GENDER DIFFERENTIALS OF LIVELIHOOD DIVERSIFICATION STRATEGIES AND ITS EFFECTS ON POVERTY STATUS OF RURAL HOUSEHOLDS IN NIGER STATE, NIGERIA

BY

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ABSTRACT

The study on the gender differentials of livelihood diversification strategies and its effects on poverty status of rural households was conducted in Niger State, Nigeria. Multi-stage sampling technique was used to select 138 male and 92 female rural households on which structured questionnaire complemented with interview schedule was employed to collect primary data. Data collected were analyzed using descriptive statistics (means, percentages and frequency counts) and inferential statistics (Logit and Tobit regression model) as well as Foster Greer and Thorbeck (FGT) model. The result of the analysis obtained showed that the male and female gender had mean age of 39 years and 35 years respectively. The male gender had a mean of 12 years in formal schooling, while the female gender had a mean of 6.5 years in formal schooling. The mean farm size of the male was 2.1 hectares and 1.4 hectares for the female. Majority (79.7%) of the male were married, while 94.6% of the female were married. Also, majority (70.3%) of the male and 88.0% of the female had contact with extension agents, 63.0% of the male and 56.5% of the female had access to credit, and 41.3% of the male and 89.1% of the female were members of cooperative societies. Livelihood diversification strategies of the rural household encompasses crop, livestock and nonfarm enterprises. The male were mostly engaged in livelihood diversification strategies such as rice (89.1%) with a mean annual income of №534,768, Chicken (31.2%) with a mean annual income of \$71,349 and self-employment (61.6%) with a mean monthly income of N49,027, while the female were engaged mostly on vegetables production (85.9%) with a mean annual income of \aleph 103,533, chicken rearing (75.0%) with a mean annual income of №85,993 and self-employment (77.2%) with a mean monthly income of ₩35,027. Based on the poverty lines computed, 47.8% of the males were found to be non – poor, 42.8% were poor and 9.4% were core–poor, while 59.8% of the female were found to be non-poor, 27.2% were poor and 13.0% were core-poor. Result of the Logit regression marginal effect estimate revealed that household size (0.0559), farm size (0.0211), livelihood diversification strategies (0.3997), income (0.2080), extension (0.0329), credit (0.1122) and cooperative (1.0892) had influence on poverty status of the male gender, while age (-0.0372), marital status (-0.4162), expenditure (-0.1150), farm size (0.1449), livelihood diversification strategies (1.4105), income (0.7590), extension contact (0.0523) and cooperative societies (0.4451) had influence on poverty status of the female gender. The livelihood diversification strategies adopted by the male and female gender had a significant effect on the likelihood of them being poor or not. Also, Tobit regression estimate revealed that household size (0.0184), education (0.0061), farming experience (-0.0097), credit (0.1420), farm size (-0.0124), income (0.4850), expenditure (0.8790), extension contact (0.0351) and occupation (0.0747) had influence on livelihood diversification strategies of the males, while years of farming experience (-0.0083), credit (0.2880), expenditure (0.2080), cooperative societies (0.0079) and extension contact (0.0187) had influence on livelihood diversification strategies of the females. The major constraints to livelihood diversification strategies reported by the males were inadequate access to credit (\overline{X} = 4.22) and poor market information (\overline{X} = 4.12) ranked 1st and 2nd, while the females reported increase cost of production (\overline{X} = 4.34) and inadequate access to credit (\bar{X} = 3.91) ranked 1st and 2nd. In conclusion, the female gender had lower incidence of poverty (i.e people living below the poverty line) as compared to the male gender, although, the livelihood diversification strategies adopted by the male and female had a significant effect on their likelihood of being poor or not. It was therefore recommended that rural households, government and NGOs should partner through seminar and workshops to promote effective social networks and social investment policy that will enhance livelihood diversification decisions.

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CHAPTER ONE

1.0

INTRODUCTION

1.1 Background of the Study

Agriculture is the most important economic sector of any Nation saddled with the responsibility of meeting the food requirements of the rather fast growing global population (Andersen, 2010). Agriculture has impacted significantly in Nigeria in the past and still contributes over 40% of the Gross Domestic Product (GDP) in 2012 (International Federation of Library Association (IFLA), 2012), and 47.8% in 2017 (National Bureau of Statistics (NBS), 2017). Investing more in agricultural sector would enable a country to sufficiently feed its growing population, generate employment, earn foreign exchange and make raw materials available for industries. This sector has a multiplier effect on any nation's socio-economic and industrial fabric because of the multi-functional nature of agriculture (Ogen, 2007). Over the years, both male and female are known to engage in agricultural production.

The concept of gender is a central factor in household decision-making, which affects productivity, time allocation and investment in developing countries. Gender differential induced poverty and any poverty alleviation programme towards household welfare must thoroughly examine the link between gender relations and state of household's food security (Arora, 2015). Gender analysis is therefore an important factor in poverty and food security analysis. International Labour Organization (ILO) (1991) and Gender Equality in Rural Advisory Services (GFRAS) (2012) referred to Women as "a group operating under the conditions in which their reproductive activities are traded at the margin against their economic ventures". This does not only limit the time at these women's disposal but also restrict them to activities that are compatible with their schedules. Consequently, most women work on small-scale farms for production with attendant low yields and income that can hardly meet their varying family obligations.

This therefore places limitation on their purchasing power and invariably their household food security level (Fawehinmi and Adeniyi, 2014).

The contribution of non-agricultural activities to household income in the developing world in general and Sub-Saharan Africa in particular is substantial. Local non-farming income contributes between 30 to 40 % of rural household income in the developing world (Haggblade *et al.*, 2007). Various studies have shown that while most rural households are involved in agricultural activities such as livestock, crop, or fish production as their main source of livelihood, they also as a means of diversification engaged in other income generating activities to augment their main source of income (Abimbola and Oluwakemi, 2013). There is different perception of people about the concept of diversification.

Diversification has been defined by Kimenju and Tschirley (2008) as "the number of economic activities an economic unit is involved in and the dispersion of those activities' shares in the total economic activity of the unit". The focus on livelihood is relevant, in particular with the discussion on rural poverty reduction. With prevalent poverty in most rural areas, rural development has been an important policy goal for many developing countries, and large-scale structural reform measures have been taken to this end (Hyewon, 2011). Off-farm and non-farm income economic activities has been viewed as potential diversification pathway among rural farming households.

The growing interest in research on rural off-farm and non-farm income in rural economies shows that rural people's livelihoods are derived from diverse sources and are not as overwhelmingly dependent on agriculture as previously assumed Gordon and Craig (2001). Non-farm local activities include all economic activities in rural areas except agriculture, livestock, fishing and hunting. It includes all off-farming activities,

processing, marketing, manufacturing, wage and causal local employment in the rural villages (Agu, 2013).

Most rural populations in Africa have been suffering from poverty and environmental degradation. Maintenance of a diversified resource base is a prerequisite for adaptation to climate variability as diversified livelihood systems allow indigenous farming communities to draw on various sources of food and income. In doing so, they can diffuse the risks of vulnerability to climate change (Macchi *et al.*, 2008).

Ellis (2000a) and Warren (2002), defined livelihood diversification as a process by which rural households construct an increasingly diverse portfolio of activities and assets in order to survive and improve their standard of living. Therefore, an analysis of the diversification concept empirically, has been assessed from the asset, income or activity viewpoints. Asset measurement is deemed arduous and sometimes crudely estimated due to the poor development of asset market especially in most rural communities in Africa (Barrett and Reardon, 2000). Drawing from Minot *et al.* (2006), Ronning and Koveried (2006), the study defines livelihood diversification as "a situation where farming households rely on multiple income sources; both farm and Non-farm" activities. This has helped to positively engaged rural households especially during the off-season period.

According to Ellis (2000b), seasonality of farming resulting in labour idling during offfarming seasons have led farm households to engage in activities (particularly non-farm activities) to use their full labour potentials. Moreover, realization of economies of scope, diminishing returns to factors (land, capital, labour) use, response to liquidity constraints and availability of opportunities (infrastructural development, access to social amenities, increases in population etc.), have also backed farm household's pursuance of diversification of their livelihood activities (Barrett *et al.*, 2001). The Author further classifies reasons of livelihood diversification into pull (favourable conditions which draw farm households into diversification) and push factors (harsh conditions that force households into diversification). Livelihood and income diversification have been studied extensively over the years (Okali, 2006; Reardon *et al.*, 2007; Adekoya, 2009; Akinwale, 2010). Despite the fact that rural areas are agrarian in nature, there is an increasing level of income and livelihood diversification especially to non-agricultural income generating activities (Oluwatayo, 2009).

Poverty is a problem affecting every nation of the world (Chen and Ravallion, 2010). The reduction of poverty is the most difficult challenge facing many countries in the developing world where on average, the majority of the population is considered poor. In Nigeria, the number of people below the poverty line has continued to increase (Lawal *et al.*, 2011). Despite the various efforts of government to reduce the incidence of poverty through different poverty alleviation programmes and strategies and the quest to be one of the 20 largest economies by the year 2020, Nigeria continues to be one of the poorest countries in the world (Adepoju, 2012). Its incidence rose from 27.2% in1980 to 42.7% in 1992 and 69.0% in 2010 (NBS, 2012).

Nigeria has been ranked 153rd with human development index of 0.471 in 2013 UNDP Human Development Index despite moving a step up from the 2011 rating, portraying the country among the poorest countries in the world, majority of whom resides in the rural areas with farming as their primary occupation. However, with the enormous efforts which are being exerted on rural livelihood diversification by government and non-governmental organizations in Nigeria, the result on the distribution of income remains rarely checked (Santos, 2015).

1.2 Statement of the Research Problem

Across Sub-Saharan Africa, a range of empirical studies have found that female farmers have lower yields than male farmers. A number of reports have documented this pattern and sought to explain it (Sofa, 2011; World Bank, 2012). In overall, these studies suggest constraints in every step of the livelihood diversification. First, women are likely to have less land to cultivate than men, and when they do, tenure security may be weaker. Second, their access to improved technology, information, and agricultural extension tends to be more limited compared to men. In growing crops, women are more prone to be constrained in their access to inputs such as fertilizer, agro-chemical, labour and other inputs. Management of plots may reveal constraints as well – ranging from low level of education to trying to juggle into dual roles as farm managers and household managers (Oseni *et al.*, 2013).

Unless Africans invest heavily in gender equality, it will neither sustain its growth nor meet its development goals (African Development Bank (ADB), 2013). Gender disparities in agriculture also affects African agricultural transformation. Africa is still lagging behind in terms of production and yield per hectare which has continue to decline (Dillion and Barrett, 2014; FAO, 2015). Unequal access to farming resources leads to decrease in female livelihood. Increasing output of livelihood through enhanced gender participation and livelihood diversification is the key to achieving poverty reduction within the study area. It therefore implies that to attain this goal, attention should be focused on dealing with issues bordering on gender bias, such as ensuring equal right and access in the poverty reduction strategies of rural households, with a view to redressing the gender livelihood strategies gap (Alobo, 2015).

There have been neglect by researchers in examining livelihood diversification strategies along gender differentials especially in the study area which has constituted a dearth in knowledge that needs to be filled. It is based on the aforementioned, that this study was conceived to analyze gender differentials on livelihood diversification strategies and its effects on poverty reduction among rural household in Niger State, Nigeria. Thus, this study attempts to provide answer for the following research questions:

- i. What are the socio-economic characteristics of rural households in the study area?
- ii. What are the major livelihood diversification strategies adopted by the rural household along the gender differentials in the study area?
- iii. What is the poverty status of the rural households along gender differentials?
- iv. What are the effects of livelihood diversification strategies on rural households' poverty status along gender differentials in the study area?
- v. What are the factors influencing the livelihood diversification strategies of the rural households along gender differentials in the study area?
- vi. What are the constraints that hinders livelihood diversification strategies by the rural households along gender differentials in the study area?

1.3 Aim and Objectives of the Study

The aim of this study is to analyze the gender differentials of livelihood diversification strategies and its effects on poverty status of rural households in Niger State, Nigeria. The specific objectives were to:

- i. describe the socio-economic characteristics of the rural households along gender differentials in the study area;
- ii. identify the major livelihood diversification strategies adopted by the rural households along gender differentials;
- iii. estimate the poverty status of the rural households along gender differentials;
- iv. evaluate the effect of livelihood diversification strategies on poverty status of rural households along gender differentials;
- v. determine the factors influencing the livelihood diversification strategies of the

rural households along gender differentials, and

vi. identify the constraints that hinders livelihood diversification strategies by the rural households along gender differentials in the study area.

1.4 Hypotheses of the Study

The following null hypotheses were tested in this study:

 HO_1 : There is no significant relationship between selected socio-economic characteristics of the respondents (age, marital status, household size, education, experience and farm size) and their poverty status along the gender differentials in the study area.

HO₂: There is no significant difference in poverty status of the respondents along gender differentials in the study area.

1.5 Justification of the Study

Food insecurity is not a new phenomenon throughout the world. It is constantly spreading day by day like wildfire and it is not only peculiar to farmers, but also non-farmers. This study focuses on livelihood diversification strategies along gender differential and its effects on poverty reduction in the study area. The study will draw the attention of selected Local Government Areas of Niger State to gender inequality issues as a medium to enhancing livelihood diversification strategies and its effects on poverty reduction.

The study will serve as a source of information on livelihood related diversification strategies, with the view to provide empirical justification for equal agro-input support to both genders. The study will provide relevant data and information required for policy makers for redressing gender lop-sidedness in livelihood diversification strategies support in the country and in particular in the study area. The research will further serve as an eye opener to government on strategies that can be deployed to combat challenges and factors hindering gender equality, livelihood diversification strategies and its effects on poverty reduction. This study will assist policy makers to formulate policies and evolve programmes that will help in poverty reduction and gender equality.

It will also stimulate research institutes into further research into area of poverty reduction in the study area and the nation at large. The result of this study would serve as a frame of reference to be consulted by research institutions, governmental and non-governmental agencies in improving livelihood diversification and poverty reduction strategies. Agricultural cooperative societies will find this study helpful in checkmating their policies so as to enhance poverty reduction through livelihood diversification strategies. The result of this study will ultimately contribute to nation's building through poverty reduction.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Socio-Economic Attributes of Farmers

One of the major factors responsible for the declining agricultural productivity in Nigeria is the relegation to the background of the contributions of women in the issues of food crop production (Abiola and Omoabugan, 2001). Women farmers have been reported to require time saving technologies for both farming and domestic works to reduce the length of their working day, increase efficiency leading to increased output (Rahman and Usman, 2004) and poverty reduction among the farmers, with enhanced standard of living in the economy (CBN, 1998; Van Buren, 2001; United Nations, 2001; FGN, 2004).

According to Steunou (2009), the contributions of women farmers to agricultural production have been marginalized and under-valued in conventional agriculture,

economic analysis and policies. Women are the backbone of the agricultural sector, accounting for 60 to 80% of agricultural labour and being responsible for 80% of food production (Mgbada, 2000). The presence of women in the farming enterprise is significant. They have been found to do as much work as the men in farming. Women farmers play vital roles in food production, processing and marketing in Nigeria (Ralmah *et al.*, 2004). It is however very important to try to close the gap between the actual and potential productivity levels of women in the farm. The bridging of actual potential productivity gap presents one of the most effective means of promoting efficient agricultural productivity, and enhancing an overall economic development.

