early maturity period, high market value and drought tolerance are major reasons cassava growers adopt cultivating improved cassava varieties. Major constraints associated with the adoption of improved cassava production technologies include; high cost of fertilizer, agrochemicals and unavailability of markets which could influence adoption of recommended practices. Gadzama *et al.* (1995) reported that the major factors that

hinder the adoption of recommended practices are the expensive nature of farm inputs and ignorance on the part of the farmers. However, according to Adebayo *et al.* (2003) most people will adopt new ideas if they have the resources and are not hampered by physical, social and organizational constraints.

2.4 Cassava Production in Nigeria

Cassava *manihot esculenta* originated from Brazil and Paraguay and was introduced into West Africa by the Portuguese around 18th century and it is widely grown today over a wide range of climatic, soil and ecological zones (Cock, 1990; IITA, 2002 and Ohadike, 2007). Cassava scientifically belongs to the family *Euphorbiaceae* and two varieties are known to be of economic values which are the bitter (poisonous) and the sweet (non-poisonous). Cassava is believed to be the most produced crop in the tropics. It is a perennial plant, propagated from the stem cutting and usually harvested during the first or second year in the typical farming set-up. In Africa, cassava is mostly grown on small farms, usually intercropped with vegetables, plantation crops (such as coconut, oil palm, and coffee), yam, sweet-potato, melon, maize, rice, groundnut, or other legumes (IITA, 2002). Cassava has the ability to grow on marginal lands where cereals and other crops do not grow well; it can tolerate drought and can grow in low-nutrient soils. Because cassava roots can be stored in the ground for up to 24 months, and some varieties for up to 36 months, harvest may be delayed until market, processing, or other conditions are favorable (IITA, 2002).

Cassava is important, not only as a food crop but even more so as a major source of income for rural households. Its comparative production advantage over other staples serves to encourage its cultivation even by resource poor farmers (Fakayode *et al.*, 2008). It is largely consumed in many processed forms in Nigeria and its uses in the

industry and as livestock feed, is well known, but is gradually increasing, especially as import substitution becomes prominent in the industrial sector of the economy. According to Nweke (2004) cassava is the major calorie in the diet of rural consumers. Nigerian cassava production is by far the largest in the world with an annual output of over 34 million tonnes of tuberous roots; a third more than production in Brazil and almost double the production of Indonesia and Thailand. Cassava production in other African countries, the Democratic Republic of the Congo, Ghana, Madagascar, Mozambique, Tanzania and Uganda appears small in comparison to Nigeria's substantial output (IITA, 2004 and Chukwuji, 2008). The total production was around 45 million tonnes in 2009, almost 19.0% of total world production.

According to International Institute for Tropical Agriculture (2004) impact studies have revealed that in Nigeria the introduction of improved varieties has provided food for 50 million people. The benefits of the improved varieties are not limited to Nigeria; improved cassava varieties are now used in most cassava-growing countries in Africa. However, the presidential initiative, on cassava which was launched in 2003 brought cassava and its potentials to national limelight. The initiative has as goal, the promotion of cassava as a viable foreign exchange earner for Nigeria, and also development of the cassava production system in order to sustain the national demand (UNIDO, 2006). The cassava production initiative of the Federal Government has started to yield the expected dividend as farmers may have earned \$136 million (about N2 billion) from the produce exported to china in the last few months (Falaju, 2012).

More also, a number of new initiatives are currently being implemented to increase yields and area in order to achieve increased cassava production in Nigeria. One innovative initiative to achieve greater cassava production is being undertaken by the

Cassava Growers Association. It has acquired large parcels of land in each LGA intended to provide 1,000 ha of continuous land, suitable for commercial cassava cultivation. In addition to current production levels, farmers' groups (or clusters) would be organized in such a way that, using mechanized equipment, high yielding varieties and improving farming practices, yields of 30 tonnes per ha could be achieved in this new area (IITA, 2004).

Constraints in cassava production include a wide range of technical, institutional and socio-economic factors. These include pests and diseases, agronomic problems, land degradation, shortage of planting materials, food policy changes, access to markets, limited processing options and inefficient / ineffective extension delivery systems (Adeniji *et al.*, 2006). Between 2002 and 2010, International Institute for Tropical Agriculture (IITA) under Integrated Cassava Project (ICP) and in partnership with other sister's organization like International Fund for Agricultural Development (IFAD), United State Agency for International Development (USAID) and others had introduced and promoted more than forty (40) cassava varieties among farmers in order to accelerate cassava production in the country. Cassava production like other crops in Nigeria is mostly driven by land area expansion rather than productivity associated with improved technology (Manyong *et al.*, 2005; IFPRI, 2010).

Dynamic and sustainable approach to cassava development has remained great concern to Nigerian government and policy makers (Agwu *et al.*, 2008). Moreover, the utilization of cassava has largely explored traditional technologies for processing of its roots into human food such as *garri*, *fufu* and flour (Dada *et al.*, 2010). Cassava processing by traditional methods is labour-intensive. Cassava processing equipments and machines that are locally produced by researchers to enhance the level of

processing are as follows; graters, sifters, de-watering presser, fryers, chippers, batch dryers, pelleting machines and starch mill. According to International Fund for Agricultural Development (2006) graters, pressers, mills, stoves, are among the processing equipment easily adopted by processors. This assertion is supported in the work of Adebayo (2009) and Davies *et al.* (2008). Peeling as a unit operation in cassava processing presented a considerable problem and was still largely undertaken mostly by women and children using knife (Faborede and Ajibola, 2000; Ajibola, 1995).

2.5 Rural Household Income

According to International Labour Organization (2003) “household income consists of all receipts whether monetary or in kind (goods and services) that are received by the household or by individual members of the household at annual or more frequent intervals, but excludes windfall gains and other such irregular and typically one time receipts. Household income receipts are available for current consumption and do not reduce the net worth of the household through a reduction of its cash, the disposal of its other financial or non-financial assets or an increase in its liabilities”. Rural households in the developing world are involved in a variety of economic activities, as part of complex livelihood strategies. Agriculture, while remaining important, is not the sole nor, in some cases, necessarily the principal activity of the poor. Olawepo (2010) stated that the majority of the rural populace in Nigeria either depends entirely on farming and farming activities for survival and generation of income, or depends on these activities to supplement their main sources of income.

However, Adedayo (1985) suggested that the income levels of rural communities may be attributed to certain crucial factors, and understanding these factors may hold the keys to effective rural development policy making. In another study, Olatona (2007)

stated that a closer look at the determinants of rural income provides an in-depth knowledge into the factors that explain low income, yields and poverty in rural regions where these rural farmers constitute about 90.0% of the total population. Olayemi (2001) posited that, income diversification is the norm among rural households, and different income generating activities offer alternative pathways out of poverty for households as well as a mechanism for managing risk in an uncertain environment. It is therefore useful, when thinking about rural development, to think of the full range of rural income generating activities, both agricultural and non-agricultural, carried out by rural households. This can allow a better understanding of the relationship between the various economic activities that take place in the rural space and of their implications for economic growth and poverty reduction (Davis *et al.*, 2010).

Agricultural production remains an important source of income for most of those living in rural areas and its growth will continue to be a mainstay of poverty alleviation. But most farms are small – indeed Anríquez and Bonomi (2007) estimated that roughly 9 of 10 farms in the developing world are smaller than 2 hectares. Even though measuring household well-being is still considered one of the key reasons to collect income data, other purposes are often more important, such as utilizing income data as an input into the analysis of the determinants of welfare and poverty, to check the accuracy of consumption data, to estimate household savings, and to assess the relative importance of the various activities that contribute to total household income (McKay, 2000).

An income aggregate is a measure of household welfare that is based on the different sources of income – wage and non-wage, dependent and independent – that a given household can earn over a well-defined reference period. Set up as a monthly or annual indicator, the income aggregate is reported as an average net income figure. Wage

income includes all activities undertaken by persons in which the income received is in the form of a salary paid out by an employer; in other words, wage income includes earnings from dependent activities. Non-wage income is a broader category referring to (1) independent income, which includes crop and livestock production and self-employment (enterprise) earnings, and (2) non-labour income, containing transfer and other miscellaneous income sources (Aksoy *et al.*, 2009).

2.6 Rural Livelihoods and Their Natures

A livelihood comprises people, their capabilities, and their means of living, including food, income and assets. Tangible assets are resources and stores, and intangible assets are claims and access. A livelihood is environmentally sustainable when it maintains or enhances the local and global assets on which livelihoods depend. Livelihood is socially sustainable which can cope with and recover from stress and shocks, and provide for future generation (Chambers and Conway, 1992). According to United States Agency for International Development (2005) livelihood is the sum of ways in which households make ends meet from year to year and how they survive or fail through difficult times. Onakuse and Eamon (2008) perceived livelihood to comprise the capabilities, assets and activities required for a means of living. The concept of livelihoods is dynamic, recognizing that the conditions and consumptions change. People's livelihoods change sometime rapidly overtime (Drinkwater, 1998).

The concept has gained wide acceptance as a valuable means of understanding the factors that influence people's lives and well-being particularly those of the rural poor (Wanmali, 1999). Livelihood approaches are way of thinking about the objectives, scope and priorities for development. They place people and their priorities at the center of development. It focuses on poverty reduction interventions on empowering the poor

to build on their own opportunities, supporting their access to assets, and developing enabling policy and institutional environment. Core to livelihood approaches are a set of principles that underpin best practice in any development intervention such as people-centred, responsive and participatory, multi-level, conducted in partnership, sustainable and dynamic. According to Ellis (2000) rural livelihoods compose of activities that generate means of household survival and long term well-being. He further stated that livelihood strategies could be divided into; natural resources based activities like (collection and gathering, cultivation, livestock rearing, weaving) and non-natural resources based activities such as (trade, service and remittance).

A focus on changes of sources of livelihood of rural poor and factors affecting these changes may vary depending on location, gender, available natural resources, income generation activities and ethnicity. These factors affects access to assets of production which include natural resources like land and water for farming activities, labour and human capital, education, skill and health (Onakuse and Eamon, 2008). Similarly, there has been a shift from a material perspective that focuses on the improvement of people's capabilities to ensure their own livelihoods. Greater part of this thinking is derived from the participatory approaches that have become well integrated into the various implementing agencies activities for project diagnosis and design (Singh *et al.*, 2002).

Cleaver (1999) stated that poor livelihood is associated with lack of portable water, electricity, health care facilities, educational and recreational facilities, and un-motorable roads. Others are high population growth rates, high infant and maternal mortality and low life expectancy. International Fund for Agricultural Development (2001) argued that increasing access to assets is crucial for broad-based growth and poverty reduction. There has been lots of government intervention programmes put in

place aimed at improving the livelihood of rural people in the country. Therefore, improving the living condition of the poor requires a focus on sectors that would benefit them, for instance, boosting rural economy and distribution system (Igwe, 2005).

2.7 Agricultural Intervention Projects in Nigeria

The word intervention as simply defined by Encarta (2010) is the act of intervening, especially a deliberate entry into a situation or dispute in order to influence events or prevent undesirable consequences. Agricultural interventions therefore are those agricultural projects or programmes consciously design to address a particular problem in agriculture. It is most of the time centered on improving agricultural production and productivity which has a pre-requisite effect on the rural people thereby enhancing rural development. Agricultural development is an integral part of national development. A lot of agricultural development programmes have been designed to bring about increase in production and income of the rural farmers. It has being on course since the pre-colonial era through colonial down to the present independency period. It is probably as a result of the aforementioned that successive governments in Nigeria have executed several agricultural development interventions aimed at improving or elevating the level of agricultural production that will ensure self-sufficiency in food production. These interventions can be viewed from two perspectives that are based on Policy and Nature of the Agency. Some of these agricultural intervention projects/programmes are as follows;

- i. The National Accelerated Food Production Programme (NAFPP) which was launched in 1972 as a joint Federal and States Programme designed to develop technologies to rapidly increase the production of six major food crops. They include sorghum, millet, wheat, rice, maize and cassava.

