

EFFECTS OF WOMENS' INVOLVEMENT IN COOPERATIVE SOCIETIES ON INCOME OF GROUNDNUT PROCESSORS IN AGRICULTURAL ZONE I AREA OF NIGER STATE, NIGERIA

The study assessed the effects of cooperative societies on women involvement in groundnut processing in Agricultural Zone I of Niger State, Nigeria using a sample of 205 groundnut processors randomly selected using Taro Yamane formula at 5% error tolerance and 95% level of confidence from the study area. Specifically, the study described the socio- economic characteristics of respondents, assessed their level of involvement in cooperative activities, determined their outputs and income, examined effect of cooperative societies on groundnut processing, determined benefits derived from cooperative societies, examined factors influencing women involvement in cooperative and identify constraints faced by groundnut processors. Instrument used for data collection was primarily questionnaire while data collected were analyzed using descriptive statistics, ordered logit regression, Kendal's coefficient of concordance and multiple regression. Findings indicate that mean age of respondents was 43 years, majorities (88.8%) were married, and 59.3% had formal education and a mean household size of 10 persons. Majority had access to trainings (71.2%) and mean of 12.9 processing experience years. 74.2% had access to credit which about (40%) is from cooperative societies, and (60%) purchase groundnuts from market. Majority of the respondents' participated in cooperative activities in which attending meetings (96.6%) ranked first, 80.5% saved to raise share and 74.2% saved money together. More than half of respondents (56.1%) had medium level of involvement in cooperative activities with average annual income of above ₦400,000 and process groundnut into cake and oil. Access to information (\bar{X} =4.65), acquisition of skills and training (\bar{X} =4.39), availability of processing inputs (\bar{X} =4.22) are benefits derived from cooperative societies. The results of the regression indicates that age (β = -.147616, $P < 0.01$), household size (β = .0740513, $P < 0.01$), experience (β = .0606943, $P < 0.05$), access to trainings (β = .919835, $P < 0.01$), access to credit (β = .919835, $P < 0.05$), amount of credit received (β = 5.91e-06, $P < 0.05$), labour employed (β = -.8208339, $P < 0.10$) and amount invested (β = 5.26e-06, $P < 0.01$) significantly influenced the level of women involvement in cooperative societies. However, high cost of fuel wood (\bar{X} =2.76), high cost of processing equipment (\bar{X} =2.56), Inadequate capital (\bar{X} =2.49) are the major constraints experienced by women groundnut processors. The result of Pearson correlation showed that age ($r = -0.2553$; $\rho = 0.01$) and experience ($r = -0.1774$; $\rho = 0.01$) had significant relationship between and of respondents and their level of involvement in cooperative activities. The Z-test result shows significant difference in income ($t = 6.6092$) and output ($t = 5.5721$) of respondents before and after joining cooperative societies. The study recommended that alternative methods should be made available for women groundnut processors in order to reduce over-dependence on fuel wood, older women should be encouraged to join cooperative in order to increase their output and it is therefore necessary to encourage women participation through incentive supports in order to increase their level of involvement in cooperative societies.

INTRODUCTION

1.1 Background of the Study

Groundnut (*Arachis hypogea*) belongs to the family *Fabaceae* and it is also known as peanut. It is an important leguminous seed that ranks 6th among the oil seed crops and 13th among food crops of the world (International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), (2010). Apart from providing high quality edible oil, it is also an easily digestible protein and nearly half of the 13 essential vitamins and seven of the 20 essential minerals necessary for normal human growth and maintenance are found in it. Also it provides high quality fodder for livestock (International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), 2010; Bello *et al.*, 2016). Groundnut or peanut commonly called the poor man's nut is an important oil seed and food crop for millions of people in the semi-arid tropics. It generates employment on the farm during cultivation and processing respectively (Shuaibu *et al.*, 2018). In Nigeria, the leading producing States include Niger, Kano, Jigawa, Zamfara, Kebbi, Sokoto, Katsina, Kaduna, Adamawa, Yobe, Borno, Taraba, Plateau, Nasarawa, Bauchi and Gombe states (National Agricultural Extension and Research Liason Services (NAERLS), 2011).

In Nigeria, women occupy a dominant place in the socio-economic life of the nation. There is increasing realization of the essential role of women in agriculture and food production and the fact that the empowerment of women is necessary for achieving sustainable development (Shuaibu, 2015). In order to mitigate the adverse effect of poverty and contribute to the care and upkeep of members of their families, Nigerian women are engaged in a variety of income earning as a way of improving their livelihoods, and such activities include groundnut processing (Nwachukwu and Jibowo, 2000; Shuaibu, 2015). Though, there is little participation of women in groundnut production, they are actively involved in local groundnut processing activities. Women

are said to be involved in over 95 percent of groundnut milling activities in agricultural Zone I of Niger State (Abba *et al.*, 2011; Mohammed, 2014). Thus, to sustain their participation in this enterprise, it is important that women are organized into cooperative societies, to further enhance their empowerment drive.

Empowerment has always been fundamental to the cooperative idea. It enables weaker section of the people to get together in order to achieve goals that women would not be able to achieve on their own. Agricultural cooperative societies in Nigeria perform multipurpose functions such as marketing of produce, provision of production inputs, and provision of loans amongst others.

According to International Cooperative Alliance (ICA) (2007) and Abdul (2017), cooperative is an autonomous association of persons unified voluntarily to meet common economic, social and cultural needs through a jointly owned and democratically controlled enterprise. Abdul (2017), emphasized that rural cooperatives including groundnut processors cooperative plays important roles in mobilizing and distributing credit to the farmers, providing members with a wide range of services such as transportation of produce, product storage, input distribution and dissemination of information on modern practices in agriculture.

1.2 Statement of the Research Problem

In spite of the seeming popularity of cooperative societies, it is generally believed that some women are unaware of the various opportunities open to them via cooperative activities. Women's lack of access to resources is also a major stumbling block which affects their participation in existing cooperatives and setting up of new ones.

Due to the fact that they are unable to participate in cooperatives, they are deprived from the benefits that cooperatives and their support structures often provide to members such as credit, education and training, production inputs, technology and marketing outlets

The proliferation of small scale industries with cutting edge technologies is essential to ensure that these benefits are achievable but then, the use of these technologies is greatly underscored by the lack of access to these technologies particularly for the women. Studies have also shown that rural women are usually disadvantaged in their access to all factors of production and processing in spite of their involvement in farming generally (Bello *et al.*, 2016). Oladeji and Thomas (2010) also highlighted poor electricity supply, high cost of petrol, lack of credit facilities, high purchasing price of technologies and lack of operational facilities for processing as the major constraints faced by women processors. According to Wanyeki (2003), existing statutory and customary laws limit women's access to land and other types of property in most countries in Africa and about half the countries in Asia. This is indeed a source for concern for developing countries where women play active roles in production and processing as the lack of access to productive resources create grievous consequences for usage.

Despite the huge benefits that cooperatives can offer to women and the likely challenges that can hinder the participation of women in cooperative activities, it appears that there still exist some gap in the effect of cooperative societies on women involvement in groundnut processing activities as well as in challenges faced by women in participation in cooperative activities in Bida and Mokwa LGAs of Niger State, Nigeria.

It is against this backdrop that this study found it necessary to ask the following research questions:

- i. What are the socio-economic characteristics of women groundnut processors in the study area?
- ii. What are the levels of involvement of women groundnut processors in cooperative societies activities in the study area?
- iii. What are the factors influencing involvement of women groundnut processors in cooperative societies?
- iv. What are the outputs and income of women groundnut processors in the study area?
- v. What are the effects of cooperative societies on groundnut processing?
- vi. What are the benefits derived by women groundnut processors participating in cooperative societies in the study area?
- vii. What are the constraints faced by women groundnut processors in cooperative societies in the study area?

1.3 Aim and Objectives of the Study

The general objective of the study is to assess the effects of cooperative societies on women's involvement in groundnut processing in the study area. The specific objectives of the study were to:

- i. describe the socio-economic characteristics of women groundnut processors in the study area.
- ii. assess the levels of women involvement in cooperative societies activities in the study area.
- iii. examine the factors influencing involvement of women groundnut processors in cooperative societies.
- iv. determine the outputs and income of women groundnut processors in the study area.

- v. examine the effects of cooperative societies on groundnut processing.
- vi. determine the benefits derived by women groundnut processors participating in cooperative societies.
- vii. examine the constraints faced by women groundnut processors in cooperative societies in the study area.

1.4 Hypotheses of the Study

H0₁: There is no significant relationship between selected socio-economic variables of the respondents such as (age, household size, years of experience, marital status, educational level, credit, extension contact) and their level of involvement in cooperative societies.

H0₂: There is no significant difference between outputs and income from groundnut processing before and after joining cooperative societies.

1.5 Justification of the Study

Opportunities in food processing are enormous; this re-echoes the position of Ihekoronye and Uzomah (2011) who are of the opinion that food processing brings wide range of benefits to enterprising people in developing countries. This study is justified by the fact that women cooperative society is an agent of rural development as they help in empowering rural women thereby improving on their livelihood. This account for the Federal Government adaptation of the Cooperative Revitalization Programme (CRP) as one of the tools for improving agricultural sector in order to achieve the goals food security and national development (Mohammed 2014).

The findings from this study would assist the policy makers in making the appropriate policies that will increase income from groundnut processing and formulate effective

strategies for rural women towards improving quality of living with specific focus on groundnut processing. The results of socioeconomic characteristics of women processors will provide insight on socioeconomic characteristics and institutional factors affecting processors' level of involvement in cooperative societies and this will enable the extension agents to work assiduously on how women processors can be improved upon. It is expected that findings from this study will contribute to poverty reduction by enhancing income earning opportunities for poor people through processing of groundnut. Information on factors influencing involvement of women in cooperative societies will assist the researchers to have adequate knowledge on factors influencing knowledge level thereby working on how women processors knowledge can be improved upon through proper enlightenment. The result of effect of cooperative societies on groundnut processing will give insight to researchers and policy makers on the effect of cooperative societies on groundnut processing on improved income and livelihood of processors, this will enable the extension agents reach out to women processors on the needs to involve in cooperative societies. Information on constraints mitigating level of women processors involvement in cooperative societies will assist extension agents and the researchers to understand the problems currently militating women processors in the involvement of cooperative in order to tackle them for women processors benefit.

Similarly, the finding from this research could be used as a basis for future studies by researchers and a various institution of higher learning. Generally, this study aimed to contribute to the body of knowledge that will enhance policy recommendations on effect of cooperative societies on women involvement in groundnut processing.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Economic Importance of Groundnut

Groundnut (*Arachis hypogea*) originated from Latin America, with the Portuguese responsible for its introduction into West Africa from Brazil in the 16th century. Groundnut is one of the most valuable leguminous crops of Nigeria and other tropical countries with 25 percent protein and more than 40% oil. Nigeria is a major producer of groundnuts accounting for 25 percent of world exports (International Food Policy and Research Institute (IFPRI), 2012). In 2004, the country had 3500 hectares cultivated and production of 2750 tons (National Bureau of Statistics (NBS), 2013). Groundnut accounted for 70% of total Nigeria export prior to petroleum oil boom (Samuel and Ocholi, 2017). Groundnut is widely consumed in Nigeria as roasted or boiled nuts in the Western and Southern parts of the country (Adebesin *et al.*, 2011).

Groundnut or peanut commonly called the poor man's nut is an important oilseed and food crop for millions of people in the semi-arid tropics. It generates employment on the farm during cultivation and during processing (Shuaibu *et al.*, 2018). A report by FAO in 2009 revealed that groundnut on an average is grown on 26.4 million hectares worldwide with a total production of 36.1 million metric tons, and an average yield of 1.4 metric tons/ha (FAO, 2009). Nigeria is one of the world's largest groundnut producers, accounting for 10%, 39% and 51% of the total worlds', Africa's and West Africa's groundnut production, respectively (ICRISAT, 2011). Total production accounted for 70% of Nigeria's total export prior to petroleum oil boom (Shuaibu *et al.*, 2018).

Groundnut is important both as a cash crop and food crop. It is the 13th most important food crop of the world and the 4th most important source of edible oil (IFPRI, 2012). Its seeds contain high quality edible oil (50%), 40-50% protein and 10-20% carbohydrates (Taphee and Jongur, 2014). Groundnut kernels are consumed directly as raw, roasted,

salted or boiled forms. However, oil is the most important product of the crop which is used for both domestic and industrial purposes. The crop is used as industrial materials for producing oil-cakes and fertilizers. All parts of the groundnut plant are used in one way or the other (Nmamdi, 2010).

According to FAOSTAT (2015) world groundnut production stood at 42.8 million tons in 2013 with Asia (67.1%) and Africa (24.6%) contributing the lion share and Nigeria ranks third in the league of groundnut producing nations just after China and India. Groundnut has contributed extremely to the development of the Nigerian economy through the sales of seeds, cakes, oil and haulms (Olorunju *et al.*, 1999; Mustapha *et al.*, 2015). In terms of oil production, available statistics from FAOSTAT (2015), showed that between 1993 and 2013, on the average, Africa contributed approximately 1.1 million (21.3%) tons of her groundnuts to oil production and in 2013, Nigeria contributed approximately 312 thousand tons of her groundnuts to oil production. These statistics highlights the importance of groundnut to the Nigeria economy particularly for smallholder farmers.

Groundnut has contributed immensely to the development of the Nigerian economy in general and employment generation among the rural groundnut farmers and processors in particular. Also, they are important in the confectionary trade among the rural traders and the stable oil from groundnut is preferred by the deep-frying industries since it has a smoke point of 229.40 °C compared to soya oil. The oil is also used to make margarine and mayonnaise (Hulme and Mosley, 1996). Confectionary products such as snack nuts, sauce, flour, peanut butter and cookies are made from high quality nuts of the crop.

Groundnut plays an important role in the diets of rural populations, particularly children, because of its high contents of protein and carbohydrate. It is also rich in calcium,

potassium, phosphorus, magnesium and vitamin E. Groundnut meal, a by-product of oil extraction, is an important ingredient in livestock feed. Groundnut haulms are nutritious and widely used for feeding livestock. The groundnut oil is composed of mixed glycerides, and contains a high proportion of unsaturated fatty acids, in particular oleic (50-56%) and linoleic (18-30%)(Young, 1996; Samuel and Ocholi, 2017).

Opportunities in food processing are enormous; this re-echoes the position of Ihekoronye and Uzomah (2011) who are of the opinion that food processing brings wide range of benefits to enterprising people in developing countries. Processing of groundnut is perhaps the best area an investor can engage in with maximum utilization of the product. The milling of the product would yield edible oil which can be refined to get vegetable oil and groundnut cake which is a valuable input in the preparation of the animal feed and as such can be sold to animal millers. Groundnut processing reduces food wastage, enhances food security, improvement in livelihood of low income groups and empowerment of women especially in Nigeria where processing of groundnuts into various products is mostly done by women either for home or commercial consumption.

Oil from groundnut form a staple part of the diet for many people. About 40 percent of Nigeria yield of groundnuts is processed to oil, which has multiple of domestic and industrial applications. It is usually used for cooking, making margarine, for pharmaceutical and cosmetics products as well as lubricant and emulsion for insecticides. In Nigeria, about half of the groundnuts processed are used to make peanut butter and confectionary product (Mohammed, 2014).

Groundnut processing has helped to empower women in many communities in the North central Nigeria thereby alleviating poverty (Ndanitsa, 2012; Mohammed 2014). He further said that agricultural activities such as groundnut processing have led to increase

in income, women empowerment, improved nutrition and reduction in deficiency diseases, increase involvement of children in schools especially girl-child among households of the processors.

Groundnut is an essential food product that enjoys great attention both in local and international market as a variable source of edible oil, animal food and consumed as snacks (Ahmad, 2017). Groundnuts also have a variety of industrial end uses. Paints, varnish, lubricating oil, leather dressings, furniture polish, insecticides and nitroglycerin are made from groundnut oil. Soap made from saponified oil, and many cosmetics containing groundnut oil and its derivatives. The protein portion of the oil is used in manufacturing of some textile fibers. Groundnut shells are used in the manufacture of plastics, wallboard, abrasives, fuel, cellulose (used in rayon and paper) and mucilage (glue) (Foraminifera, 2019).

Nigeria currently produces about two million (2,000,000) MT representing 5% of the world's production and in the period between 1956 and 1967, groundnut including its cake and oil, accounted for about seventy percent of Nigeria's total export earnings and created the legendary groundnut pyramids which dotted the landscape of Kano (Foraminifera, 2019). Because of its numerous uses, groundnuts are in great demand and this opens an opportunity for interested investors to export the product. The return on investment on the export of groundnut is estimated between 10%-15% (Foraminifera, 2019).

2.2 Roles of Women in Groundnut Processing

Agricultural labour force is made up of 60 to 80% of women (World Bank, 2003). The participation in all aspect of agricultural production including processing is of great importance in production process. In West Africa especially Nigeria, majority of the

women in the northern part of Nigeria are directly involved in the processing of agricultural crops and produce. Further records show that two third of processed food crops are carried out by women (World Bank, 2003). Groundnut processing is basically the transformation of primary agricultural products (raw groundnut) into finished commodities like groundnut oil, cake, animal feed and peanut butter among others.