Amaza and Olayemi (2001), observed that food crop farmers carried out their production under conditions involving the use of inefficient tools, unimproved seed varieties, and so on, hence maximum technical efficiency has been elusive to them, particularly the women farmers. Therefore, an increased efficiency in food crop production could lead to an improvement in the welfare of the farmers and consequently a reduction in their poverty status and food insecurity level (Apata, 2007).

2.2 Gender Differentials in Agricultural Productivity

Nigeria is considered the most populous country in Africa with about 160 million people and 30.8 million hectares of arable land. However, one of the challenges this country faces is food security. Agriculture in Nigeria is a high productive sector in the country, accounting for 40% of the country's GDP and providing a livelihood for approximately 60% of its population. In general, Nigerian farmers are smallholder subsistence farmers with only a small portion of the farmers producing commercially (Nasa, 2010). Almost half of all female headed households are involved in agricultural activities, and 70% of rural female headed households rely on agriculture for their livelihood. Despite women's involvement in the Nigerian agriculture sector, they are faced with production constraints including access to resources such as land, inputs and extension services (Ojo, 2015).

Oseni *et al.* (2013) examined gender differentials in agricultural productivity across two regions in Nigeria: North and South. These regions were selected because of the variations

in agro-ecological and socio-economic conditions between these two regions. The study used data from the General Household Survey collected by Nigeria National Bureau of Statistics in collaboration with World Bank Living Standard Measurement Study (LSMS) 2010-2011. The result of the Oaxaca-Blinder decomposition method to measure the gender gap and the factors driving differences in productivity between female and male plot managers, found a statistical significant gender gap of 27% on Northern region.

Furthermore, factors widening the gender gap were i) adult labour pool; ii) lack of use of fertilizer; and iii) hired labour. Land area, on the other hand, was found to be the only factor that could reduce the gender gap. In the southern region, the difference in productivity between male and female managers was also found to be statistically significant, and the gender gap was of 24%. The results found that having more female adults living in the household mitigates the gender gap but having more male labour days and the lack of herbicides used widen the gap. Land area helped reduce the gap, which is a similar result to the Northern region. Unsurprisingly, female managers face disadvantages in their productivity age and get older (Oseni *et al.*, 2013).

Like many other countries in Africa, women in Nigeria have broadened and deepened their

involvement in agricultural production in recent decades (Salau, 2009). Although, men dominate the sector in Nigeria, a large share of women also participates across the agriculture value chain; as they are involved in production, processing and sales. Overall, 48% of female headed households participate in the agriculture sector, while in the rural areas; almost 70% of female headed households are involved in the sector.

However, there is debate in the general literature on gender and agricultural productivity as to the contribution of the differential use of inputs in explaining productivity gaps, it is certainly true across a range of countries that women tend to have lower levels of usage of various productive assets (Croppenstedt *et al.*, 2013). This is also true in the case of Nigeria. Despite their significant role in agricultural production, women in Nigeria have relatively limited access to agriculture land and lower levels of inputs and use of extension services compared with men (Phillip *et al.*, 2009).

In Nigeria, men are five times more likely than women to own land and this varies across regions, with lower ownership by women and higher gender gaps in land ownership in the North compared to the South (British Council Nigeria, 2012). In addition, women's lower levels of agency and decision-making power may negatively impact their ability to benefit from their activities in the agriculture sector, as well as in other areas of their lives.

The few studies on Nigerian gender differentials have focused on particular states or region of the country and most have used household level data (Timothy and Adeoti, 2006; Oladeebo and Fajuyigbe, 2007). Peterman *et al.* (2011) used data collected as part of an evaluation of the second phase of the World Bank sponsored National Fadama Development Project covering 12 Fadama states. Using household level data, the authors found persistent lower productivity among female headed households, even when accounting for a range of socio-economic variables, agricultural inputs and crop choices (Peterman *et al.*, 2011). They also found that the results vary across crops as well as by agro-ecological zone in Nigeria and inclusion of biophysical characteristics, suggesting

either cultural or regional gender differences or crop specific comparative advantages that interact with productivity and gender.

Timothy and Adeoti (2006) use a Cobb-Douglas production function to analyze data on cassava farmers in Ondo and Ogun States in Nigeria and their results suggest that while female farmers are more economically efficient than male farmers, male farmers have higher technical and allocative efficiency than female farmers on the average. However, the study of Oladeebo and Fajuyigbe (2007) revealed that women farmers are more efficient technically than men farmers with mean technical efficient indices of 0.904 and 0.897 respectively, but the difference is not significant.

2.3 Gender Equality and Sharing of Opportunities

The Universal Declaration of Human Rights recognised several dimensions of human rights for all people. Some are tangible and quantifiable, such as access to education, health and a decent standard of living and ability to take part in the government of the country. Others are intangible, such as freedom, dignity, and security of person and participation in the cultural life of the community (Prakash, 2003). The goals of gender equality differ from one country to another, depending on the social, cultural and economic contexts. So, in the struggle for equality, different countries may set different priorities, ranging from more education for girls, to better maternal health, to equal pay for equal work, to more seats in parliament, to removal of discrimination in employment, to protection against violence in the home, to changes in family law, to having men take more responsibility for family life. Equality is not a technocratic goal – it is a wholesale political commitment.

Achieving it requires a long-term process in which all cultural, social, political and economic norms undergo fundamental changes. The UNDP Human Development Report-1995 outlines a vision for the 21st century that should build a world order that:

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- Embraces full equality of opportunity between women and men as a fundamental concept;

- Eliminates the prevailing disparities between men and women and creates an enabling environment for the full flowering of the productive and creative potential of both sexes;

- Promotes more sharing of work and experience between women and men in the workplace as well as in the household;

- Regarding women as essential agents of change and development and opens many more doors to women to participate more equally in economic and political opportunities;

- Values the work and contribution of women in all fields on par with those of men, solely on merit, without making any distinction;

- Puts people – both women and men – clearly at the centre of all development processes. Not a single country has slipped back in the march towards greater gender equality at higher levels of capabilities, though the pace of progress has been extremely uneven and slow.

Much progress remains to be made in gender equality in almost every country. And in equality of choice in economic and political participation, industrial countries are not necessarily taking the lead. The areas showing the least progress are parliamentary representation and percentage share of administrators and managers. The clear policy message from this simple exercise is this: "In most countries, industrial or developing, women are not yet allowed into the corridors of economic and political power. In exercising real power or decision-making authority, women are a distinct minority throughout the world" (Prakash, 2003).

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Gender is the basis for a very basic division of labour between males and females within most societies: the division between "productive", "reproductive" and "communal" activities (Monica *et al.*, 2016). The gender "division of labour" is an important issue in farming areas which define what activities are deemed appropriate for males and females in developing countries. In these areas, certain tasks are considered to be carried out solely by either males or females, and there can also be gender division on who can make decisions about those tasks (Monica *et al.*, 2016). Gender division of labour vary by country, agro-ecosystem, socio-economic status, cultural norms, degree of mechanization, market orientation (subsistence and commercialized), and availability of male labour (Peterman, 2010).

In Ghana, the allocation of responsibilities in the household is determined from childhood and from the onset girls work more hours than boys in domestic activities and are also more active in productive activities especially between 12 and 14 years of age. It is also reported that in Ghana, nearly two thirds of young rural males (between 15 and 24 years of age) spend up to 10 hours weekly on domestic work, whereas over a quarter of their female counterparts spend 50 hours or more on domestic work (FAO, 2012). The report further shows that 65 percent of males spend close to 10 hours per week on domestic activities, 89 percent of females spend 10 hours or more per week and about 20 percent of females allocate more than 60 hours per week to domestic activities.

More so, a study conducted in Ethiopia reported that the average total work time per week rises to 52 hours for females, while it is only about 36 hours for males. Moreover, the average duration of housework per week is 39 hours for females and 13 for male; nearly three times higher for females while the average duration of market work per week is 36 hours for males and 24 hours for females; that is more than 10 hours longer for males (Suarez, 2010). According to Suárez (2010), females work longer hours than

males in the household, while the reverse is true for males at the market and farm levels. It is documented that in spite of the changes that have occurred in females' participation in the labour market, females continue to bear most of the responsibilities for the home: caring for children and other dependent household members, preparing meals and doing other housework (Antonopoulus and Hirway, 2010).

In Ghana, agricultural sector remains lower paid job and females contribute, at least, half of the total labour inputs in food production (Monica *et al.*, 2016). In crop production, the labour requirements have substantially been met by family members and hired workers, comprising male and female. Generally, males clear the land while females undertake most of the remaining farming activities, particularly weeding and processing. In many areas, tasks related to rice planting, weeding, harvesting, processing, marketing and preservation of seeds are in the domain of females (FAO, 2004).

In sub-Saharan African countries, the average female labour share in crop production is at 40 percent, and it is slightly above 50 percent in Malawi, Tanzania, and Uganda, and substantially lower in Nigeria (37%), Ethiopia (29%), and Niger (24%) (Palacios-Lopez *et al.*, 2015). Males control cash crop production, relegating the production of food crops and activities related to household maintenance and care work to females. A study reported owing to unequal gender division of labour, the increase in prices of cash crop benefit males relative to females within a typical agricultural household (Tarimo *et al.*, 2009).

Generally, labour is the single most important input in peasant farming system in Ghana. As a result, the unequal division of labour between males and females in the household may influence farm output. It was recorded that unequal gender division of labour and the resulting time poverty among females has impeded the growth of household's agricultural output in Mozambique (Arora, 2015). It was revealed that a decrease in farm labour input results into lower output in maize production in Malawi (Edriss and Wobst, 2004).

The examination of family caregivers in Tanzania showed that due to the pressure of caring for the sick, females significantly reduced their labour hours for cultivation on the farm which affected their farm output (Tarimo *et al.*, 2009). A study indicated that the extensive pressure of work on females eventually causes a decline in their output, thus, slowing down the growth of the cash and subsistence crops sectors (Darity, 1995). Gendered division of labour is seen to influence an output of female-headed households' plots more than that of male-headed households' plots (Njuki *et al.*, 2011).

In Sierra Leone, there is evidence that females allocate substantial time to domestic chores which limit their economic opportunities (Quentin and Yvonne, 2010). The report showed the time spent on domestic tasks lower output which may limit their income and decision-making power within the household. The necessity to combine child care, domestic work and other activities implies that females' economic undertakings will remain small-scale (Konings, 2012). Therefore, the review concluded that gender role have influence on male and female rice farmers output (Monica *et al.*, 2016).

Agricultural cooperatives are agricultural producer based cooperatives whose primary purpose is to increase members' production and incomes by helping better link with finance, agricultural inputs, information and output markets (Palacios-Lopez *et al.*, 2015). The large-scale introduction of agricultural cooperatives in the 1970s and 1980s, with compulsory membership, was associated with declining agricultural output per capital. In Ethiopia, when farmers were allowed to join or leave cooperatives at will in 1991, cooperative membership fell drastically and yields rose (Swiss, 2014).

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Certainly, there have been cooperative success stories in the region for instance the dairy sector in Kenya, coffee in Ethiopia, and cotton in Mali. The examples of Taiwan, India, and Vietnam also show that cooperatives can be instrumental in sector transformation (Simtowe, 2010). Unfortunately, to date, no African country has achieved a sustained and large scale increase in staple crop yields as a result of cooperative action and many cooperative development programs have failed to achieve their objectives or have even been counterproductive. The purpose of agricultural cooperatives is to help farmers increase their yields and incomes by pooling their resources to support collective service provisions and economic empowerment. Given their primary remit to contribute to smallholder farmer production, agricultural cooperatives are seen as critical in achieving the government's development targets in the Growth and Transformation Plan, and focusing on other types of cooperatives requires an alternative framework for analysis (Salau *et al.*, 2012).

The main categories of agricultural co-operatives fall into mainstream activities of agricultural undertaking including supply of agricultural inputs, joint production and agricultural marketing. Input supply includes the distribution of seeds and fertilizers to farmers. Co-operatives in joint agricultural production assume that members operate the co-operative on jointly owned agricultural plots. The third category consists of joint agricultural marketing of producer crops, where farmers pool resources for the transformation, packaging, distribution and marketing of an identified agricultural co-operative mode has historically been the marketing of agricultural produce after small farmers have individually completed their farm production operations. But in some cases, agricultural co-operatives have combined both input distribution and crop marketing (Kumar 2015).

2.4 The Concept of Livelihood Diversification

There is an apparent connection between livelihood diversification through non-farm work and food consumption among farming families in developing countries like Nigeria. For example, (Anderson, 2016), noted that off-farm income is extremely important to the household livelihood in many developing nations and essential to food security among farm households. Specifically, households with non-farm work will have a better chance to re-allocate their labour and can more efficiently offset the negative price effect on their food security compared to those who have fewer non-farm options (Chang and Mishra, 2008).

One definition that comes closest to the original meaning of "livelihood diversification" perhaps refers to the increase in the number of sources of income in a household or the balance among various diverse sources. Thus, having two sources of income in a household shows more diversification than a household with just one source of income. Also, a household that has two sources of income, each contributing half to the total income, would be more diversified than a household with two sources of income, with one contributing 90% of the total income and the other only 10% (Ersado, 2003; Joshi *et al.,* 2003). However, according to Ellis (1998; 2000), we can easily differentiate between the following income sources:

2.4.1 On-farm income:

This refers to income generated from farming activities from one's own farm, whether on owner's occupied land or leased land. To define broadly, farm income includes crop output as well as the cash income generated from the sale of outputs and livestock consumption from one's own farm.

2.4.2 Off-farm income:

This refers to temporary wage labour on other people's farms within agriculture (Ellis, 1998). In most instances, this involves working on other people's farms for wages, exchange of labour in kind or sharecropping. Therefore, in this study, off-farm income refers to income generated by working on other people's farms.

2.4.3 Non-farm income:

This refers to income gotten from non-agricultural activities. The classification of income as non-farm involves making a sectorial distinction depending on the type of the activity (Barrett *et al.*, 2001). Non-farm income however may also relate to a dimension that includes income obtained for example from remittances (Ellis, 1998; Ellis and Freeman, 2005). Therefore, it is safe to regard diversification as a risks minimizing strategy when faced with rising climatic conditions and economic uncertainties in developing countries like Nigeria.

2.5 Determinants of Livelihood Diversification

Off-farm income diversification as an agricultural investment is particularly important for rural farm households. For example, in rural Nigeria, although farming is the main source of livelihood, rural households often diversify from farm to off-farm activities (Oseni and Winter, 2009), noted some common off-farm economic activities in rural Nigeria. These included trading (trading of food stuffs, fruits and vegetables, provisions etc.), sewing, palm wine tapping, farm labourer, craft (leather and wood works and weaving, making pots), and chores to maintain a certain level of sustenance.

Findings of the Multinomial Estimation Method where no participation in off-farm was the choice comparison showed that education, availability of off-farm activities in the regions and ethnic groups were found to affect off-farm participation. It was contended that in the study area, education helped the farm households to participate in the higher paid off-farm activities. Beyene (2008) also found that the effect of education on offfarm participation decision was different, depending on the type of off-farm activities.

A study conducted by (Beyene, 2008) on the determinants of off-farm participation decision in Ethiopia also indicated that age of the household head, health status of the male members of the household, training in handicraft skills by male members of the household, gender, presence of children had a significant effect on households off-farm participation decisions. He posited that at a younger age, the probability of working off-farm increased and also that farmers who were trained in non-farm activities were more likely to engage in either wage employment such as masonry, carpentry, etc. or self-employment activities like weaving, carpentry, pottery, blacksmithing, etc.