- ii. Operation Feed the Nation (OFN) was launched in 1976 by the military regime. It is theoretically valid to preface discussion of the OFN with representation of two strategies of development which includes the following; the management strategy and the mobilization strategy.
- iii. River basin development authorities (RBDA) were an irrigation schemes that are central part of a strategy to raise food production in Nigeria. The most notable ones are the Kano River project in Kadawa, the Sokoto Rima Project at Bakolori and Goronyo and the Lake Chad Basin Development in Borno State.
- iv. The Green Revolution (GR) was another mobilization scheme, conceived and executed within the same system, in which Operation Feed the Nation lived and terminated. The “Green Revolution” programme was formulated by President Shehu Shagari in the second republic civilian administration in 1980; primarily aimed at making Nigeria self-sufficient and self-reliant in food needs.
- v. Agricultural Development Projects (ADPs) were rightly tagged as World Bank Projects because of the Bank’s heavy financial and technical commitments to them. The ADPs began as Integrated Agricultural Development projects which dated back to 1972 when the World Bank assisted officials of Nigeria’s Federal Ministry of Agriculture to mount a country-wide agricultural projects identification mission.
- vi. The Nigerian Agricultural and Co-Operative Bank (NACB) was a development finance institution owned by Federal Government with a share of 60.0% and the Central Bank of Nigeria with a share of 40.0%. It is charged with the responsibility of credit delivery for the development of agriculture and other agro-allied industries, including marketing of agricultural products.

- vii. Directorate for Food, Roads and Rural Infrastructure (DFRRI) in 1986. DFRRI was established by General Ibrahim Babangida, the then Head of State. This Directorate of Food, Roads and Rural Infrastructure was under the Office of the President.
- viii. National Fadama Development Project (NFDP) was an idea conceived by the World Bank, African Development Bank and the Federal Government of Nigeria with active participation of the States and Local Governments. It is a quick and sustainable agricultural and rural development project with a nation wide spectrum targeted at dry farming and related agro-processing and marketing activities.
- ix. Special Programme for Food Security (SPFS) was a bi-partial agreement to embark on special programme for food security between food and agriculture organisation of the United Nations and Federal Government of Nigeria on 11th May, 2000. The conviction is that SPFS offers a practical vehicle for applying innovative low cost approaches to improving the productivity and sustainability of agricultural systems with ultimate objective of contributing to better livelihood for poor farmers.

2.8 Constraints Faced by Smallholder Farmers in Agricultural Programmes

Studies have shown that smallholder farmers encountered several problems associating with the implementation of intervention programmes which could potentially limit the output of production thus affecting the programme goal. These problems range from the socio-economic, cultural, political and technological attributes such as cost, complexity, compatibility, visibility and divisibility among others (Abdullahi, 2005). According to Lawal (2010) access to inputs, insufficient capital, high cost of planting materials, labour intensity and poor market of products among others were major problems faced by farmers during implementation of Root and Tuber Expansion Projects (RTEP).

Camara *et al.* (2011) posited that several constraints limits rural farmers productivity in Kindia region of Guinea which includes: lack of funding to ensure the intensification of action in development programmes, low awareness of the importance of production facilities, lack of modern infrastructure and extension services to help create the needed awareness, low technical knowledge on the maintenance and repairs of machineries leading to inadequate care and management of community infrastructures, lack of credit facilities tailored to the needs of programme operators, lack of facilities for the preservation and packaging of agricultural products, poor organization of the marketing operators and failure to comply with the legislation of trading.

However, Adegboye (2011) reported that constraints by women farmers in accessing extension information includes literacy problems, lack of awareness of sources of information, inadequate fund to acquire information, complexity in operating equipment, inadequate professionals, feedback problem and cooperation of the extension staff. According to Byamugisha *et al.* (2011) problems encountered in the course of sourcing information is related to lack of cooperation from fellow farmers, high transport cost and lack of understanding the language in which the information was disseminated. Kabro and Zabo (2001) identified lack of linkages between the government agencies charged with the responsibilities for implementing programs and research institutes in terms of management as impediment to effective programme implementation.

2.9 Constraints in Implementation of Agricultural Intervention Projects in Nigeria

Williams (1990) opined that programme implementation have been characterized by many impediments, among the most important factors mentioned was the “top down” approach in which the rural farmers were not involved in the concept, planning and

monitoring of programmes. Other factors include lack of understanding the socio-economic, cultural and religious factors of the target population. In the same vein, Amalu (1998) classified the problems impeding effective implementation of agricultural intervention programmes into four which are institutional pathway framework, externalities, internal arrangement and field implementation. Field implementation problems centered on the continuity and sustainability of the programme, inadequate incentive structure for adaptive research and extension staff (Ifeanyi, 2010).

The general and common factors limiting the effective agricultural intervention projects or programmes in Nigeria are highlighted briefly as follows:

- i. Lack of commitment to agricultural development: Though series of Nigerian Government have made promises to commit themselves to agricultural and rural development programmes but there have not been consistency in capital budget allocation. Where fund is available, there is always a problem of misappropriation and diversion of fund for no cause.
- ii. There is policy associated problems: policy of Nigerian government characterised by frequent reversal due to high degree of political instability. Therefore, policy on agriculture and rural development are characterised by harsh policy environment.
- iii. Lack of systematic and coordinated implementation of programmes resulting in duplication of efforts. Most of the programmes either from the government, international donors and NGOs, are usually channeled to the same target group hence, difficult to comprehensively monitored and evaluate performance.
- iv. Lack of community empowerment: Most of the rural and agricultural development programmes rarely affect the lives of the rural people on sustainable basis; this is

basically due to the fact that they are top-down driven with little or no community participation.

- v. High level of corruption: This is a menace that has eaten deep into the present day Nigeria society and heavily constrained meaningful agricultural and rural development programmes.

2.10 Theoretical Framework of the Study

This study was guided by the adoption and diffusion framework and the perspectives on impact assessment.

2.10.1 The adoption and diffusion theory

Rogers (1983) defined adoption as use of a technology by a farmer at a given period of time on relatively large scale. This definition can be extended to all economic units in a social system. Adoption is commonly refers to as the decision to use new technology or practice by economic units on a regular basis. Feder *et al.* (1985) distinguished individual adoption (farm level) from aggregate adoption. Individual (farm level) adoption was defined as the degree of use of a new technology in a long-run equilibrium when the farmer has full information about the new technology and it's potential. He termed aggregate adoption as diffusion which is the spread of technology within a region. Adoption research has moved on in the last 25 years.

Doss (2006) stated that adoption research was needed in five areas: (i) examining the intensity of adoption (not just dichotomous choices); (ii) addressing the simultaneity of adoption of different components of a technology package; (iii) analyzing the impact of incomplete markets and policies on adoption decisions; (iv) contextualizing adoption decisions within social, cultural and institutional environments; and (v) paying attention to dynamic patterns of changes in landholdings and wealth accumulation among early

and later adopters. The adoption process is essentially a decision-making process. According to Rogers (1995) adoption process is a mental process through which an individual passes from hearing about an innovation to final adoption.

The adoption of practice is not a unit act and instantaneous. The farmer's decision to accept or reject adoption of science based production technology consists of several stages and involves sequence of thoughts and decisions. Technology development without dissemination to ultimate users could be a waste of resources. Some of the recommended and improved technologies in cassava production and processing includes the following; cassava chippers, graters, leaf choppers, solar driers, pulverizers, improved cassava varieties, high quality cassava flour for bakeries, cassava silage, storage of fresh cassava leaf vegetable, storage of fresh cassava roots, and stem storage, plus a number of agronomic and management practices (Emma, 2010).

The study of adoption and diffusion of innovations are central to understanding the process of change in human societies. But, approaches to exploring the adoption process have changed over time. While early studies have simply focused on measuring the awareness of innovations, the focus in the 1980s and 1990s was on establishing relationships between various independent factors and the adoption of new innovations. It is assumed that socio-economic factors such as age, gender, marital status, occupation, household size, educational level, farm-size and land tenure tend to determine the level of participation of individuals, groups and communities in economic activities. They have direct relationship on the cause of poverty, unemployment and poor living condition. In order to improve on the condition of rural farmers, institutional factors such as access to credit, extension visit and cooperative membership play significant roles in driving rural people to better living condition. Therefore, in carrying

out development activities, the poor and vulnerable in the community should be the main target and should be allowed to actively participate in the decision making and management of agricultural development programmes.

2.10.2 The impact assessment perspectives

Sanginga *et al.* (1999) posited that impact analysis deals with the investigation of the change that occurred or likely to occur on the people's life as a result of a project or programme. Impact assessment is a special form of evaluation that deals with the effect of intervention programme output on the target beneficiaries or population. In conducting impact assessment research, some researchers often use "with" and "without" impact method, while others use the "before" and "after" impact method. Manyong *et al.* (2001) argued that impact assessment of agricultural development projects is a continuous process and therefore being a process, it is better conceptualized to use the "before and after" impact assessment approach. The International Initiative for Impact Evaluation (2008) defined rigorous impact evaluations as: "analyses that measure the net change in outcomes for a particular group of people that can be attributed to a specific program using the best methodology available, feasible and appropriate to the evaluation question that is being investigated and to the specific context".

According to the World Bank's Independent Evaluation Group (2008) impact evaluation is the systematic identification of the effects positive or negative, intended or not on individual households, institutions, and the environment caused by a given development activity such as a program or project. Impact Evaluation has been defined differently over the past few decades. Other interpretations of impact evaluation include: An evaluation which looks at the impact of an intervention on final welfare outcomes,

rather than only at project outputs, or a process evaluation which focuses on implementation. An evaluation carried out some time (five to ten years) after the intervention has been completed so as to allow time for impact to appear and evaluation considering all interventions within a given sector or geographical area. However, impact assessment of agricultural research is viewed as an important activity to ensure accountability, maintain credibility and improve internal decision-making process and the capability to learn from the past experience (Alene *et al.*, 2006).

2.11 Conceptual Model

A model is a construction that shows relations existing among variables. Model has been used in research primarily as tools for organizing knowledge gained in experimentation (Adebayo and Okunaye, 2004). The term conceptualized model may be used to refer to a model which has been formed after a generalized process in mind. It helps us to know and understand the subject matter they represent. It is a figurative expression of relationships between independent and dependent variables. These relationships are depicted schematically or mathematically as shown below. In this model, the first box contains the activities of Survival Farming Intervention Programme (SFIP) which when the participants in the second box take will result in the third box containing the impact variables namely: cassava output, cassava yield, income from cassava and finally level of living compared with those of non-participants. The first dotted arrow indicates if there are any spill-over effects on non-participants, while the second dotted arrow indicates the resultant impact on the non-participants.