Gender issues cannot be omitted from the trend of agricultural food processing in Nigeria, and the world over. Agriculture is characterized by gender division of labour. Most women works in processing, marketing or gathering of fuel and fetching of water over long distance are not recognized. According to Ayieko (2006), the Nigerian women play an important role in agricultural food processing. he further said that Nigerian women play a crucial role in agricultural food processing and women also account for half of the rural population who spend more than two-third of their income on food processing.

Nigerian women are found to do most of the work in the area of processing and transportation of processed product and marketing (Mohammed, 2014). He also revealed that out of the 95 percent of small scale processors in Nigeria who actually feed the nation, 55percent of them are women processors. Maigida (2008) stated that women processors account for 70 percent of agricultural processing workers. It has been revealed that Nigerian women processors generally achieved processing objectives through collective work; the spirit of cooperative has been cultivated and expressed among its member in different ways. The roles of women in groundnut processing in Nigeria is very important, they are involved in the processing and final marketing of groundnut products (Mohamed, 2014).

Women in agrarian settling contribute a lot to agricultural food processing. All over African countries and Nigeria in particular, more than 90 percent of women population performs extensively in processing of staple food (FAO, 2009). Lele (2007) asserted that women in the northern part of Nigeria were not left behind. According to him, women take part in these, are in the processing of grains, legumes and starchy roots readily made for food.

The roles of women in groundnut processing in Nigeria is very important, they are involved in the processing and final marketing of groundnut products. Lele (2007) reported that women play more important roles in agricultural processing compared to men. In Nigeria, women take part actively in groundnut processing activities in addition to their domestic/household responsibilities. Center for Technical Agriculture (CTA) (2003) reported that the role of women in groundnut processing accounted for one-third of the work force.

2.3 Concept of Cooperative Societies

International Cooperative Alliance (ICA) (2010) defines cooperative as an autonomous association of persons unified voluntarily to meet their common economic, social and cultural needs through a democratically controlled enterprises. It is a business voluntarily owned and controlled by its member patrons and operates for them and by them on a non-profit basis.

The term cooperative refers to an association of people of limited means that voluntarily come together so as to achieve a common economic end through the formation of democratically controlled organization, allowing equitable contribution required to be available. There is no consistency to the exact origin of the cooperative movement; however, many scholars believed that the Rockdale pioneers of 1844 started the

organization of cooperative societies in England as panacea to the inconveniences caused to workers as a result of exploitation of workers by the then capitalists (Ibitoye, 2012).

International cooperative Alliance (ICA), a non-governmental organizational was established in 1895 as an umbrella organization to promote friendly and economic relations between cooperative organizations throughout the world. The ICA also aims to promote exchange of information such as news and statistics between cooperatives through research reports, conference and publications (Onouha, 2002; Ibitoye, 2012).

Cooperative societies are very popular in Nigeria. Onouha (2002) in his study of cooperative history in Nigeria opined that there are traditional and modern cooperative societies. The modern cooperative societies started in the country as a result of the Nigerian cooperative society law enacted in 1935 following the report submitted by Strickland in 1934 to the then British colonial administration on the possibility of introducing cooperatives into Nigeria.

According to Bhuyan (2007), cooperatives are specially seen as significant tools for the creation of jobs and for the mobilization of resources for income generation. In Nigeria, cooperatives provide locally needed services, employment and inputs to farmers. Cooperative also provides opportunities to farmers to organize themselves into groups for the purpose of providing services which will enhance outputs of the members.

Bhuyan (2007) stressed that rural cooperatives played an important role in mobilizing and distributing credit to the farmers. Agricultural cooperatives are also useful in the dissemination of information about modern agricultural practices. Hermida (2008) reported that cooperative provides education to members in the areas of production, processing and marketing of agricultural produce. Ibitoye (2012) said that the most important reasons for cooperative failure in Nigeria include; the shortage of trained

managers, lack of understanding of the principles and approaches of cooperatives, inadequate financing, lack of trust among members and inability of cooperative members to cope with modern methods and tools of production.

Cooperative societies in Nigeria perform multipurpose functions. They are engaged in the production, processing, marketing, distribution and financing of agricultural products. The most common agricultural cooperatives available in Nigeria include; group farming cooperatives, marketing cooperatives, consumer cooperatives, agricultural processing cooperatives, agricultural thrift and credit cooperatives and farmers' multipurpose cooperatives.

In Nigeria, Agricultural cooperative was established in the early 1970 to take care of farmers needs from production, marketing and processing. Thus Ibitoye (2012) implies that the cooperative offer the farmers a complete cycle embracing their whole farming activities.

Agricultural cooperative hold a strong potential for helping weak farmers both male and female to improve their livelihoods through developing individual capacities (Fatai, 2018). However, in Nigeria, cooperative membership is generally low. According to a study based on 2005 data, only 10 percent of smallholders were member of agricultural cooperative and only 40 percent of small rural household have access to cooperative within their communities (Fatai, 2018).

Women play important role in agriculture which covers all aspects of agribusiness including livestock production, food production, food processing, fishing and farm management. Agriculture cooperative association are often used in the implementation of agricultural programmes in which they are acceptable for reaching larger majority of the rural poor population engaged in agricultural and other rural development activities.

One of the important measures that have been adopted in order to solve agricultural problems and increase productivity in the establishment of cooperative includes both in agricultural and non-agricultural activities. There are different type of farmers' cooperative societies which include marketing cooperatives, credit cooperatives, and industrial cooperatives which are engaged mostly in agriculture and also related business (Fatai 2018).

2.4 The Principles of Cooperative Societies

The Principles of Cooperative societies are guidelines by which cooperatives put their values into practice. These principles are as follows:

- **Voluntary and Open Membership:** Cooperatives are voluntary organizations; open to all persons able to use their services and willing to accept the responsibilities of membership, without gender, social, racial, political or religious discrimination.
- **Democratic Member Control:** Cooperatives are democratic organizations controlled by their members, who actively participate in setting their policies and making decisions. Men and women, serving as elected representatives, are accountable to the membership. In primary cooperatives, members have equal voting rights (one member one vote), and cooperatives at other levels are also organized in a democratic manner.
- **Member Economic Participation:** Members contribute equitably to, and democratically control, the capital of their cooperative. At least part of that capital is usually the common property of the cooperative. Members usually receive limited compensation, if any, on capital subscribed as a condition of membership. Members allocate surpluses for any or all of the following purposes: developing

their cooperative, possibly by setting up reserves, part of which at least would be indivisible; benefiting members in proportion to their transactions with the cooperative; and supporting other activities approved by the membership.

- **Autonomy and Independence:** Cooperatives are autonomous, self-help organizations controlled by their members. If they enter into agreements with other organizations, including governments, or raise capital from external sources, they do so on terms that ensure democratic control by their members and maintain their cooperative autonomy.
- **Education, Training and Information:** Cooperative provides education and training for their members, elected representatives, managers, and employees, so that they can contribute effectively to the development of their cooperatives. They inform the general public – particularly young people and opinion leaders – about the nature and benefits of cooperation.
- **Cooperation among Cooperatives:** Cooperatives serve their members most effectively and strengthen the Cooperative Movement by working together through local, national, regional and international structures.
- **Concern for the Community:** Cooperatives work for the sustainable development of their communities through policies approved by their members. It undertakes need based community-related services e.g., drinking water, health care, sanitation, education, women empowerment, and other community related programs. A cooperative is a central rallying point in the village and therefore it performs a lot towards the social responsibility and such activities bring the general community closer to the cooperative (Virendra *et al.*, 2015).

2.5 Types of Cooperative Societies in Nigeria

There are different types of cooperatives in our world. The cooperatives are classified based on the nature of activities they undertake and their organizational structure. Based on their structure, we classify cooperatives as primary, secondary and apex level society. On the other-hand, cooperatives are classified based on the types of business they undertake in which many scholars classify as agricultural based cooperatives and nonagricultural cooperatives (Taybela, 2016).

Based on their nature, there are different types of cooperatives like marketing society, production society, saving and credit society, industrial society, housing society, insurance society, processing society, consumer society and others.

Cooperative societies are of various types depending upon their objects and nature of work. Some of the cooperatives have been formed to help consumers and other have been established to help producers. There are some societies which help the farmers in providing credit for the purchase of fertilizers and seeds etc. and some help them in the promotion of trade (Kareem *et al.*, 2012). According to him some of the important types of cooperative societies are:-

i. **Small producers:** The members of the society produce goods in their houses or at common place. The raw material, tools money etc. is provided to them by the society. The output is collected by the society and sold in the market at the wholesale rate. The profit is distributed among the member in proportion to the goods supplied by each member.

ii. **Consumer's cooperative societies:** Consumer's cooperatives are established to remove middlemen from the field of trade. These societies purchase foods at wholesale prices and sell these goods to the members at cheaper rates than the market prices. However, the goods are sold to the nonmembers at the market rates. The profit, if any, is distributed among the members in the shape of bonus according to their purchase ratio.

iii. **Marketing cooperative societies:** The marketing cooperative societies are formed by the small produces for the promotion of trade. The two main objectives of these societies are, to sell the good at reasonable prices by eliminating middlemen and to make the ready for the product of the member. These types of societies are formed by the small agriculturalist and artisans. These societies collect the products of its members and make its grading and keep them in warehouses and sell them in the market at whole sale rate when the market is ready for these products. The profit is distributed among the member according to the ratio of goods supplied by them.

iv. **Credit cooperative societies:** These cooperatives are formed for the financial help of the members. These societies provide loans to the members at low rate of interest. In rural areas these provide loans to the farmers for the purchase of seeds, fertilizers and cattle. In urban areas these societies provide loan to its members for the purchase of raw material and tool.

v. **Farming cooperative societies:** These solicit are formed by the small agriculturalist to get the benefits of large scale farming. These societies provide help to the farmer for the improve method of cultivations by providing large scale forming tools such as tractors, threshers and harvesters etc.

vi. **Housing cooperative societies:** These societies are formed for the procurement of land for the construction on houses on homogeneous basis. These societies are formed by those members who are intended to construct their own home. These societies provide loan to the members for the construction of houses. These also purchase construction material in bulk and provide this material to its member at cheaper rates.

vii. **Insurance cooperative societies:** These societies make contract with insurance companies for the purchase of different insurance policies for its member at lower

premium. This society may take a group insurance policy for its members. The main object of the society is to minimize the risk of its member.

viii. **Transport cooperative societies:** These societies are formed to provide the services of transport to its members at lower rates. Welfare bus scheme is an example of this type of society. A pass is handed over to the member for traveling on approved routes.

ix. **Storage cooperative societies:** These societies are formed for the provision of storage facilities to its member for perishable and nonperishable goods at lower rates. These societies also provide grading and distribution services to its members.

x. **Labour cooperative societies:** These societies are formed by unskilled labour for selling their services at reasonable wage rate. This type of society makes a contract with different firm for the provision of labour to them.

xi. **Miscellaneous societies:** Some other important societies, in addition to the major form of societies discussed above are Processing cooperative societies, Fisheries cooperatives societies, Forestry and poultry forming etc.

2.5.1 Types of Agricultural Cooperative Societies

Cooperative societies are very popular in Nigeria. Onuoha (2002) in his study of cooperative history in Nigeria states that, there are formal and informal cooperative societies. The formal cooperative societies started in the country as a result of the Nigerian cooperative society law enacted in 1935 following the report submitted to the then British colonial administration on the possibility of introducing cooperatives into Nigeria. In 1935, an administrative officer (E.F. Haig) was appointed to study cooperation abroad and eventually became the first Registrar of cooperative societies. By 1936, few African staff were appointed and the control of cooperatives was gradually transferred from agricultural department to the cooperative department. The first

registered cooperative society in Nigeria is the Gbedun cooperative produce and marketing society limited, named after a village near Ibadan which was registered in 1937. Thereafter, formal cooperatives spread rapidly from the western part to other parts of the country.

Onuoha (2002) further maintained that the informal cooperatives are traditional organizations which were in existence before the advent of formal cooperatives in Nigeria. Self-help from outside the family used to be an important feature of agricultural activities. This was due to the use of ineffective farm tools. Services provided by these organizations are economic, social and cultural in nature.

Different types of agricultural cooperative society exist which are organized to satisfy the identified needs of members. Aweto (2004) identified various types of agricultural cooperatives which are as follows:

1. Agricultural Thrift and Credit Cooperative Society

Onje (2003) reported that this type of cooperative society accumulate capital through members Shares, savings and external loan when necessary. The society encourages thriftiness amongst members and helps to save members money. Fund is disbursed to members as credit for productive purpose. Ebonyi and Jimoh (2002) reported that the major benefit of this type of society is that members have easy access to credit facilities. The lending policy is devoid of the numerous bottlenecks prevailing with other formal financial institutions. They further maintained that Guarantors are within the reach of members as any member of the society is eligible to guarantee another member.

2. Agricultural Supply Cooperative Society

Ijere (2008), reported that this type of cooperative pools members resources together to procure production inputs such as farms tools, agro-chemicals, improved seeds and seedlings and retail to members at fair prices. The supply of input is also made to tally with seasonal requirements. Onje (2003) revealed that this type of cooperative society takes advantage of economies of scale and discount given for bulk purchase. This arrangement ensures easy, timely, and regular supply of inputs to the farmers at lower price.

3. Agricultural Produce Marketing Cooperative Society

Agricultural produce and marketing cooperative society collects members produce and sell same on the market at the best possible price. The proceeds are passed on the farmers. Through this collective effort, marketing cost is minimized, better prices are obtained, activities of middlemen are reduced and member's income enhanced (Omosho, 2007). On their studies on cooperative movement in Nigeria, (Ebonyi and Jimoh, 2002) revealed that originally, marketing cooperative was organized only for cash crops (e.g. cotton, cocoa, groundnut, coffee and palm kernel. Cooperative has however developed to embrace food crops such as rice and beans.

4. Agricultural Multipurpose Cooperative Society

This is organized by farmers with the objective of providing more than one service. Onuoha (2002), in his study of the history of cooperative in Nigeria, revealed that MPCS performs at least two functions. It promotes integration of economic activities such as mobilizing capital to provide credit and inputs of production to members. It also assists members with storage, processing and marketing of produce. The range of services provided by the society is determined by the members and the society's capability.

2.6 Women and Cooperative Movement in Nigeria

Women group themselves together to help one another to solve their daily problems is customary in Africa. Therefore, working together in cooperatives would be in line with the local tradition. However, for various reasons, women's participation in cooperatives is still insignificant, and with exception of saving and credit organizations, women are basically absent in the management of cooperatives (Taybela, 2016). A research paper by ILO reconfirmed that in Cooperatives there are low level of participation and under representation in decision making and leadership (Nippierd, 2002).

Organizing women into cooperatives helps to consolidate efforts, creates louder voice, achieve self-reliance and serves as vehicle for socio-cultural transformation (Taybela, 2016). Like other forms of enterprises, the cooperatives reflect the broader society in which they operate; it is not surprising that gender imbalances do exist despite the cooperative principles and values that proclaim equality and equity. The paper points out that the low participation of women is the result of women's social, economic and legal constraints that discriminate against women in regard to property ownership and inheritance.

Taybela (2016), by citing a number of studies, showed that roles of women and men in cooperatives there is low level of participation and under representation in decision making and leadership (Nippierd, 2002). Organizing women into cooperatives helps to consolidate efforts, creates louder voice, achieve self-reliance and serves as vehicle for socio-cultural transformation. Like other forms of enterprises, the cooperatives reflect the broader society in which they operate; it is not surprising that gender imbalances do exist despite the cooperative principles and values that proclaim equality and equity. The paper points out that the low participation of women is the result of women's social, economic and legal constraints that discriminate against women in regard to property ownership and inheritance.

2.7 The Challenges of Women's Participation in Agricultural Cooperatives.

Agricultural cooperatives, in present times, everywhere have come under dark clouds due to heavy competitions and pressures of open market economy systems. They are now expected to meet the challenges which they had never anticipated before. Their business methods remain traditional and they expect government support in the form of protection and subsidies. These are no longer available and will not be available in the near future. In several countries, agricultural cooperatives have either folded up or are under massive reorganization. To overcome these and other related problems, agricultural cooperative organizations, being a social development agency should play an active role in advocating for gender equality since women have been active and central role in development works. However, in terms of the ratio of membership of women in agricultural cooperatives, the percentage is rather low, but they have a strong influence on them through the heads of the household. Certain obvious barriers restrict their direct and formal entry in agricultural cooperatives.

Evidently there are serious constraints which militate against the promotion of an effective role for women in development in those societies which were bound by age-old traditions and beliefs. Resulting from these situations, women's contribution to agriculture and other sectors in the economy remain hampered. A Study named Profile and Challenges to Women's participation in Agricultural Co-operative in Maiduguri Metropolis, Borno State, Nigeria carried out by Ogunbameru *et al.*, (2010) revealed that majority (53%) of their respondents were of the opinion that pressure is from their husbands (household head) was the major problem they faced in participating actively in cooperative societies while 5% complained of misappropriation and embezzlement of fund and the remaining 4.2% complained of low income realized from their occupation. Furthermore, a study carried out by Maleko and Msuya (2015) stated the following reasons to be challenges women face in participating in cooperative societies.