However, he stated that the education level of the household head had no significant effect on the participation decision of the farm households in off-farm activities and pointed out that the possible reason for this could be the nature of off-farm activity. He also established that most of the off-farm activities especially wage employment, did not require any formal education. This argument was supported by Woldehanna (2000) and MOLSA (1997) in their different studies in the Ethiopian and the Tigray case respectively.

2.6 Socio-economic Characteristic of Farmers

2.6.1 Age:

Aderinoye-Abdulwahab *et al.* (2015) in a study on the assessment of livelihood activities of rural farmers in Kwara State Nigeria, from the discovery made from the study it will be safe to conclude that the youths are yearning for better living conditions and hence, seek for a diversification in income sources. However, the qualitative data revealed that

community members are ready to take agriculture as a business if their capacity is strengthened. This could encourage youths and unemployed graduates to return to their communities to engage in farming as a lucrative business. A study conducted by Adeolu *et al.* (2014) on the livelihood strategies of female indigenous vegetable farmers in Osun State, Nigeria revealed that 73% of the respondents were below 50 years of age implying that the sample were dominated by relatively young and active farmers who are economically productive and willing to explore new avenue for livelihood.

Numerous authors have addressed the significance of household members' age in relation to their involvement in the non-farm sector. It is a dimension of human capital and although it may not be amenable to change (except in the aggregate), it is important to understand how it affects participation in the non-farm sector. Smith, (2000) notes that it is generally the younger household members who migrate in search of non-farm income earning opportunities, and he points out that age is a factor synonymous with moving into the non-farm sector more broadly.

2.6.2 Gender and Education:

Aderinoye-Abdulwahab *et al.* (2015) also reported in their study that those who have drifted to the urban cities are the more educated while the less educated are left with not many choices to cope with their livelihood. These findings simply implies that the level as well as quality of education in the rural communities needs to be greatly improved. They also need some encouragement and sensitization on the need to enrol. It's also an indication that level of education significantly influences the choice of the farmer on the pattern and nature of diversification the farmer chooses to engage into (Smith, 2001).

Similarly, in another study by Santos (2015) on livelihood strategies of female indigenous vegetable farmers in Osun State, Nigeria, revealed that lack of post-secondary education may limit farmer's access to high paying off-farm opportunities.

It was postulated by Gordon and Craig (2001), that there are several processes that reinforce the effect of education on incomes. Education increases skill levels, which are required for some rural non-farm activities, or contribute to increased productivity, or may be an employment rationing device. Education can set in train processes that increase confidence, establish useful networks or contribute to productive investment (exposure outside the home village, migration, using improved earnings to educate other family members or invest in rural enterprises). Non-educated family members may benefit from advice given by more educated relatives.

2.6.3 Marital status:

Adeolu *et al.* (2014) also discovered that women work as part of the family labour on their husband's farms. Mamman *et al.* (2019) in their study of socio-economic factors and livelihood diversification affecting food security status of farming households in Jigawa State Nigeria discovered that, most households have responsibilities bestowed upon them and on the other hand households consisting large numbers can be useful, thereby contributing to family labour for farm, off-farm and non-farm activities.

2.7 Major Livelihood Diversification Strategies of Rural Household

In the African continent, non-farm sources may already account for as much as 40 - 45% of average household income and seem to be growing in importance (Smith *et al.*, 2001). All these emphasize that people in developing countries got their livelihood from different sources. Since these sources do not have the same potential contribution to their income, it is important to examine these different sources and their influences on income

generation of the people in the developing countries such as Nigeria particularly in the study area.

Barrett *et al.* (2001) recognized four diverse rural livelihoods strategies offering markedly different returns distributions. Some rural African households depend exclusively on their own agricultural (animal or crop) production for income, what is termed the "full time farmer" strategy. Others combine own production on-farm with wage labour on others farm, which is referred to as the "farmer and farm worker" strategy. The other two strategies combine farm and non-farm earnings. Within this population, (Barrett *et al.*, 2001) drew a distinction between those who undertake unskilled labour – whether in the farm or non-farm sectors – and those who do not.

The "farm and skilled non-farm" strategy does not include unskilled labour and tends to be associated with higher income households with relatively better educated or skilled adult members. The fourth "mixed" strategy combines all three basic elements discussed so far: on-farm agricultural production, unskilled on-farm or off-farm wage employment, and non-farm earnings from trades, commerce and skilled (often salaried) employment. This classification scheme underscores the importance of labour market dualism in poor, rural regions; returns to labour vary substantially. These four household livelihood diversification strategies do not offer similar returns.

In comparative work across different African agro-ecologies, Barrett *et al.* (2001) revealed that strategies including non-farm income stochastically dominate those based entirely on agriculture, while the farm and skilled non-farm and full time farmer strategies generally offer greater returns to the mixed and, especially, the farmer and farm worker strategies, respectively. These inconsistencies arise due to variation in the degree to which each strategy involves barriers to entry. Pursuit of the full time farmer strategy requires either sufficient fertile land endowments or the financial or political

means to secure access to additional land. On-farm production may include food crops, cash crops or livestock, and output may be sold to market, retained for home consumption, or both.

2.8 Push and Pull Factors Influencing the Livelihood Diversification Strategy

Small business development projects often offer a range of services including education in business skills, vocational training in traditional trades (baking, brick-making, building skills, handicrafts, workshop repairs etc.) and may also be offered at designated colleges or sometimes as part of school curricula (Ellis, 2010). Some organizations run short courses targeted to local needs, it is without any doubt that the health status of household members has a substantial bearing on their participation in income generating activities (Babatunde *et al.*, 2008). However, this general rule applies to health in its broadest sense, at the present time in parts of Sub-Saharan Africa concerns about health tend inevitably to focus on HIV/AIDS (Alex, 2014).

HIV/AIDS is particularly pertinent to this discussion as it often results in the loss of household members who are at the top of their productivity, and potentially have most to contribute to the livelihood of the household. Productive time and material resources are further lost in caring for those stricken with the disease, and households may have the additional liability of having to take in orphans or other dependents of the person in question. Families, who have restricted access to health facilities, whether for reasons of location or affordability, inevitably suffer the consequences in loss of potentially productive time (Alex, 2014).

Not much has been written about personal vision as a possible factors of participation in the non-farm sector. It is nonetheless interesting to consider a finding of Horn *et al.* (2000) that the potential of the women interviewed in Mozambique was severely constrained by their inability to see themselves in situations very different from those in which they currently live. This may be a result of years of war and poverty, and may not apply very widely, but may equally be pertinent in particularly isolated areas, where limited contact with others results in narrow minded perceptions of what is possible. Improvements in communication and travel may reduce the implication of this factor.

Social capital encompasses the social resources (e.g. networks, membership of groups, relationships of trust, access to wider institutions of society) upon which people draw in pursuit of livelihoods. There is a common consensus in the literature that gender is a significant factor determining access to non-farm opportunities. They have, therefore, greater need than most for the income that can be secured through participation in the non-farm sector. Women have long been constrained in the activities in which they are permitted or able to participate, by tradition, religion, or other social mores (World Bank, 2012).

In their work in Mozambique, Horn *et al.* (2000) reported that home-based activities were most common among Muslim women. A different aspect of the influence of religion is emphasized by Tovo (1991) who reported that in Tanzania, Christian women are more 'risk-taking' than Muslim women. Individuals and households with better social networks have countless opportunities in the non-farm sector. Once more, this discriminates against the poorest, who suffer a lack of (useful) social networks and are, therefore, unable to capitalize on informal opportunities and remain excluded from formal support systems (Smith, 2000). Gordon *et al.* (2000b) reported that the ability to migrate and the choice of destination for migration are influenced by social networks. Naturally, men will migrate to areas where they already have relatives or friends, on whom they can rely for initial support, mentorship and information.

Urbanization has been an important driver of livelihood diversification in recent years, offering many new prospects; the flow of money, and goods and services between rural

and urban areas can create a virtuous circle of local economic development by increasing demand for local agricultural produce, stimulating the non-farm economy and absorbing surplus labour (Tacoli, 2011). But this is crucially dependent on three pre-requisites; access to infrastructure, trade relation and market information (Development Assistance Committee (DAC), 2004). Natural capital comprises the natural resources, such as water, land and common property resources that are so crucial to rural livelihoods. These resources provide a foundation for farming and also for much of the non-farm economy. Natural capital and infrastructure contribute to improved availability of opportunities, as well as improved capability to access those opportunities.

Off-farm sources of livelihood bring about uneven distribution of income. Average nonfarm income share of the total is about 42% in Africa, 40% in Latin America and 32% in Asia (World Bank, 2000). There has been a debate on the role of non-farm income in rural inequality. Some studies have shown that although non-farm income increases total rural income, it worsens income inequality because it is more unequally distributed than farm income (Bright *et al.*, 2000; Elbers and Lanjouw, 2001); Escobal, 2001; Khan and Riskin, 2001; Leones and Feldman, 1998).

In a study by Zhu and Luo (2006), poor households in China gain more from non-farm activity than the rich households. One of the important reasons is that households that suffer stronger constraints in farm activity are more likely to partake in non-farm activity, and earn moderately higher income compared to those with better resources. Households are motivated to take on rural non-farm activity by either "pull" or "push" factors. If the non-farm sector has high returns, the "pull factors" will be strong; if farm activity cannot provide enough income for households (for example, if farm output is inadequate due to drought, flood, or land insufficiency) or households need to diversify

their income sources, the "push factors" may kick in. Poor households are less capable of weathering negative shocks, and are highly risk prone.

The high participation in non-farm activity among low-income rural households may result in a more equal distribution of total income. The rural economy is not based solely on agriculture but rather on a diverse array of activities and enterprises (Chapman and Tripp, 2004). In this regard, the welfare effect of non-farm diversification depends on whether rural households are in a 'pull' or 'push' factor scenario. Some households may be 'pushed' into non-farm activities in their struggle to survive, while others may be 'pulled' into them by their desire to accumulate more resources. As the 'pushed' scenario is usually referred to poor households and the 'pulled' is more likely associated with the non-poor, the welfare effect of non-farm livelihood diversification on rural poverty in general is no unequivocal.

Furthermore, push and pull factors are found to diversify livelihoods (Barrett *et al.*, 2001). The push factor is a kind of diversification driven factor due to the fact that rural farmers have restricted capacity to bear risks especially where there is incomplete or weak financial systems. This provides some strong incentives to create portfolio of activities so as to make consumption and income flow stable (Barrett *et al.*, 2001). Non-farm income diversification may be driven by the following push factors: first, the need to get more money to put into agriculture when the credit market is not functioning well (Kilic *et al.*, 2009; Oseni and Winter, 2009). Second, when a need arises to increase the income of the family when the income that is gotten from the farm is not enough to provide sufficient livelihood (Minot *et al.*, 2006). Third, because of lack of insurance market, there arises a desire to manage agricultural production and market risks (Reardon, 1997; Barrett *et al.*, 2001).

The pull factor perspective is when the power source of growth in the local area such as commercial agriculture or nearness to an urban area creates opportunities to diversify income in linkage activities of production and expenditure (Barett *et al.*, 2001). The rural farm households can be pulled into off-farm sector because of higher returns of labour and also because investing in off-farm sector is much less risky than agriculture (Kilic *et al.*, 2009). Farming remains important, but rural dwellers are looking for diverse opportunities to increase and stabilize their incomes. The notion of livelihood diversity is based on a framework that considers the activities of the rural poor as being determined by their portfolio of assets, including social, human, financial, natural and physical capital (Berdegue and Escobar, 2002).

It has been variously demonstrated that production of indigenous leafy vegetables as small scale enterprises can be viable (Besong *et al.*, 2001; Ngugi *et al.*, 2006) as it yields early returns (Joshi *et al.*, 2006) and is more remunerative than cereals, pulses and other economic activities (Adhakari, 2006). Indigenous vegetables are also rarely affected by diseases and pests (Farm Concern International (FCI), 2011). The production of indigenous leafy vegetables has a comparative advantage under conditions where arable land is scarce and labour is abundant (Weinberger and Lumpkin, 2005) and often provides the only cash resource for women to use for the welfare of their families. The revenue generated contributes significantly to the enhancement of household food security, access to family health care and enables women to attain some degree of financial independence within the family budget (IITA, 2003). This has positive implications for immediate well-being as well as long-run human capital formation and economic growth through improved health, nutrition and education outcomes (Doss, 2005; Ramakrishnan *et al.*, 2003; Quisumbing and Maluccio, 2000).
2.9 The Effects of Livelihood Diversification Strategies on Rural Household Poverty Status

2.9.1 Meaning and measurement of poverty

Poverty can be defined as lack of material well-being, insecurity, social isolation, psychological distress, lack of freedom of choice and action, unpredictability, lack of long-term planning horizons because the poor cannot see how to survive in the present, low self-confidence and not believing in one self (Narayan, 2000). Sengupta (2003) defined poverty as not only an insufficient income to buy a minimum basket of goods and services but as the lack of basic capabilities to live in dignity. This definition recognizes poverty's broader features, such as hunger, poor education, discrimination, vulnerability and social exclusion.

In the light of the International Bill of Rights (IBR), poverty is defined as a human condition characterized by sustained or chronic deprivation of the resources, capabilities, choices, security and power necessary for the enjoyment of an adequate standard of living and other civil, cultural, economic, political and social rights (United Nations (UN), 2001; Hunt *et al.*, 2004). As observed by Kankwanda *et al.* (2000), poverty is either absolute or relative or both. Absolute poverty being that which could be applied at all time in all societies, such as the level of income necessary for bare subsistence, while relative poverty relates to the living standard of the poor to the standards that prevail elsewhere in the society in which they live. Related to the definition of poverty are the measurements of poverty whose importance is to know who is poor, how many people are poor, and where the poor are located.

According to Foster *et al.* (1984); Mailumo (2013) and Oladimeji (2015), the most frequently used measurements are:

(i) The head count poverty index given by the percentage of the population that lives in the household with consumption per capita less than the poverty line;

(ii) poverty gap index which reflects the depth of poverty by taking into account how far the average poor persons' income is from the poverty line; and

(iii) The distributional sensitive measure of squared poverty gap defined as the means of the squared proportionate poverty gap which reflects the severity of poverty. Studies by UNDP also advocate the use of Human Development Index (HDI) and Capability Poverty Measure (CPM).

In various issues of UNDP, Human Development Index (HDI) combines three components in the measurement of poverty which include: longevity as measured by life expectancy at birth; educational attainment as measured by a combination of adult literacy (two-thirds weight) and combined primary, secondary and tertiary enrolment ratios (one-third weight); and improvement in standard of living as measured by real GDP per capita income (PPP\$). The first relates to survival vulnerability to death at a relatively early age. The second relates to knowledge - being excluded from the world of reading and communication. The third relates to a decent living standard in terms of overall economic provisioning. On the other hand, CPM focuses on the average state of peoples' capabilities by reflecting on the percentage of people who lack basic or minimally essential human capabilities that are ends in themselves, needed to lift one from income poverty and sustain strong human development (NBS, 2012).

Poverty is a general phenomenon as old as human history in Nigeria, it is a common status which cannot be easily wiped off except available basic needs and resources are acquired and evenly distributed among the citizens to alleviate their Poverty which requires some concerted efforts by the government and individuals to shift the status to a more positive direction in nature (Olaitan, 2004). He further stated that Nigerians in the early times regard poor people as those who are unable to take up wedding, manage large families and own domestic animals like Goats, Cattles, and Poultry. Olaitan *et al.* (2000) asserts that these are attributes or layers of status or wealth on which individuals worshipped as wealth. At present, modern development recognizes these attributes to be of short span with low materials and sustainable value when human needs are in question; that is, if somebody at present marry many wives and Children without work or habitable houses commensurate to the large families or important means of transportation, good education for the Children and so on is still regarded as poor (Staudt, 2014).