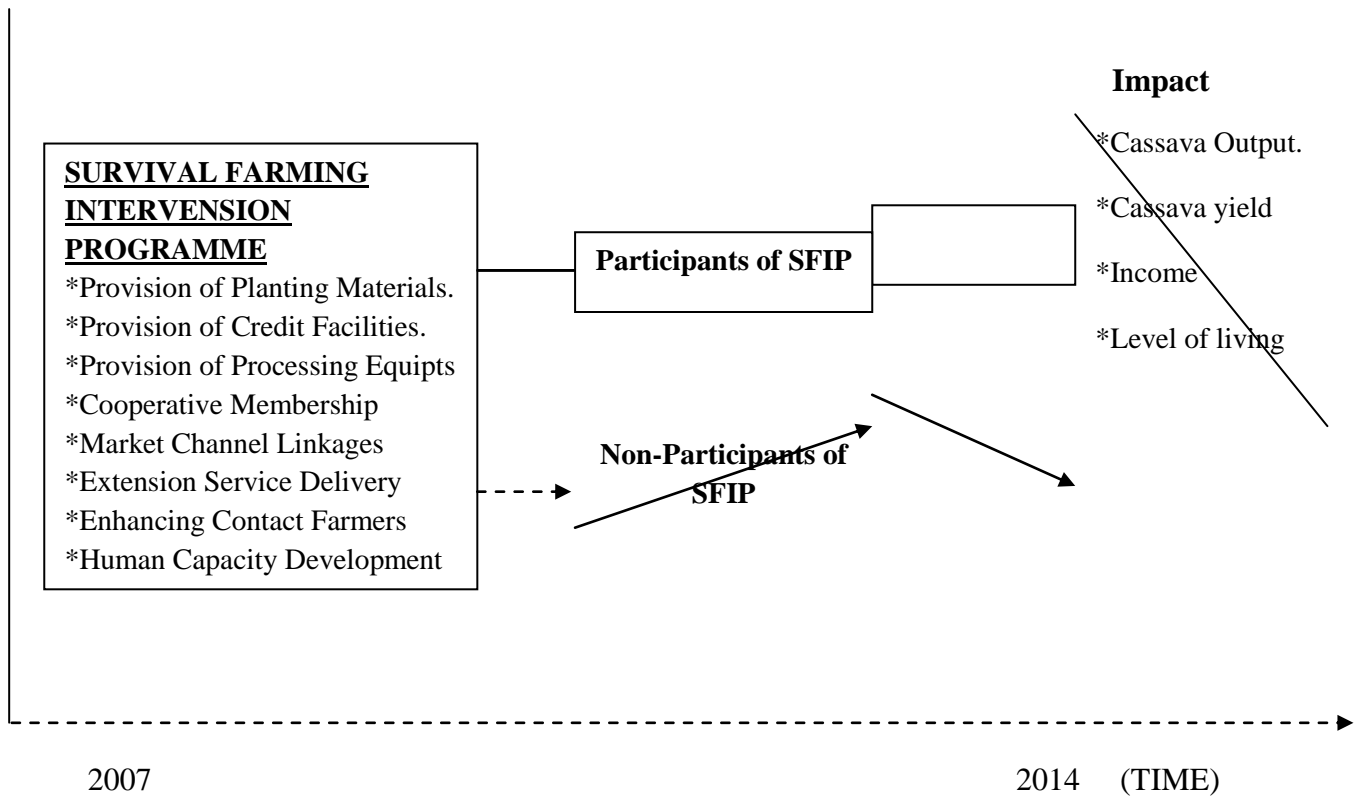


Figure 1. Conceptual Model of Impact of Kogi ADP Survival Farming Intervention Programme on Cassava Production in Three LGAs.

CHAPTER THREE

METHODOLOGY

3.1 Study Area

This study was conducted in Adavi, Okehi and Okene Local Government Areas of Kogi State. The LGAs are located on latitude $7^{\circ}40'N$, $7^{\circ}42'N$ and $7^{\circ}33'N$, and longitude $6^{\circ}27'E$, $6^{\circ}18'E$ and $6^{\circ}14'E$ of the equator respectively (Kogi ADP, 2003). The estimated land area for the three LGAs is 1707 square kilometers (Km^2) and a total population of 202,194 for Adavi LGA, 199,999 for Okehi LGA and 320,260 for Okene LGA (NPC, 2006). The projected population as at 2013 using 3.2% growth rate was 252,743 for Adavi LGA, 249,999 for Okehi LGA and 400,325 for Okene LGA. The Local Government Areas are characterized by two main seasons which are wet and dry seasons. The rainy season is established around late march to early April and get to the peak in August and September while dry season begin in November up to late February. Just like in the Northern part of the country, the area also experience cold weather “harmathan” from December to January.

Vegetation type is Sudan savannah with notable trees such as locust-beans, baobab, sheer-butter and palm trees. Majority of the people, especially the male are farmers engaging in crop production such as maize, cassava, guinea corn, yams, beni-seed, ground nut and cotton to some extent and livestock rearing (goats, sheep, poultry, etc). The female are responsible for the livestock rearing, but their major occupation is weaving, sales of produce within and outside the Local Government Area. With the advent of modernization, diversification of occupation exist with some people working as civil servants and others engage in trading, furniture making, photography, printing, small scale processing and other economic activities.

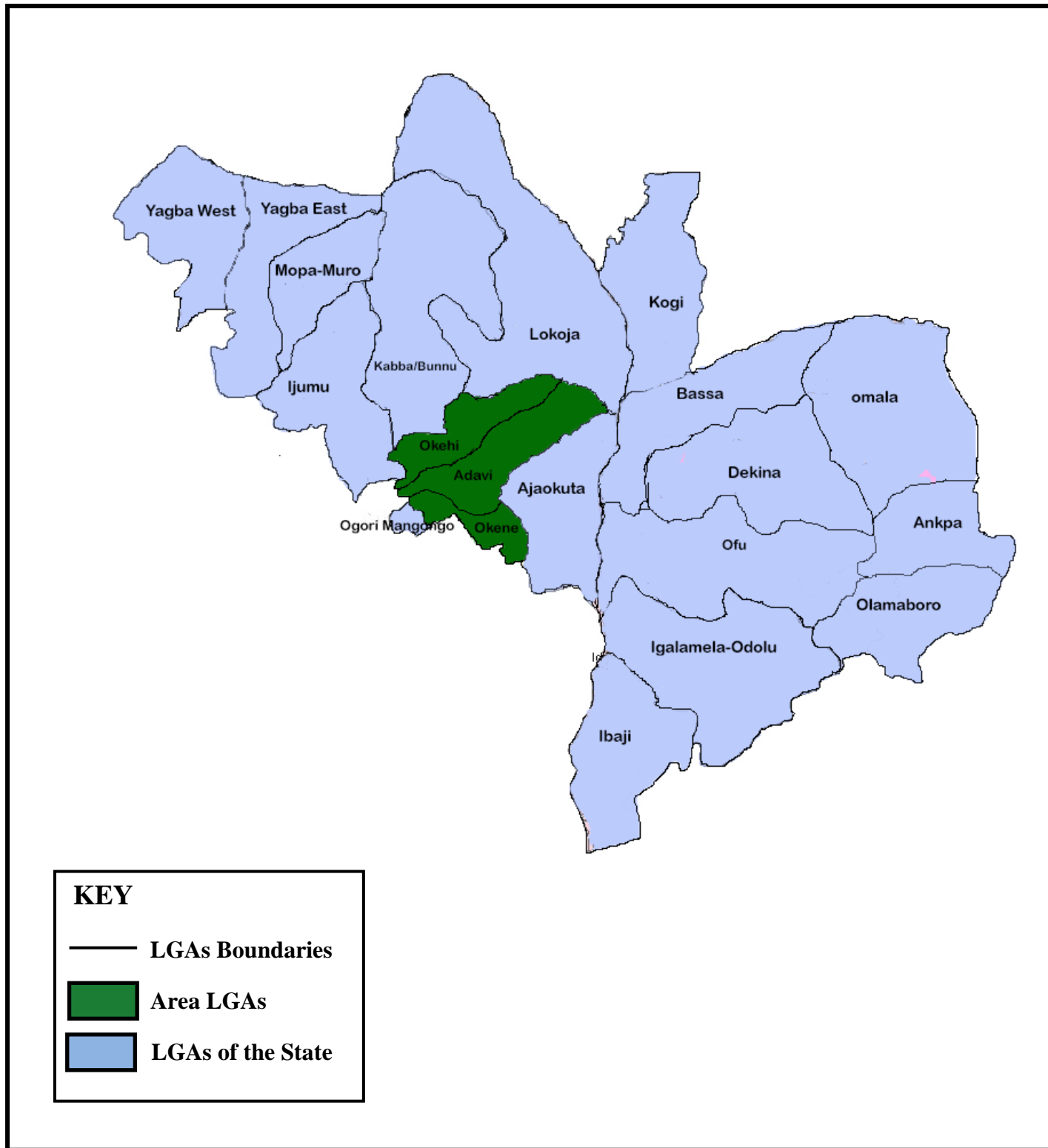


Figure 2: Map of Kogi State Showing the Study Area

The people are pre-dominantly Ebira speaking tribe but there are other tribes that could be found in the area like Yorubas, Hausas, Igbos and others in few proportions. The people are culturally and traditionally rich in cultural activities with Islam and Christianity as major religions widely practiced. Infrastructure such as water, electricity, health, communication, transport, education and recreational facilities are all found in the study area (Kogi ADP, 2003).

3.2 Sampling Procedure and Sample Size

The population for this study comprised of cassava producers in Adavi, Okehi and Okene Local Government Areas which are categorize into participant and non-participant groups of survival farming intervention programme. Adavi Local Government Area comprises of two (2) main districts which are Adavi-West and Adavi-East. Adavi-West district has five (5) wards; Nagazi/Farm centre, Ogaminana central, Uhucheba, Kuroko II and Osisi/Ipaku/Inoziomi (considered as participant groups) while Adavi-East district has six (6) wards; Adavi-Eba, Kuroko I, Okunchi/Ozuri/Onyieka, Anyioke/Idanuhua, karaworo/Iresuhua/Ebogogo and Egge/Iruvochinomi (considered as non-participant groups). Okehi Local Government Area comprises of two (2) main districts which are Ihima and Eika. Ihima district has seven (7) wards; Obeiba I, Obeiba II, Ikuehi, Ohueta, Oboroke-eba, Oboroke-uvete I and Oboroke-uvete II (considered as participant groups) while Eika district has four (4) wards; Obangede/Uhuodo, Eika-Ohizenyi, Okaito/Usungwe and Uboro/Omavi/Ohuepe (considered as non-participant groups). Okene Local Government Area comprises of two (2) main districts which are Okene and Okengwe. Okene district has seven (7) wards; Bariki, Otutu, Orietesu, Lafia/Obessa, Okene-eba, Onyukoko and Idoji (considered as participant groups) while Okengwe district has four (4) wards; Obehira-eba, Obehira-uvete, Upogoro/Odenku and Abuga/Ozuja (thenon-participant groups).

A multi-stage sampling technique was used to select respondents for this study. The first stage involved the purposive sampling of two districts from each of the Local Government Areas giving a total of six districts comprising of three (3) participant groups (Adavi-West, Ihima and Okene districts) and three (3) non-participant groups (Adavi-East, Eika and Okengwe districts). The second stage involved random selection of two wards from each district giving a total of twelve (12) wards. The third stage involved random selection of fifteen (15) respondents from each ward giving a total of one hundred and eighty (180) respondents comprising of ninety (90) participants and ninety (90) non-participants. Questionnaire was also administered on ten (10) officials of SFIP randomly selected to obtain vital information to complement the respondents' responses. Entries in Table 3.1, shows the distribution of respondents in the study area.

Table 3.1: Distribution of Respondents in the Study Area

Category	LGAs	Districts	Wards	No. of Household
Participants	Adavi	Adavi-West	Nagazi/Farm Centre	15
			Kuroko II	15
	Okehi	Okehi	Oboroke-eba	15
			Oboroke-uvete	15
	Okene	Okene	Onyukoko	15
			Lafia/Obessa	15
Non-participants	Adavi	Adavi-East	Egge/Iruvochinomi	15
			Kuroko I	15
	Okehi	Eika	Eika-Ohizenyi	15
			Obangede/Uhodo	15
	Okene	Okengwe	Obehira-Eba	15
			Abuga/Ozuja	15
Total		6	12	180

3.3 Source of Data

Data for the study were obtained purely from primary source. It was collected between March and April, 2014. Two set of structured questionnaire were designed. The first set was administered on the participant and non-participant while the second set was administered on officials of Survival Farming Intervention Programme (SFIP) to obtain first hand information. However, relevant literatures like textbooks, journals, seminar papers, annual reports, newsletters, newspapers, pamphlet and others were consulted through various organizations such as State Ministry of Agriculture and Natural Resources (MANR), Kogi State Agricultural Development Project (KADP), Adavi, Okene and Okehi Local Government Area. The use of internet played very useful resource in obtaining the vast information in the course of this study.