- i. Subordination of women
- ii. Overburden of work
- iii. The absence of women's access and control over resources and the benefits arising from the development process
- iv. The meager access of women to education and training facilities
- v. Absence of political power with women
- vi. Absence of more economic options to women
- vii. Psychological barriers i.e. lack of experience self-confidence etc.
- viii. Glaring disparities in gender stratification in rural and urban areas
- ix. Religious and social moves and taboos.

2.8 Socio-economic Characteristics of Women Groundnut Processors

Mohammed (2014) in his findings revealed that socio-economic characteristics play vital role in women involved in groundnut processing. Such socio-economic factors are age, marital status, level of education, household size, income, years of experience, and years of membership determine women processors willingness to involve themselves in cooperative societies.

2.8.1 Age

Age is a variable that measures the age of the women in cooperative in years. Age may influence individual level of involvement in cooperative societies. Results of a study conducted by Ahmad (2017) on rural women agro-food processors indicated that a greater proportion of the women were in the age bracket of 21-40 years, implying that respondents were young and energetic, within the productive age which could increase

their groundnut processing activities and will be able to use resources efficiently. Studies by Nwosu and Okon (2013) also revealed that most (70%) of groundnut processors are between ages 26 and 45 and are similar to findings of Sani and Danwanka (2011). Age of women is crucial factor in determining social and economic activities of a family (Taybela, 2016). He reported that majority of the respondents are between the range of 18 to 30 years of age. This indicates as age increases the probability to be actively participating in saving and credit cooperative is expected to decrease due to lack of physical power and fear of risks to involve in income generating activity.

2.8.2 Marital Status

Marital status of the respondents is an important factor in processing operations, especially when labour is in short supply. Married women with large family sizes may have ready supply of family members to work during processing season. This assertion is in agreement with the results of researchers like (Onwurafor and Enwelu, 2013; Abdullah *et al.*, 2014; Iyiola and Azuh (2014) in separate studies who reported that over 70.0% of rural business women were married and have advantage of employing family labour to assist in processing.

2.8.3 Household Size

This was found to have significant relationship with involvement of women in cooperative societies. However the numbers of children are positively and significantly associated with women processors involvement level in cooperatives (Kayode, 2009). Another study by Nwosu and Okon (2013) revealed that about 32% of women had the highest household size of 7-9 persons which implies that, an increase in family size is likely to increase the probability of participation in agricultural activities. Ahmad (2017) also reported that larger households tend to consume more and therefore have more needs

to cater for. As such large household size would want to participate in women processors cooperative societies.

2.8.4 Educational Qualification

Ahmad (2017) stated that education is a good pointer to improved productivity as the level of education is a tool which an individual could be efficient at whatever endeavour being undertaken by the individual. Women processors' education level has been found to positively influence involvement of women in cooperative societies so as to have access to improved method of groundnut processing (Olukosi, 2003).

In a finding by Abonge (2012) the educational background of respondents shows that most (80.0%) women entrepreneurs have barely finished primary education or are school drop outs. In other studies (Onwurafor and Enwelu, 2013; Abdullah *et al.*, 2014; Ifelunini and Wosowei, 2013; Nwosu and Okon 2013; Nor, 2011) contrary findings were reported where majority of respondents were found to have undergone formal education at different levels. This is because those who value cooperative societies and join them were those who had a certain level of education and some civil servant.

2.8.5 Years of Experience in Processing Business

Coker & Eseyin (2013) reported that majority of their respondents had between 5 and 10 years processing experience, which implies that most of the processors have substantial experiences and may likely sustain their processing operations which may likely hinder them from joining cooperatives. Ahmad (2017) is of a contrary opinion, he said that majority of the respondents (52.5%) have 1-10 years of processing experience in Bida Niger State, indicating that most of the respondents in the study area were experienced and know how to use resources efficiently and also handle production problems and thus increase in output.

Nor (2011) reported that majority (71.0%) of women in income earning activities have between 1-10 years of experience in business. Similarly Sani and Danwanka (2011) reported majority (81.5%) of their respondents to have between 3-10 years of business experience in Kogi State. Nwosu and Okon (2013), in their own study in Akwa Ibom however, found out that 42% have between 11-20 years in their business.

2.8.6 Membership of Cooperatives

This is a voluntary organization of persons with common interest formed and operates along democratic lines for the purpose of supplying service cost of its members who contributes both capital and business (Mohammed, 2014). Processing cooperative can be organized around women processors who undertake the groundnut processing. Such a development has the salutary advantage of providing employment opportunity, enhancing rural family income, minimizing the drudgery of rural processing into improved methods, and eliminating substantial processing wastage of traditional methods (Mohammed, 2014).

Onwurafor and Enwelu (2013) have found majority (75%) of rural women they studied to belonging 1-4 social organizations while the rest of them were non-members. In contrast, Negi and Upadhyay (2012) in their paper titled: "assessment of the Strengths, Weaknesses, Opportunities and Threats (SWOT) of selected entrepreneurial activities undertaken by the rural women in Uttarakland State, India", stated that more than half (66.6%) of respondents had no organizational membership. Coker and Eseyin (2013) asserted that overwhelming majority (99.2%) of groundnut processors in their study area do not belong to any association, probably due to limited awareness of benefits of group membership or negative experiences arising from previous association.

2.8.7 Extension Service: Women farmers who have contact with extension agents will tend to have better access to information technology. This may improve their satisfaction

and hence raise their level of participation in Agricultural cooperative. According to Mohammed (2014) who revealed that extension information influence the rate of women involvement in use of improved method of groundnut processing technology .Respondents with extension information can obtain, process and use information relevant to groundnut processing to better their level of standard and increase income than respondents without extension information.

Fatai (2018) reported that 70.2% of women farmer in Nigeria has no direct contact with extension agent. Ahmad (2017) reported that 70% of groundnut processors do not have contact with extension agent implying that those that have contact with extension agent are likely to have a better output because they will be informed on new methods of groundnut processing to increase output thus having an increased income.

2.8.8 Income: measures the level of income of the women farmers. It is expected that the sign of the coefficient should be positive .the greater the income the greater the level of participation in Agricultural cooperative. According to a study carried out by Fatai (2018), farm income was less than #30,000 per annum for 60 percent of respondents while almost 90 percent did not receive credit from Agricultural credit for their agricultural activities which reduce the level of their participation in cooperative.

2.9 Nature of involvement in groundnut processing business

According to Shuaibu (2015), Fifty two percent of the women were engaged in groundnut processing on full time basis while 48% were part-timer processors. This indicates that majority of the respondents will be more committed and dedicated to their groundnut processing businesses as they do not have other businesses that will take their time.

2.10 Benefits of Women Groundnut Processors Participating in Agricultural Cooperatives

According to Fatai (2018) opined that major benefits derived by members of cooperative included access to loans (87%), input provision (77%) and product marketing (50%). Similarly, Fatai (2018), opined that women farmers in cooperatives have more bargaining power, lower transaction cost in getting loan, and better access to information about its members, Rachel MachHenry argues that cooperative have several common features that are particularly beneficial to women, including ensuring a fair return on work, support for members, safe working conditions, availability of pooled and purchase raw materials and access to viable markets.

A study by Awotide (2012), presents benefits members of cooperative societies enjoy to include accessibility to loan, provision of input for production, marketing of products and gaining of higher social status. Majority of his respondents (54%) has accessibility to loans. Furthermore, Ibitoye (2012) said that almost all of his respondents (94%) agreed that membership of cooperative societies lead to increase in their income. Improvement of the general living conditions of respondents also ranked high. Other benefits derived of being members of cooperative societies include: improved farm produce, access to inputs, easy access to credit, education and training.

2.11 Determinants of Groundnut Processors' Income

In Nigeria, researchers like Fanegan (2010); Adeyemo *et al.*, (2010) have all identified the determinants of small holder processors' income to include income from farm and non-farm activities, availability and accessibility of credit facilities, level of education, household sizes, amongst others.

Coker and Eseyin (2013) stated that experience, household size, membership of association and labour cost were significant. This implies that there were positive significant relationship between these variables and groundnut processors' income.

Implying that as the processors acquire more experience and household size increases, processor's income increases. Also membership of association will increase income.

According to ILO, over 100 million jobs have been generated by cooperative societies around the world. Agriculture remains the major source of income and employment in rural areas and the majority of the cooperatives are found in the agricultural sector. About 90,000 people in the agricultural sector of Ethiopia are estimated to generate their livelihood from their cooperatives, while in Egypt, about 4 million farmers could have gone without an income had they not been members of agricultural cooperatives. Olawepo (2010) examined the determinants of rural farmers' income in the Afon district of Kwara State, in Nigeria, using data obtained from 268 farmers in the rural community. The stepwise multiple regression analysis method was adopted to empirically evaluate the determinants of income from farming production within a farming season. The findings show amongst others that output/yield per ton, cost of farm input and implements, accessibility to credit facilities and transport costs were the main determinants of farmers' income in the area studied.

2.12 Factors Influencing Women Participation in Agricultural Cooperative

Fatai (2018) observed that women level of education and the role plays in the household had a major effect on participation of women in cooperative. This implies that women who are more educated, who comes from household that are more educated, or who are heads of households are more likely to participate. The author further argued that government activities, through visits and formal registration of cooperative, do not affect women's participation in cooperative. Similarly, Ogunbameru *et al.* (2006) identified extension contact, access to market, level of education, access to credit, access to land

and taking part in decision making as the factors affecting women participation in agriculture.

Awotide (2012) in his study revealed that form of cooperative, years of business experience, and educational level attained were statistically significant in relation to women's participation in cooperative societies. Years of business experience shows a direct relationship with participation in cooperative societies as a woman. This implies that as years spent in business increases, women increase their participation in cooperative activities. Educational level is significant and positively related with women's participation in cooperative societies. Form of cooperative societies especially producers and credit and thrift were significant and positively related with women's participation in cooperative societies. His result shows that the activities, benefits and roles played by the various cooperative societies give room for more interest in cooperative.

2.13 Constraints Faced by Women Participating in Agricultural Cooperative

Constraint which limit women full participation in cooperative in Nigeria are socio-economic attitude, legal constraint(land and property laws), inadequate education and illiteracy among women , absence of clearly policies regarding participation of women in cooperative, resources that support cooperative activities for women are relatively small. Where there is pressure of the household head (husband) was the major problem they faced in participating in cooperative societies while few complained of misappropriation of fund and the remaining complained of low income realized from their occupation. Cultural belief and low level of education were found to be major problem militating women participation in cooperatives (idrisa *et al.*, 2007). Similarly, Ogunbamero *et al.* (2010) opined that the major challenges of women participation in

cooperative activities in Borno state, Nigeria were found to be low level of education and cultural barriers. In some culture, women are restricted from conducting business independently or without their husband consent (Awotide, 2012).

According to International Cooperative Alliance (ICA) (2010) and Alkali *et al.* (2018) women, especially in developing countries are confronted by formidable constraints that block their active participation in cooperatives. Similarly Ekesionye and Okolo (2012) noted that the participation of women in agricultural cooperative activities at all level is hampered by numerous constraints which include among others:

1. Culture/ Customs: Idrisa *et al.* (2007) in a study conducted on socio-economic factors affecting women's participation in agricultural cooperative in Gwoza Local Government Area, Borno state, affirm that culture/customs was the main barrier to women participation in agricultural cooperative activities. In some cultures, women are restricted from conducting business independently or without their husband's consent. This poses a serious challenge to participation in cooperative activities. Even though in some cases, women's legal rights may be stipulated in the constitution of the cooperative, they may not necessarily be enforced or they may be superseded by customs. It is in line with this view that Alkali *et al.*(2018) observed that lack of social, economic and legal rights explains women's low participation in cooperative decision-making and leadership positions. Besides cultural issues, women, especially in developing countries, are confronted by formidable constraints that block their active participation in cooperatives activities. These include the traditional role of women in society and the prevalent misconception that women's reproductive and domestic responsibilities constitute their main role.

2. Low Level of Education: The poor performance of women's participation in agricultural cooperative activities is attributed to inefficient management capabilities of

members and elected representatives. Ogunbameru *et al.* (2010) revealed that low level of education was the most important factor constrained the participation of women in cooperative activities as indicated by majority of the respondents in the study area. Similarly, Onyemauwa (2006) revealed that more than half of the respondents reported low level of education as the constraints to women's participation in cooperative activities in Imo state. Women willing to form cooperatives may lack knowledge of what to do and how to go about it. Illiteracy and lack of adequate education have been identified as part of the major factors militating against institutional support towards agriculture (Alkali *et al.*, 2018). Low level of women education is an important factor that explains the prevailing low level of women participation in agricultural cooperatives. Idrisa *et al.* (2007) stressed that, the most significant socio-economic factor that determines women's participation in agricultural cooperatives is their level of education. Women who have attained a higher level of education are more likely to be members of cooperatives.

3. Lack of Capital/Credit: Inadequate finance has remained a major problem of agricultural production. This is because capital is the most important input in agricultural production and its availability has remain a major problem to small scale farmers who account for the bulk of agricultural produce of the nation. In Nigeria, credit has long been identified as a major factor in the development of the agricultural sector (Balogun, 2007). Cash is considered the catalyst that activates other factors of production and make under used capacities functional for increased production. It is a major factor necessary for technological transfer in traditional agriculture (Alkali *et al.*, 2018). Farm credit can be obtained from either the formal source which include the banks and other government owned institutions or the informal sources which are self-help group, money lender, cooperatives and non-government agencies (NGO). The informal source of credit is more

popular among small scale farmers which may be to the relative ease in obtaining credit devoid of administrative delay, nonexistence of security or collateral, flexibility built into repayment which is against what is obtained in the formal sources. The institutional lending system has failed to meet the objectives for which they were set up (Alufohai and Ahmodu, 2005). A study conducted in 2004 in cooperative produce marketing societies in Oyo, Ogun and Ondo states of Nigeria by Aweto, revealed that 74% of the total women cooperative members join cooperative societies with the hope of obtaining financial assistance. Out of these only 14% benefitted from financial assistance of the society when really in need of fund. Alkali *et al.* (2018) remarked that increased inaccessibility to credit facilities had immensely affected agricultural development in the country. Indeed, the establishment of micro-finance banks and agricultural banks has genuine interest in granting loans to prospective borrowers but the cooperatives are still finding it difficult to access the loans due to strings and conditions attached to it.

4. Gender Disparity: It is common knowledge that gender inequality is one of the pervasive forms of inequality; especially it cuts across other forms of inequality (Alkali *et al.*, 2018). One of the most critical problems faced by women is gender inequality, especially in land acquisition, which remains a major constraint for women farmers in Africa. This has led almost exclusively to the transfer of land right to male (FAO, 2005 and 2010). This means gender inequality is a major problem in the distribution of assets in agricultural production. Since cooperatives, like other forms of enterprise, reflect the broader society in which they operate, it is not surprising that gender imbalances do exist, despite the cooperative principles and values that proclaim equality and equity. Among the most important gender issues in cooperatives today are women's low level of active participation and their under-representation in decision-making and leadership (Ekesionye and Okolo, 2012).

5. Fraud: Aweto (2004) revealed that, fraudulent and dishonest practices have been widely identified as the most serious ill which hinders the growth of cooperative endeavors in Nigeria. She further maintained that corruption and embezzlement could be widespread among cooperators themselves, or amongst the cooperative officials or staff and government officials who collaborate to embezzle cooperative funds. This, in consequence has made many cooperative societies or union bankrupt. Sometimes, the administrators or cooperative personnel such as cooperative officers exploit the ignorance of the members by embezzling the society's fund. Omotosho (2007) reported that corruption can also occur if there is no adequate auditing of the society's accounts. This situation usually discourages farmer cooperators from participating fully in the cooperative activities. Apart from this, it prevents potential cooperators from being involved in cooperatives activities.

2.14 Constraints faced by Women Groundnut processors

Bello *et al.* (2016) reported that the highest constraint faced by women groundnut processors was lack of capital for the business and inadequate processing equipment/training followed by high purchasing price of machine lack of institutional credit lenders/ collateral high prices of petrol and diesel to power the machine ,poor electricity supply, and poor extension service delivery ,while the least constraints faced by respondents includes inadequate raw materials, lack of manpower/ labour and marketing.

Ibrahim *et al.* (2020) in their study also revealed that the constraints militating against groundnut processing in the study area varies from one respondent to another. However the major constraints processors pointed out were inadequate capital for expansion, unstable price of inputs and inadequate processing machines are the three major constraints hindering the processing of groundnut. Samuel and Ocholi (2017) also

reported that the constraints faced by groundnut processors in the study area vary from one respondent to another. However, three major constraints were pointed out by the processors which include, seasonality nature of groundnut, unavailability of high oil yielding groundnut variety and inadequate capital for business expansion. The most important constraint faced by groundnut processors in the study area was the unavailability of high oil yielding groundnut variety. Processors prefer using raw groundnut with high oil content, since their profit depends on the quality and quantity of groundnut oil and groundnut cake they produce, and the aim of every business is to make profit. However, this groundnut variety is mostly unavailable or expensive. This results in low profitability and hence leads to poor participation of women in the enterprise.