Poverty in Nigeria is essentially a rural phenomenon-the majority of those in poverty are disproportionately located in the rural areas, where they are primarily engaged in agricultural production and allied activities (NBS, 2007) revealed that rural poverty incidence increased by 22 percent points in the period 1980 – 1985 (from 29.3 percent to 51.4 percent), decreased slightly during the period 1985 – 1992 from (51.4 percent to 46.1 percent) but soared by 23 percent in the following four-year period 1992 – 1996 (from 46.1 percent to 69.8 percent). However, in the period 1996 – 2004, rural poverty incidence decreased from 69.8 percent to 63.8 percent. On the other hand, urban poverty incidence stood at 17.2 percent in 1980 but rose to 37.8 percent in 1985 and remained relatively stable up to 1992 from where it rose to 58.2 percent in 1996 and again dropped to 43.1 percent in 2004 (NBS, 2012).

2.9.2 Causes of poverty

Obadan (1997) and World Bank (2012) identified some factors as the causes of poverty. These included inadequate access to employment opportunities, inadequate physical assets, inadequate access to markets, destruction of natural resources, lack of power to participate in design of development programmes and inadequate access to assistance for those living at the margin. The CBN (2012) summarized the causative causes of poverty as:

2.9.2.1 The stage of economic and social development:

Even when a country's export earnings might be abundant, a situation of economic under-development might pose a management constraint on absorptive capacity or use of funds for development projects which are either not available or properly targeted.

2.9.2.2 Low productivity:

In this case, the consuming unit (individual households) is unable to earn enough income which will enable them to maintain adequate living standards. This would result from the low utilization or low acquisition of human skills due to low education, poor health or physical incapacity and inadequate access to productive assets, which leads to unemployment.

2.9.2.3 Market imperfections:

These are factors which through institutional distortions, would not allow equal access to productive assets and introduce forms of discrimination that prevent the advancement of people. These factors could arise from ignorance, culture, sex, age, race and so forth. Market imperfections also arise from distortions in the unemployment market and skewed income distribution structure that favours some classes in the society and the less favoured class poorer.

2.9.2.4 Structural shift in the economy:

This result of inadequate macroeconomic management policies in which undue concentration is given to a particular sector of the economy to almost total neglect of other sectors. In Nigeria's case, from independence (1960 - 1970), her major export

commodities were cocoa, palm produce, rubber and groundnut (agricultural goods) which provided jobs for the rural poor. But by 1971, Nigeria's structural shift occurred in favour of crude oil, due to its greater foreign exchange earnings. As such, the country became a mono-export country, such that agriculture suffered a setback and mass poverty became the lot of the rural farmers, and rural labour had to seek for alternative jobs in the urban cities.

2.9.2.5 Political instability:

The failure to successfully actualize political transition programmes result in social and economic unrest domestically and internationally. Productive ventures were unable to flourish with restricted outputs and market for sales, investments are withdrawn, jobs are insecure, and the general citizenry faces economic insecurity.

2.9.2.6 Corruption:

In an attempt to measure corruption, a Non-Governmental Organization (NGO) Transparency International (TI), developed the perception of corruption in the world which placed countries on a scale of 1 - 10, where a score of 10 implies that a country is free of corruption, and a score of I implies that a country is completely corrupt.

2.9.3 Characteristics of Poverty

2.9.3.1 Low income:

When the income per individual is low, the country is below poverty line. Nigeria is poor because the standard of living by the citizens is pegged at N300 a day (NBS, 2012). This shows that the greater percentage of Nigerians have low standard of living beyond the datum or benchmark of U.S \$1 per day. Hence, the degree of poverty is enormous (NBS, 2012).

2.9.3.2 Large family size:

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The decision to have many children can be a poverty indicator because large family size is an attribute of low income per capita in a population. Large family size facilitates ill health, malnutrition, illiteracy, high dropout rate as a result of low level of education (Okonkwo *et al.*, 2015).

2.9.3.3 Low level of productivity:

It is generally evident that productivity connotes efficiency and where there is shortage of complementary factors like infrastructure, management and efficient administration. Other cases are the use of primitive implement, high illiteracy rate among the Citizens, lack of appropriate training, low motivation, and poor attitude to work and so on (Okonkwo *et al.*, (2015).

2.9.3.4 Political instability:

Constant changes in government without democratic system results in serious political instability. Most importantly there is a striking evidence of unequal distribution of the economy and earnings and this gives rise to poverty (Alex, 2014).

2.9.4 High dependence:

The poverty experienced by Nigerians is pervasive, multifaceted, and chronic, affecting the lives of a large proportion of the populace. The Nigerian situation presents a paradox because the country is rich but the people are poor. This has been captioned, 'poverty in the midst of plenty' by the World Bank (World Bank, 2000). The incidence of poverty in Nigeria has been on the increase since 1980. The National Bureau of Statistics (NBS, 2007) revealed that the incidence of poverty increased sharply both between 1980 and 1985 (from 28.1 percent to 46.3 percent) and between 1992 and 1996 (from 42.7 percent to 45.6 percent) though there were declines between 1985 and 1992 (from 46.3 percent).

However, while the poverty incidence reduced from 65.6percent in 1996 to 54.4 percent in 2004, the number of poor people increased from about 67 million people to about 70 million people. The reasons for the increased poverty incidence between 1980 and 1985 were multiple. The increase in poverty incidence between 1992 and 1996 was the outcome of the reversal of many of the policies that contributed to growth and poverty reduction during the 1986 – 1992. Real gross domestic product (GDP) and consumption per capita fell by 5 percent between 1992 and 1994, while the resumption of rapid inflation further eroded many of the earlier benefits-from 49 percent in 192 to 77 percent in 1994.

In fact, the country returned during the 1992/94 period to the exchange rate, fiscal and monetary policies that were operated before 1986 (the onset of SAP). The decline in poverty incidence that was again witnessed between 1996 and 2004 was, among others, the product of rationalization and streamlining of the activities of poverty alleviation institutions and agencies in order to enhance effective performance and reduce overlapping functions. In addition, the establishment, for the first time, of the National Poverty Eradication Programme (NAPEP) in 2001 to replace the ad hoc Poverty Alleviation Programme (PAP) of the year 2000 also accounted for the reduced poverty incidence within the period (NBS, 2007).

Rural poverty incidence, therefore, was higher than urban poverty incidence between 1980 and 2004. This is a reflection of' the disparities in the access to opportunities and infrastructure among the different households. For instance, infrastructure such as roads, water and sanitation, education, and electricity are not readily available in the rural areas of the country. In the same vein, opportunities such as off-season employments, credit availability, and access to timely agricultural inputs are not commonplace in the rural

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areas. The drastic rise in urban poverty incidence is connected with the declining state of infrastructure such as roads, water and sanitation, education, and electricity (NBS, 2007).

The majority of the rural poor in Nigeria derive their livelihood from subsistence agriculture and from the provision of services such as blacksmithing, tailoring and carpentry. The areas where the poor live are served with bad roads, making them to lack access to productive inputs as well as the output market arid other facilities like health clinic/hospitals in the nearby urban centres.

Consequently, they have small-sized farms, use traditional farming inputs, and face food insecurity during the rains just before harvest. This period is characterized by the simultaneous prevalence of malnutrition (as diets are limited to starch-based ones), poor food availability, sickness, indebtedness, hard work, and discomfort (NBS, 2007). All these make the chronically poor in Nigeria to eat stale food and leftovers. The chronically poor has been described by World Bank (1996) as one that does not have access to adequate shelter (manifested in poor houses and over-crowding), have only one or two pairs of clothing, worn at all times, do extensive physical work either in the farm or in other occupations and the children in poor households cannot afford school uniforms and fees and/or transportation costs to and from school. Therefore, they resort to doing menial jobs like collection and sale of firewood, hawking of ready to eat food and load carrying in the markets and other public places.

Poverty, which has become pronounced and widespread in Nigeria, was not so until after the end of the oil boom era which started with the collapse of oil prices in the international market in the early 1980s. The emergence of oil in the Nigerian economy in the 1970s made the agricultural sector, which hitherto was the mainstay of the economy, to be neglected. This was attributed to the shift in the terms of trade together with the heavy spending in unviable investments, designed to raise the economy's productive capacity and human capital (NBS, 2007).

Consequently, farm resources (most especially labour) migrated to the urban areas to supply the much-needed labour in construction works at a wage higher than what was obtainable on the farms. Hence, agricultural production fell considerably, making Nigeria (an almost food self-sufficient nation) to become a net importer of food. Oil also turned Nigeria into a mono-export- product economy. In addition, when oil prices fell (leading to a fall in revenue and per capita income), the government increased borrowing abroad to sustain its pre-oil shock expenditure pattern instead of cutting them. As a result, foreign debt accumulated which led to the short fall in social sector expenditure and consequently, a fall in social services, making the welfare system to fall apart (NBS, 2007).

Though the military government of 1983 introduced across-the-board budgetary cuts and administrative restrictions on import and foreign exchange transactions, the welfare status of the people only increased marginally. This is because of their failure to address the economy structural weakness of low productivity in the agricultural sector, uncompetitive manufacturing sector, significant trade distortions, and cumbersome regulatory framework. In 1986, a further collapse in oil prices to US\$14 per barrel made the government adopt the Structural Adjustment Programme (SAP) supported by the World Bank and International Monetary Fund (World Bank, 2012).

The country since the inception of democratic government in 1999 has not left out the effort to reduce poverty. An ad-hoc poverty reduction program, Poverty Alleviation Programme (PAP) was implemented in 2000 basically to provide jobs for the poor unemployed for a time period. However, this was replaced by the National Poverty Eradication Programme (NAPEP) in 2001 to coordinate and monitor all poverty

eradication efforts at federal, state, and local government levels. It also assists the federal government to formulate poverty reduction policies nationwide, and intervenes in specific poverty reduction areas to provide social protection through economic empowerment as may be needed (NBS, 2012). This project will reveal the effect of livelihood diversification strategy on rural household poverty status in the study area as input to policy on poverty reduction in Nigeria.

2.10 Conceptual Framework

Conceptual frameworks connect all aspects of inquiry in a research (e.g. problem definition, purpose, literature review, methodology, data collection and analysis) and also provides the structure/content for the whole study based on literature and personal experience (Roger and Vaughan, 2008). It also act like maps that give coherence to inquiry and explain key constructs and terms as introduced for clarity in the theoretical models. It situates the work within prior theory and research on the question, identifies the phenomena propose to analyze and the justification for studying (Roger and Vaughan, 2008). The conceptual model (See Figure 2.1) for this study shows the relationship between the independent variables (such as socio-economic factors, institutional factors, livelihood diversification strategies and constraints) and the dependent variable (poverty status of the respondents) leading to the expected effects/impacts in the study area. However, intervening factors, cultural beliefs, values and norms could indirectly influences the independent and dependent variables in the study area.



Key: Indirect -----

Direct ------

Figure 2.1: Conceptual framework on livelihood diversification strategies and its effects on poverty status of rural farmers in Niger State, Nigeria

Source: Adopted and Modified from Oyediran (2016)

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CHAPTER THREE

3.0 METHODOLOGY

3.1 Study Area

This study was conducted in Niger State, Nigeria. The State was created in 1976. It is located in Guinea Savannah Region and lies between Latitude 8° 20' - 11° 30' North and Longitudes 38° 30' - 8° 20' East of the equator (NAMDA, 2018). The state is boarded to the North by, Kaduna State and Federal Capital Territory (FCT), Kebbi State to the West, Kogi State to the South, and Kwara State to the south – West. Niger State has a common entry boundary with Republic of Benin along New Bussa, Borgu Local Government Area. This has given rise to common border between Benin Republic and Nigeria. The State covers land area of 74,244sq km of 7,424 million hectares covering 8% of the land area of the country. It had a population of about 3,950,249 people with Male population of 2,032,725 and female population as at 2019 using 3.2% growth rate was 6,139,477 with male population of 3,159,261 and female population of 2,980,216 (Niger State Agricultural Mechanization and Development Authority (NAMDA), 2019).

The climate and ecological conditions of the State is favoured with mean annual rain fall of 782 – 1250 mm and mean temperature of about 82°F or 27.7°C (Tsado, 2013). The State has over the years, remained a leading contributor to agricultural productivity in the country at the regional and State levels (FMARD 2012; NBS, 2012). It has abundant wild vegetation of Shea trees and dominated by small scale farmers. The State is made up of 25 LGAs divided into three agricultural zones with millet, rice, maize, guinea corn, cowpea, cassava, groundnuts and sweet potatoes as the major crops cultivated. Majority of famers keep livestock like poultry, goat and sheep while others engaged in crafts such as sculptures, weaving and blacksmith (Tsado, 2013). About 85% of the populations of the State engage in farming while 15% are involved in one or other activities along agricultural value chain as well as vocation such as white collar jobs, businesses, crafts and arts (Tsado, 2013).

The major tribes are Nupe, Gwari, and Hausa, while other tribes are Fulani, Kanbari, Kakanda Dibbo, Kamuku, Ganagana, Ibo and Yoruba as minorities. The major economic activity is agriculture (farming, fishing and livestock rearing). The State is blessed with numerous natural resources found in large deposits. The two major dams for electricity generation in the country are located in the state. The extensive flood plain in the Southern boundary of the State availability of large water bodies, dams and reservoirs offer great opportunity for dry season cultivation of fadama crops (Niger State Geographical Information System (NGIS, 2018).



Figure 3.1: Map of Nigeria showing Niger State Source: NAMDA, 2019



Figure 3.2: Map of Niger State showing the selected LGAs (Lavun, Paikoro and Wushishi) Source: NAMDA, 2019

3.2 Sampling Procedure and Sample Size

The State is divided into three (3) agricultural zones namely: Zone I, Zone II and Zone III. Multi-stage sampling technique was used in this study to select the respondents. In the first stage, one (1) Local Government Area (LGA) each was purposively selected from each zones namely: Lavun LGA from zone I, Paikoro LGA from zone II and Wushishi LGA from zone III of Niger State due to preponderance of economic and livelihood activities in the area. In the second stage, three (3) villages were randomly selected from each of the selected three LGAs. The list of registered households from each of the village selected was obtained from Niger State Agricultural and Mechanization Development Authority (NAMDA) as sample frame which is 4,597 male and Female household heads. In the third stage, the sample frame was stratified into 2,765 males and 1,832 females headed rural households. The fourth stage involved proportionate selection of the respondents at 5% to get one hundred and thirty eight (138) males and ninety – two (92) females headed rural households from each strata. In all, two hundred and thirty (230) respondents (males and females) were selected for the study.

Table 3.1: Sample outlay of the respondents in the study area

		Ι	Male		Female	
LGAs/Zone	Villages	Sample Frame	Sample Size (5%)	Sample Frame	Sample Size (5%)	

Lavun I	Batati	374	19	289	15	
	Kutigi	665	33	367	18	
	Busu/Kuchi	105	5	68	3	
Paikoro II	Kafinkoro	349	17	218	11	
	Nikuchi	200	10	124	6	
	Paiko	77	4	52	3	
Wushishi III	Kodo	283	14	194	10	
	Lokogoma	290	15	202	10	
	Zungeru	422	21	318	16	
Total		2765	138	1832	92	

Source: Niger State Agricultural Mechanization and Development Agency (2019)

3.3 Method of Data Collection

Primary data were used for this study. These data were collected from respondents with the aid of structured questionnaire complemented with an interview schedule. Trained enumerators under the supervision of the researcher helped in the collection of the data. In administering the questionnaire, the limited cost-route approach to data collection was employed. The questionnaire for the study was designed in line with the specific objectives of the study. Hence, data were collected on socio-economic characteristics of the respondents such as age, gender, marital status, household size, educational qualification, and years of farming experience. Other information included livelihood diversification strategies, effects on poverty reduction in rural household, input-output information from on-farm, off-farm and non-farm activities of households as well as total income realized per annum.