3.4 Analytical Tools

Data were analyzed using both descriptive and inferential statistics. The descriptive statistics includes: frequency distribution tables, percentages and mean where necessary while the inferential statistics involved the use of logistic regression and chow-test statistical tool. Attitudinal measuring scale such as Likert-scale was also used.

Objectives i and vi.

These objectives were achieved using descriptive statistics such as frequency distribution tables, percentages, means and standard deviation.

Objective ii.

Objective ii which is to determine the level of awareness of the survival farming intervention programme in the study area was achieved using 5-points Likert scale (Highly aware =5, aware =4, undecided/neutral =3, unaware =2 and highly unaware =1). The mean level of awareness was obtained by adding the scores (5+4+3+2+1=15) together and divide by the total number of points which are five (5). This gave us the

mean score of three (3). The decision rule therefore was that computed value of greater than 3 indicated high level of awareness, value of less than 3 indicated low level of awareness while value of equal to 3 indicated moderate level of awareness.

Objective iii.

Logit regression analysis was used to achieve objective three (iii) which is to determine the factors influencing participation of respondents in survival farming intervention programme on cassava production in the study area.

Objective v.

Impact of the survival farming intervention programme on cassava output, yield, income from cassava and level of living of the participants and non-participants was achieved using Chow-test statistic.

Test of hypotheses

The hypotheses were tested using chow-test statistics at 5% (i.e. $p < 0.05$) probability level of significance.

3.5 Model Specifications

3.5.1 Logit Regression Analysis

Logit regression was used to achieve objective (iii) which is factors influencing participation of respondents in Survival Farming Intervention Programme. The general logit regression model is mathematically expressed as below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \dots \beta_{14} X_{14} + e \dots \dots \dots (1)$$

Where:-

Y = Participation of Respondents in SFIP on cassava production (Yes = 1, No = 0)

X₁ = Age in years

X₂ = Marital status (Married = 1, Single = 0)

X₃ = Gender (Male =1, Female = 0)

X_4 = Labour usage in man days

X_5 = Educational level in years of formal schooling

X_6 = Farmers experience in years of farming

X_7 = House-hold size in numbers

X_8 = Farm size in hectares

X_9 = Land tenure (Owned = 1, Not owned = 0)

X_{10} = Awareness of SFIP Components (Yes = 1, No = 0)

X_{11} = Access to credit in Naira

X_{12} = Co-operative membership in years

X_{13} = Extension contact in number of visits per annum

X_{14} = Planting material in kilogram

α = Constant

$\beta_1 - \beta_{14}$ = regression coefficients

e = error term

3.5.2 Chow test Statistic

Impact of the survival farming intervention programme on cassava production, income and livelihoods of the participant and non-participants was achieved using Chow-test statistic. A Chow test is a particular test for structural change; an econometric test to determine whether the coefficients in a regression model are the same in separate sub-samples. According to Chow (1960) “the standard F test for the equality of two sets of coefficients in linear regression models” is called a Chow test. Dougherty (2007) stated that chow-test statistics is often used in programme evaluation to determine whether the programme has impacts on different sub-group of the population. It requires the sum of squared residuals from three regressions, one from each sample group and one for the

pooled data. If the F-chow is greater than the F-table, then there was programme impact on the participants otherwise no impact. This is expressed mathematically as:

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

Where;

RSSR = the sum of squared residuals from a linear regression in which b_1 and b_2 are assumed to be the same, b has dimension k , and there are n observations in total.

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

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

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

3.6 Operationalization and Measurement of Variables

3.6.1 Measurement of independent variables

i. **Age (x_1):** The age of the respondents was the number of years he/she has spent in this life. Studies have shown that young age groups are involved in agricultural production activities and adopt technology faster than the older age.

ii. **Marital status (x_2):** This is the act of being married or unmarried. Somebody that is unmarried could either be single, divorce or widowed. Marital status was measured as a dummy variable (married assigned 1 while unmarried was assigned 0).

iii. **Gender (x_3):** Gender is the categorization of the respondents according to their sex which is either male or female. Oladeji *et al.* (2003) observed that it is generally believed that males are often more energetic and could readily be available for energy demanding jobs like cassava farming. However, according to Adewale *et al.* (2005) gender is no barrier to active involvement in cassava production activities. Gender was measured as a dummy variable (male assigned 1 while female was assigned 0).

- iv. **Labour (x_4):** Labour is the effort or strength exerted to accomplish work done. It could be family or hired labour. Availability of labour is important in agricultural activities because it enhances the level of production and it was measured in man days.
- v. **Education level (x_5):** Education is generally considered an important variable that could enhance farmer's acceptance of new technologies. Ogunbameru (2001) posited that education will likely enhance the adoption of modern farm technologies by youth and thereby sustaining a virile farming population. The more educated farmers are, the more likely they adopt technology. Level of education is measured by number of years spent in formal schooling. This was measured as the total number of years in formal schooling.
- vi. **Farming experience (x_6):** Farming experience is an experience gain with age while carrying out farming operations. Since the major occupation of the respondents is farming, the length of time in farming can be linked with the age of the farmers. As the age increases among the farmers, their years of experience also increase. This variable was measured in number of years the respondent has been into cassava production.
- vii. **House-hold size (x_7):** This was the number of people in a given household. Ojuekaiye (2001) defined household as the number of people eating from same pot. It implies that the consumption unit is also the production unit. The larger the family size the more favorably disposed will be the members to adopt the recommended cassava production technology.
- viii. **Farm size (x_8):** This was measured as total portion of land that is put into cassava production. In other words, it was the total area of farm land measured in hectares operated by the respondents for cassava production in the study area.
- ix. **Land tenure (x_9):** Agricultural land is that portion of earth surface that is put forward for agricultural production. Land tenure is the system by which an individual

acquire or have title to portion of land for farming. One major characteristic of small-scale farmers is fragmented land holding. It is an important variable in respect to adoption of agricultural technologies and was measured as a dummy (access assigned one (1) while no access was assigned zero (0)).

x. **Awareness (x_{10}):** Awareness is the first stage of adoption process and involves the farmers learning of the existence of an innovation. At this stage he/she has little knowledge about it. The participating farmers will be interviewed to ascertain their level of awareness of survival farming intervention programme. The more farmers are aware about an innovation, the more likely they will adopt it and vice versa. It was measured as dummy variable with one (1) was assigned to aware and zero (0) to not aware.

xi. **Access to credit (x_{11}):** Credit is a very strong important factor that is needed to acquire or develop farm enterprise (Ekong, 2003). Its availability could determine adoption of recommended cassava production technologies and the extent of production capacity. This was measured as dummy variable with one (1) was assigned to access to credit and zero (0) to no access.

xii. **Co-operative membership (x_{12}):** Co-operative groups are organized for the promotion of special interest or meet certain needs that cannot be achieved by the individual efforts. They contribute to the dissemination of new ideas, practices and products as well as in sourcing for loan and farm input (Chikezie *et al.*, 2012). Farmers that belong to a co-operative society are likely to adopt new technology easily than those not in any co-operative. This was measured in number of years of cooperative membership.

xiii. **Extension contact (x_{13}):** Agricultural extension service constitutes a driving force for any agricultural development. The relationship between agricultural extension agent and the farmer is an important determinant in improving yield of cassava as well as in

ensuring food security (Chikezie *et al.*, 2012). The more number of visits of an extension agent to the farmers the greater the chance for them to adopt innovation. It was measured in terms of number of visits received.

xiv. **Planting materials (x_{14}):** This was the pieces of cassava stem (stem cuttings) that was propagated. The development of cassava and amount of yields depends on the quality of stem cuttings. It was measured in kilogram.

3.6.2 Measurement of dependent variables

The dependent variable (Y) is the participation of respondents in Survival Farming Intervention Programme (SFIP) on cassava production. This was measured as a dummy variable with “Yes” assigned one (1) for participating and “No” assigned zero (0) in response to not participating in survival farming intervention programme in the study area. The impact of SFIP was determined in terms of output, yield, income from cassava and level of living and measured as follows:

i. **Output:** This was the quantity of cassava produced in 2012 cropping season measured in kilogram (kg).

ii. **Yield:** This was measured as the total output of cassava produced in 2012 in kilogram divided by the total hectares.

iii. **Income:** This was the total money realized from the sales of cassava products which was measured in naira (₦).

iv. **Level of living:** This encompasses all things as contributing to the quality of life of the respondents hence boasting their social status. Thus, level of living was measured in terms of value of durable goods such as bus / pick-up vehicle, motor cycle, bicycle and others, farm equipment and livestock possession of an individual farmer which was converted to naira (₦) value.

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter discusses the result of the data analysis comprising of the socio-economic characteristics of the respondents, factors influencing participation of respondents in Survival Farming Intervention Programme (SFIP) and impact of SFIP on cassava production, income and livelihoods of participants and non-participants in the study area.

4.1 Socio-Economic Characteristics of the Respondents

The socio-economic variables examined were age, marital status, gender, educational qualification, farming experience, labour usage, farm size, land ownership, access to credit, extension visits and membership of cooperatives.

4.1.1 Age of the respondents

The age of farmers determines the quality and quantity of work he can do on his/her farm. It is an important determinant of farm productivity. Table 4.1 reveals that majority of the respondents in the area (66%, 65% and 70%) were within the age range of 36 -55 years for the participants, non-participants and the officials respectively with a mean age of 45 years for participants and 44 years for non-participants of SFIP. This implies that respondents were in the most productive stage of their life. This finding is in agreement with Okunade *et al.* (2005) who stated that cassava farmers were mostly between 36 – 56 years of age.

4.1.2 Marital status of the respondents

This is the act of being married or unmarried (such as single, divorced or widowed). From Table 4.1, the result shows that almost all the respondents were married at one

time or the other. However, about 94.5% of the participants and non-participants were married while 3.3% and 5.5% were widowed respectively. Majority (90%) of the officials were married, while only 10% were widowed. This implies that the respondents are responsible and there will pro-creation of new generation that will be in cassava production in near future in the study area.

4.1.3 Gender of the respondents

Gender is social differentiation of an individual into either masculinity or femininity. It is an important variable as far as participation in agricultural programme is concerned depending on the geographical location. Table 4.1 reveals that majority of the respondents 90%, 91.1% and 80% of the participants, non-participants and officials respectively, were male. This means that male is more involve in agricultural programme especially in the study area than female. This finding is in agreement with those of Okwoche and Asogwa (2012) who posited that male dominancy in cassava production is due to the labourious nature of cassava farming operations.

4.1.4 Educational qualification of the respondents

Education is generally considered an important variable in agricultural production because it assists farmers in accepting an innovation. It enhances the decision-making process of a farmer. From Table 4.1, the result shows that 12.2% of the participants and 47.8% of non-participants had no formal education. But, 76.6%, 52.2% and 60% of the participants, non-participants and the officials respectively attended primary and secondary schools. However, 7.8% of the participants and 40% of the officials attended tertiary institutions. This explains the reason why the participants easily participate in a programme due to high level of education. This is in corroboration with the findings of

Nsonya and Nenna (2011) in which they found out that education is an advantage for innovation adoption and transfer.