However, this is different from the findings of Abdulazeez *et al.* (2012) in their study of economics of small-scale agro-enterprise in Kwara State, Nigeria, which states that the major constraints associated with groundnut processing are household size and processing experience. Secondly, seasonal supply of groundnut; It is available at the end of the crop production cycle. Its supply is usually available only during one or two brief periods in the year. The demand for groundnut oil and groundnut cake is relatively constant throughout the year. Therefore, processors must contend with a supply imbalance and problems of inventory management, production scheduling and coordination among processing and marketing segments of the processors-to-consumer chain. Seasonality also leads to a shortage in the working capital available to handle the bulge in expenses and the heavy financial cost of carrying the inventory. Such financial shortages can lead to short falls in raw material procurement, causing severe under-utilization of the processing plant's capacity and hence decrease profitability. A similar finding was also made by Haruna *et al.* (2006) in their study of the economics of groundnut processing among the rural women in Katagun Local Government Area,

Bauchi State, Nigeria. Thirdly, groundnut processors in the study area are poor and hence lack capital for business expansion. They work to acquire basic necessities such as food, clothing and shelter through groundnut processing. This has manifested in continuous food crisis associated with shortfall in supply, rising cost of living, poverty, malnutrition, and disease and social unrest. In the time past several programs were been carried out by researchers and government through the Microfinance Bank and Bank of Agriculture and these have impacted positively on the production of groundnut oil and groundnut cake.

2.15 Theoretical Framework

This study will be guided by the social capital theory and the theory of Democracy.

2.15.1 The Social Capital Theory

The analytical framework reinforcement for this research is the Social Capital Theory. The Social Capital Theory emanates from social capital which the World Bank (1998) defined as “the institutions, the relationships, the attitudes and values that govern interactions among people and contribute to economic and social development” (Onafowokan, 2012). The focus of the Social Capital Theory is to use social network, association and relationship for the social and economic development of individuals, the group and the community. The application of the Social Capital Theory to the Effect of Cooperative Societies on Women Involvement in Groundnut Processing assess the contribution of the cooperatives to member’s standard of living which basically examines household income, household assets, enterprise profitability and enterprise asset condition is expected to lead to social, financial and physical benefits. The three benefits were suggested in Henry and Schimmel (2011) conclusion that cooperatives are meant to meet members’ financial, economic and social needs. The economic needs can be met

through the financial and physical benefits derived by the members, while social needs relate to social benefits.

The social, financial and physical contribution of cooperative to the members may include easy access to loans, ability to accumulate savings and acquisition of physical assets. Financial benefit or capital can arise in a cooperative because “improved interpersonal relations and trust can increase efficiency and reduce the costs of working together, thus creating financial capital” (Holmgren, 2011). Financial capital can also arise where participation in an association leads to increase in investment and income. Improvement in household income and enterprise profitability is a form of financial capital provided the increase can be associated to membership of an association or program. All forms of financial security such as savings and access to loan are financial capital including other opportunity to generate or improve income. Increase in savings is therefore a financial capital, and the acquisition of financial capital can be a possible motivation for joining a cooperative. Financial capital is important because it can be converted into other forms of capital that could generate income or bring more satisfaction. Access to adequate financial capital is very useful to generate physical capital and may reduce worry and stress. Physical capital is those material things, items and products that can be seen and touched which shows an improvement in standard of living (Taybela, 2016). These include assets and other household and enterprise durables that make life worth living. Physical capital is also needed and useful to support livelihoods (Holmgren, 2011). Taybela (2016) offers four reasons why researchers use social capital theory to determine the theoretical implication of rural finance program. Where the program is used basically for female; where the program operates in group; to be able to relate and analyse impact of the program on a community; and where loans are given for enterprise use (Onafowokan, 2012). The use of Social Capital Theory will be

appropriate for Credit cooperatives that focus on women groundnut processors, enterprise activities and operate in a group.

2.15.2 Theory of democracy

According to Kareem *et al.* (2012), the only known and recognized theory, which backed the activities of the co-operative, is the “theory of Democracy” but this theory of democracy was later categorized into:

- a) The classical theory
- b) The modern theory
- c) Co-operatives and the classical theory

i. Theory of democracy

The principal objective of this theory is to make co-operative an easy and profitable organization in which their aims and objectives are achieved. The theory provides at least some of the materials required to enable us to make a realistic assessment of decision making in retail cooperatives. An appraisal however requires more than facts. If we desire to make some judgment about how democratic co-operatives really are, we need first of all a clear conception of the meaning of the term “Democracy”. Although there is no agreed definition of democracy, even though a cursory study of the uses of the term by modern writers and politicians shows that there is no agreed meaning. Some equate it with the rule of the majority, others emphasize the importance of protecting the rights of the minority. Some regard it as a system, which maintains certain valued institutions, such as freedom of speech and association, while others said a way, which totalitarian democracy.

Co-operative democracy could be viewed as the democratically controlled in the co-operative set-up, that is, democracy within co-operatives. The concrete elements in a co-operative democracy may of course, be different from those in a state democracy. And any

conclusions, which hold good democracy within the states, will apply equally well to democracy within cooperative societies.

ii. The classical theory

The classical theory was developed in the eighteenth centuries. In essence, it holds that democracy is a method of government, which realizes the common good by a system in which the people themselves decide political issues, the decision taken can be said to express the will of the people. So stated, the presumption is that all the people participate in decision making, the system is one of direct democracy.

The physical and practical impossibility of everyone taking part in every decision in all save relatively small groups; is recognized and leads to the introduction of the notion of representation and thus of indirect or representative democracy. In this attenuated form, the people's will is not expressed, directly by themselves but indirectly through representatives who are elected by people and who meet periodically in assembly to carry out the will of the people. Representation on this view is an important device to enable democracy to be applied in large scale groups and small groups like cooperatives and trade union but it is nothing more than this: it changes the form but not the substance of democracy. Provided that the representatives do not attempt to substitute their wills for the people's will and regular periodical elections help to ensure this. Thus, democracy of co-operative is thus seen as an institutional arrangement for arriving at co-operative decisions realize the common goals by making the people itself decide issues through the election of representatives who assemble in order to carry out its will.

The first requirement of any theory is that its central concepts should be unambiguous. But the Classical theory fails to meet this test. "The common good" is a much phrase, but its reference is selfdom clear. On analysis it is doubtful whether- it is something

which can be “realized”. It is not an objective like full employment for which precise criteria can be established.

The classical theory is also vulnerable to be changed as it ignores the problem of representations. Its assumption that representation is merely a device to enable democracy to work in large-scale group is naïve. Representation is one of the most puzzling concepts in politics and nobody has, succeeded in explaining satisfactorily how one person can represent another.

iii. The modern theory

The modern theory of democracy rejects the questionnaire assumptions of the classical theory and seeks to provide a model, which embodies ideas having clear and unambiguous empirical references. The main emphasis of the classical theory is on self-government, in the sense of government acting in the expressed interest of the people or at least a majority of them. It answers to the question. How DOES one ensure responsible government? Is it through institutionalization of competition for leadership? Schumpeter has defined the modern democratic method as that “institutional arrangement for arriving at political decisions in which individuals acquire the power to decide by means of a competitive struggle for the people’s vote. On this view, the main function of the people is not to make, or indirectly, the multitude of decisions involved in government, but to make one big decision to produce, by means of periodic elections, either a government or an intermediate body, which in turn will produce a government.

The model of democracy avoids the problem of representation since the problem arises only in the context of self-government. When the assumption that they themselves make the decisions is dropped, the representative need no longer be concerned about whether they reflect accurately the views of the electors: the right to make the decisions is theirs

and due allowance is made for the exercise of leadership as distinct from the expression of the wills of others. The system works in such a way as to ensure that the interests of the government will not be neglected.

In short, the modern theory is both neater and empirical than the classical theory. Its relation to the older theory is well summed up. Democracy can mean government of the people by the people, by the people and for the people. The modern theory has been developed to explain, and perhaps also to justify, the working of western parties state system. The importance the theory attaches to parties has now been generally recognized by the ordinary citizen who is inclined to regard the existence of a legitimate opposition party as the very hall-mark of a democratic state.

iv. Co-operative and the classical theory

This is certainly true of co-operators. If the two theories of democracy are regarded as “Ideal types”, the classical theory is more useful for analyzing the practice of retail co-operative government. In the early days of the movement, co-operatives approximated very closely to ideal direct democracies in which all the members meet together in terms of equality to make decisions. The representative executive body-“the Government” of the co-operative exercised only limited powers between general meetings and there was no sharp distinction between the executive and other members.

In some societies, the executive would be chosen by a system of rotation rather than election and it was common practice for ordinary members to attend executive meetings. Today, even in the smallest societies, the roles of the executive and the members are clearly differential but the element of direct democracy remains relatively pronounced. Over the years, the indirect representative element in co-operative government has markedly increased, but all representative bodies remain, in theory at least, directly

accountable to the business meeting as well as accountable to the membership through the election procedures.

Other features of co-operative government underline its classical democratic character. Most obvious, perhaps, is the emphasis placed upon local democracy. Although the structure of the movement, based, as it autonomous local societies, seems too many observers ill-adapted to modern trading conditions, most active co-operative regard it as a landing of democracy.

In theory, of course, it is possible to envisage as some reformist co-operators do, a single natural cooperative society constructed according to the canons of representatives classical democracy. Those cooperators who see democracy as direct self-government by the members are; therefore, correct their point of view, in questioning the ideas of a normal society. The member, it is implied, ought to be interested in the government of his society and the more members who are interested, the more likely is the society to be a “genuine” co-operative.

2.15 Conceptual Framework

As indicated by many researchers empowerment, is vital issue in cooperative. Cooperative empowers its members socially and economically through provision of improved services (Nippierd, 2002). Thus, different national and international organizations are currently promoting cooperatives as a means of empowering poor women.

Cooperatives provide training opportunity, credit facility, and employment opportunity; promote self-reliance and self-responsibility among its members. Cooperative has played also great role in bringing women to leadership positions and bring equality. Moreover, target training and social development measures provided by cooperative prevent new poverty result from modernization and restructuring of economy (Taybela, 2016).

In the women's empowerment literature, "a woman is economically empowered when she has both the ability to succeed and advance economically and the power to make and act on economic decisions". To achieve economic advancement, women need the skills and resources to compete in markets and fair and equal access to economic institutions (Golla, 2011). To have the power and agency to benefit from economic activities, women must have the ability to make and act on decisions and control resources and profits (Taybela, 2016).

A model is a contribution that shows relationships existing among variables. Those relationships are depicted schematically or mathematically (Olukosi, 2003). The conceptual model for this study is depicted in figure I. From the analytical framework, effect of cooperative societies on women involvement in groundnut processing is shaped by both the perceptual and behavioural factors. The perceptual factors are mainly combination of women processor's personal characteristics. The relationship in the model starts from socio-economic variables and institutional variables. The socio-economic variables such as age, level of education, household size, household size, marital status and years of experience can influence women groundnut processors' involvement in cooperatives. The institutional The institutional variables are extension contact, amount of credit received and membership of cooperative societies. The behavioural factors are shaped by women processors knowledge, attitude, and subjective culture.

In this model, it is expected that age and experience are important characteristics that will determine involvement of women groundnut processors' in cooperative societies. Older people tend to form favourable attitude towards participation in cooperative societies more than younger ones. This is probably as a result of experience that older

people must have acquired over time. Similarly, educated women processors' with large household tend to form positive attitudes towards participating in cooperative societies. In terms of education, literate women processors' are considered to positively influence the likelihood of participating in cooperative societies because with education, they have more exposure and are willing to involve themselves in new practices.

Other factors involving economic variables; access to credit, access to market, access to land, labour and market for processing inputs can influence women's' participation in agricultural cooperatives. Their participation in cooperative is expected to increase their output and income which would consequently improve the living standards of the women processors.

2.16 Ordered Logit Regression

The ordered logit model is a regression model for an ordinal response variable. Therefore, the model is based on the cumulative probabilities of the response variable: in particular, the logit of each cumulative probability is assumed to be a linear function of the covariates with regression coefficients constant across response categories. (Leonardo *et al.*, 2014).

However, some discrete outcomes can be ordered to obtain more robust and representative information about the subject under consideration, Examples include: Rating systems (excellent, very good, good, fair, poor). The numbers 1-5/ 5-1 mean nothing in terms of their value, just an ordering to show the lowest to highest/ highest to lowest (Afees, 2016). Despite the order from lowest to highest, the spacing between the values may not be the same across the categories of the ordered variable.

However, variables having its output in categories are classified as Ordinal variables/Ordered outcomes or Polychotomous responses (as opposed to Dichotomous responses in the case of Binary outcomes). The central idea behind the ordinal outcomes is that there is a latent continuous metric and it is an unobserved variable, it only exhibits itself when it crosses thresholds. Thus, the appropriate models for analysis are the Logit models (Afees, 2016).

CHAPTER THREE

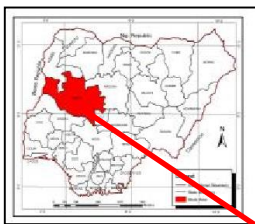
3.0

RESEARCH METHODOLOGY

3.1 Study Area

The study was undertaken in selected Local Government Areas (LGAs) of Agricultural Zone1 of Niger State, Nigeria. Niger State is located between Latitudes 8⁰22'N and 11⁰30'N and Longitudes 3⁰30'E and 7⁰20'E. The State is bordered by Zamfara and Kebbi States in the North and North-west respectively, Kogi State and Kwara State in the South and South-west respectively; while Kaduna State and the Federal Capital Territory, Abuja, border the State to the Northeast and Southeast respectively. The State shares an international boundary with the Republic of Benin at Babanna, in Borgu Local Government Area. Currently, the State covers a total land area of 76.363 sq.km , which is about 8% of Nigeria's total land area. This makes the State the largest in the Country (Niger State Bureau of Statistics, 2012).

The population of the State was 3,950,249, comprising 2,082,725 males and 1,867,524 females (National Population Commission (NPC), 2006). The projected population of the State as at 2016 was 5,556,200 (United Nations Population Fund, 2016). The State is divided into three agricultural Zones, namely: Zone 1, with capital at Bida, Zone II, with headquarter at Kuta and Zone III, with capital at Kontagora. The Zonal L.G.A. distribution comprise: Zone 1-Mokwa, Edati, Lavun, Gbako, Bida, Katcha, Agaie and Lapai; Zone II- Suleja, Tafa, Paikoro, Chanchaga, Bosso, Gurara, Shiroro, Rafi and Minna; and Zone III - Wushishi, Mariga, Magama, Mashegu, Munya, Agwara, Kontagora and Rijau (Mohammed, 2014).



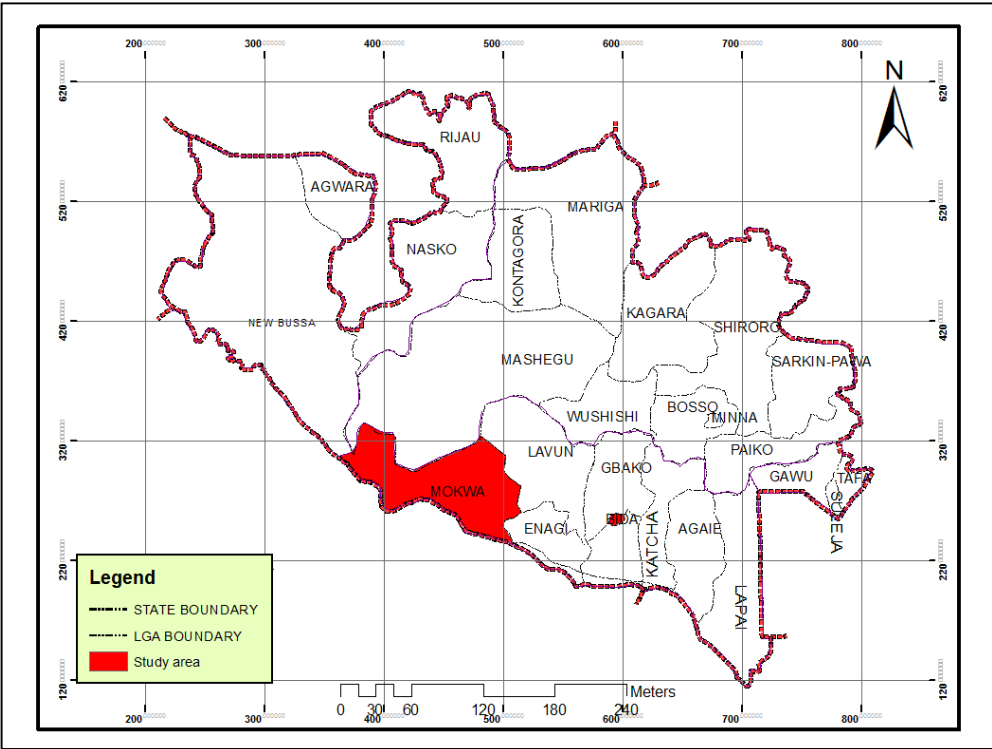


Figure 3.1: Map of Niger State showing the study areas

Source: www.NigerState.gov.ng

The average annual rainfall in the state is 1,219 mm. The dry season is between November and March. Temperature is fairly regular and ranges from 26.1⁰C to 30.3⁰C. The soil types support sustainable production of arable crops. The major spoken languages are Nupe, Gbagyi and Hausa, while the major occupation of the people is farming. Major crops cultivated include rice, guinea corn, maize, yam, beans, groundnut, and sugarcane. Livestock reared are cow, goats, sheep, chicken e.t.c (www.NigerState.gov.ng). Women are majorly involved in processing of groundnut, rice and maize. The State has large water bodies (River Niger and Kaduna) with numerous tributaries, as well as lakes and dams (Shiroro, Kainji and Jebba) which make it suitable for the cultivation of irrigated crops such as rice, sugarcane, vegetables. (International Rice Research Institute (IRRI), 2000).