3.4 Method of Data Analysis

Descriptive statistics such as mean, median, frequency distribution and percentages were used to analyze the socio-economic characteristics of respondents (male and female household members) in the study area (objective i). Descriptive statistics/Adaptation strategies index was used to determine livelihood strategies adopted by male and female rural household (objective ii). Foster Greer and Thorbek (FGT) index model was used to evaluate poverty status of respondents (objective iii). Tobit regression was used to estimate the factors influencing the livelihood diversification strategies of the respondents (objective iv). Logit regression was used to determine the effects of livelihood diversification strategies on poverty reduction of respondents (objective v). Descriptive statistics/Likert scale was used to identify the constraints faced by the respondents (objective vi).

3.5 Operational Measurement of Variables

3.5.1 Dependent variables of the study

In the context of this study, the dependent variable was measured based on the following indicators:

3.5.1.1 Poverty status:

To determine their poverty status, information on both quantifiable and non-quantifiable factors of household expenditure on goods and services, and income was elicited. These factors include:

3.5.1.2 Household expenditure and income:

Household expenditure refers to all spending on goods and services intended for consumption. It includes payment by the household for goods and services supplied, accommodation, education, health, transportation, communication, clothing, utility supplies, bills and food. Household income refers to the disposable cash income which is the total receipt (mainly from the sales of farm produce and other off-farm activities) less personal taxes, plus gifts earned by members of the household. This was measured in Naira.

3.5.1.3 Farm income:

This refers to the proceeds, returns and earnings from crop farm products and off-farm activities. Therefore, income in this study refers to the total revenue generated from farm and off-farm activities per annum by the respondents. Farm income which is the aggregate sales of farm output was measured in Naira.

3.5.1.4 Crop output:

This refers to the quantity of crops produced within the season of the study and it was measured in 100 kilogramme bag.

3.5.1.5 Farmer's level of living:

This is the relative quality of life of household in the study area. It is assumed that participation in development project enhances the likelihood of better living. To measure the household level of living with precision could be difficult, as perceptions differ in various areas among diverse societies. However, material possessions of farmers as well as general expenditure was used as indicators of level of living. The possession include radio, television, bicycle, motorcycle, car, livestock and other valuables. The total value of assets possessed by a farmer was estimated and converted to naira value.

(i) Assets: This was measured as the number and value in Naira of all valuable items owned by the respondents. It was scored as 1= pump; 2= ox- plough; 3= draft cattle; 4 = hoes; 5= motorcycle; 6 = radio; 7 = rechargeable lamp; 8 = cattle; 9 = sheep and goats; 10 = poultry; 11 = bicycle; 12 = cutlasses/matchets

(ii) Expenditure: This was measured as the sum total of the expenditure on certain items in naira. The items were scored as 1 = food; 2 = rent; 3 = education; 4 = electricity; 5 = religious festivities; 6 = health and medicare; 7 = transportation; 8 = clothing; 9 = ceremonies; 10 = kerosene/firewood; 11 = others

3.5.2 Independent Variables of the study

(i) Age: This was measured in years as given by the respondents.

(ii) Education level: It was measured by the number of years spent in formal schooling and qualification. It was scored as 0= no formal education, 1= adult education, 2= primary education, 3= secondary education, 4= tertiary education.

(iii) Household size: This was measured by the total number of people a respondent feeds and takes care of. It includes the husband, children and any other dependants in the house.

(iv) Membership of organization: It was measured as 1= member, 0 = non-member.

(v) Access to credit: This was measured by the actual amount of money the respondent had received as credit in naira and kobo

(vi) **Training:** This refers to the instructions or actual training received by respondents on farming activities and entrepreneurship. This was measured by the actual number of times a respondent had participated in such training.

(vii) Farm size: Farm size was measured in hectares

(viii) Farming experience: This was measured in years: 1-5 years was scored 1; 6-10 years was 2; 11-15 years was scored 3, while 16 years and above was scored 4.

(ix) Extension contact: This was measured in frequency of contact with extension agent for the purpose of improving agricultural activities. Weekly extension agent visit was scored 1; fortnightly extension agent visit was scored 2, monthly visit was scored 3, quarterly visit was scored 4 and annual visit was scored 5.

(x) Farm inputs: This describes a package of farm inputs available to respondents.These include seeds, fertilizers and other chemicals. They were measured in kilogramme (kg), except agro-chemical in liquid form measured in litres.

(xi) Distance to market: Access to market is known to positively influence the adoption of improved agricultural technologies (Workneh, 2007). This was measured in kilometre (Km)

(xii) Money remittance: This is financial service accessible to respondents for payments and transfer of funds to individuals within and outside the locality. It was measured in term of Yes = 1 and No = 0.

(xiii) Labour input: Labour was measured in man/day

(xiv) Perceived constraints: Perception constraints faced by the rural households with regards to livelihood diversification strategies was measured using 5-point Likert type rating scale; 1 = Not Very Serious, 2 = Not Serious, 3 = Indifferent, 4 = Serious and 5 = Very Serious.

3.6 Model Specification

3.6.1 Foster-Greer-Thorbecke (FGT)

Poverty Index was used to evaluate the poverty status of rural household and to disaggregate them into poor and non-poor categories. It has become customary to use the so-called P α measures in analyzing poverty. The measures relates to different dimensions of the incidence of poverty P₀, P₁ and P₂ was used for head count (incidence), depth and severity of poverty respectively. The three measures was based on a single formula but each index puts different weights on the degree to which a household or individual falls below the poverty line. The mathematical formulation of poverty measurements as derived from Foster, Greer and Thorbecke (1984) is estimated as in equation (1) to (6):

$$P_{ai} = \frac{1}{n} \sum_{i=1}^{q} \left[\frac{(z-y)}{z} \right]^{a}$$
(1)

Where;

a = 0, P_o =
$$\frac{1}{n} \sum_{i=1}^{q} \left[\frac{(z-y)}{z} \right]^{0} = \frac{q}{n} \rightarrow \text{Poverty incidence or head count}$$
 (2)

$$a = 1, P_1 = \frac{1}{n} \sum_{i=1}^{q} \left[\frac{(z-y)}{z} \right]^1 \to Poverty \ deph$$
(3)

a = 2, P₂ =
$$\frac{1}{n} \sum_{i=1}^{q} \left[\frac{(z-y)}{z} \right]^2 \rightarrow \text{Poverty severity}$$
 (4)

Where;

a = degree of poverty

n = number of households in a group

- q = the number of poor households
- y = the per capita expenditure (PCE) of the ith household.
- z = poverty line

The 2/3 mean per capital expenditure is referred to as the moderate poverty line, while its 1/3 is referred to as the core poverty line. This study was however, limited to the moderate poverty line, because it closely approximates the \$1/day international poverty line (NBS, 2007).

 α = degree of poverty aversion

Per capita expenditure =
$$\frac{Total expenditure}{household size}$$
 (5)

Mean per capita household expenditure (MPCHE) = $\frac{Total \ household \ PCE}{Total \ number \ of \ Households}$ (6)

The categorization of respondents based on the poverty line is given as:

Extreme poor: those spending < 1/3 of MPCHE

Moderately poor: those spending < 2/3 of MPCHE

Non-poor: those spending > 2/3 of MPCHE.

3.6.2 Tobit Regression Model

Tobit regression model was employed to estimate the factors influencing the choice of livelihood strategies among households in the study area. The Tobit model (Greene, 2003; Isaac, 2009) is expressed as in equation (7):

$$Yi^* = X i \beta + \varepsilon i \tag{7}$$

Where;

 ε *i* is normally distributed with zero mean and constant variance.

Y* is the livelihood diversification index obtained by dividing the number of livelihood strategies employed by all the livelihood strategies available in the study area. Thus, the value of the livelihood index ranges between zero and one. Thus, the explanatory variables used in the regression analysis was implicitly expressed as:

$$\mathbf{Y} = f(\mathbf{X}_1, \mathbf{X}_2, \mathbf{X}_3, \mathbf{X}_4, \mathbf{X}_5, \mathbf{X}_6, \mathbf{X}_7, \mathbf{X}_8, \mathbf{X}_9, \mathbf{X}_{10}, \mathbf{X}_{11}, \mathbf{X}_{12}, \mathbf{X}_{13}, \mathbf{X}_{14})$$

However, the explicit form of the model is given as in equation (8):

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_{14} X_{14} + e$$
(8)

Y = Livelihood diversification strategies (measured as index given by number of livelihood diversification strategies adopted over the total number of available livelihood diversification strategies).

 $\beta_0 = constant$

 β is vector parameters

Xj is vector regressor

e is error term

The independent variables include:

 $X_1 = Age of the respondents (in years)$

 X_2 = Marital status (married = 1, 0 if otherwise);

 X_3 = Household size (numbers)

 $X_4 =$ Education (years)

 $X_5 =$ Farming experience (years)

 $X_6 =$ Farm size (hectare)

 $X_7 = Access to credit (\mathbb{N})$

 X_8 = Household income (\aleph)

 X_9 = Household expenditure (\mathbb{N})

 X_{10} = Cooperative membership (years)

 X_{11} = Extension contact (number)

 $X_{12} = Occupation (number)$

 X_{13} = Skill acquisitions (number)

 β = Regression parameters or coefficient

U = error term

3.5.3 Logit regression model

Logit regression model was used to determine the various effects of livelihood diversification strategies on poverty reduction of farmers on a dichotomous outcome by estimating the probability of the event's occurrence. It does this to determine the relationship between one or more independent variables and the log odds of the dichotomous outcome by calculating changes in the log odds of the dependent as opposed to the dependent variable itself. The log odds ratio is the ratio of two odds and it is a summary measure of the relationship between two variables (Olayemi *et al.*, 1995; Adepoju and Obayelu, 2013).

The Logit regression model is express explicitly as in equation (9):

$$Z = \beta_0 + \beta_1 X_1 + \dots + \beta_n X_n + U \tag{9}$$

Where;

 X_1 X_n are the explanatory variables.

Z = Poverty status of the rural households (Poor = 1, 0 if otherwise).

 $X_1 = Age of the respondents (in years)$

 X_2 = Marital status (married = 1, 0 if otherwise)

 X_3 = Household size (numbers)

 X_4 = Education (years)

 $X_5 = Experience (years)$

 $X_6 =$ Farm size (hectare)

 X_7 = Livelihood strategies (numbers)

 X_8 = Household income (\mathbb{N})

 X_9 = Household expenditure (N)

 $X_{10} =$ Extension contact (number)

 X_{11} = Access to credit facility (access = 1, 0 if otherwise)

 X_{12} = Cooperative membership (member = 1, 0 if otherwise).

U = error term

3.6.3 z – test

The hypothesis that there is no significant difference in poverty depth of the respondents along the gender differential in the study area was tested using z-test. The z-test statistics formula is expressed as in equation (10):

$$Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$
(10)

Where;

- \bar{X}_1 = Mean poverty depth of the male gender
- \bar{X}_2 = Mean poverty depth of the female gender
- σ_1^2 = Poverty depth variance of the male gender
- σ_2^2 = Poverty depth variance of the female gender
- n_1 = Number of the male gender
- n_2 = Number of the female gender

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

This chapter discussed the results of the data analysis comprising the socio-economic characteristics of the respondents along the gender differential, the major livelihood diversification strategies adopted along gender differential, the poverty status of the respondents along the gender differential, the effects of livelihood diversification

strategies on poverty status, the factors influencing the livelihood diversification strategies of the respondents along the gender differential and the constraints to livelihood diversification strategies faced by the rural households along gender differential.

4.1 Socio-economic Characteristics of the Respondents

Socio-economic characteristics of the respondents described were age, marital status, educational status, farming experience, household size, farm size farmland acquisition, farming status, extension contact, access to credit, cooperative membership and access to skill acquisition. The results of the analysis are presented in the Tables 4.1.

4.1.1 Age of the respondents

Age is the length of time an individual lived or existed on the earth or simply the life span of an individual. As revealed in Table 4.1, majority (86.3%) of the male household heads and 87.0% of the female household heads were within the age group of 26 - 55 years with mean age of 39 and 35 years, respectively. This implies that the respondents in the study area were in their most productive stage of life and have the capacity to diversify their livelihood through adoption of various livelihood strategies. Although, there is marginal difference in the mean age of the male gender as compared to that of their female counterpart. This finding is in agreement with the work of Zakaria *et al.* (2015) who reported that the working age of their respondents differs across gender with the male household heads having higher mean age as compared to female household heads.

4.1.2 Educational status of the respondents

Table 4.1 revealed that majority (72.5%) of the male household heads had one form of formal education or the other (i.e primary, secondary and tertiary) with mean of 12 years spent in formal schooling, while 27.5% had no formal education. Also, more than half

(59.8%) of the female household heads had one form of formal education or the other (i.e primary, secondary and tertiary) with mean of 6.5 years spent in formal schooling, while 40.2% had no formal education. This implies that there is a relatively moderate literacy level along the gender line in the study area. However, the male household heads are more educated as compared to the female household heads which could be attributed to lack of equal opportunities for education across gender based on data obtained for the study. Education is regarded as an investment in human capital needed to raise the skills and quality of an individual particularly in agricultural production. This finding is in agreement with the work of Gebreyesus (2016) who reported in his study on the determinants of livelihood diversification: The case of Kembata Tambaro Zone, Southern Ethiopia that there is significant difference in the educational status of his respondents as the male gender were found to be more educated (i.e could read and write) compared to the female gender.

Variables	Male (n = 138)		Female (n = 92)	
	Frequency	Percentage	Frequency	Percentage
Age (Years)				
< 26	7	5.10	12	13.00
26 - 35	59	42.80	46	50.00
36 - 45	40	29.00	24	26.10
46 - 55	20	14.50	10	10.90
> 55	12	8.60	-	-
Mean	39		35	
Marital status				
Single	28	20.30	5	5.40
Married	110	79.70	87	94.60
Education status				
Primary	13	9.40	17	18.50
Secondary	64	46.40	20	21.70
Tertiary	23	16.70	18	19.60

Table 4.1: Distribution of respondents based on their socio-economic characteristics

Non formal	20	27.50	20	40.20
Non-tormal	38	27.50	30	40.20
Farming experience (Years)	1.0		4.0	10.00
< 6	10	7.20	10	10.90
6 - 10	53	38.40	55	59.80
11 - 15	29	21.10	15	16.30
> 15	46	33.30	12	13.00
Mean	14		11	
Household size (Number)				
1 – 5	44	31.90	42	45.70
6 - 10	69	50.00	36	39.10
11 – 15	19	13.80	7	7.60
> 15	6	4.30	7	7.60
Mean	8		6	
Farm size (Hectares)				
< 2.1	45	32.70	78	84.80
2.1 - 4.0	58	42.00	12	13.00
4.1 - 6.0	25	18.10	2	2.20
> 6.0	10	7.20	-	-
Mean	3.5		1.4	
Method of farmland acquisition				
Inheritance	122	88.40	61	66.30
Purchase	8	5.80	9	9.80
Rent/Lease	6	4.20	18	19.60
Gift	2	1.40	4	4.30
Farming status				
Full term	95	68.80	70	76.10
Part term	43	31.20	22	23.90

Source: Field Survey, 2019

4.1.3 Marital status of the respondents

Marital status refers to the state of being married or unmarried. Result in Table 4.1 revealed that majority (79.7%) of the male household heads were married, while 20.3% were single. Also, 94.6% of the female household heads were married, while 5.4% were single. This implies that most of the respondents along the gender differential were married people with more married female gender compared to male gender in the study area. Married individual are considered responsible based on societal norm and they tend to engage in different livelihood diversification strategies to cater for the family needs. More so, they have the capacity of producing next future generation that will be involved in agricultural activities. This result also corroborate with the work of Zakaria *et al.*

(2015) who reported in their study that female and male gender differ significantly in terms of marital status as the male gender were found more likely to be single compared to the female gender. Male gender in most rural setting are the head of households with lot of responsibilities to discharge, thus the need to develop the capacity which sometimes delay their getting married.