4.1.5 Farming experience of the respondents

As the years pass by, farmers gain experience while carrying out farming operations. Years of experience in farming has great influence on production, processing, storage and marketing of farm output. It is an indication of farming expertise. Table 4.1 reveals that majority of the respondents 84.5%, 75.5% and 100% of the participants, non-participants and the officials respectively have experience in farming activities within the range of 1 – 20 years with mean of 14.5 years for participants and 17 years for non-participants in the study area. This finding implies that the respondents have been into cassava farming over a long period of time and it is in agreement with Chikezie *et al.* (2012) who posited that, with many years of farming experience, farmers will be able to make sound decisions as regards resources allocation and management of their farms.

4.1.6 House-hold size of the respondents

House-hold size to some extent determines the supply of labour for farming operations in agriculture. From Table 4.1, the result shows that majority (81.1%) of the participants and 80% of the non-participants had house-hold size within the range of 1 – 20 persons with an average of 16 persons per household. This means that there is a large number of people eating from the same cooking pots. As this may be a good source of farm labour but it also poses a food insecurity threat especially with many dependents. The implication according to Agboola (2004) is that the larger the size of a house-hold, the higher the probability of being food insecure.

Table 4.1 Distribution of Socio-economic Characteristics of the Respondents

CATEGORY	Participants		Non-participants		Officials	
	Freq.	Percentage	Freq.	Percentage	Freq.	Percentage
Age (Years)						
< 36	4	4.5	2	2.2	3	30
36 – 45	37	41.1	43	47.8	6	60
46 – 55	29	32.2	22	24.4	1	10
> 55	20	22.2	23	25.6	-	-
Total	90	100	90	100	10	100
Mean	45		44			
Marital Status						
Married	85	94.5	85	94.5	9	90
Widow	3	3.3	5	5.5	1	10
Divorce	2	2.2	-	-	-	-
Total	90	100	90	100	10	100
Gender						
Male	81	90.0	82	91.1	8	80
Female	9	10.0	8	8.9	2	20
Total	90	100	90	100	10	100
Education						
No Formal	11	12.2	43	47.8	-	-
Primary	22	24.4	30	33.3	1	10
Secondary	47	52.3	17	18.9	5	50
Tertiary	7	7.8	-	-	4	40
Adult Education	3	3.3	-	-	-	-
Total	90	100	90	100	10	100
Mean	9.5		7.0			
Farming Experience						
1 – 10	53	58.9	46	51.1	9	90
11 – 20	23	25.6	22	24.4	1	10
21 – 30	12	13.3	15	16.7	-	-
> 30	2	2.2	7	7.8	-	-
Total	90	100	90	100	10	100
Mean	14.5		17			
House-hold Size						
1 – 10	9	10.0	5	5.6	-	-
11 – 20	64	71.1	67	74.4	-	-
> 20	17	18.9	18	20.0	-	-
Total	90	100	90	100	-	-
Mean	16		16			

4.1.7 Labour usage of the respondents

Labour is the effort or strength exerted to accomplish work done. This could be family or hired depending on the availability. Table 4.2 reveals that 100% of the participants used both family and hired labour in cassava production while 85.6% of the non-participants used both family and hired labour, and 14.4% used family labour alone in cassava production. This might be due to large household size of the respondents. Nandi *et al.* (2011) in his study posited that both family and hired labour was found to be the most important determinants of cassava production output.

Table 4.2 Distribution of Respondents based on the Types of Labour Usage

LABOUR USAGE	Participants		Non-participants	
	Frequency	Percentage	Frequency	Percentage
Hired	-	-	-	-
Family	-	-	13	14.4
Both	90	100	77	85.6
Total	90	100	90	100

4.1.8 Farm size of the respondents

This is the total area of land that is put into cassava production. It is an important fixed factor for agricultural production. Table 4.3 reveals that all the participants (100%) and 98.9% of the non-participants have farm size within the range of 1 – 10 hectares with mean farm size of 4.7 and 4.6, respectively, while 1.1% of the non-participants have farm size above 10 hectare. This implies that cassava production in the study area falls within the small and medium scale which is in agreement with the findings of Chikezie *et al.* (2012).

Table 4.3 Distribution of Respondents based on the Farm Size

FARM SIZE	Participants		Non-participants	
	Frequency	Percentage	Frequency	Percentage
< 5	34	37.8	32	35.6
5 – 10	56	62.2	57	63.3
> 10	-	-	1	1.1
Total	90	100	90	100
Mean	4.7		4.6	

4.1.9 Land ownership of the respondents

Ownership of land determines level of production of individual farmers. It is a tenure system by which an individual have title to portion of land for farming. Table 4.4 shows that 52.3% of the participant and 62.2% of the non-participants acquire their farmland through inheritance while 28.9% of the participants purchased their farmland and 13.3% were given farmland; only 3.3% of the non-participants purchased their farmland while 21.1% were given farmland implying that farmland is not a problem in cassava production in the study area. This finding corroborate with that of Chikaire *et al.* (2011).

Table 4.4 Distribution of Respondents based on Land Ownership

LAND OWNERSHIP	Participants		Non-participants	
	Frequency	Percentage	Frequency	Percentage
Borrowed	1	1.1	8	8.9
Purchased	26	28.9	3	3.3
Gifted	12	13.3	19	21.1
Rented	4	4.4	4	4.4
Inherited	47	52.3	56	62.2
Total	90	100	90	100

4.1.10 Access to credit for cassava production

Credit is an important variable needed to acquire or develop farm enterprise. Access to credit will go a long way in determining the level of agricultural production. Table 4.5 reveals the access to credit and loan acquired by the respondents in the study area. Majority (77.8%) of the participants have access to credit while 22.2% did not have, and 38.9% of the non-participants have access to credit while 61.1% did not have access. In terms of loan acquired for cassava production, 81.1% of the participants and all the non-participants (100%) acquired loan within the range of 1,000 – 200,000 naira during their production while 18.9% of the participants acquired loan of above 200,000 naira for production. This implies that participants had more access to credit than the non-participants, thus may not be unconnected with the fact that majority of the participants belongs to one cooperative society or the other which is the major means of obtaining assistance either from Government or Non-Governmental Organizations (NGOs).

Table 4.5 Distribution of Respondents based on Access to Credit for Cassava Production

ACCESS TO CREDIT	Participants		Non-participants	
	Frequency	Percentage	Frequency	Percentage
Access to Credit				
Access	70	77.8	35	38.9
No Access	20	22.2	55	61.1
Total	90	100	90	100
Loan Acquire				
1000 – 100000	40	44.4	83	92.2
101000 – 200000	33	36.7	7	7.8
201000 – 300000	9	10.0	-	-
> 300000	8	8.9	-	-
Total	90	100	90	100

4.1.11. Sources of credit to the respondents

Credit for agricultural production is sourced through several ways which includes agricultural and commercial banks, money lenders, cooperatives, friends and relatives, and others. However, Table 4.6 shows that 75.6% and 25.6% of the participants sourced credit through cooperatives and friends & relatives respectively, while 33.3% of the non-participants sourced credit through cooperative. This implies that participation in SFIP had enhanced participants' source of credit as compared to the non-participants.

Table 4.6 Distribution of Respondents based on Sources of Credit

SOURCES OF CREDIT	Participants (Freq.%)*		Non-participants (Freq.%)*	
	No	Yes	No	Yes
Agricultural Bank	84.4 (76)	15.6 (14)	92.2 (83)	7.8 (7)
Cooperative	24.4 (22)	75.6 (68)	66.7 (60)	33.3 (30)
Friends & Relatives	74.4 (67)	25.6 (23)	93.3 (84)	6.7 (6)

***Multiple responses**

Numbers in parenthesis represent the frequency of the respondents.

4.1.12 Extension visits received

Agricultural extension services constitute a driving force for any agricultural development. The relationship between agricultural extension agents and farmers is an important determinant in improving yield of cassava production as well as ensuring food security. Table 4.7 reveals that 30% of the participants and 54.4% of the non-participants were visited less than 5 times per annum while, 60% of the participants and 45.6% of the non-participants were visited within the range of 5 - 10 times per annum. Only 10% of the participants were visited more than 10 times per annum by extension agents during their cassava production in last cropping season. This indicates that participants receive more visit than the non-participants which could be due to their participation in SFIP.

Table 4.7 Number of Extension Visits Received

EXTENSION VISITS	Participants		Non-participants	
	Frequency	Percentage	Frequency	Percentage
< 5	27	30.0	49	54.4
5 – 10	54	60.0	41	45.6
> 10	9	10.0	-	-
Total	90	100	90	100

4.1.13 Cooperative membership of the respondents

Cooperative groups are organized for the promotion of special interest or meet certain needs that cannot be achieved by the individual effort. Table 4.8 shows that 36.7% of the participants and 40.0% of the non-participants were members of cooperative for less than 5 years while, 62.2% of the participants and 54.4% of the non-participants were members within the range of 5 - 10 years. Only 1.1% of the participants and 5.6% were members of cooperative for more than 10 years. This implies that majority of the non-participants have been members of cooperative for long time but did not participate in Survival Farming Intervention Programme (SFIP).

Table 4.8 Years of Membership in Cooperatives

COOPERATIVE	Participants		Non-participants	
	Frequency	Percentage	Frequency	Percentage
< 5	33	36.7	36	40.0
5 – 10	56	62.2	49	54.4
> 10	1	1.1	5	5.6
Total	90	100	90	100

4.2 Level of Awareness of SFIP Components

Awareness is the first stage of adoption process and involves the farmers learning of the existence of a programme. To assess the level of awareness of survival farming

intervention programme components, there is need to know if the respondents are aware of different components of the programme and sources of awareness.

4.2.1. Awareness of SFIP Components by the respondents

As revealed in Table 4.9, majority (82.2%) of the participants were aware of the different components of SFIP while 17.8% said they were not aware the different components. This may be due to careless attitude of some farmers or voluntary withdrawal after being first nominated as participant. In the same vein, majority (81.1%) of the non-participants were not aware of the different components of SFIP while 18.9% of the non-participants were aware. This could be possibly due to their interaction with the participants in the same social system resulting in counter-factual effect of the programme on non-participants. More so, participants were more aware of the different components of SFIP than the non-participants which may be due to their involvement in SFIP.

Table 4.9 Distribution of Respondents based on the Awareness of SFIP Components

AWARENESS OF SFIP	Participants		Non-participants	
	Frequency	Percentage	Frequency	Percentage
Aware	74	82.2	17	18.9
Not Aware	16	17.8	73	81.1
Total	90	100	90	100

4.2.2 Sources of awareness of SFIP Components by the respondents

As revealed in Table 4.10, about 51.6%, 71.1% and 26.7% of the participants got to know of SFIP components through friends & relatives, extension agent and mass media, respectively, while 4.4%, 28.9% and 30.0% of the non-participants got to know of SFIP components through friends & relatives, extension agent and mass media, respectively. This implies that the extension agents are the major source through which information is disseminated to the people in the study area. For those that got to be aware through the

mass media, 24.4% representing five (5) participants and 37.8% representing two (2) of the non-participants were from television, while 53.3% representing eleven (11) participants and 63.3% representing three (3) of the non-participants heard of the SFIP components over the radio implying that radio is the widely used media source in the study area.

Table 4.10 Distribution of Respondents based on Source of Awareness of SFIP

AWARENESS SOURCE	Participants (Freq.%)*		Non-participant (Freq.%)*	
	No	Yes	No	Yes
Source of Awareness				
Friends & Relatives	48.9 (36)	51.6 (38)	95.6 (16)	4.4 (1)
Extension Agents	28.9 (22)	71.1 (52)	71.1 (12)	28.9 (5)
Mass Media	73.3 (54)	26.7 (20)	70.0 (12)	30.0 (5)
Medium of Awareness				
Newspaper	87.8 (18)	12.2 (2)	100.0 (5)	_ (0)
Radio	46.7 (9)	53.3 (11)	36.8 (2)	63.2 (3)
Television	75.6 (15)	24.4 (5)	62.2 (3)	37.8 (2)
Internet	90.0 (18)	10.0 (2)	100.0 (5)	_ (0)

Numbers in parenthesis represent the frequency of the respondents.