3.2 Sampling Technique and Sample Size

A multi-stage sampling procedure was used to select respondents for this study. The first stage involved purposive selection of agricultural Zone 1 out of the three agricultural zones in Niger state due to the preponderance of women groundnut processors. The second stage was selection of 2 LGAs from Zone 1 i.e Bida and Mokwa. The third stage involved the random selection of four and five registered cooperatives respectively from each of the selected Local Government Areas making a total of nine cooperatives. The fourth stage was selection of 205 respondents using Yamane (1979), at 5% precision level and 95% confidence interval.

Table 3.1: Distribution of Sample Respondents

LGA	Names of Cooperatives	Sample frame	Sample size (49%)
Bida	i.Gabigi women G/nut processors	45	22
	ii.Gbewodan women G/nut processors	30	15

	iii.Ebidayegboro women G/nut processors	60	29
	iv.yegborololenle women G/nut processors	32	16
Mokwa	i. Kpayelo women G/nut processors	62	30
	ii.Yetsewedan women G/nut processors	75	37
	iii.Ebeyeloyegboro women Cooperative group	43	21
	iv. Yetulo women Cooperative group	40	20
	v.Kpanoyedan women G/nut processors	30	15
	Total	417	205

Source: Niger State Ministry of Agriculture (2019).

A total of two hundred and five (205) women groundnut processors was sampled using the Taro Yamane (1967) as shown below

$$n = \frac{N}{1 + N(e)^2} \quad (3.1)$$

Where;

n= sample size,

N= the finite population,

e = limit of tolerable error at 0.05 probability level and

1=unity sampling to select 5% of respondents from the existing list of registered women cooperative association with the State Ministry of Agriculture.

3.3 Method of Data Collection

Primary data was used for the study. The data was collected using a structured questionnaire administered to the respondents by the researcher and a team of trained Extension Agents.

Information was collected on some socio- economic variables such as age, educational level, household size, marital status, years of experience, and membership of cooperatives e.t.c. Also information was collected on levels of involvement of women processors in cooperative societies, outputs and income of women groundnut processors, benefits women derive in cooperatives as well as constraints faced by women processors in cooperative societies. The period of data collection lasted one month.

3.4 Test of instrument for data collection

3.4.1 Validity of instrument for data collection

Validity is defined as “the degree to which the instrument measures what it is supposed to be measured”. The researcher mostly focused on content validity, which refers to the accuracy with which an instrument measures the factors under study. This means that the instruments for data collection were given to the supervisors and other experts in the field to ascertain its validity. They made their inputs before the instruments were taken to the field.

3.4.2 Reliability of instrument for data collection

Reliability relates to the precision and accuracy of the instrument. Reliability test is the degree with which data collection instrument yields consistent results over a repeated number of trials. This was established through the use of test-retest method which is the process of administering the same instrument twice or more over a period of time to a group of individuals. In this course of study, a period of two weeks was allowed before the

instrument was retested. The scores from first and second time was then correlated using pearson product moment correlation coefficient in order to evaluate the test for stability over time at 0.05% level of significant

3.5 Measurement of Variables

3.5.1 Dependent Variable

Level of involvement was determined using 3-point Likert type scale. The activities were listed and respondents picked the ones they partook in. These values were added together to obtain an aggregate score of 6, which then was divided by 3 to obtain 2.00 taken as the cut off mean. Any involvement level with mean score less than 2.0 was considered as low involvement, equal to 2.0 was considered as Moderate involvement while greater than 2.0 was considered as High involvement..

$$\text{Mean} = \frac{\sum fx}{n}$$

(3.2)

$$\frac{\sum fx}{n} = \frac{6}{3} = 2.0$$

3.5.2 Independent Variables

- i. **Age:** The age of the of the women groundnut processors was measured in years as given by the respondents.
- ii. **Education:** This was measured as numbers of years spent in formal educational system by the women processors.

- iii. **Household Size:** This was measured by the total number of people the women processor is feeding and taking care of. These include the husband, children and any other dependent living with her.
- iv. **Marital Status:** The marital status of the women processors was measured as being single, married, divorced and widowed.
- v. **Annual income:** Income in this context refers to amount processors obtained per annum. This was determined by the amount generated from the sales of their produce. It was measured in Naira.
- vi. **Access to credit:** This was determined by knowing how much of the credit gets to the women and this was measured in Naira.
- vii. **Training:** This was also based on a 3- point likert scale interval range of never, rarely and frequently.
- viii. **Membership of association:** This answered the question in years. That is the number of years the women processors have being in the group.
- ix. **Experience in processing:** Experience refers to the number of years the women processors have in groundnut processing. It was measured in years.
- x. **Output:** was measured in kilogram (kg)
- xi. **Income:** was measured in Naira (₦)
- xii. **Labour:** respondents indicate whether family, hired labour or both
- xiii. **Extension contact:** respondents indicated if they were been visited by any extension agent or not. If yes number of times visited.
- xiv. **Quantity of groundnut processed:** respondents indicate the quantity of groundnut processed in kilograms.

- xv. **Constraints:** this was measured using 3 points Likert type rating scale of severe =3, not severe = 2 and not a constraint = 1.

3.6 Analytical Techniques

Descriptive statistics, multiple regression, and ordered logit regression was employed to analyze the data elicited from the field. Specifically, Objectives (i),(ii), (iv), and (vii) was achieved using descriptive statistics such as frequency distributions and means, objective (vi) was achieved using Kendall's Coefficient of Concordance while Objective (v) was achieved using multiple regression, (iii) while ordered logit regression was used to achieve objective vi. Hypothesis (i) was tested using correlation analysis and Hypothesis (ii) was tested using Z-test.

3.7 Specification of Models

3.7.1 Ordered Logit Regression

This was used to achieve objective iii. Behavioral response models involving more than two possible outcomes are either multinomial or multivariate. An ordered logit model is appropriate when individuals can choose only one outcome from among the set of mutually exclusive, collectively exhaustive alternatives. Therefore, in order to determine the factors influencing the involvement of women in cooperative society's activities, the ordered logistic regression model was used. The choice of this method is based on the fact that the level of involvement (dependent variable) is a categorical variable which can take three (3) levels (1, 2, and 3) (Ayinde, 2010). The probability that the i th women processor belongs to the j th level of involvement reduces to:

$$Y = \beta_i (X_i) + e \tag{3.3}$$

The likelihood of being in either of the level of involvement is described by ordered logit model expressed as follows:

$$\Pr (Y = c/X_i) = F(X_i \beta)$$

(3.4)

Where;

Y=Level of involvement in cooperative societies. (3=high involvement 2=moderate involvement, 1=low involvement);

F = the standard logistic cumulative link function;

X = the set of predictor variables.

C = categories for the *i*-th subject,

The empirical specification of equation 2 above is presented as:

$$Y_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

(3.5)

The explicit form of the function is specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X + \beta_n X_n + \varepsilon_i.$$

(3.6)

The dependent variable (Y) in this case is an ordered variable indicating the involvement levels by the women groundnut processors.

Where;

Y=Level of involvement in cooperative societies. (3=high involvement, 2=moderate involvement, 1=low involvement)

X₁= Age of the respondents (Years)

X₂ = Marital status (single =1, others=0)

X₃ = Years of schooling (Years)

X₄ = Household size (Number)

X₅ = Years of experience in groundnut processing (years)

X₆ = Availability of modern processing techniques (Yes=1, No=0)

X₇ = Participation in trainings on groundnut processing (Yes=1, No=0)

X₈ = Access to credit from formal and informal financial institution (Yes=1, no=0)

X₉ = Amount of credit obtained (Naira)

X₁₀= Annual income (Naira)

X₁₁= Total labour employed (man days)

X₁₂= Total investment capital (Naira)

X₁₃= Number of extension contacts

X₁₄= Membership of cooperative societies (in years).

β_0 = Constant

$\beta_1 - \beta_{14}$ = coefficient of the independent variables

X₁ – X₁₄ = independent variables

ε_i = error term

3.7.2 Multiple Regression

Multiple regression analysis was used to achieve objective v, which is effect of cooperative societies on groundnut processing.

The model is expressed in implicit as:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_n, \mu) \quad (3.7)$$

The four functional forms namely linear function, Cobb- Douglas (Double- log), Semi-Log and Exponential was used in testing the variables. The four functional forms in which the data was fitted are as follows:

1. Linear equation

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_nX_n + \mu \quad (3.8)$$

2. Double- log function

$$\begin{aligned} \text{Log } Y = & a + b_1 \text{Log } X_1 + b_2 \text{Log } X_2 + b_3 \text{Log } X_3 + b_4 \text{Log } X_4 + b_5 \text{Log } X_5 + b_6 \text{Log } X_6 \\ & + b_7 \text{Log } X_7 + b_n \text{Log } X_n + \text{Log } \mu \end{aligned} \quad (3.9)$$

3. Semi – log function

$$\begin{aligned} Y = & a + b_1 \text{Log } X_1 + b_2 \text{Log } X_2 + b_3 \text{Log } X_3 + b_4 \text{Log } X_4 + b_5 \text{Log } X_5 + b_6 \text{Log } X_6 + \\ & b_7 \text{Log } X_7 + \text{Log } e \end{aligned} \quad (3.10)$$

4. Exponential function

$$\text{Log } Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_nX_n + e$$

(3.11)

Where $Y_1, X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8$, are as defined in the explicit form

Y = Income (₦) from groundnut processing

X_1 = Years spent in cooperative societies (years)

X_2 = Amount of loan obtained from cooperative societies (₦)

X_3 = Trainings received from cooperative societies (Number)

X_4 = Marketing assistance from cooperative societies (Yes=1, No=0)

X_5 = Amount saved in cooperative (₦)

X_6 = Level of involvement in cooperative societies (participation score)

X_7 = Type of membership in cooperative societies (Official= 1, ordinary member=0)

X_8 = Age (years)

3.7.3 Kendall's Coefficient of Concordance

To examine benefits derived by women groundnut processors participating in cooperative societies (vi), the Kendall's coefficient of concordance (W) adopted from Mohammed *et al.* (2018) was used to rank the benefits. A lower mean rank indicates the benefits is not significant and vice versa. The Kendall's W was computed as shown below.

$$W = \frac{12 \sum R^2 i - 3N(N-1)^2}{N(N-1)}$$

(3.12)

Where:

W = Kendall's value,

N = total sample size,

R = mean of the rank. The Kendall's coefficient of concordance (W) is a measure of the extent of agreement or disagreement among women groundnut processors of the rankings obtained. The value of W is positive and ranges from zero to one where one denotes perfect agreement among women processors of the rankings and zero denotes maximum disagreement.

3.8 Test of Hypotheses

Hypothesis one (i) of the study was tested using Pearson Product Moment Correlation analysis. The formular is given below:

$$r_{xy} = \frac{n\sum XY - \sum X \sum Y}{\sqrt{[n(\sum X^2) - (\sum X)^2][n(\sum Y^2) - (\sum Y)^2]}}$$

(3.13)

Where:

r = correlation coefficient

Y = level of involvement in cooperative societies

X = independent variables

N = total number of observations

\sum = summation

Hypothesis two (ii) was tested using Z-test. Below is the model specification

$$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

(3.14)

Where;

\bar{X}_1 = Mean of income before joining cooperative societies

\bar{X}_2 = Mean of income after joining cooperative societies

σ_1^2 = Variance before before joining cooperative societies

σ_2^2 = Variance after after joining cooperative societies

n_1 = Number of observation before joining cooperative societies

n_2 = Number of observation after joining cooperative societies

CHAPTER FOUR

4.0

RESULTS AND DISCUSSION

This Chapter presents the results and discussion of the analysis of the seven research objectives of the study.

4.1 Socio-economic characteristics of women groundnut processors.

4.1.1 Age

Table 4.1 showed that the mean age of the respondents was 43.2 years, implying that the active, productive and actual age in which groundnut processing is practiced is at its peak. They also tend to have energy to cope with strenuous activities involved in groundnut processing. This is in agreement with findings from Mohammed (2014) who revealed that women processors were of the middle age category of 40-50 years of age. Ogunbamero *et al.* (2010) opined that age has significant influence on the participation on women in cooperative activities. The possible explanation for this is that younger persons have greater capacity to utilize opportunities such as those provided by cooperative societies

4.1.2 Marital status

Table 4.1 indicated that majority (88.8%) of the groundnut processors in the study area were married which simply indicate family responsibilities on the part of the respondents. This could be advantageous in the provision of additional labour that would assist in processing of groundnut. This finding agreed with findings of Abonge, 2012; Nwosu and Okon, 2013; Abdullahi *et al.* (2014) who reported that majority of rural women agro-processors were married. This is departure from the notion that marriage is an impediment to women participation in cooperative activities, on the claim that culture deprives women from such activities.53

Table 4.1 Socio-economic characteristics of women groundnut processors (n=205)

Variables	Frequency	Percentage	Mean
Age (years)			
<30	25	12.2	43.2
30-40	61	29.8	
41-50	79	38.5	
51-60	28	13.7	
61-70	12	5.9	
Marital status			
Single	10	4.9	
Married	182	88.8	
Others	13	6.3	
Educational level			
Tertiary	10	4.9	

Secondary	67	32.7	
Primary	44	21.7	
Adult education	32	15.6	
Non-formal	34	16.6	
None	18	8.8	
Years spent in formal education			
1-6	68	33.1	8.2
7-12	81	39.5	
>12	29	14.1	
None	27	13.1	
Household size			
≤5	45	21.9	10
6-10	91	44.4	
11-15	48	23.4	
16-20	13	6.3	
>20	8	3.9	
Years of experience in groundnut processing			
1-10	106	51.7	12.9
11-20	62	30.24	
21-30	29	14.2	
31-40	7	3.4	
Above 40	1	0.5	

Source: Field survey, 2019.

4.1.3 Educational level

Table 4.1 indicated that 59.3% of the respondents had formal education in the study area. This indicated that more than half of groundnut processors were literate which might influence their participation in cooperative and also improve their skills and methods involved in processing of groundnut into different products. This finding is in consonance with Mustapha (2011) who reported that most of the groundnut processors in Kaduna State, Nigeria had one form of formal education and the other. It is expected that women that are educated tend to have broader horizons and they could initiate or conceptualize the formation of cooperative societies. Education is an important factor that could influence the participation of women in cooperative activities. It is expected that members of cooperative societies with high literacy levels could assess support of various kinds from formal institutions without the help of educated persons which would improve the cooperative activities. This is agreed with Attah (2012) who also shares the same opinion. It is believed that with formal education, the women will be able to improve on their enterprises, can easily source for funds, and organize themselves into cooperative societies and become more efficient (Bello *et al.*, 2016). The mean years spent in school was 8 years, implying a low literacy level.

4.1.4 Years spent in formal education

The results in Table 4.1 also show the number of years spent in formal education. It shows that 39.5% spent about 12 years in school, 33.1% spent 6 years in formal school and 14.1% spent above 12 years in school with the mean years spent in school as 8 years, implying that members of cooperative societies assessed support of various kinds from formal institutions without the help of educated persons which would improve the cooperative activities. This agrees with Attah (2012) who also shares the same opinion.

Conversely, Nwosu and Okon (2013) found that a high proportion (85%) of women oil palm processors in AkwaIbom State of Nigeria were educated. Education is important for efficient and successful running of an enterprise. It is believed that with formal education, the women will be able to improve on their enterprises, can easily source for fund, and organize themselves into cooperative societies and become more efficient (Bello *et al.*, 2016). These results imply that the women processors will be more receptive to information and thereby increase their income.