4.1.4 Farming experience of the respondents

The result in Table 4.1 revealed that most (67.5%) of the male household heads and 76.1% of the female household heads had farming experience between 6 - 15 years with a mean of 14 and 11 years in farming, respectively. This implies that the respondents have been into agricultural activities for relatively long time which could easily influence their decision to adopt different livelihood strategies. However, the male gender had more farming experience compared to their female counterpart in the study area. Farming experience is an indication of the practical knowledge and skills of farming gained through regular farming operation over a period of time. It enables the farmer to be able to overcome problems encountered in farming and adjust where appropriate to enhance their livelihood. This result is in corroboration with the work of Adzawla and Kane (2018) who in their study found male gender to have higher farming experience compared to the female gender.

4.1.5 Household size of the respondents

Household size refers to the total number of people living under the same roof and eating from the same pot (Ojuekaiye, 2001). Table 4.1 also revealed that, most (63.8%) of the male household heads and 46.7% of the female household heads had household size between 6 - 15 persons with mean household size of 8 and 6 persons, respectively. This implies that household size of the respondents in the study area is fairly large with male household heads having larger household size as compared to female household heads.

Larger household size is very important in agricultural production because it provide the needed family labour in livelihood diversification, thereby reducing the labour cost through hired labour. This result agrees with the work of Oyesola and Ademola (2012) who reported in their study on gender analysis of livelihood status among dwellers of Aiyedire LGA of Osun State, Nigeria that male headed households had larger family sizes compared to female headed households with smaller household sizes.

4.1.6 Farm size of the respondents

The results in Table 4.1 revealed that most (60.1%) of the male household heads had farm size ranging from 2.1 – 6.0 hectares with a mean farm size of 3.5 hectares, while majority (84.8%) of the female household heads had farm size of less than ranging from 2.1 hectares with a mean farm size of 1.4 hectares. This implies that the male gender had moderate farm size as compared to their female counterpart who had small farm size. Thus, the male gender operates on medium scale, while the female gender are smallholder farmers operating on a small scale. The level of operation across gender could influences the decision to adopt livelihood strategies. This finding agrees with the work of Kolawole and Ojo (2007) who reported that Nigerian agriculture is dominated by small-scale farmers operating farm holdings ranging from 0.5 - 3.0 hectares. More so, Simtowe (2010) in his study on livelihoods diversification and gender in Malawi reported significant difference in the land holding between male–headed and female–headed households.

4.1.7 Farmland acquisition of the respondents

Land ownership refers to situation where an individual has title to portion of land for farming through a tenure system. As shown in Table 4.1, majority (88.4%) of the male household heads acquired their farmland through inheritance, followed by 5.8% who purchase their farmland and 4.3% who acquired their farmland through rent/lease.

Similarly, most (66.3%) of the female household heads acquired their farmland through inheritance, followed by 19.6% who acquired their farmland through rent/lease and 9.8% who purchase their farmland. This implies that access to farmland for agricultural production in the study area is mostly through inheritance. This type of title to farmland usually lead to farmland fragmentation from generation to generation, thus limiting agricultural mechanization. However, few respondents spend money in acquiring farmland with the female gender spending more to access farmland. Access to farmland determines the level of production of individual farmers and the need to diversify their livelihood source. This finding is in agreement with the work of Yusuf *et al.* (2008) who reported that majority of the respondents in their study area acquired farmland through inheritance.

4.1.8 Farming status of respondents

As revealed in Table 4.1, most (68.8%) of the male household heads and 76.1% of the female household heads were involved in full-term farming, while 31.2% of the male household heads and 23.9% of the female household heads were into farming on part-term. This implies that most of the respondents in the study area were full-term farmers. Meanwhile, the female headed household were found to participate more in farming activities than their male counterpart. Participation of an individual in farming activities is to improve the living standard as some of the respondents were found to be fully engaged in farming as a primary occupation, while others are engaged in farming as a secondary occupation.

4.1.9 Institutional variables assessed by the respondents

The institutional variables assessed by the male and female gender include extension services (contact and frequency of extension contact), credit services (sources and amount), cooperative societies (number and types) and skills acquisition assessed are presented in Table 4.2. As revealed in Table, majority (70.3%) of the male household heads and 88.0% of the female household heads had contact with extension agents, while 29.7% of the male household heads and 12.0% of the female household heads had no contact with extension agents. This implies that most of the respondents in the study area had access to extension services with the female household heads having more access to extension services as compared to their male counterpart. Access to extension service is expected to influence livelihood diversification strategies adopted by rural households. This findings agrees with the work of Asfaw *et al.* (2017) who reported in their study on determinants of non-farm livelihood diversification: evidence from rain-fed dependent smallholder farmers in North-Central Ethiopia that farmers with access to extension services provide rural people access to knowledge and information needed to increase agricultural productivity through sustain production. It also help to improve quality of life and livelihoods among rural farmers.

However, in contrast, male headed households had more access to extension services as compared to female headed households who had low access to extension services. Furthermore, the result in Table 4.2 revealed that 40.2% and 26.8% of the male household heads had contact with extension agent monthly and annually, respectively, while 35.8% and 48.1% of the female household heads had contact with extension agents monthly and annually, respectively. This also showed that the female household heads had contact with extension agents frequently as compared to the male household heads which could be due to availability of more female related livelihood programmes in the study area.

Variables	Male		Female		
	Frequency	Percentage	Frequency	Percentage	
Extension contact	. . .		A V		
No contact	41	29.70	11	12.00	
Contact	97	70.30	81	88.00	
Frequency of contact					
Weekly	3	3.10	8	9.90	
Fortnightly	20	20.60	2	2.50	
Monthly	39	40.20	29	35.80	
Quarterly	9	9.30	3	3.70	
Annually	26	26.80	39	48.10	
Access to credit					
No access	51	37.00	40	43.50	
Access	87	63.00	52	56.50	
Sources of credit*					
Farmers' organization	37	42.50	29	55.80	
Family & Friends	45	51.70	32	61.50	
Microfinance bank	30	34.50	12	23.10	
Bank of Agriculture	50	57.50	31	59.60	
Commercial bank	5	5.70	20	38.50	
Cooperative societies	57	65.50	41	78.80	
Cooperative membership					
No member	81	58.70	10	10.90	
Member	57	41.30	82	89.10	
Types of cooperative*					
Production	38	66.70	19	23.20	
Marketing	17	29.80	60	73.20	
Consumer	11	19.30	20	24.40	
Credit & Thrift	35	61.40	51	62.20	
Access to skill acquisition					
Not accessible	89	64.50	18	19.60	
Accessible	49	35.50	74	80.40	
Types of skill acquisition*					
Driving	3	6.10	-	-	
Culture fish	17	34.70	10	13.50	
Agro-processing	39	79.60	63	85.10	
Tailoring	10	20.40	25	33.80	

Table 4.2: Distribution of respondents based on institutional variables

Source: Field Survey, 2019	*Multiple responses			
Handcraft	8	16.30	46	62.20
Artisan	27	55.10	-	-

More so, Table 4.2 showed that most (63.0%) of the male household heads had access to credit, while more than half (56.5%) of the female household heads had access to credit. This clearly indicates that the male household heads had more access to credit compared to female household heads in the study area which could be due to their exposure to different sources of credit. More so, male headed household are usually avail with opportunities to participate in rural development programmes that link them with various sources of credit. Credit is a catalyst for increased agricultural production and livelihood diversification. Availability of credit becomes imperative for adoption of different livelihood strategies and enhance income. This finding is also in corroboration with the work of Adzawla and Kane (2018) who reported that financial asset (measured by access to credit) significantly influenced farmers' livelihood diversification. Thus, male farmers as compared to female farmers have a higher probability of engaging in livelihood diversification because of their access to credit (in-cash or in-kind). The effects of credit on diversification can be explained through its effect on resource mobilization. The credit risk averse nature of females could explain the reason for their low access to credit as compared to male headed households.

The result further revealed the sources of credit by the respondents as 65.5% of the male household heads sourced their credit from cooperative societies; 57.5% sourced their credit from Bank of Agriculture; 51.7% sourced their credit from family and friends; 42.5% sourced their credit from farmers' organization; 35.4% sourced their credit from Microfinance bank and 5.7% sourced their credit from commercial banks. This implies the cooperative societies was their main sources of credit, while highest mean amount of credit accessed was recorded from farmers' organization.

Similarly, 78.8% of the female household heads sourced their credit from cooperative societies; 61.5% sourced their credit from family and friends; 59.6% sourced their credit from Bank of Agriculture; 55.8% sourced their credit from farmers' organization; 38.5% sourced their credit from commercial bank and 23.1% sourced their credit from Microfinance banks. This implies the cooperative societies was their main sources of credit, while highest mean amount of credit accessed was from microfinance and commercial banks.

Table 4.2 further revealed that 41.3% of the male household heads were member of cooperative societies, while majority (89.1%) of the female household heads were member of cooperative societies. This implies that the female household heads were more involved in cooperative societies compared to the male household heads in the study area. This finding corroborates Yaro *et al.* (2016) who reported in their study on focused group discussion in Kanshegu community of Ghana that female headed households were members of a development group or cooperative which significantly influences their livelihood diversification as compared to male headed households.

In terms of types of cooperative membership the respondents were involved, 66.7% of the male household heads were in production cooperative; 61.4% were in credit and thrift cooperative; 29.8% were in marketing cooperative and 19.3% were in consumer cooperative. Similarly, most (73.2%) of the female household heads were in marketing cooperative; 62.2% were in credit and thrift cooperative; 24.4% were in consumer cooperative and 23.2% were in production cooperative. This implies that both the male and female gender are into different types of cooperative societies where they could derive a lot of benefits.

(iv) Skills acquisition by the respondents
Table 4.2 also revealed that 35.3% of the male household heads had access to skill acquisitions, while majority (80.4%) of the female household heads had access to skill acquisitions. This implies that the female household heads had more access to skill acquisition as compared to the male household heads in the study area. In terms of skills acquired by the respondents, majority (85.1%) of the female household heads acquired skill on agricultural processing, 62.2% acquired skills on hand craftsmanship, 33.8% acquired skill on tailoring and 13.5% acquired skill on fish culture. In the same vein, 79.6% of the male household heads acquired skill on agricultural processing, 55.1% acquired skill as artisan, 34.7% acquired skill on fish culture and 20.4% acquired skill on tailoring.

4.2 Livelihood Diversification Strategies of the Respondents

4.2.1 Crop livelihood diversification strategies of the respondents

Crop diversification is one of the livelihood strategies that is adopted by the rural households to improve household food security and welfare. The result in Table 4.3 revealed the crop livelihood diversification of the respondents in the study area. Majority (89.1%) of the male household heads were into rice production This is followed by 79.7% of the respondents into yam production; 68.1% were into maize production; 41.3% were into millet production and 39.9% were into sorghum production. Other crops produced are vegetables (29.7%), potato (23.2%) and melon (12.3%). This implies that rice, yam and maize are the three major crop diversification livelihood strategies mostly engaged by the male headed household among other crops in the study area.

Similarly, majority (85.9%) of the female household heads were into melon production. This is followed by 44.6% of the respondents into vegetable production; 35.9% were into maize production and 30.4% were into rice production. Other crops produced are potato (17.4%), sorghum (16.3%), millet (15.2%) and yam (13.0%) with a mean annual income of N203,417. This implies that melon, vegetables and maize are the three major crop diversification livelihood strategies mostly engaged by the female headed household among other crops in the study area.

Tuste net 21501500000 of respondents subset of erop interiord artersinearion								
Crops	Ma	ale	Female					
_	Frequency*	Percentage	Frequency*	Percentage				
Maize	94	68.10	33	35.90				
Millet	57	41.30	14	15.20				
Sorghum	55	39.90	15	16.30				
Yam	110	79.70	12	13.00				
Melon	17	12.30	79	85.90				
Rice	123	89.10	28	30.40				
Potato	32	23.20	16	17.40				
Vegetables	41	29.70	41	44.60				
Source: Field Survey,	2019	*Mul	tiple responses					

Table 4.3: Distribution of respondents based on crop livelihood diversification

The mean income realized from crop livelihood diversification in Naira is presented in Table 4.4. It revealed that the male household heads in the study area realized mean annual income of №534,768 from rice production. This is followed by yam production with mean annual income of N251,420; maize production with mean annual income of ₦172,783; millet production with a mean annual income of ₦248,526 and sorghum production with mean annual income of $\mathbb{N}^{147,164}$. Other crops produced are vegetables with mean annual income of №102,293, potato with mean annual income of №190,938 and melon with mean annual income of N222,530. This implies that the male household heads realized more income from rice, yam and millet production among other crops they engaged as livelihood diversification strategies in the study area.

In the same vein, the female household heads realized mean annual income of \$103,533from melon production. This is followed vegetable production with mean annual income of ₩74,512; maize production with mean annual income of ₩141,242 and rice production with a mean annual income of N288,200. Other crops produced are potato with a mean annual income of N77,321, sorghum with a mean annual income of ₦75,867, millet with a mean annual income of ₦83,072 and yam with a mean annual income of N203,417. This implies that the female household heads realized more income from rice, yam and maize production among other crops they engaged as livelihood diversification strategies in the study area.

1 able 4.4: Mean annual income from crop livelihood diversification strategies						
Crops	Male	Female				
-	Mean (ℕ)	Mean (N)				
Maize	172,782.98	141,242.42				
Millet	248,526.32	83,071.43				
Sorghum	147,163.64	75,866.67				
Yam	251,419.64	203,416.67				
Melon	222,529.61	103,533.33				
Rice	534,768.29	288,198.68				
Potato	190,937.50	77,321.43				
Vegetables	102,292.68	74,512.20				

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Source: Field Survey, 2019

Generally, it was evident from findings of the study that that there is gender differential in crop diversification for improved livelihood. Male-headed households have a higher probability of engaging in crop diversification strategy than the female-headed households. This could be due to the vital role men play in providing food for the family. According to Adzawla and Kane (2018), in most rural homes, men usually engage in the cultivation of multiple food crops to meet the food diversity needs of their families, while women's crop productions are mainly to complement males' production.

4.2.2 Livestock livelihood diversification strategies of the respondents

Table 4.5 revealed livestock diversification strategies of the respondents in the study area. The findings showed that 31.2% of the male household heads were into Chicken production. This is followed by 26.8% of the male household heads that were into Goat production; 20.3% were into Sheep production and 18.1% were into Cattle production. The least livestock diversification strategies engaged by the male household heads were Duck production (6.7%) and Pig production (2.9%) with mean annual income of ₦30,000. This implies that Chicken, Sheep and Goat are the livestock diversification strategies mostly employed by the male household heads in the study area.