4.2.3 Components of SFIP benefited by the respondents

Entries in Table 4.11 reveals that 18.9% of the participants benefited from all the components of the SFIP, majority (73.3%) of the participants benefited from few while only 7.8% of the participants did not benefit from any of the SFIP components. This could be due to lack of interest, careless attitude or voluntary withdrawal. However, 27.8% of the non-participants benefited from the components of SFIP in one form or the other. This might be as a result of interaction in the social system resulting in trickle-down effect.

Table 4.11 Distribution of Respondents based on the Components of SFIP Benefited

COMPONENTS BENEFITED	Participants		Non-participants	
	Frequency	Percentage	Frequency	Percentage
All of the Components	17	18.9	–	–
Few of the Components	66	73.3	21	27.8
None of the Components	7	7.8	65	72.2
Total	90	100	90	100

4.2.4 Level of awareness of SFIP based on its components

Level of awareness of different components of survival farming intervention programme using 5-point Likert-scale to categorize the responses into highly aware, aware, neutral, unaware and highly unaware were determined from the responses gathered and analyzed descriptively. The decision was that, mean score of above 3.0 signifies high level of awareness; mean score of less than 3.0 signifies low level of awareness while mean score of 3.0 signifies moderate awareness. Table 4.12 reveals that planting material, access to credit, extension contact and training have high awareness and ranked 1st, 2nd and 3rd respectively among the participants implying that they were the most benefited components of SFIP. Others include processing equipment and cooperative membership that have high awareness and ranked 4th and 5th respectively. However, market channel linkages have moderate awareness, while contact farmer enhancement and human capacity development both have low awareness and ranked 7th and 8th respectively.

Table 4.12 Level of Awareness of SFIP Components among Participants

COMPONENTS	Mean Score	Rank	Decision
Planting Materials Provision	3.64	1 st	High Awareness
Access to Credit Facilities	3.43	2 nd	High Awareness
Extension Contact & Training	3.34	3 rd	High Awareness
Processing Equipments Provision	3.32	4 th	High Awareness
Cooperative Membership	3.10	5 th	High Awareness
Market Channel Linkages	2.98	6 th	Moderate Awareness
Contact Farmers Enhancement	2.50	7 th	Low Awareness
Human Capacity Development	2.14	8 th	Low Awareness

Table 4.13 reveals the responses of the non-participants showing that all the components have low awareness. This is because they did not participate in the programme while few that have benefited from any of the components was as a result of trickle-down effect within the social system.

Table 4.13 Level of Awareness of SFIP Components among Non-Participants

COMPONENTS	Mean Score	Rank	Decision
Extension Contact & Training	2.42	1 st	Low Awareness
Planting Materials Provision	2.26	2 nd	Low Awareness
Market Channel Linkages	2.21	3 rd	Low Awareness
Processing Equipments Provision	2.20	4 th	Low Awareness
Access to Credit Facilities	2.16	5 th	Low Awareness
Cooperative Membership	2.14	6 th	Low Awareness
Human Capacity Development	2.01	7 th	Low Awareness
Contact Farmers Enhancement	1.98	8 th	Low Awareness

4.3 Factors Influencing Participation in SFIP by Cassava Producers

Logit Regression model was used to determine the factors influencing participation of respondents in survival farming intervention programme on cassava production. Several factors are known to influence participation of farmers in agricultural programme. The

empirical results of the logit regression are presented in Table 4.14. The value of coefficient of determination, R^2 was 0.67969 with an adjusted R^2 of 0.53998. This implies that about 68% of the variation in the participation of SFIP is explained by the independent variables in the logit regression model. Gender (X_3), farming experience (X_6), farm size (X_8), land tenure (X_9) and access to credit (X_{11}) all had negative coefficients. This implies that they are inversely related to participation in SFIP. One unit increase in their variable coefficient will result to a decrease in level of participation. However, coefficients of age (X_1), marital status (X_2), labour (X_4), education (X_5), household (X_7), awareness (X_{10}), extension contact (X_{12}), cooperative (X_{13}) and planting materials (X_{14}) had positive and direct relationship with participation in SFIP. The implication is that, one unit increase in any of the variable coefficients will result to an increase in level of participation. From the t-value of the logistic regression, seven independent variables were found to be significant at 1% level of probability with five of the variables positively related to participation. Two of the independent variables are significant at 5% level of probability with one negatively and other positively related to participation while five of the independent variables were not significant.

Table 4.14 Coefficients of the Logistic Regression of the Respondents Participation in SFIP

Variables	Coefficients	Standard Error	T-value
Constant	-88.615	25.482	-3.4775*
Age (X ₁)	0.23723	0.072723	3.2621*
Marital status (X ₂)	3.6228	1.4613	2.4660**
Gender (X ₃)	-2.7602	1.1625	-2.3744**
Labour (X ₄)	13.037	4.5235	2.8822*
Education (X ₅)	0.14931	0.058918	2.5341*
Experience (X ₆)	-0.64132	0.60804	-1.0547 ^{NS}
Household (X ₇)	0.20878	0.71713	0.29113 ^{NS}
Farm-size (X ₈)	-0.043388	0.73143	-0.59319 ^{NS}
Land tenure (X ₉)	-1.6259	0.62549	-2.5995*
Awareness (X ₁₀)	3.6699	0.67358	5.4484*
Access to credit (X ₁₁)	-0.15027	0.60787	-0.24720 ^{NS}
Extension visits (X ₁₂)	0.38294	0.14613	2.6206*
Coop. membership (X ₁₃)	0.093426	0.12103	0.77190 ^{NS}
Planting materials (X ₁₄)	3.3573	4.5235	2.8822*

R-Squared=0.67969, Adj. R-Squared=0.53998, *significant at 1%, **significant at 5%

4.4 Impact of Survival Farming Intervention Programme

The impact of Survival Farming Intervention Programme (SFIP) was determined in terms of cassava output, cassava yield, income from cassava and level of living of respondents in the study area.

4.4.1 Impact of SFIP on cassava output

The impact of SFIP on cassava output of the participants and non-participants in the study area was achieved using chow test statistics. The Chow Test is a test that determines if the coefficients from two regression analyses are the same. However, three different linear regressions were carried out comprising of the pooled samples of participants and non-participants, and separate linear regression for participants and non-participants respectively. The residual sum of square of each of the three regressions was used to compute the chow test. The decision rule was that if Chow F-statistics is greater than that of F-table, there is impact of SFIP on cassava output and

structural differences between the participants and non-participants in terms of cassava output, if otherwise there is no impact of SFIP on cassava output in the study area. Table 4.15 therefore shows the results of regression coefficients and residual sum of square for the pooled samples, participants and non-participants of SFIP respectively.

Table 4.15 Impact of SFIP on Cassava Output of the Respondents

Group Sample	Regression Coef.	Residual Sum of Square	$n_1 + n_2$	k	F-Cal	F-Tab
Pooled Samples	25.30	0.8307009E+10	180	3	16.31	1.83
Participants	26.20	0.3626668E+10				
Non-participants	08.74	0.6371387E+10				

As shown in Table 4.15, the Chow F calculated was 16.31, while F table value at 9 degree of freedom with sample size of 180 was 1.83 at 5% level of probability implying a significant impact of SFIP on cassava output in the study area since the F calculated was greater than the F table. Hence, we reject the null hypothesis that there is no significant difference between the participants and non-participant of SFIP in terms of cassava output and accept the alternative hypothesis that there is significant difference between the participants and non-participants of SFIP in terms of cassava output in the study area.

4.4.2 Impact of SFIP on cassava yield

The impact of SFIP on cassava yield of the participants and non-participants in the study area was achieved using chow test statistics. Three different linear regressions were carried out comprising of the pooled samples of participants and non-participants, and separate linear regression for participants and non-participants respectively. The residual sum of square of each of the three regressions was used to compute the chow test. The decision rule was that if Chow F-statistics is greater than that of F-table, there

is impact of SFIP on cassava yield and structural differences between the participant and non-participants in terms of cassava yield, if otherwise there is no impact of SFIP on cassava yield in the study area. Table 4.16 therefore shows the results of regression coefficients and residual sum of square for the pooled samples, participants and non-participants of SFIP respectively.

Table 4.16 Impact of SFIP on Cassava Yield of the Respondents

Group Sample	Regression Coef.	Residual Sum of Square	n₁ + n₂	k	F-Cal	F-Tab
Pooled Samples	56.05	0.48883E+10	180	3	16.65	1.83
Participants	26.76	0.35991E+10				
Non-participants	06.84	0.650446898E+9				

As shown in Table 4.16, the Chow F calculated was 16.65, while F table value at 9 degree of freedom with sample size of 180 was 1.83 at 5% level of probability implying a significant impact of SFIP on cassava yield in the study area since the F calculated was greater than the F table. Hence, we reject the null hypothesis that there is no significant difference between the participants and non-participant of SFIP in terms of cassava yield and accept the alternative hypothesis that there is significant difference between the participants and non-participants of SFIP in terms of cassava yield in the study area.

4.5.1 Impact of SFIP on income

The impact of SFIP on income of the participants and non-participants in the study area was also achieved using chow test statistics. Three different linear regressions were carried out comprising of the pooled samples of participants and non-participants, and separate linear regression for participants and non-participants respectively. The residual sum of square of each of the three linear regressions was used to compute the

chow test. The decision rule was that if Chow F-statistics is greater than that of F-table, there is impact of SFIP on income and structural differences between the participant and non-participants in terms of income, if otherwise there is no impact of SFIP on income in the study area. Table 4.17 therefore shows the results of regression coefficients and residual sum of square for the pooled samples, participants and non-participants of SFIP respectively.

Table 4.17 Impact of SFIP on Income of the Respondents

Group Sample	Regression Coef.	Residual Sum of Square	n₁ + n₂	k	F-Cal	F-Tab
Pooled Samples	28.49	0.2872046E+12	180	3	21.06	1.83
Participants	25.94	0.9114868E+11				
Non-participants	08.74	0.4120071E+11				

As shown in Table 4.17, the Chow F calculated was 21.06, while the F table value at 9 degree of freedom with sample size of 180 was 1.83 at 5% level of probability indicating that there was significant impact of SFIP on income of the participants since the F calculated was greater than the F table. Hence, we reject the null hypothesis that there is no significant difference between the participants and non-participants of SFIP in terms of income and accept the alternative hypothesis that there is significant difference between the participants and non-participants of SFIP in terms of income in the study area.

4.5.2 Impact of SFIP on level of living

The impact of SFIP on level of living of the participants and non-participants in the study area was also achieved using chow test statistics. Three different linear regressions were carried out comprising of the pooled samples of participants and non-participants, and separate linear regression for participants and non-participants

respectively. The residual sum of square of each of the three linear regressions was used to compute the chow test. The decision rule was that if Chow F-statistics is greater than that of F-table, there is impact of SFIP on level of living and structural difference between the participant and non-participants, if otherwise there is no impact of SFIP on level of living of the participants and non-participants in the study area. Table 4.18 therefore shows the results of regression coefficients and residual sum of square for the pooled samples, participants and non-participants of SFIP respectively.

Table 4.18 Impact of SFIP on Level of Living of the Respondents

Group Sample	Regression Coef.	Residual Sum of Square	n₁ + n₂	k	F-Cal	F-Tab
Pooled Samples	11.13	0.1576053E+14	180	3	28.01	1.83
Participants	25.94	0.4194792E+13				
Non-participants	08.74	0.4194792E+13				

As shown in Table 4.18, the Chow F calculated was 28.01, while the F table value at 9 degree of freedom with sample size of 180 was 1.83 at 5% level of probability. This means that there was significant impact of SFIP on level of living of the participants since the F calculated is greater than the F table. Hence, we reject the null hypothesis that there is no significant difference between the participants and non-participant of SFIP in terms of level of living and accept the alternative hypothesis that there is significant difference between the participants and non-participants of SFIP in terms of level of living in the study area.