4.1.5 Household size

It is also evident in Table 4.1 that the mean household size of the respondents was 10 persons, implying large household size that could be of immense benefits to processors in the area of availability of family labour. Large households are expected in this part of the country where many polygamous homes exist. This assertion is in consonance with Folorunsho and Okoroji (2015) who agreed that large household has a great capacity of reducing the incidence of food insecurity at both household and community levels. The finding is similar to that of Jamilu *et al.* (2014) who found rural households in Kaduna State to have an average of 11 members. In contrast, the findings of Nnadi *et al.* (2014), Dimelu *et al.* (2014) and Chah (2014) from Southern part of Nigeria that is mostly dominated by monogamous households have reported an average of 5 members per households. This implies that the women groundnut processors in the study area might have the advantage of family labour availability if many household members assist in the processing business

4.1.6 Years of experience

Findings in table 4.1 indicated that the mean groundnut processing experience of the respondents in the study area of 12.9 years which is a relatively appreciable period of time

to understand all the complex aspect involved in groundnut processing activities. This indicates that the respondents have many years of processing experience. This could have positive implication for the business as it is expected that the higher the women's years of experience the better their productive capacity because of the knowledge accumulated by the women on the pros and cons of the business over the years. This agreed with Umar *et al.* (2020) who reported high experience among groundnut processors in Zamfara State, Nigeria. Mustapha (2011) reported between 13 years of experience among groundnut processors in Kaduna State, Nigeria. Ahmad (2017) reported between 1-10 years of experience among groundnut processors in Niger State, Nigeria.

4.1.7 Institutional factors related to the respondents

Institutional factors (such as access to training and source of training, types of training received, access to credit, amount and source of credit and years of cooperative membership) that relate to the respondents are discussed in this section.

4.1.7.1 Access to training

The findings in Table 4.2 indicates that majority (71.2%) of the respondents had received training in the last 3 years, while 28.8% had never received training. This implies that majority of respondents have received one form of training on groundnut processing. However, access to training is expected to improve skills and methods involved in the processing of groundnut. This finding is in consonance with Tsado *et al.* (2014) who reported that training of farmers should be given topmost priority to improve their skills and knowledge on improved practices in order to increase their productivity Table 4.2 furthered indicated that 63.7% of the respondents receive trainings from NGOs while 25.3% receive

trainings from ADP. This was contrary to Pelemo *et al.* (2019) who reported that ADP was the major source of training among rural farming populace in Niger State, Nigeria.

4.1.7.2 Types of training received

Result in table 4.2 showed the type of trainings received by the women groundnut processor indicating majority (83.6%) received trainings on storage of groundnut seeds while 79.5% received training on processing of groundnut. Also, 73.3% and 72.6% received trainings on packaging/labeling and handling of machineries respectively. This finding implies that majority of the respondents received different kinds of training and this could play important roles in increasing their output.

4.1.7.3 Access to credit

Results in Table 4.2 indicated that about 74.2% of the respondents had access to credit to finance their activities in the last three year and 25.9% had no access to credit. This implies that majority of the respondents had access to credit. Access to credit will enable women groundnut processors to purchase inputs and other incentives that would maximize their output. This agrees with Attah (2012) who indicated credit facilities by members of cooperative as well as one of the expected benefits members usually enjoy by being part of cooperatives. But on the contrary, the study from Shuaibu (2015) stated that women processors had low access to credit. Other studies (Sheheli, 2012; Umar *et al.*, 2014; Chah *et al.*, 2014) had similarly revealed that majority of small-scale farmers and women in micro-enterprising do not have access to credit. The low access to credit may be due to complexity of the procedure for obtaining credit especially in formal financial institutions as well as lack of collateral.

Table 4.2: Distribution of respondents based on Institutional Factors Related to the respondents

Variables	Frequency	Percentage	Mean
Access to training			
Yes	146	71.2	
No	61	28.8	
Sources of training			
ADP	37	25.3	
NAMDA	16	11.0	
NGO	93	63.7	
Types of training received*			
Storage of groundnut seeds	122	83.6	
Processing of groundnut	116	79.5	
Packaging/ labeling	107	73.3	
Handling of machineries	106	72.6	
Advertising and marketing	68	46.6	
Access to credit			
Yes	152	74.2	
No	53	25.9	
Sources of credits			
Friends and family	44	28.9	
Commercial banks	6	3.9	
Cooperative	61	40.1	
Microfinance	15	9.9	
Agricultural banks	19	12.5	

FG's trader Moni scheme	7	4.6	
Amount received ₦ over a period of 1 year			
≤500000	47	30.9	80,947.30
50000-100000	69	45.4	
>100000	36	23.9	
Percentage of repayment over a period of 1 year			
1-5	21	13.8	
6-10	64	42.2	
11-15	66	43.4	
>15	1	0.7	
Status in cooperative			
Ordinary member	160	78.1	
Official member	45	21.9	
Years of cooperative membership			
1-10 years	170	82.9	7.7
11-20	34	16.6	
>20	1	0.5	

Source: Field survey, 2019.

*Multiple responses

4.1.7.4 Sources of credit

Table 4.2 revealed that major source of credit for the business is from cooperative society (40.1%) followed by friends and family (28.9%) and agricultural banks (12.5%). The implication is that cooperative was the major sources of credit processors in the study area. This might due the fact farmers generally did not own much assets and landed properties in

good locations, which might make it difficult for them to access credit from formal and microfinance banks. Also, this might be due to high interest rate charged by financial institutions.

4.1.7.5 Amount received and percentage of repayment over a period of 1 year

Results in table 4.2 revealed that 45.4% of the respondents had access to about ₦51000-₦100000 Naira, while 30.9% of the respondents had access to less than ₦50000. The mean amount received is ₦80, 947. This implies significantly low amount received. Table 4.2 furthered revealed that 43.4% had paid between 11-15 percent of credit received in the past 12 months while 42.2% had paid between 6-10 percent of credit received in the last 12 months. This finding implies that only small fraction of the credit has been paid.

4.1.7.6 Status and years of cooperative membership

Results in Table 4.2 indicated that majority of the respondents (78.1%) are ordinary members while 21.9% are officials in the cooperative societies. This indicated that larger percentage of the respondents were ordinary members of cooperative society. This might be owing to the fact that there are lesser official members which are mostly the executive of the cooperative. Also, the mean year spent in cooperative was 7.7 years, implying that respondents are not naïve and have more experience in cooperative. The implication is that it is easier to reach these women in groups for purposes of information dissemination and new women's empowerment programs that may be introduced in the area (Shuaibu, 2015).

4.1.7.7 Extension access

The result on extension visit in Table 4.3 shows that 56.6% of the groundnut women processors were visited by extension agents while 43.4% had not been visited by extension agent. This implies that more than half of the respondents had accessed to extension and

advisory services. It is expected that extension visits are always accomplish with knowledge dissemination that is expected to improve wellbeing of women groundnut processors in the study area. This is in contrary with a study from Usman (2014) who reported that majority of farming populace in Nigeria were not access by extension and advisory services.

4.1.7.8 Number of extension contact in the last three years

Table 4.3 revealed that 90.5% of them were visited between 1-2 times while 9.5% were visited between 3-4 times in the last one year. The average extension visit to the respondents was once in a year. This implies that extension agent's visitation to women groundnut processors was not frequent. This could be as a result of under staff of extension agent by ADP and logistics. The recommended visit schedules of village extension agents under the T&V system is two extension visits per month (Shuaibu, 2015). The findings may be attributed to several reasons, extension outfits in the country particularly the public extension system, are constrained by poor funding, inadequate extension professionals, poor infrastructural facilities and several other institutional and administrative bottlenecks (Dimelu *et al.*, 2014). The low level of extension visits has negative implication on the productivity of the women as lack or poor access to extension services deprives them the opportunity of embracing new improved technologies/practices and access to useful information.

4.1.7.9 Major source of groundnut for processing

Table 4.3 showed that 60.0% of the respondents source of groundnut from market while 30.2% sourced from personal farm 30.2%. Also, 15.6% source from cooperative societies while 12.6% source from family and friends. This study established that market was the major sources of inputs. This might be attributed to the fact that majority of the respondents

do not engage in production and only interested in getting produce from market or other available place.

Table 4.3: Distribution of respondents according to access to extension services, number of visits and source of groundnut for processing

Variables	Frequency	Percentage	Mean
Extension contact(n=205)			
Yes	116	56.6	0.93
No	89	43.4	
Number of extension contact(n=116)			
1-2 times	104	89.7	
3-4 times	12	10.3	
Major source of groundnut*			
Personal farm	62	30.2	
Cooperative	32	15.6	
Market	123	60.0	
Friends and relatives	5	2.4	

Source: Field survey, 2019

*Multiple responses

4.1.8 Method of processing groundnuts

4.1.8.1 Traditional methods

Table 4.4 showed that majority (50.1%) of the respondents stores groundnut seeds in woven bags/ sacks, 23.3% in baskets and 10.5% stores groundnut seeds in plastic containers. The table also shows that majority of respondents practice roasting method. 97.1% roast groundnut seeds in the traditional way by using fire woods and 17.1% uses charcoal to roast. This implies that roasting and storage were the most common traditional method processing methods used by respondents in the study area. This finding agreed with Bello *et al.* (2016) who reported that storage is one of the most used traditional methods of processing groundnut in Jigawa State, Nigeria. Also, 71% and 60% used shelling/decorting and frying. This implies that most of the respondents utilized shelling and frying of groundnut in the study area. Other findings showed that 50.2% and 34.6% of women groundnut processors used grinding machine to grind groundnut into paste and cake molding respectively.

4.1.8.2 Modern methods

Result in table 4.4 revealed that 22.4% and 13.6% used oil extraction expeller machines and cake drier while 10.7% and 2.9% used cooking machine and pressing machine. This finding revealed that majority of the respondents did not use modern methods of groundnut processing. This might be due to high cost of acquiring that machines that could not be afforded by most of the farmers and cooperative in the study area. This finding contradicts that of Bello *et al.* (2016) who reported high utilization of modern processing methods among groundnut farmers in Jigawa State, Nigeria

Table 4.4 Distribution respondents according processing methods (n=205)

Variables	Frequency	Percentage	Ranking
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Traditional methods

Roasting of gnut seeds			1 st
Firewood	199	97.1	
Charcoal	35	17.1	
Storage of gnut seeds	95	50.1	2 nd
50kg woven bags	30	10.5	
Plastic containers	47	23.3	
Baskets			
Shelling/decorticing			3 rd
By hand	60	19.5	
Use of sticks/pestles	100	61.5	
Frying	123	60	4 th
Grinding using diesel machines	103	50.2	5 th
Cake molding by hand	71	34.6	6 th
Sun drying	69	33.7	7 th
Crushing using pestles	67	32.7	8 th
Oil extraction by hand pressing	60	29.3	9 th
Scorching	43	20.9	10 th
Pasting by machines	39	19.0	11 th
Removal of haulms	36	17.6	12 th
Rolling by hand	21	10.2	13 th

Modern methods

Oil extraction expeller machineries	46	22.4	1 st
Groundnut cake drier	28	13.6	2 nd
Cooking machine	22	10.7	3 rd

Pressing machine	12	2.9	4 th
Rolling machine	2	0.9	5 th

Sources: Field survey, 2019.

4.2 Level of Women Involvement in Cooperative Societies

4.2.1 Requirements for membership

Results in table 4.5 showed that majority (98.1%) were groundnut processors while 4.9% and 0.5% used indigene ship and stated there is no requirement before becoming a member. This shows that been a groundnut processors granted them opportunity of belonging to cooperative society without stress. It could be seen that the cooperative society in the study area had membership criteria open to all women groundnut processors. This agrees with Attah (2012) that in arrangement of processors cooperative society that there is open membership.

Table 4.5: Requirement for membership of cooperative societies

Variables*	Frequency	Percentage
No requirement	1	0.5
Must be a groundnut processor	201	98.1
An indigene	10	4.9

Source: Field survey, 2019.

*Multiple responses

4.2.2 Reasons for joining cooperative

Table 4.6 revealed that 90.2% of the women processors joined cooperative so as to have access to credit, 72.2% joined so as to get processing input, 71.2% so as to have easy access to market and 60.9% to get dividend. This implies that majority of the women joined cooperative societies so as to have access to credits so as to expand their business. This

entails that the groundnut processors were highly engaged in cooperative activities. This agrees with Mohammed (2014) who posits that membership of associations added to dissemination of agricultural innovations. It is expected that membership of processors organization could influence respondents participation in cooperative.

Table 4.6: Showing respondents reasons for joining cooperative societies

Variables	Frequency *	Percentage
To get dividend	125	60.9
To get processing inputs	148	72.2
To have access to credit	185	90.2
Access to market	146	71.2

Source: Field survey, 2019.

*Multiple responses

4.2.3 Cooperative activities engaged in by members of the women cooperative societies

Results in table 4.7 showed the activities engaged in by the women cooperative members. It can be seen that attending meeting (96.6%) ranked 1st, implying that majority of the respondents in the study area attend meetings on regular basis. This might be due to ideas and benefits embedded in regular attendance of meeting ranging from sharing of ideas, access to improved practices, loans and other inputs. Also, saving to raise share (80.5%) ranked 2nd. Cooperative membership assists members to save fund and purchasing of shares for future purposes. Moreover, saving money together (74.2%) ranked 3rd, showing that cooperative membership grant members ability to save fund and also access fund in term of emergency of inevitable needs.

More so, voting/ election (65.9%) ranked 4th, implying that each members of cooperative could participate in the election aim at electing new executives. Other activities involved include borrowing of loans (64.9%), attending social activities (56.1%), approving rules of law (52.7%), sales of processed groundnut (51.2%) and buying of inputs (31.4%) ranked 5th, 6th, 7th 8th and 9th respectively. This agrees with Barnabas *et al.* (2019) who reported that cooperative membership of cooperative societies increases farmers access to timely and speedy access to inputs, market information and innovation that will enhance farmers' income and livelihood. The researchers furthered revealed that cooperative membership grant farmers access to soft loan that will boost their production. The findings agreed with that of Martey *et al.* (2014), who stated that cooperatives membership is expected to open avenues for income generation that will enhance farming activities.

Table 4.7: Distribution of respondents based on their involvement in cooperative activities/services

Variables	Frequency*	Percentage	Ranking
Attending meetings	198	96.6	1 st
Saving to raise share	165	80.5	2 nd
Saving money together	152	74.2	3 rd
Voting /election	135	65.9	4 th
Borrowing of loans	133	64.9	5 th
Attending social activities	115	56.1	6 th
Approving rules of law	108	52.7	7 th
Sales of processed groundnut	105	51.2	8 th
Buying inputs	64	31.4	9 th

Sources: Field survey, 2019

*Multiple responses

4.2.4a Level of involvement/participation in cooperative activities/services scores

Results in Table 4.8a revealed that 56% of respondents had score of between 4-6 while 33.2% had score of between 7-9. The mean score was 5.7, implying that respondents in the study area had significant level of involvement in cooperative activities. This is expected to increase their accessibility to vital information that would enhance their output and subsequently improved their income.

Table 4.8a: Distribution of respondents according to level of involvement scores

Participation scores	Frequency	Percentages	Mean
2	3	1.5	5.7
3	19	9.3	
4	49	23.9	
5	43	20.9	
6	23	11.2	
7	7	3.4	
8	35	17.1	
9	26	12.7	

Sources Field survey, (2019)

4.2.4b Level of involvement in cooperative activities/services

Table 4.8b revealed that 56.1% of the respondents had moderate level of involvement in cooperative activities/services while 33.2% had high level of involvement. This implies that more than half of women groundnut processors had moderate involvement, which is an indication of slightly participation in cooperative activities and this is expected to influence processors access to income, training and improved practices that could be of major boost to their output in the study area. This finding contradicts Bello *et al.* (2016) who reported

low level of participation improved groundnut among women groundnut processors in Jigawa State, Nigeria

Table 4.8b: Distribution of respondents according to level of involvement in cooperative activities/services

Level of participation	Frequency	Percentages
Low level of involvement (1-3)	22	10.7
Medium level of involvement (4-6)	115	56.1
High level of involvement (7-9)	68	33.2

Sources Field survey, (2019)

4.3 Factors influencing involvement of women groundnut processors in cooperative societies

Table 4.9 showed the ordered logit regression was used to determine factors influencing involvement of women groundnut processors in cooperative societies. The results showed Pseudo R² of 0.4430, implying that about 44.3% of variation in involvement of women groundnut processors in cooperative societies were explained by the independent variables included in the model, while the remaining 55.7% were due to error and external factor not captured by the researcher. The chi-square statistics 69.78 was significant at 1% level of probability indicating fitness of the model. From the Z values, eight out of the fourteen variables included in the model were statically significant at 1%, 5% and 10% in the result.

Table 4.9: Factors influencing participation in cooperative societies

Variables	Coefficient	z-value
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Age	-.147616	-3.28***
Marital status	.5098638	0.91
Years spent in school	.0332896	0.84
Household size	.0740513	3.04***
Experience	.0606943	1.89**
Method of processing	.2444424	0.73
Access to trainings	.9198359	2.81***
Access to credit	.9198359	1.98**
Amount received	5.91e-06	1.90**
Annual income	5.52e-08	0.52
Total labour employed	-.8208339	-1.69*
Amount invested	5.26e-06	2.55***
Number of extension contact	5.26e-06	1.38
Years in cooperative	.0228194	0.49
Log likelihood	-155.73034	
Chi square	69.78***	
Pseudo R2	0.4430	

Sources: Field survey 2019

*** significant at 1% level of probability, **=Significant at 5% level of probability,

*=significant at 10% level of probability

The coefficient for years of experience (.0606943) was positively significant at 5% level of probability. This implies that any increase in experience will lead to a corresponding increase in the membership of cooperatives. This is expected because with experience, the women processors are aware of the numerous benefits emanating from being members and also the more years the women spent on groundnut processing the more the tendencies to gain more

confidence involving in cooperative societies. This result is in tandem with the findings of Mbagwu (2018) where farming experience of cooperators were determinants of participation and cooperative membership in Abia State, Nigeria. More so, the coefficient of amount of loan received ($5.91e-06$) is positive and significant at 5% level of probability, implying that if members receive substantial amount of loan, they will continually remain members of cooperative societies and this will also enable them invite more people to join cooperative societies. Results from Table 4.9 also revealed that the coefficient of total labour employed ($-.8208339$) was negatively significant at 10% level of probability. Amount invested was also a factor which influences participation in cooperative societies.