Similarly, majority (75.0%) of the female household heads were into Chicken production, while 68.5% of the female household heads were into Goat production; 65.2% were into Sheep production; 62.0% were into Duck production and 45.7% were into Guinea fowl production. The least livestock diversification strategies engaged by the female household heads were Pig production (7.6%) and cattle production (5.4%). This implies that Chicken, Sheep and Goat were the livestock diversification strategies mostly employed by the female household heads in the study area.

Livestock	Ma	ale	Fen	nale
	Frequency*	Percentage	Frequency*	Percentage
Cattle	25	18.10	5	5.40
Sheep	28	20.30	60	65.20
Goat	37	26.80	63	68.50
Pig	4	2.90	7	7.60
Chicken	43	31.20	69	75.00
Duck	9	6.50	57	62.00
Guinea fowl	_	-	42	45.70
Source: Field Surv	vey, 2019	*Mı	ultiple responses	

Table 4.5: Distribution of respondents based on livestock livelihood diversification

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The mean income realized from livestock livelihood diversification in Naira is presented in Table 4.6. It revealed that the male household heads in the study area realized mean annual income of \$71,349 from Chicken production. This is followed by mean annual income of \$80,000 from Goat production; mean annual income of \$110,137 from Sheep production and mean annual income of \$327,500 from Cattle production. Others were Duck production with mean annual income of \$39,667 and Pig production with mean annual income of \$30,000. This implies that the male household heads realized more income from Cattle, Sheep and Goat production among other livestock they engaged as livelihood diversification strategies in the study area.

Similarly, the female household heads realized mean annual income of \$85,993 from Chicken production. This is followed by mean annual income of \$70,967 from Goat production; mean annual income of \$94,605 from Sheep production; mean annual income of \$40,542 from Duck production and mean annual income of \$21,893 from Guinea fowl production. Others were mean annual income of \$27,286 from Pig production and mean annual income of \$214,000 from cattle production. This implies that the female household heads realized more income from Cattle, Sheep and Chicken production among other livestock they engaged as livelihood diversification strategies in the study area

Male Mean (¥)	Female Mean (N)					
327,500.00	214,000.00					
110,137.93	94,605.26					
80,000.00	70,966.67					
30,000.00	27,285.71					
71,348.84	85,992.75					
39,666.67	40,541.67					
-	21,892.86					
	Male Mean (₦) 327,500.00 110,137.93 80,000.00 30,000.00 71,348.84 39,666.67					

 Table 4.6: Mean annual income from livestock livelihood diversification strategies

 Livestack

Source: Field Survey, 2019

However, there seem to be consistency in the livestock diversification strategies along gender differential as both the male and female headed households tend to engage in the same animal production. Livestock can easily be managed on farms or backyard to provide livelihood support especially during the periods of natural disaster such as droughts and floods, and in times of hardship and crop failure. This finding is in corroboration with the work of Chandra *et al.* (2017) in their study on gender vulnerabilities of smallholder farmers to climate change in conflict-prone areas: A case study of Mindanao, Philippines reported that gender had a positive significant effects on diversification into animal production. Thus, female headed households have higher probability of engaging in livestock diversification strategies than the male headed household. However, backyard animal rearing is found among females in most rural areas as a means of supporting the household heads which could be considered as livelihood diversification strategies.

4.2.3 Non-Farm livelihood diversification strategies of the respondents

The result of the non–farm livelihood diversification strategies adopted by the male household heads in the study area is presented in Table 4.7. Most (61.6%) of the male household heads were self–employed, followed by 50.0% of the male household heads employed in government organizations. However, 41.3% of the male household heads relied on sales of land properties for livelihood; 37.7% relied on the remittance from children and family members that migrated for livelihood; 34.8% were employed in private organizations and also work as wage labourers for livelihood, respectively. Other non-farm livelihood diversification strategies adopted were commission/gift (30.4%) and pension/arrears (16.7%). This implies that the main non-farm livelihood diversification strategies of the male household heads in the study area was self–employment.

Similarly, majority (77.2%) of the female household heads were self–employed, while 62.0% were engaged as wage labourer for livelihood. The least livelihood diversification strategies adopted by the female household heads was employment in government organizations (9.8%) and private organizations (6.5%). This also implies that the main livelihood diversification strategies of the female household heads was also self–employment. This finding corroborate that of Zakaria *et al.* (2015) who found that the main livelihood diversification strategies of the male and female headed households in their study area was self-employment such as trading, agro-processing, food vendor, artisanship and wage labourer among others.

Table 4.7: Distribution of respondents based on non-farm livenhood diversification								
Non-Farm Activities	Ma	ale	Female					
	Frequency	Percentage	Frequency	Percentage				
Self – employment	85	61.60	71	77.20				
Private – employment	48	34.80	6	6.50				
Government – employment	70	50.70	9	9.80				
Remittance (Children/Family)	52	37.70	-	-				
Gift	42	30.40	-	-				
Pension and Arrears	23	16.70	-	-				
Land properties	57	41.30	-	-				
Wage labour supply	48	34.80	57	62.00				
Source: Field Survey, 2019		*Multipl	e responses					

...

The mean income realized from non-farm livelihood diversification in Naira is presented in Table 4.8. It revealed that the male household heads in the study area realized mean monthly income of \aleph 49,027 from self-employment. This is followed by mean monthly income of \aleph 98,329 from government employment; mean monthly income of \aleph 38,824 from sales of land properties; mean monthly remittance of \aleph 36,596 from children and family members who migrated; mean monthly income of \aleph 35,500 from private employment and \aleph 36,042 from wage labourer. Others include commission/gift with a mean monthly income of \$14,904 and pension/arrears with a mean monthly income of \$18,654. This implies that the male household heads realized more income from government employment and self-employment among other non-farm livelihood diversification strategies in the study area.

Similarly, female household heads realized mean monthly income of \$35,027 from selfemployment, followed by mean monthly income of \$15,500 from wage labourer; mean monthly income of \$37,778 from government employment and with mean monthly income of \$22,000 from private employment. This implies that the female household heads also realized more income from government employment and self-employment among other non-farm livelihood diversification strategies in the study area like their male counter-part.

strategies		
Non-Farm Activities	Male	Female
	Mean (N)	Mean (N)
Self – employment	49,027.06	35,412.68
Private – employment	35,500.00	22,000.00
Government – employment	98,328.57	37,777.78
Remittance (Children/Family)	36,596.15	-
Gift	14,903.85	-
Pension and Arrears	18,653.85	-
Land properties	38,823.53	-
Wage labour supply	36,041.67	15,000.00

Table 4.8: Mean monthly income from non-farm livelihood diversification strategies

Source: Field Survey, 2019

4.3 **Poverty Status of the Respondents**

Table 4.9 revealed the results of the poverty status of the male and female gender in the study area. Poverty line of \$10,875 for male household heads and \$5,482 for female household heads were computed at 2/3 mean per capita household income to separate the poor households from non – poor households. More so, to separate the core – poor households from poor households, poverty line of \$5,437 for male household heads and

№2,741 for female household heads were computed using 1/3 mean per capita household income. Based on the poverty line for the respondents obtained, 47.8% of the male household heads were found to be non – poor, 42.8% were poor and 9.4% of the male household heads fall on the core – poor category, while 59.8% of the female household heads were found to be non – poor, 27.2% were poor and 13.0% of the female household heads fall on the core – poor category. This implies that the male household heads were poorer as compared to the female household heads which could be due to their adoption of different livelihood diversification strategies which yielded more output and income thereby alleviating their poverty.

More so, the poverty incidence, gap and severity of the male household heads were found to be 0.52, 0.50 and 0.25, respectively, while the poverty incidence, gap and severity for the female household heads was 0.40, 0.35 and 0.12, respectively. This implies that the female household heads had lower incidence of poverty (i.e people living below the poverty line), poverty gap and severity as compared to the male household heads. The incidence of poverty which is the head count of those who fell below the poverty line were found to be more among the male household heads as compared to the female household heads. The poverty gap index which represent the amount of income required by the poor households to come out of the poverty line (i.e being poor) was found to be lower among the female household heads as compared to the male household heads. The poverty severity index which represent the situation of extremely being poor was found to be lower among the female household heads as compared to the male household heads. The poverty severity index takes into account not only the distance separating the poor from the poverty line, but also the inequality among the poor. This result contradict finding of Simtowe (2010) that female-headed households were poorer than male-headed households. The main reason for livelihood diversification strategies among households is as a result of poverty incidence. The low incidence of poverty

among female headed households could be due to number of factors among which include participation in cooperative societies and saving mobilization scheme aimed to assisting female-headed households to raise their standards of living and reduce the overall poverty in the study area.

1 able 4.7. Distribution of the respondents based on their poverty status and mulces									
Male (n = 138) Female (n = 92									
Poverty status/indices	Frequency Percentages		Frequency	Percentages					
Core – poor	13	9.40	12	13.00					
Poor	59	42.80	25	27.20					
Non – poor	66	47.80	55	59.80					
Total	138	100.00	92	100.00					
Poverty line (1/3 MPCHMI)	₩5,437.40		₩2,741.00						
Poverty line (2/3 MPCHMI)	₩10,874.80		₩5,482.00						
Poverty incidence	0.52		0.40						
Poverty gap	0.50		0.35						
Poverty severity	0.25		0.12						

Table 4.0. Distribution of the regnandants based on their neverty status and indiges

Source: Field Survey, 2019

4.4 Effects of Livelihood Diversification Strategies on Poverty Status of Respondent

Results of the Logit regression estimate on the effects of livelihood diversification strategies on poverty status of respondents is presented in Table 4.10. The pseudo R square value of 0.7342 for the male household heads and 0.7286 for the female household heads implies that about 73% variation in the poverty status of the respondents in the study area was explained by the explanatory variables specified in the model. The chi-square value of 140.44 for the male household heads and 89.06 for female household heads were significant at 1% probability level indicating the model's overall goodness of fit. Out of the twelve explanatory variables specified in the model, seven variables (household size, farm size, livelihood strategies adopted, income,

extension, credit and cooperative) significantly influenced poverty status of the male household heads, while eight variables (age, marital status, farm size, livelihood strategies adopted, income, expenditure, extension and cooperative) significantly influenced on poverty status of the female household heads.

Age of the female household heads was negative and significant at 10% probability level implying an inverse relationship with poverty status. An increase in age of the female household heads will decrease the likelihood of non-poor. This could be due to the fact that capacity to engage in livelihood diversification strategies decreases with old age. Unlike younger farmers who can easily make decisions that could help alleviate their poverty status, older farmers may be too weak to perform difficult farm operations or adopt new ideas for improved living condition.

Marital status of the female household heads was negative and significant at 5% probability level implying an inverse relationship with poverty status. An increase in marital status of the female household heads will decrease the likelihood of non-poor. Getting married connotes additional household and responsibilities. Increase in number of married individuals means larger household sizes and responsibilities leading to higher dependants to manage and cater for. However, where the dependency ratio is high, there will be increase in the household consumption needs that could probably cause the situation of household heads being poor.

Variables	Μ	ale (n = 1.	38)	Female (n = 92)			
	Coeff.	Std.	z - value	Coeff.	Std.	z - value	
		error			error		
Constant	-5.5343	2.8339	-1.95*	1.0497	6.1796	0.17	
Age	-0.1177	0.1322	-0.89	-0.6669	0.3632	-1.84*	
Marital status	1.8863	1.2938	1.46	-7.4558	3.3441	-2.23**	
Household size	1.0195	0.3306	3.08***	0.6268	0.6985	0.90	
Education	0.1285	0.1188	1.08	-0.0440	0.2108	-0.21	
Experience	0.2653	0.1739	1.53	0.1761	0.2174	0.81	
Farm size	0.3834	0.2222	1.73*	2.5969	1.0062	2.58***	
Livelihood strategies	7.2798	2.4838	2.93***	25.2689	10.9452	2.31**	
Income	0.3790	0.1210	3.13***	0.1360	0.0501	2.71***	
expenditure	0.0196	0.1660	0.12	-0.2070	0.1050	-1.97*	
Extension contact	0.5984	0.2591	2.31**	0.9373	0.4212	2.23**	
Credit	2.0431	0.9357	2.05**	0.6949	1.1244	0.62	
Coop. membership	1.9839	0.9357	2.12**	7.9739	3.0463	2.62***	
Pseudo R ²	0.7342			0.7286			
Chi – square	140.44***			89.06***			
Log likelihood	-25.4195			-16.5837			

 Table 4.10: Logit regression estimates on effect of livelihood diversification on poverty status

Source: Field Survey, 2019

Note: *** implies significant at 1%, ** implies significant at 5%, * implies significant at 10%.

Household size of the male headed household was positive and significant at 1% probability level implying a direct relationship with poverty status. An increase in the household size of the male household heads will increase the likelihood of non-poor. Household size is a measure of labour availability which can assist in farm operation for enhanced agricultural productivity. Larger household size has the tendency to increase the number of household workforce that sources for income which could be used to cater for the general household needs.

Farm size of the male household heads was positive and significant at 10% probability level, while that of the female headed household was also positive and significant at 1% probability level implying a direct relationship with poverty status. An increase in farm size will increase the likelihood of the respondents not being poor. Households with larger farm sizes were more likely to be less poor than those that cultivated smaller farm sizes. This is expected as increase in area of cultivation could easily enhance agricultural production for greater output and income which in turn improve the livelihood of the rural households.

Livelihood diversification strategies adopted by the male household heads was positive and significant at 1% probability level, while that of the female headed household was also positive and significant at 5% probability level implying direct relationship with poverty status. It therefore implies that, an increase in livelihood strategies adopted by the respondents, the higher likelihood of them not being poor. This shows that households with relatively more diverse livelihood enterprises as sources of income tend to have lower probability of being poor. Livelihood enterprise diversification ensures that the rural household derives income from a wide range of sources, thereby reducing income instability. Thus, livelihood diversification strategies had a positive effect on the poverty status of the respondents as it tend to assist in improving their living standard.

Income of the male household heads was positive and significant at 1% probability level, while that of the female headed household was also positive and significant at 1% probability level implying a direct relationship. An increase in income will increase the likelihood of the respondents not poor. This is in confirmation with the *a priori* expectation as increased income could be due to increase area of cultivation for greater output and livelihood diversification strategies adopted by the households.

Expenditure of the female household heads was negative and significant at 10% probability level implying an inverse relationship with poverty status. An increase in expenditure of the female household heads will decrease the likelihood of non-poor. In other words, increase in household expenditure of the female household heads could increase the probability of being poor. Households with higher expenditure on food items and education among others were likely to be poor as more resources are committed in taking care of the basic needs of the household at the expense of investment in livelihood diversification.

Extension contact of the male household heads was positive and significant at 5% probability level, while that of the female headed household was also positive and significant at 5% level of probability implying a direct relationship. An increase in extension contact of the respondents will increase the likelihood of not poor. Households that had access to extension services tends to have lower probability of being poor than those that did not have such access. This could be due to fact that contact with extension services provide more access to improved crop production techniques, inputs and other livelihood diversification strategies which would positively affect farmers' outputs and income-generating ability, thereby alleviating their poverty status.