4.5.3 Sources of Livelihood of the Respondents

Table 4.19 reveals the sources of livelihood of the respondents in the study area. Majority (97.8%) of the participants and 74.4% of the non-participants were engaged in on-farm activities as means of livelihood (these includes crop and animal production,

fishery, plantation and others). Only a paltry (2.2%) of the participants and 20.0% of the non-participants are engaged in off-farm activities (such as craftsmanship, labourers and others), while 5.6% of the non-participants were engaged in non-farm activities like carpentry, welding, brick-laying and other.

Table 4.19 Distribution of Respondents based on Sources of Livelihoods

LIVELIHOODS SOURCE	Participants		Non-participants	
	Frequency	Percentage	Frequency	Percentage
On-Farm Activities	88	97.8	67	74.4
Off-Farm Activities	2	2.2	18	20.0
Non-Farm Activities	-	-	5	5.6
Total	90	100	90	100

4.5.4 Perceived Living Conditions of the Respondents

Table 4.20 shows the perceived conditions of living of the respondents in the study area. About 64% of the participants indicated that they had balance nutrition as a result of their participation in the SFIP, increased savings was indicated by 61.1%, expanded hectarages by 77.8%, better health-care by 65.6% and prompt payment of children school fees by 60.0% of the participants implying that their level of living have improved as a result of participating in SFIP. On the other hand, the non-participants level of living was low which was due to them not participating in SFIP. About 16.7% of the non-participants indicated expanded hectarages and prompt payment of children school fees, while balance nutrition was indicated by 10%, better education by 11.1%, increased savings by 14.4% and better health-care by 13.3%.

Table 4.20 Respondents Perception based on their Living Conditions

LIVING CONDITION	Participants (Freq.%)		Non-participant (Freq.%)	
	No	Yes	No	Yes
Better Education	55.6 (50)	44.4 (40)	88.9 (80)	11.1 (10)
Balance Nutrition	35.6 (32)	64.4 (58)	90.0 (81)	10.0 (9)
Increased Savings	38.9 (35)	61.1 (55)	85.6 (77)	14.4 (13)
Expanded Hecterages	22.2 (20)	77.8 (70)	83.3 (75)	16.7 (15)
Better Health-care	34.4 (31)	65.6 (59)	86.7 (78)	13.3 (12)
Prompt Payment of Fees	40.0 (36)	60.0 (54)	83.3 (75)	16.7 (15)
Engaged Labourer Service	47.8 (43)	52.2 (47)	91.1 (82)	8.9 (8)

Numbers in parenthesis represent the frequency of the respondents.

4.6 Constraints of the Farmers in Accessing SFIP

Cassava farmers in the study area are faced with various constraints which are: poor road network, poor market for products, poor storage facilities, and poor extension contact and training. From Table 4.21, Most of the participants (67.8%) indicated poor road network as their major constraint, while 40%, 37.8% and 36.7% indicated poor market for products, poor storage facilities and poor extension contact & training, respectively. On the other hand, all the non-participants (100%) indicated inadequate planting material, difficulty in accessing credit, poor market for products and poor storage facilities as their major constraints, while, majority of about 66.7% and 57.8% indicated less involvement in cooperative, and poor extension contact and training, respectively. These conform to the a priori expectation as they did not participate in the programme and benefited from it except through a counter-factual effect as they interact with the participants of SFIP in the study area.

Table 4.21 Constraints of Participant and Non-participants in SFIP

CONSTRAINTS	Participants (Freq.%)		Non-participant (Freq.%)	
	No*	Yes*	No*	Yes*
Inadequate Planting Mat.	67.8 (61)	32.2 (29)	-	100 (90)
Difficulty in Accessing Credit	85.6 (77)	14.4 (13)	-	100 (90)
Poor Market for Produce	60.0 (54)	40.0 (36)	-	100 (90)
Poor Extension Contact & Training	63.3 (57)	36.7 (33)	42.2 (38)	57.8 (52)
Insufficient Processing Equipment	70.0 (63)	30.0 (27)	-	100 (90)
Less coop. & Participation	64.4 (58)	35.6 (32)	33.3 (30)	66.7 (60)
Poor Road Network	32.2 (29)	67.8 (61)	51.1 (46)	48.9 (44)
Poor Storage Facilities	62.2 (56)	37.8 (34)	-	100 (90)

***Where “Yes” is an indication of constraints and “No” indicates no constraints. Numbers in parenthesis represent the frequency of the respondents.**

4.6.1 Constraints Associated with Effective Implementation of SFIP

The constraints encountered by officials of survival farming intervention programme are presented in Table 4.22. Majority of the officials (90%) attested to poor extension to farmer’s ratio as a constraints to effective implementation of SFIP in the study area, 80% attested to problem of mobility in getting to their target farmers, 70% attested to poor healthcare facilities in meeting with health challenges of members, and poor salary and remuneration, while 60% of the officials attested to delay in payment of salary and budgetary disbursement. These constraints may be due to government nonchalant attitudes and misplacement of priorities thereby resulting in diversion of funds meant for agricultural production particularly funds for the execution of agricultural programmes.

Table 4.22 Constraints to Effective Implementation of SFIP

CONSTRAINTS	Officials (Frequency percentages)	
	No*	Yes*
Lack of Cooperation from Farmers	80 (8)	20 (2)
Delay in Provision of Useful Materials	40 (4)	60 (6)
Delay in Budgetary Disbursement	70 (7)	30 (3)
Delay in Payment of Salary	40 (4)	60 (6)
Poor Salary and Remuneration	30 (3)	70 (7)
Problem of mobility	20 (2)	80 (8)
Poor Road Network	60 (6)	40 (4)
Poor Extension to Farmers Ratio	10 (1)	90 (9)
Poor Healthcare Facilities	30 (3)	70 (7)

***Where “Yes” is an indication of constraints and “No” indicates no constraints.**

Numbers in parenthesis represent the frequency of the officials.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study was on Impact of Kogi Agricultural Development Project Survival Farming Intervention Programme on Cassava Production in Adavi, Okehi and Okene Local Government Areas of Kogi State and it also determine the factors that influence respondents' participation in SFIP in the study area. A multi-stage sampling technique was used to select respondents for this study. The first step involved the purposive sampling of the two districts from each of the Local Government Area giving a total of six districts comprising of participant groups (Adavi-West, Ihima and Okene districts) and non-participant groups (Adavi-East, Eika and Okengwe districts). The second step involved simple random sampling of two wards from each district giving a total of twelve (12) wards. The third step involved simple random sampling of fifteen (15) respondents from each of the ward to get a total of one hundred and eighty (180) respondents comprising of ninety (90) participants and ninety (90) non-participants that was interview with the aid of structured questionnaire. Questionnaire was also administered on ten (10) officials of SFIP to obtained vital information. Data was obtained purely from primary source.

Analytical tools used were both descriptive and inferential statistics. The descriptive statistics involved frequency distribution tables, percentages and mean where necessary while the inferential statistics involved the use of logit regression and chow-test statistical tool. Attitudinal measuring scale such as likert-scale was also employed in this study. The results of the analysis obtained shows that majority of the respondents, 66% of the participants, 65% of the non-participants and 70% of the officials are within

the age range of 36 - 55 years in the study area. Almost all the respondents are married with just few divorced and widowed. More also, 12.2% of the participants and 47.8% of non-participants did not attend school at all. But, 76.6%, 52.2% and 60% of the participants, non-participants and the officials respectively attended primary and secondary schools. However, 7.8% of the participants and 40% of the officials attended tertiary institutions. Majority of the respondent 84.5%, 75.5 and 100% of the participants, non-participants and the officials respectively have experience in farming activities within the range of 1 – 20 years. In terms of awareness of SFIP, 82.2% of the participants were aware of SFIP while 81.1% of the non-participants were not aware of SFIP. In the same vein, planting material, access to credit, extension contact and training components of SFIP have high awareness and ranked 1st, 2nd and 3rd respectively among the participants.

From the logit regression on factors influencing participation of respondents, the value of coefficient of determination, R^2 was 0.67969 meaning that about 68% of the variation in the participation of SFIP is explained by the independent variables in the logit regression model. Chow test statistics was to assess the impact of SFIP on the output, yield, income and level of living. Chow test F-calculated for output was 16.31, while that of F-tabulated value for 9 degree of freedom with sample size of 180 was 1.83 at 5% level of probability, hence there is significant impact of SFIP on cassava production output of the participants in the study area. In terms of yield, Chow test F-calculated was 16.65, while the F-tabulated value for 9 degree of freedom with sample size of 180 was 1.83 at 5% level of probability, hence significant impact of SFIP on cassava yield. More also, Chow test F-calculated for income was 21.06, while that of F-tabulated value for 9 degree of freedom with sample size of 180 was 1.83 at 5% level of probability, hence there is significant impact of SFIP on income of the participants in

the study area. In the same vein, Chow test F-calculated for living standard was 28.01, while that of F-tabulated value for 9 degree of freedom with sample size of 180 was 1.83 at 5% level of probability, hence there is significant impact of SFIP on living standard of the participants in the study area.

The hypotheses that there is no significant difference between the participants and non-participants in terms of cassava output, yield, income and level of living was rejected while the alternative hypotheses were accepted. Finally, the major constraints identified by the participants were poor road network (67.8%) and poor market for produce (40.0%). Majority (90%) of the officials attested to poor extension to farmers' ratio as a major constraint to effective implementation of SFIP in the study area.

5.2 Conclusion

Based on the empirical evidence emanating from the findings of this study, it could be concluded that there was high level of awareness of the Survival Farming Intervention Programme (SFIP) by farmers in Kogi State with the majority of the participants aware of the various components of the programme. Participation in SFIP had broaden the knowledge base of the participants through the advisory services of the programme, enhanced the output/yield, increased the asset base, increased the income and living conditions of the participants more than that of the non-participants in the study area. In overall, there was significant impact of SFIP on cassava output, yield, income from cassava and level of living of the participants compared to the non-participants in the study area. However, some of the major constraints identified were poor road network, poor market for products, poor storage facilities, poor extension contacts and training.

5.3 Recommendations

From the findings of this study, the following recommendations, among others are put forward:

- i. It was revealed from the finding of this study that there was low level of awareness among the non-participants of SFIP. Therefore, for full acceptance and participation in agricultural programmes, it is recommended that extension agents should increase their contacts and use better medium of communicating to farmers.
- ii. Age, marital status, education, labour and extension contact were found to influence participation; it is therefore recommended that Government and Non-Governmental Organizations (NGOs) should provide basic amenities such as schools, hospitals, portable drinking water, recreational centers and others that will improve the socio-economic status of the farmers especially in the study area.
- iii. SFIP was found to have significant impact on cassava output, yield, income and level of living among the participants. Based on the success of the programme in the study area, it is hereby recommended that to be scaled up, replicated in neighbouring villages, Local Government Areas (LGAs) and other States including Federal Capital Territory (FCT). Stake-holders, Non-Governmental Organizations (NGOs), Agricultural banks and relevant Government institutions should partner in promotion of agricultural programmes to achieve a sustainable agricultural production.
- iv. It is also recommended that farmers should join cooperative societies as this would facilitate access to vital information and credit provided mostly by financial institutions for large scale cassava farming which could in turn increase cassava output, income and improve the level of living of the farmers.
- v. Poor road network and storage facilities were among the constraints identified in the study area. It is therefore recommended that Government should provide rural

infrastructures (such as road network, electricity, water and others) that will aid movement of produce from farm to the market and ware-houses.