4.4 Income of Women Groundnut Processors

4.4.1 Annual income from groundnut processing

Results in Table 4.10 showed majority (75.6%) of the respondents had an average annual income of above ₦400,000, with a mean annual income of ₦908,752.7. This signifies large income among the respondents, implying that groundnut processing had significant effect on the income of processor. This marks a great improvement on earlier study by Ogunbameru *et al.* (2010) that 53%-70% of women are living below the poverty line, earning less than \$1.00 per day. This indicates that majority of the women who participated in cooperative activities earned the average income to put them above the poverty line. The findings also indicated that the women processors are moderate income earners and this is expected to influence their involvement in cooperative societies. It is expected that moderate income could assist women processors financially in seeking for new techniques, skills and knowledge that will enhance their income and livelihood.

4.4.2 Secondary occupation of respondents

Results in Table 4.10 revealed that 63.1% of the respondents were into fishing, 50.7% were into farming, while 33.7%, 7.8% and 5.9% of the women processors were traders, artisans and civil servants respectively. This implies that majority of the processors had secondary occupation through which they generate more income for their family. The result agreed with Mohammed (2014), who stressed that secondary occupation enable farmers to diversify their sources of income in order to manage risk and diversify their source of livelihood.

Table 4.10: Distribution of respondents based on average annual income from groundnut processing and from secondary occupation (n=205)

Variables	Frequency	Percentage	Mean(₦)
Annual income from groundnut processing			
≤100000	2	0.9	908,752.7
100000-200000	5	2.4	
201000- 300000	14	6.8	
301000- 400000	29	14.2	
>400000	155	75.6	
Secondary occupation			
Fishing	75	63.1	
Farming	104	50.7	
Artisan	16	7.8	
Civil servant	12	5.9	
Trading	69	33.7	
Income from secondary occupation			
≤100000	33	16.1	166,732.2
101000-200000	59	28.8	
>200000	65	31.7	

Source: Field survey, 2019.

4.4.3 Annual income from secondary occupation

Table 4.10 revealed the annual income from secondary occupation. It revealed the average annual income from a secondary occupation to be ₦166,732.2 implying that most substantial amount of the respondents annual income comes from groundnut processing. That is, ₦13,000 as an extra income is being added to their monthly income.

4.4.4 Frequency of Processing of Groundnut

4.4.4.1 Groundnut cake

Table 4.11 revealed that 40.5% of the respondents in the study area processed groundnut into cake on a daily basis, 17.1% process twice weekly, 9.8% thrice weekly and 7.8% once in a week. The table further revealed 74.2% of the respondents processing into groundnut cake revealed that there is significant increase in quantity of groundnut processed after joining cooperative societies in which more than half (52.6%) of the respondents witnessed >50% increment. The implication of this is that significant increase in quantity of groundnut processed is due to cooperative membership.

4.4.4.2 Groundnut oil

Table 4.11 showed that 48.8% of the respondents in the study area processed groundnut into cake on a daily basis, 20.5% process twice weekly, and 6.3% thrice weekly and 13.2% once in a week. Table 4.11 further revealed 85.9% of the respondents processing into groundnut oil revealed that there is significant increase in quantity of groundnut processed after joining

cooperative societies in which 61.9% recorded ≤ 50 increment. The implication of this is that significant increase in quantity of groundnut processed is due to cooperative membership.

4.4.4.3 Dankwa

Table 4.11 revealed the frequency of processing groundnut into dankwa. It shows that majority are not so involved into dankwa production unlike groundnut cake and oil. It is revealed that 41.5% of the respondent's processes into dankwa on a daily basis and 51.2% have no significant increase in quantity after joining cooperative. This may be as a result that dankwa is not mostly consumed by majority of individuals and consumed locally; it is also not mostly transported to far places due to its nature unlike groundnut oil and cake.

Table 4.11: Distribution of respondents based on frequency of processing cycle and record of significant increase of processed groundnut (n=205)

Variables	Frequency	Percentage
Groundnut cake		
Daily	83	40.5
Twice weekly	35	17.1
Thrice weekly	20	9.8
Weekly	16	7.8
None	51	24.9
Record of significant increase after joining cooperative		
No increase	53	25.8
Increase	152	74.2

Percentage of increment

<50	72	47.4
≥51	80	52.6

Groundnut oil

Daily	100	48.8
Twice weekly	42	20.5
Thrice weekly	13	6.3
Weekly	27	13.2
None	23	11.2

Record of significant increase after joining cooperative

No increase	29	14.2
Increase	176	85.8

Percentage of increment

<50	109	61.9
≥51	67	38.1

Dankwa

Daily	85	41.5
Thrice weekly	4	1.9
Weekly	8	3.9
None	108	52.7

Record of significant increase after joining cooperative

No increase	105	51.2
Increase	100	48.8

Percentage of increment

<50	71	71.0
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Source: field survey, 2019.

4.4.5 Quantity of groundnuts processed into groundnut cake before and after joining cooperative society on a monthly basis

Results in table 4.12 showed the quantity of groundnut processed per month into groundnut cake before and after joining cooperative societies. It reveals that about 13.1 bags of groundnuts' are being processed monthly before joining cooperative societies and about 20 bags are processed after joining cooperative societies on a monthly basis. The result also indicates t-value of (-6.7414) which is significant at 1% level of significance. This implies that there is significant increase in quantity of groundnut cake processed after joining cooperative societies. This may be as a result of access to loan, marketing of products and other benefits associated with being members of cooperative societies.

Table 4.12: Quantity of groundnuts processed into groundnut cake, groundnut oil and dankwa before and after joining cooperative society

Products	Before	After	t-value
Ground cake(kg)	13.06341	19.80488	-6.741463***
Groundnut oil(litres)	17.67805	24.64878	-6.97032***
Dankwa(kg)	1.093137	1.887255	-0.794118***

Source: Field survey, 2019.

4.4.6 Quantity of groundnuts processed into groundnut oil before and after joining cooperative society on a monthly basis

The results in Table 4.12 revealed that about 18 bags of 100kg of groundnuts' are being processed monthly before joining cooperative societies and about 25 bags are processed after joining cooperative societies on a monthly basis. With t- value of (-6.9703) implying 1% level of significance. This implies that there is significant increase in quantity of groundnut oil processed after joining cooperative societies.

4.4.7 Quantity of groundnuts processed into Dankwa before and after joining cooperative society on a monthly basis

Table 4.12 showed the quantity of groundnut processed per month into dankwa before and after joining cooperative societies. It reveals that about 1.1 bags of groundnuts are being processed monthly before joining cooperative societies and about 1.8 bags are processed after joining cooperative societies on a monthly basis. The result also indicates t-value of (-0.79411) which is significant at 1% level of significance. This implies a slight increase in dankwa production after joining cooperative societies. This may be as a result that dankwa is not mostly consumed by majority of individuals and consumed locally; it is also not mostly transported to far places due to its nature unlike groundnut oil and cake.

4.5 Effect of cooperative societies on income status of groundnut processors

The result of the regression model showing effects of cooperative societies on groundnut processing in the study area is presented in Table 4.13. The result of the multiple regression analysis showed R^2 value of 0.4324 which implies that 43% variation in income from groundnut processing in the study area was explained by the independent variables included in the model. Exponential log function gave the best fit due to its number of significant

variables with the best fit of 43%. The coefficient of trainings received (0.1755152) was positively significant at 1% level of probability, implying that increase in trainings received will have significant impact on ground nut processors. This might be owing to the fact that training tend to expose processors to new way of processing and handling of groundnut that would have a long positive effect on their income. This agreed with Azumah *et al.* (2017) who found that farmers who attended trainings had a greater probability of adopting the new innovations. Also, the coefficient level of involvement (0.0128063) was positive but significant at 10% level of probability, implying that level of involvement in cooperative activities have significant effect on groundnut processors in the study area.

Moreover, the coefficient of status in cooperative societies (0.2684209) was positively significant at 10% level of probability. This result indicates that being an official in the cooperative society helps member access to more funds and benefits more than ordinary member of the cooperative society and thus leads to an increase in income. This agreed with Shuaibu (2015), who reported that status of cooperative is expected to have significant effect on membership participation. More so, the coefficient of age (-1580699) was negatively significant at 1% level of probability, implying that as women groundnut processors get older, their participation in cooperative reduces and this may also lead to decrease in their income. This is in consonance with the findings by Abdullahi and Tashikalma (2016) who stated that as farmers advance in age, they tend to resist the use of new farm innovation that will improved their income.

Table 4.13: Effect of cooperative societies on income of groundnut processors

Variables	Linear		Semi-log		Double log		Exponential	
	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value	Coefficient	t-value
Years in cooperative	55.83486	0.04	-1456.674	-0.13	-.0142044	-0.11	.0083572	0.47
Amount of loan obtain	-.0046499	-0.07	15393.46	1.42	-.0547154	-0.43	-6.31e-07	-0.87
Training received	16481.08	2.70***	42436.01	3.55***	.4940483	3.54***	.1755152	2.60***
Market assistance from cooperative	-4489.33-0.38		-7037.789	-0.41	-.2970278	-1.49	-.1598545	-1.19
Level of involvement	1129.568	1.72	44406.76	1.60	.6215344	1.92**	.0128063	1.72*
Amount save from cooperative	-.002092-0.53		-1628.171	-0.16	-.0132706	-0.11	7.70e-09-0.17	
Status in cooperative	26661.16	1.88*	33760.81	1.73*	.4235852	1.86*	.2684209	1.69*
Age	-10066.89	-3.32***	-34916.69	-1.81*	-.7153305	-3.12***	-.1580699	-4.64***
Constants	69208.81	0.062*	-161919.5	-1.12	10.75084	6.36***	11.21963	26.81***
F-value	1%		1%		1%		1%	
R-square	38.7		40.2		41.8		43.2	
Adjusted R-square	35.3		36.9		38.6		40.1	

Sources: Field survey, 2019

*** 1% level of significant

** 5% level of significant

4.6 Benefits enjoyed as members of cooperative societies

4.6.1 Supports from Non- governmental Organizations and Government Organizations by cooperative societies

Results in table 4.14 revealed that about 65.4% of the respondents in the study area benefits from Governmental organizations. This implies that most of women groundnut processors benefitted from support rendered by government organizations in the study area. Further findings revealed that 45.5% benefitted from Fadama programme while 20.5% received trainings and sensitization from NGOs while 22.2% benefitted from Government machinery hiring. Also, 14.2% received support from saving mobilization scheme while only (8.9%) benefitted from FG farmers moni. However, it is expected that various support programme from government could play important roles in increasing the output of groundnut processors through training and inputs support which would go a long way in increasing their participation and commitment in cooperative activities.

Table 4.14 showed that only (20.9%) of the respondents benefitted from NGOs intervention while majority (79.1%) did not benefit. This implies that NGOs do not play active roles for women groundnut processors in the study area. This might be owing to inadequate financial strength of most NGOs in the study area. Further findings showed that cooperative societies (60.5%) top the list of NGOs in the study area while 39.5% are women assisted groups. This implies that majority of NGOs that assisted women in the study area are cooperative societies. Table revealed that 95.3% of the respondents benefited from trainings and sensitization from NGOs while 93.0% benefitted from financial supports. These are not least expected because majority of Government Organizations and NGOs in Nigeria offered training and financial support to rural populace with the motive of improving their output.

Table 4.14: Distribution of respondents based on benefits supports derived from NGOs and Government Organizations by cooperative societies

Variables	Frequency	Percentage
Benefit from Government intervention programmes		
Yes	134	65.4
No	71	34.6
List of Government intervention benefitted		
Subsidy on machine equipment	4	2.9
FG Farmers Moni	12	8.9
State government loan	8	5.9
Fadama programme	61	45.5
Government machinery hire	30	22.2
Savings mobilization scheme	19	14.2
Benefit from NGOs intervention programmes		
Yes	43	20.9
No	162	79.1
List of NGOs		
Cooperative societies	26	60.5
Women group	17	39.5
Types of benefits from NGOs*		
Financial support	40	93.0
Training and sensitization	41	95.3

Source: field survey, 2019

* Multiple responses

4.6.2 Benefits enjoyed by members of cooperative societies

Result in Table 4.15 revealed a Kendall's coefficient of concordance obtained in the analysis was 0.148 and significant at 1% level of probability, suggesting that 15.0% of the respondents agreed

on the outcome of the ranking which showed a weak agreement on the outcome of ranking. Table 4.13 showed that access to market information ($\bar{X} = 4.65$) ranked first as the most benefits enjoyed by members of cooperative societies, implying there are unhindered flows of market information among members of cooperatives with the hope of getting them updated regards to changes in prices and other sensitive information aimed at enhancing their out. Acquisition of skills and training ($\bar{X} = 4.39$) ranked 2nd, showing that access to skills and training is part of benefits embedded in being a member of cooperative this is owing to the fact that majority of government intervention programme most focused on associations and cooperative societies rather than individual farmers.. Further findings showed that availability of processing inputs, linkages with markets, access to loan as easy transportation were ranked 3rd, 4th, 5th and 6th respectively. This is in agreement with the findings of Basorun and Fasakin (2012) who indicated that access to market information and easy access to loan were one of the benefits of cooperative society in Ekiti State, Nigeria.

Table 4.15: Distribution of respondents according to benefits enjoyed by members of cooperative societies (n=205)

Variables	Mean (\bar{x})	Ranking
Access to market information	4.65	1 st
Acquisition of skills and training	4.39	2 nd
Availability of processing inputs	4.22	3 rd
Linkage with market	4.05	4 th
Access to loans	3.59	5 th
Easy transportation	2.79	6 th
Kendall's W	0.148	
Chi-Squared	181.796	

Degree	6
<u>Asymptotic significant</u>	0.000

Source: field survey, 2019

4.7: Constraints faced by women groundnut processors

Results in table 4.16 showed the constraints faced by women groundnut processors in the study area. The result revealed that high cost of fuel wood was the major constraint faced by the respondents with mean value of ($X = 2.76$). This was followed by high cost of processing equipments with mean value of ($X = 2.56$). Inadequate capital ranked third with mean value of ($X = 2.54$). This finding is in agreement with (Mohammed 2014) whose study revealed that women face a number of barriers to obtain credit from lending institutions because most of them have no collateral. The implication of this is that, inadequate capital will limit the scope and potential to expand their business enterprises.

Also, High cost of electricity ranked 4th with mean value of ($x = 2.49$), while erratic power supply ranked 5th with mean value of ($x = 2.40$). This implies that high cost of electricity and erratic power supply were part of the major constraints faced by women groundnut processors in the study area. This finding agrees with Aboki (2015), who reported that most labour/energy saving processing machines was electrically operated. Their being put to use was hampered by unavailable electricity. It was also noted that inadequate electricity increased operation cost in diesel and petrol and also led to capacity underutilization of machines. Electric operated machines did more jobs and cleaner products than diesel operated machines. Other constraints faced by the respondents are Lack of credit facilities which also ranked 5th with mean value of ($x = 2.4$), high cost of transportation which also ranked 5th with mean value of ($x = 2.39$), high cost of groundnut seeds ranked 8th with mean value of ($x = 2.31$). This has to do with seasonal harvest of groundnut. The

raw groundnut becomes scarce and costly during the off season, so that processors could not maintain processing activities throughout the year.

Respondents also agreed that theft of processed groundnut is also a constraint faced by them, this ranks 9th with mean value of ($x=2.24$) this might be due to lack of secured environment and proper storage facility. Seasonality of groundnut seeds ranked 10th with mean value of ($x=2.17$) its supply is usually available only during one or two brief periods in the year. The demand for groundnut oil and groundnut cake is relatively constant throughout the year. Therefore, processors must contend with a supply imbalance and problems of inventory management, production scheduling and coordination among processing and marketing segments of the processors-to-consumer chain. Seasonality also leads to a shortage in the working capital available to handle the bulge in expenses and the heavy financial cost of carrying the inventory. A similar finding was also made by Samuel and Ocholi. (2017) in their study of analysis of costs and returns of groundnut processing in Taraba State, Nigeria.

Inadequate labour ranked 11th with mean value of ($x=2.13$). This implies that most of the women processors make up of family labour. This constraint was followed by fluctuation of prices of inputs with mean value of ($x=2.11$) and fluctuation of prices of output with mean value of ($x=2.09$). This implies that input and outputs of groundnut processing do not have a stable or fixed price and this affects the women groundnut processors. Low patronage ranked 14th with mean score of ($x=1.98$), unavailability of high yielding seed ranked 15th with mean score of ($x=1.92$), processors prefer using raw groundnut with high oil content, since their profit depends on the quality and quantity of groundnut oil and groundnut cake they produce, and the aim of every business is to make profit. However, this groundnut variety is mostly unavailable or expensive. Scarcity of

groundnut seeds was the least constraint faced by the respondent which ranked 15th.with mean value of (\bar{x} =1.76).

Table 4.16: Distribution of respondents based on constraints faced by women groundnut processors

Constraints	Severe	Not severe	Not a constraint	Weighted sum	Weighted mean	Rank
High cost of fuel wood	156(76.1)	48(23.4)	1(0.5)	565	2.76	1st
High cost of processing equipment	121(59.0)	78(38.1)	6(2.9)	525	2.56	2nd
Inadequate capital	114(55.6)	88(42.9)	3(1.5)	521	2.54	3rd
High cost of electricity	115(56.1)	77(37.6)	13(6.3)	512	2.49	4th
Erratic power supply	101(49.3)	86(41.9)	18(8.8)	493	2.40	5th
Lack of credit facilities	91(44.4)	105(51.2)	9(4.4)	492	2.40	5 th
High cost of transportation	86(41.9)	114(55.6)	5(2.4)	491	2.40	5th
High cost of groundnut seeds	79(38.5)	112(54.6)	14(6.8)	475	2.31	8th
Theft of processed groundnut	63(30.9)	129(63.2)	12(5.9)	459	2.24	9th
Seasonality of groundnut seeds	53(25.9)	134(65.4)	18(8.8)	445	2.17	10th
Inadequate labour	48(23.4)	135(65.9)	22(10.7)	436	2.13	11th

Fluctuation of prices of inputs	42(20.5)	143(69.8)	20(9.8)	432	2.11	12th
Fluctuation of prices of output	48(23.4)	129(62.9)	28(13.7)	430	2.09	13th
Low patronage	62(30.2)	76(37.1)	67(32.7)	405	1.98	14th
Unavailability of high yielding seed	32(15.6)	125(60.9)	48(23.4)	394	1.92	15th
Scarcity of Gnut seeds	44 (21.5)	68(33.2)	93(45.4)	361	1.76	16th

Source: field survey, 2019

4.8 Hypotheses Tested

4.8.1 Hypothesis I

The result in the Table 4.17 revealed that there was a significant relationship between the level of involvement in cooperative societies and some selected socio-economic characteristics. Coefficient of age (-0.2553) was negatively significant at 1% level of probability, implying that as women groundnut processors age increases in age, their level of involvement decreases. The coefficient of experience (-0.1774) was negative and significant 1% level of probability, which is an indication that there is an inverse relationship between experience and women's Involvement in cooperative societies. However the null hypothesis that stated that there is no significant relationship between selected socio-economic characteristics of the respondents and their level of involvement in cooperative societies is rejected.

Table 4.17: Relationship between socioeconomic characteristics of respondents and their level of involvement in cooperative societies

Variables	P	R	Decision
Age	0.0002***	-0.2553	Significant
Household size	0.9164	-0.0074	Not significant
Experience	0.0109***	-0.1774	Significant

Marital status	0.5776	-0.0391	Not significant
Educational level	0.2209	0.2209	Not significant
Access to credit	0.2519	0.0804	Not significant
Number of extension visit	0.1000	0.1152	Not significant

Source: Field survey, 2019

*** Significant at 1%, P = probability level, r= coefficient

4.8.2 Hypothesis II

Results in Table 4.18 showed that there was a significant difference in income before and after with mean difference of $t= 6.6092$ which was also significant at 1% probability level, implying that involvement in cooperative societies had significant effect on income and output of women groundnut processors after joining cooperative societies. Table 4.8b showed there was a significant difference in the output of groundnut cake, oil and *dankwa* processed before and after with mean difference of $t=5.5721$ which was significant at 1% probability level. This finding implies that there was significant difference between output before and after joining cooperative societies. Therefore, the hypothesis which states that there is no significant difference between income and output from groundnut processing before and joining cooperative societies is rejected.

Table 4.18: Significant difference between income before and after joining cooperative societies

Variables	Mean	Standard deviation	T
Income before	44601.71	35442.23	6.6092***
Income after	77080	89724.08	

Source: field survey, 2019

Table 4.18b: Difference between output from groundnut cake, oil and *dankwa* processed before and after joining cooperative societies

Variables	Mean	Standard deviation	T
Output before	30.74146	46.61909	5.5721***
Output after	44.45366	70.86077	

Source: field survey, 2019

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

It can be concluded that women groundnut processors in the study area were in their active age and married. Also, majority of women groundnut processors had formal education. The findings

further revealed that most of the respondents processed groundnut in traditional ways. Further findings showed that majority of the respondents had access to training and credit facilities. More so, majority of the respondents joined cooperative to have access to credit and to get processing inputs. Attending meetings and saving to raise share were the most cooperative activities engaged by women groundnut processors. Moreover, more than half of the respondents had medium level of participation in cooperative activities while majority of the women who participated in cooperative activities earned the average income to put them above the poverty line.

The coefficient of age, household size, experience, access to training, access to credit, amount received, total labour employed and amount invested had influence on the level of participation in cooperative societies. Further findings showed that less than half of the respondents processed groundnut into cake and oil daily. More so, majority of the respondents processed groundnut into Dankwa. Further findings showed that the coefficient of training, level of involvement, cooperative societies, and age had significant effect on cooperative societies. Other findings showed that majority of the respondents benefitted from Governmental and Non-Governmental Organization. High cost of fuel wood, high cost of processing equipment's and inadequate capital were the major constraints faced by women groundnut processors.

5.2 Recommendations

The following recommendations were made based on the empirical findings of the study

- i. High cost of fuel wood was most severe constraint faced by women groundnut processors. Therefore, alternative methods other than electricity supply which is irregular should be made available for women groundnut processors. It is recommended that interested NGOs should provide solar power in order to reduce over-dependence on fuel wood.

- ii. High cost of processing equipment is one of the severe constraints faced by women groundnut processors. However, government should key in by ensuring the exorbitant prices of processing equipment is reduced by subsidizing their prices.
- iii. The coefficients of age negatively influence women participation in cooperative society. Older women should be encouraged by the cooperative societies to join cooperative in order to increase their output
- iv. Most of the respondents had medium level of involvement in cooperative activities. It is therefore necessary to encourage women participation through incentive supports by Executives of the cooperative societies in order to increase their level of participation
- v. To improve the effectiveness of women groundnut processors in cooperative society, they should have a strong link with major government and nongovernmental organization which should be keeping them up- to- date with training and incentives.
- vi. Women groundnut processors cooperatives should not depend only on government for agricultural incentives but rather use their pulled resources to acquire their needs.
- vii. There is need for co-operative societies to organize symposium and public lectures with a view to enhance the efficiency of co-operative movement in Nigeria.

5.3 Contribution to Knowledge

The study has made the following contributions to knowledge:

- i. The study found that women's involvement in cooperative societies on income of groundnut processors in the study area is significant. This is due to their involvement in cooperative societies activities.

- ii. Womens' involvement in cooperative societies had significantly impacted on the income status of the women, as the calculated t-value (6.61) for the mean income before and after joining cooperative societies.
- iii. Groundnut processing into cake and oil by rural women was profitable in Agricultural Zone I area of Niger State with an average annual income of above N400,000.
- iv. The study has revealed that groundnut processing could be used by government and developmental agencies to reduce poverty and redundancy among women in the study area.
- v. This research has also brought to the forefront agricultural processing, not only as a tool for product diversification, and preservation of farm produce but also a profit making business activity.

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APPENDIX

Research Questionnaire

Department of Agricultural Extension and Rural Development,

School of Agriculture and Agricultural Technology.

Federal University of Technology Minna, Niger State.

Dear respondent,

I am an M.Tech research student of Federal University of Technology Minna. I am conducting a research titled ‘Effect of cooperative societies on women involvement in groundnut processing in Bida and Mokwa Local Government Areas of Niger State.’ Please kindly assist in the completion of this questionnaire.

Kindly fill in the attached questionnaire. The research work is purely for academic purpose and your accurate information will give a credit to the work. All information given will be treated with utmost confidentiality and of no personal implication. Your cooperation is highly anticipated please.

Yours faithfully,

Hussein Rahamat.

Respondents Identification

Name of respondent.....

Location:- Latitude.....Longitude.....

Local Government Area.....

Name of village.....

Phone number of respondent.....

Questionnaire NO:.....

SECTION A: SOCIO-ECONOMIC CHARACTERISTICS OF RESPONDENT

1. Age of respondent (years).....
2. Marital Status (a) Single [] (b) Married[] (c) Others[]
3. Highest level of education (a) primary education[] (b) Secondary education [](c) Tertiary education [] (d) Adult education[] (e) Non-formal [] (f) None[]
4. Number of years spent in formal educational school.....
5. Household size.....

6. Years of experience in groundnut processing
7. What method of processing are you involved in? (a)traditional processing[](b) modern processing[]
8. Do you receive training on groundnut processing techniques from cooperative societies? (a) Yes[](b)No[]
9. If yes, from which organization? (a) Agricultural Development Programme[] (b) Niger State Mechanization Development Agency[] (c) Non-Governmental organizations[] (d) Research institutes (e) others(specify).....
10. If yes, what are the types of training received and from what organization?

S/NO	Types of training recieved	Tick	Organisations
1	Preservation and storage of groundnut seeds		
2	Processing of groundnuts		
3	Packaging/ labeling		
4	Handling of machineries/ equipment		
5	Advertising and marketing		
6	Others(specify)		

11. Do you have access to credit over the past 3 years? (a) Yes [] (b) No[]
12. If yes, from what source?

S/NO	Credit source	Amount(₦)	% of repayment
1	Family and friends		
2	Commercial banks		
3	Cooperative societies		
4	Microfinance banks		
5	Agricultural banks		
6	FG's Farmer Moni Scheme		
7	Others (specify)		

13. What is the name of your cooperative society?.....
14. What is your status in the cooperative society? (a) Ordinary member [] (b). Official []
15. Years of cooperative membership.....
16. Do you have contact with extension agent (a) Yes[] (b) No[]
17. If yes, how many times do you have access to extension agent this year?.....
18. If no, why?.....

19. What is the major source of groundnuts for processing? (a) Personal farm [] (b) Family [] (c) Cooperative [] (d) Market [] (e) Friends and relatives []

SECTION B: LEVELS OF INVOLVEMENT IN COOPERATIVE SOCIETIES

20. What are the requirements for membership?

(a) No requirement [] (b) Must be a groundnut processor [] (c) Age restriction used [] (d) an indigene [] (e) others (specify).....

21. What were your reasons for joining a cooperative society?

Reasons	Tick
To get dividend	
To get processing inputs	
To have access to credit	
Access to market	
Others(specify)	

22. What is your amount of savings in the cooperative societies? ₦.....

23. Which of these cooperative services/activities do you engage in over the last 3 years?

S/NO	Cooperative activities/ services	Tick
1	Saving to raise share	
2	Borrowing of loan	
3	Attending meetings	
4	Approving rules of law	
5	Voting/election	
6	Buying inputs	
7	Sales of processed groundnut product	
8	Attending social activities	
9	Saving money together so as to increase capital of the cooperative society	
10	Others(specify)	

24. Which of the following groundnut processing activities are you engaged in?

S/NO	G/nut processing activities	Tick
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1	Shelling/ decortication	
	a. By hand	
	b. decorticator	
2	Drying	
3	storage	
4	Scorching	
5	Roasting	
	a. use of firewood	
	b. use of electricity	
6	Removal of haulms	
7	polishing	
8	Grinding	
9	pasting	
10	Oil extraction	
	a. hand pressing/ kneading	
	b. expeller	
11	Cake molding	
12	Frying	
13	Cake packaging	
14	Transportation of processed groundnut	
	a. loading	
	b. off- loading	
15	Marketing	
	a. hawking	
	b. wholesales	
	c. retails	
	d. through cooperatives	

25. What type of labour do you use in your processing activities?

S/N O	G/nut processing activities	Family labour	Hired labour	Both family and hired	Machinerie s	Joint cooperative members labour
1.	Shelling/ decortication					
	a. By hand					
	b. decorticator					
2.	Drying					
3.	Storage					
4.	Scorching					
5.	Roasting					
	a. use of firewood					
	b. use of electricity					
6.	Removal of haulms					
7.	Polishing					
8.	Grinding					

9.	Pasting					
10.	Oil extraction					
	a. hand pressing/ kneading					
	b. expeller					
11.	Cake molding					
12.	Frying					
13.	Cake packaging					
14.	Transportation of processed groundnut					
	c. loading					
	d. off- loading					
15.	Marketing					
	e. hawking					
	f. wholesales					
	g. retails					
	h. through cooperatives					

SECTION C: OUTPUTS FROM GROUNDNUT PROCESSING

26-31.

Type of product	Frequency of processing cycle	Record of significant increase	Qty of g/nut processed per month b4 joining cooperative	Qty of g/nut processed per month after joining cooperative
Groundnut cake				
Groundnut oil				
Dankwa				
Others(specify)				

What quantity of gnut was stocked for processing in 2019?		Out of the quantity stocked, what was the(%)consumed in 2019?		Out of the qty stocked, what (%) did you give out as gift in 2019?		Out of the qty stocked, what was the(%) lost / damaged b4 processing?		What was the total quantity (kg/yr) processed in 2019?		What is the value of the produce sold?(₦)	
QTY	UNIT	QTY	UNIT	QTY	UNIT	QTY	UNIT	QTY	UNIT	QTY	UNIT

INCOME FROM GROUNDNUT PROCESSING

38. What is your income before joining groundnut processing cooperative societies?.....(₦)
39. Do you record any significant increase in income of groundnut processed after joining cooperative societies over the year? (a) Yes[] (b) No[]
40. What is your income after joining groundnut processing cooperative societies?.....(₦)
41. How much do you earn from processing in a week (₦)?.....
42. How much do you earn from groundnut processing activities annually? (₦).....
43. What is the average monthly quantity and value of groundnut processed by you?

S/NO	Product from g/nut processed	Quantity processed	Value(₦)
1	Groundnut cake (mudus, bags)		
2	Groundnut oil (litres)		
3	Dankwa		
4	Others(specify)		

44. What is your secondary occupation? (a) Fishing [] (b) Farming[] (c) Artisan[]
(d) Civil servant[] (e) Trading[] (f) others specify).....

45. What is your income annually from a secondary occupation (₦)?
.....

SECTION D: BENEFITS ENJOYED AS A MEMBER OF COOPERATIVE SOCIETIES

46. Does your group benefit from any of the Governmental and non-Governmental organization intervention programmes? (a) Yes[] (b) No[]

47. If yes, indicate which type. (a) Subsidy on machine equipment [] (b) FG's Farmer Moni [] (c) FG's Trader Moni [] (c) State government loans (d) Fadama program [] (e) Government machinery hire [] (f) Savings mobilization scheme [] (g) Financial support from NGO [] (h) Trainings and sensitizations from NGOs [] (i) others (specify).....

48. What are the benefits you enjoy as a member of cooperative societies?

S/NO	Benefits enjoyed as a member of cooperatives	Tick	Quantity	Value(₦)
1	Access to loan			
2	Availability of processing inputs(gnutseeds,labour)			
3	Linkage with market			
4	Improvement in standard of living			
5	Access to extension services			
6	Acquisition of skills and training			
7	Easy transportation			
8	Access to market information			

9	Others(specify)			
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SECTION E: FACTORS INFLUENCING WOMENS INVOLVEMENT IN COOPERATIVE

49. What are the factors that influence you being involved in cooperative societies?

S/NO	Factors influencing	Significant	Not significant	No influence
1.	High level of education			
2.	Access to credit			
3.	Years of experience			
4.	Taking part in decision making process			
6.	Exposure			
7.	Age			
8	Income			
9.	Others (specify)			

SECTION F: CONSTRAINTS TO WOMEN INVOLVEMENT IN GROUNDNUT PROCESSING

50. Do you think there are any significant constraints to the processing of groundnuts? (a) Yes[] (b) No[]

S/NO	Constraints	Severe	Not severe	Not a constraint
1.	Scarcity of groundnut seeds			
2.	Fluctuation of prices of inputs (raw groundnut, equipments, firewood e.t.c)			
3.	Fluctuation in prices of output (groundnut oil and cake)			
4.	Lack of credit facilities/financial support			
5.	High cost of groundnut seeds			
6.	Unavailability of high yielding groundnut variety			
7.	Theft of processed groundnut			
8.	High cost of transportation from source of groundnut purchase			
9.	Inadequate labour			
10.	Seasonality of groundnut seeds			
11.	Erratic power supply			
12.	High cost of electricity			
13.	High cost of processing equipments			
14.	Inadequate capital for expansion			
15.	Low patronage			
16	High cost of fuelwood/charcoal			

I7	Others(specify)			
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