- vi. More so, as mentioned as constraints by the respondents, rural markets should be linked to the urban market through relevant stakeholders to attract good value for cassava products thereby enhancing living standard of the farmers especially those in the rural areas.
- vii. There is need for Government to look into the salary and welfare package of agricultural staff in order to enhance their performance for effective discharge of responsibilities. Constant training and re-training is also necessary to ensure capacity building of personnel.

5.4 Suggestions for Further Study

From the findings and conclusion of this study, the following suggestions for further study are made:

- i. There is need to carryout comprehensive study on the impact of Survival Farming Intervention Programme (SFIP) on cassava processing and marketing in the study area.
- ii. Comparative study of Survival Farming Intervention Programme (SFIP) and other agricultural programme of Kogi State Agricultural Development Project (KADP) is further suggested in order to evaluate their performance and contribution in improving the living conditions of the targeted population.

5.5 Contributions to Knowledge

The results of this study have contributed to knowledge in the following ways:

- i. This study has extended the frontier of knowledge in terms of impact assessment studies particularly in the study area. Chow test F-calculated 16.31, 16.65, 21.06 and 28.01 revealed impact of SFIP on cassava output, yield, income and level of living of participants, respectively, in the study area. This will be a good source of information for researchers going into impact assessment studies.
- ii. It is also evident from the logit regression that 68.0% variation in the participation of respondents are been explained by the independent variables in the model which are the socio-economic and institutional variables in the study area. This implies that, improving on the socio-economic status of the respondents will enhance their participation in SFIP.
- iii. Result on the constraints for effective participation shows that poor road network (67.8%) for transporting produce and poor market for produce (40.0%) as a result price fluctuation are the major constraints highlighted by the participants, while majority (90.0%) of the officials attested to poor extension to farmers ratio as a major constraints for effective implementation of SFIP in the study area.

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APPENDIX I

DEPARTMENT OF AGRICULTURAL ECONOMICS & RURAL SOCIOLOGY,
FACULTY OF AGRICULTURE,
AHMADU BELLO UNIVERSITY, ZARIA.

RESEARCH QUESTIONNAIRE FOR RESPONDENTS

Dear Respondent,

I am M.Sc. student of the above named Institution and currently conducting a research on “Impact of Kogi State Survival Farming Intervention Programme on Cassava Production in Three Local Government Areas, Nigeria”. You are please expected to answer the following questions based on facts and personal experience. Kindly tick (✓) or fill(s) in the blank space(s) as appropriate. All information provided will be kept absolutely confidential. Thanks for your co-operation in anticipation.

i. *Questionnaire* No.....

ii. LGA.....

iii. District.....

iv. Ward.....

v. Participant Non-Participant

SECTION A: SOCIO- ECONOMIC CHARACTERISTICS OF RESPONDENTS

1. Age of the respondent..... (Years)

2. Gender: (i) Male (ii) Female

3. Marital Status: (i) Married (ii) Single

4. If single, tick the one that best describes your condition (i) Widow (ii)Widower
(iii) Divorced (iv) Never Marry

5. How long have you been involved in farming?..... years.

6. Religion: (i) Islam (ii) Christianity (iii) Traditional worshipper

7. Educational qualification:

- (i) No formal education
- (ii) Primary (Years)
- (iii) Secondary (Years)
- (iv) Tertiary (Years)
- (v) Others (specify).....

8. Did extension staff visit you last cropping season to discuss innovations in cassava production? Yes No

9. If yes, how many times did extension staff visit you last cropping season?.....time(s).

**10. From which organisation? i. Kogi ADP ii. Survival iii. IITA
iv. Others (specify).....**

**11. Do you belong to cassava farmers' association or co-operative society?
Yes No**

12. If yes, how long have you been in the associations or co-operatives in years?.....

13. Size of household:.....

- (i) Number of wives
- (ii) Number of children
- (iii) Number of dependants other than wives and children

14. Do you have access to credit on cassava production? Yes No

15. If yes, indicate which financial institution you have access to?

- (i) Agricultural bank (NACRDB)
- (ii) Commercial bank
- (iii) Cooperative
- (iv) Friend / Relatives
- (v) Others (specify).....

16. How much have you taken as loan from financial institution(s) in the last three years for cassava production? ₦.....

17. Kindly indicate the type of ownership of the land use for cassava production?

- (i) Borrowed (ii) Purchased (iii) Gifted (iv) Rented (v) Inherited
(vi) Others(specify).....

18. Kindly give a rough estimate of the total size of land you use for production of the cassava harvested in 2012.....hectares?

19. What type of labour did you use in your cassava production?

- (i) Hired labour (ii) Family labour (iii) Both

20. How many hours did you spend on your cassava production operations?.....hours.

21. Which of the following is your major source of livelihood?

- (i) On-farm activities (ii) Off-farm activities (iii) Non-farm activities
(iv) Remittance

22. What is your major on-farm activities?

- (i) Crop production (ii) Livestock production (iii) Poultry production
vi. Others(specify).....

23. How many kilogramme of planting material (cutting stem) do you use in 2012 production year?.....kg.

SECTION B: LEVEL OF AWARENESS OF SURVIVAL FARMING INTERVENTION PROGRAMME ACTIVITIES.

24. Are you aware of Survival Farming Intervention Programme? Yes No

25. If yes, from whom did you get to be aware of Survival Farming Intervention Programme?

- (i) Friends & Relations (ii) Extension Agent (iii) Mass media
iv others (specify).....

26. If mass media, which of the following?

(i) Newspapers (ii) Radio (iii) Television (iv) Internet (v) Others (specify)....

27. What is your level of awareness on the following components of Survival Farming Intervention Programme (SFIP) activities?

S/No	Components	HA	A	UD	UA	HUA
1	Provision of planting material	()	()	()	()	()
2	Provision of processing Equipment	()	()	()	()	()
3	Cooperative Membership	()	()	()	()	()
4	Extension Service Delivery	()	()	()	()	()
5	Market Channel Linkages	()	()	()	()	()
6	Contact Farmer Enhancement	()	()	()	()	()
7	Human Capacity Development	()	()	()	()	()
8	Provision of Credit Facilities	()	()	()	()	()

Key: HA= Highly Aware, A = Aware, UD = Undecided, UA = Unaware, HUA = Highly Unaware.

28. Which of the components have you benefited from?

(i) All of the components (ii) None of the components (iii) Few of the components

29. If few, list them.

(i)

(ii)

(iii)

(iv)

SECTION C: IMPACT OF SURVIVAL FARMING INTERVENTION PROGRAMME ON CASSAVA PRODUCTION OUTPUT

30. How many hectares of land did you use for farming in the last five years?.....ha

31. What portion of the land did you use for cassava production in the last five years?.....ha

32. What portion of the land did you use for cassava production in the last cropping season?.....ha

33. What was the quantity of cassava tubers harvested in the last five years?.....kg

34. What was the quantity of cassava tubers harvested in the last cropping season?.....kg

35. Before the introduction of survival farming intervention programme, what was your estimated output of cassava tubers?.....kg

36. Since the introduction of survival farming intervention programme, what has been your estimated output of cassava tubers in the following cropping season?

(i) 2008.....

(ii) 2009.....

(iii) 2010.....

(iv) 2011.....

(v) 2012.....

37. What is the price of one tonne (1000kg) of cassava tubers in the following cropping season?

(i) 2008

(ii) 2009

(iii) 2010

(iv) 2011

(v) 2012

SECTION D: IMPACT ON SURVIVAL FARMING INTERVENTION PROGRAMME ON INCOME AND LIVELIHOOD OF RESPONDENTS.

38. Has your income increase over the past five years? Yes No

39. If yes, what was your estimated income in the last five years?

40. What are your other sources of income apart from cassava production?

(i) Friends & Relations (ii) Money lenders (iii) Banks Cooperatives

(vi) Others

41. If others, specify.....

42. Kindly indicate which of the following animals you currently have?

Animals	Tick	Numbers	Estimated Value (N)
Cattle	()		
Sheep	()		
Goats	()		
Donkeys	()		
Oxen	()		
Horses	()		
Chicken	()		
Pigeon	()		
Turkey	()		
Duck	()		
Dog	()		
Swine	()		
Others	()		

43. If others, specify.....

44. Kindly indicate which of the following items you currently have?

Items	Tick	Numbers	Estimated Value (N)
Electric cooker	()		
Gas cooker	()		
Kerosine stove	()		
Freezer	()		
Fridge	()		
GSM Phone	()		
Television	()		

Radio/Cassette player	()		
CD Player	()		
Satelite Dish	()		
Internet modem	()		
Video player	()		
Air-conditioner	()		
House	()		
Bicycle	()		
Motor cycle	()		
Car	()		
Fan	()		
Others	()		

45. If others (specify).....

46. Kindly indicate which of the following you have enjoyed as a result of your participation in SFIP within the last five years?

Conditions	Tick
Better education	()
Balance nutritional diet	()
Increased savings	()
Expansion of hecterages	()
Better health-care	()
Prompt payment of fees	()
Engaged service of labourers	()
Others	()

47. If others (specify)

SECTION E: CONSTRAINTS FOR EFFECTIVE PARTICIPATION IN SURVIVAL FARMING INTERVENTION PROGRAMME?

48. What are your major constraints in participation in Survival Farming Intervention Programme?

Constraints	Response
Inadequate planting materials	Yes () No ()
Difficulty in accessing credits	Yes () No ()
Lack of market for produce	Yes () No ()
Poor extension contact and training	Yes () No ()
Insufficient processing equipment	Yes () No ()
Lack of cooperation and participation	Yes () No ()

49. State other constraints apart from the one highlighted above.

- (i)
- (ii)
- (iii)
- (iv).....
- (v)

50. What suggestions will you give to help in solving the above constraints for effective participation in Survival Farming Intervention Programme?

- (i)
- (ii)
- (iii)
- (iv)
- (v)

APPENDIX II

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

RESEARCH QUESTIONNAIRE FOR OFFICIALS

Dear Sir,

I am M.Sc. student of the above named Institution and currently conducting a research on “Impact of Kogi State Survival Farming Intervention Programme on Cassava Production in Three Local Government Areas, Nigeria”. You are please expected to answer the following questions based on facts and personal experience. Kindly tick (√) or fill(s) in the blank space(s) as appropriate. All information provided will be kept absolutely confidential. Thanks for your co-operation in anticipation.

SECTION A: SOCIO- ECONOMIC CHARACTERISTICS OF THE OFFICIALS

1. Age of the respondent..... (Years)
2. Gender: (i) Male (ii) Female
3. Marital Status: (i) Married (ii) Single
4. If single, tick the one that best describes your condition (i) Widow (ii) Widower
(iii) Divorced (iv) Never Marry
5. Educational qualification:
 - (i) No formal education
 - (ii) Primary (Years)
 - (iii) Secondary (Years)
 - (iv) Tertiary (Years)
 - (v) Others (specify).....

6. How long have you been involved with Survival Farming Intervention Programme?.....years.

7. Religion: (i) Islam (ii) Christianity (iii) Traditional worshipper

SECTION B: CONSTRAINTS FOR EFFECTIVE IMPLEMENTATION OF SURVIVAL FARMING INTERVENTION PROGRAMME?

8. What are your major constraints in implementing Survival Farming Intervention Programme?

Constraints	Response
Inadequate planting materials	Yes () No ()
Lack of credits facilities	Yes () No ()
Lack of market for produce	Yes () No ()
Poor extension contact and training	Yes () No ()
Insufficient processing equipment	Yes () No ()
Lack of cooperation and participation	Yes () No ()

9. State other constraints apart from the one highlighted above.

- (i)
- (ii)
- (iii)
- (iv).....
- (v)

10. What suggestions will you give to help in solving the above constraints for effective implementation of Survival Farming Intervention Programme?

- (i)
- (ii)
- (iii)
- (iv).....
- (v)

THANK YOU