Credit access of the male household heads was positive and significant at 1% probability level and this implies a direct relationship with poverty status. An increased access to credit by the male household heads will increase their likelihood of not poor. The higher the access to credit facilities by the male household heads, the lower their chances of being poor as compared to those who had lower or no access to credit. This is because households with access to credit could easily acquire more productive resources and invest in income generating livelihood strategies that will enhance the overall household welfare. Cooperative membership of the male household heads was positive and significant at 5% probability level, while that of the female headed household was also positive and significant at 1% level of probability implying a direct relationship. An increase in cooperative membership by the respondents will increase the likelihood of not poor. Cooperative societies play crucial roles in poverty alleviation due to various benefits accruable to members such as credit facilities and access to information. Thus, membership in an organization can stimulate investment in livelihood activities for enhanced poverty status.

Meanwhile, the result of marginal effect estimates of the significant variables is presented in Table 4.11. It revealed that the probability of household size influencing the poverty status of the male household heads increases by the coefficient of 0.0559, implying that for every unit increase in the household size of the male household heads, there is about 6% increase in the likelihood of not poor. The coefficient of farm size, livelihood strategies and income were 0.0211, 0.3997 and 0.2080 respectively, implying that for every unit increase in farm size, livelihood strategies and income were 0.0211, 0.3997 and 0.2080 respectively, implying that for every unit increase in farm size, livelihood strategies and income of the male headed household increases the probability of them not being poor by about 2%, 40% and 21%, respectively. More so, the coefficient of variables like extension contact (0.0329), credit (0.1122) and cooperative membership (1.0892) increased the probability of the male household heads not being poor by about 3%, 11% and 109%, respectively. This shows that all the identified variables play significant roles in alleviating the poverty of the male household heads.

Variables	Ν	Male (n = 138)			Female $(n = 92)$		
	Marginal	Standard	z - value	Marginal	Standard	z - value	
	effect	error		effect	error		
Age	-	-	-	-0.0372	0.0187	-1.99*	
Marital	-	-	-	-0.4162	0.1614	-	
						2.58***	

 Table 4.11: Marginal effect of the Logit regression estimate

Household	0.0559	0.1442	3.88***	-	-	-
Education	-	-	-	-	-	-
Experience	-	-	-	-	-	-
Farm size	0.0211	0.0116	1.81*	0.1449	0.0435	3.33***
Livelihood index	0.3997	0.1141	3.50***	1.4105	0.5241	2.69***
Income	0.2080	0.0554	3.75***	0.7590	0.2130	3.56***
Expenditure	-	-	-	-0.1150	0.0516	-2.23**
Extension contact	0.0329	0.0129	2.55**	0.0523	0.0199	2.62***
Credit	0.1122	0.0522	2.15**	-	-	-
Cooperative	1.0892	0.0474	2.30**	0.4451	0.1323	3.36***

Source: Field Survey, 2019

Note: *** implies significant at 1%, ** implies significant at 5%, * implies significant at 10%.

Similarly, marginal effect of the significant variables for the female headed household revealed that the probability of age influencing the poverty status of the female household heads decreases by the coefficient of -0.0372, implying that for every unit increase in age of the female household heads, there is about 4% decrease in them not being poor, while marital status of the female household heads has coefficient of -0.4162 and expenditure has coefficient of -0.1150 implying about 42% and 12% decrease in the female household heads not being poor. In other words, a unit increase in age, marital status and expenditure of the female headed household will increase the poverty situation of the female gender in the study area. However, the coefficient of variables such as farm size (0.1449), livelihood strategies (1.4105), income (0.7590), extension contact (0.0523), cooperative membership (0.4451) increases the probability of the female household heads not poor by about 14.5%, 76%, 5% and 44.5%, respectively. This shows that all the identified variables play significant roles in alleviating the poverty status of the female household heads.

4.5 Factors Influencing the Livelihood Diversification Strategies of Respondent

Results of the Tobit regression estimate on the factors influencing livelihood diversification strategies of the respondents is presented in Table 4.12. It revealed pseudo R-squared (coefficient of determination) value of 0.8895 for the male household heads

and 0.7649 for the female household heads and this implies that about 89% and 77% variation in the livelihood diversification strategies of the male and female gender respectively was explained by the predictor variables specified in the model. The F-statistics value of 17.48 for the male household heads and 4.52 for female household heads were significant at 1% probability level indicating the model overall goodness of fit.

The sigma also known as the scale of parameter is analogous to the standard deviation of the residual (i.e the standard deviation of the latent dependent variable). Thus, the sigma coefficient value of 0.1122 is lower than the standard deviation of the dependent variable and statistically significant at 1% probability level implies the goodness of fit of the model. Out of the thirteen predatory variables specified in the model, nine variables (household size, education, experience, farm size, credit, income, expenditure, extension, and occupation) were found to have significant influence on livelihood diversification strategies of the male household heads, while five variables (experience, credit, expenditure, cooperative and extension) were found to have significant influence on livelihood diversification strategies of the female headed household.

The coefficient of household size (0.0184) of the male headed household was positive and significant at 5% probability level. This implies that a unit increase in household size of the male household heads will lead to an increase in livelihood diversification strategies adopted by about 2%. As the number of household members increases, the need to diversify their livelihood activities also increases in order to source for income that will cater for need of the family. This finding is in agreement with the work of Debele and Desta (2016) who reported that household size significantly influence the adoption of the various diversification strategies.

Table 4.12: Tobit regression estimates on factors influencing livelihood diversificationVariablesMale (n = 138)Female (n = 92)

	Coeff.	Std.	t-value	Coeff.	Std.	t-value
		error			error	
Constant	0.1268	0.0759	1.67*	0.1225	0.0668	1.83*
Age	0.0010	0.0037	0.28	0.0027	0.0029	0.93
Marital status	-0.0232	0.0274	-0.85	0.0181	0.0247	0.74
Household size	0.0184	0.0086	2.14**	-0.0013	0.0064	-0.20
Education	0.0061	0.0032	1.89*	-0.0029	0.0031	-0.95
Experience	-0.0097	0.0037	-2.64***	-0.0083	0.0039	-2.09**
Farm size	-0.0124	0.0059	-2.07**	-0.0067	0.0115	-0.58
Credit	0.1420	0.0272	5.22***	0.2880	0.1630	1.77*
Income	0.4850	0.2730	1.78*	0.1180	0.5380	0.22
Expenditure	0.8790	0.4730	1.86*	0.2080	0.0835	2.49**
Coop. membership	0.0028	0.0029	0.95	0.0079	0.0034	2.29**
Extension contact	0.0351	0.0068	5.13***	0.0187	0.0074	2.52***
Occupation	0.0747	0.0227	3.29***	-0.0257	0.0213	-1.21
Skill acquisition	0.0154	0.0300	0.51	0.0032	0.0239	0.13
Sigma	0.1176***	0.0078		0.0822***	0.0080	
Pseudo R ²	0.8895			0.7649		
F – statistics	17.48***			4.52***		
Log likelihood	95.7382			56.0117		
~ _						

Source: Field Survey, 2019

Note: *** implies significant at 1%, ** implies significant at 5%, * implies significant at 10%.

The coefficient of education (0.0061) of the male headed household was positive and significant at 10% probability level. This implies that a unit increase in educational status of the male household heads will lead to an increase in livelihood diversification strategies adopted by about 0.6%. Education plays a significant role in sharpening the mind of farmers for rational decision making. Thus, the level of educational attainment by an individual determine his ability to adopt different livelihood diversification strategies. This finding is in corroboration with the work of Gebreyesus (2016) who reported in his study that the livelihood diversification strategies is significantly influenced by level of education of the respondents. This could be due to the fact that educated individuals are exposed to lots of livelihood opportunities for diversification. Thus, household heads with higher education have a higher probability of engaging in

different income generating activities. Ullah *et al.* (2015) also found a positive effect of education on livelihood diversification strategies and argued that people become aware of the importance of diversification as a response to household needs.

The coefficient of farming experience (-0.0097) of the male headed household was negative and significant at 1% probability level, while coefficient of farming experience (-0.0083) of the female headed household was also negative and significant at 5% probability level. This implies that a unit increase in experience of the male and female gender will lead to a decrease in livelihood diversification strategies adopted by about 1% and 0.8%, respectively. Both the male and female gender are experienced farmers who are knowledgeable in agricultural production systems. In general, experienced farmers have a lesser probability of engaging in livelihood diversification strategies due to their commitment and resolve to farming than the less experienced farmers. This finding is in corroboration with the work of Adzawla and Kane (2018) who reported in their study that farming experience have negative influence in adoption of livelihood diversification strategies among the male and female headed households.

The coefficient of farm size (-0.0124) of the male headed household was negative and significant at 5% probability level. This implies that a unit increase in farm size of the male household heads will lead to a decrease in livelihood diversification strategies adopted by about 1%. Farm land is a basic income earning assets and serves as collateral in credit transactions for most households. Thus, households with larger farm sizes were less likely to diversify their livelihood activities because they are expected to generate more income which would enhance their consumption level as compared to those with smaller farm sizes. This finding is in line with that of Manjur *et al.* (2014) that an increase in farm size by one unit is found to hinder participation in livelihood

diversification activities which is perhaps due to the availability of enough food items such as grains, tubers and vegetables from farming operation.

The coefficient of credit (0.1420) of the male headed household was positive and statistically significant at 1% probability level, while coefficient of credit (0.2880) of the female headed household was also positive and significant at 10% probability level. This implies that a unit increase in access to credit of the male and female gender will lead to an increase in livelihood diversification strategies adopted by about 14% and 28%, respectively. Households with high access to financial credit have higher likelihood of engaging in livelihood diversification strategies than those with low access to financial credit. Thus, significance of credit in adoption of livelihood diversification strategies cannot be over-emphasized. This finding is in corroboration with the work of Adzawla and Kane (2018) who found that financial asset in form of credit to significantly influenced farmers' livelihood diversification strategies.

The coefficient of income (0.4850) of the male headed household was positive and significant at 10% probability level. This implies that a unit increase in income of the male household heads will lead to an increase in livelihood diversification strategies adopted by about 49%. The need to cater for family members has prompted many households to diversify their income sources. In Nigeria, particularly in the study area, there were more male headed households as compared to the female headed households as bread winner. Thus, on the average, household income for most male-headed households is higher than income for female-headed households which could be due to exposure to lots of opportunities. This findings is in agreement with the work of Javed *et al.* (2015) who reported significant influence of income on livelihood diversification strategies among male-headed households.

The coefficient of expenditure (0.8790) of the male headed household was positive and significant at 10% probability level, while coefficient of expenditure (0.8350) of the female headed household was also positive and significant at 5% probability level. This implies that a unit increase in expenditure of the male and female gender will lead to an increase in livelihood diversification strategies adopted by about 88% and 84%, respectively. Most of the rural household incomes are usually expended on household consumption such as food, education and healthcare among others. Households with higher expenditure especially low income earners tends to engage in livelihood diversification strategies in order to meet up with household basic needs. Most rural female headed households are poor and earn low income, but could spend all their resources on household consumption needs as compared to most male headed households.

The coefficient of cooperative membership (0.0079) of the female headed household was positive and significant at 10% probability level. This implies that a unit increase in cooperative membership by the female household heads will lead to an increase in livelihood diversification strategies adopted by about 0.8%. Cooperatives are useful instrument in bringing about social change. In most farming communities, cooperative society is a major source of information, knowledge and labour. Women participation in cooperative helps in share of vital information relating to training and capacity building, and livelihood activities that could help boost overall well-being of an individual. This finding agrees with Ngigi *et al.* (2017) who reported that cooperative membership had a positive influence on livelihood diversification strategies among female gender.

The coefficient of extension contact (0.0351) of the male headed household was positive and significant at 1% probability level, while coefficient of extension contact (0.0187) of the female headed household was also positive and significant at 1% probability level. This implies that a unit increase in extension contact of the male and female gender will lead to an increase in livelihood diversification strategies adopted by about 4% and 2%, respectively. Access to extension services through contact with extension agents is usually aimed at improving productivity and profitability which enhances specialization. Thus, male and female headed households with access to extension services have a higher likelihood for livelihood diversification particularly in area of crop and livestock production. This finding corroborate that of Asfaw *et al.* (2017) that access to extension have a positive and significant influence on livelihood diversification among male and female headed households.

The coefficient of occupation (0.0747) of the male headed household was positive and significant at 1% probability level. This implies that a unit increase in occupation of the male household heads will lead to an increase in livelihood diversification strategies adopted by about 8%. Occupation is an activity performed by an individual on a regular basis with the hope to earn a living. It is all encompassing economic activities in which an individual engaged in exchange for payment. In most rural communities, farming is the major occupation of people covering the production of all kind of animals and crops. Farming as an occupation is a risky enterprise and seasonal in nature. Thus, enterprise diversification is one of the major risk management strategies adopted by small scale farmers as a form of livelihood sources.

4.6 Constraints to Livelihood Diversification Strategies by the Respondents

Distribution of the respondents according to constraints associated with livelihood diversification strategies in the study area is presented in Table 4.13 and 4.14. The major constraints to livelihood diversification strategies as identified by the male gender are presented in Table 4.13 which revealed inadequate access to credit (\bar{X} = 4.22), poor market information (\bar{X} = 4.12) and unstable electricity (\bar{X} = 3.78) ranked 1st, 2nd and 3rd,

respectively as very serious constraints faced by the male gender to livelihood diversification strategies. The importance of credit in enterprise development cannot be over-emphasized. Access to credit is very significant because it enhances investment in viable livelihood enterprise. Adequate and timely information will provide for an investment that will yield positive return. However, to minimize cost of production, provision of stable power supply will aid rural households to produce more for profit maximization.

Constraints	VS	S	Ι	NS	NVS	WS	WM	Rmk	Rank
Inadequate access to credit	71	51	3	2	11	583	4.22	S	1^{st}
Poor market information	70	37	11	17	3	568	4.12	S	2^{nd}
Unstable electricity supply	72	30	2	2	32	522	3.78	S	3^{rd}
Poor access to urban markets	40	54	19	22	3	520	3.77	S	4^{th}
High cost of business premises	29	71	11	23	4	512	3.71	S	5^{th}
Increase cost of agric. production	19	84	18	5	12	507	3.67	S	6^{th}
Price fluctuation of produce	29	73	11	10	15	505	3.66	S	7^{th}
High taxes rate	31	41	34	24	8	477	3.46	S	8^{th}
Poor management system	17	67	21	16	17	465	3.37	S	9^{th}
Bad weather condition	18	59	23	24	14	457	3.31	S	10^{th}
Problem of gender discrimination	5	54	26	32	21	404	2.93	NS	11^{th}
Poor wages for skilled labour	20	11	43	39	25	376	2.72	NS	12^{th}

Table 4.13: Constraints faced by the male households in livelihood diversification (n=138)

Source: Field Survey, 2019

Note: VS=Very Serious (5), S=Serious (4), I=Indifferent (3), NS=Not Serious (2), NVS =Not Very Serious (1), WS=Weighted Sum, WM=Weighted Mean and Rmk=Remark. The Mean Score is 3.0.

Other constraints identified by the male household heads include poor access to urban markets (\overline{X} = 3.77), high cost of business premises (\overline{X} = 3.71), increase cost of production (\overline{X} = 3.67), price fluctuation of produce (\overline{X} = 3.66), high taxes rate (\overline{X} = 3.46), poor management system (\overline{X} = 3.37) and bad weather condition (\overline{X} = 3.31) ranked 4th, 5th, 6th, 7th, 8th, 9th and 10th, respectively were among the serious constraints faced by the male household heads. Poor linkages to urban market usually lead to poor market value or price for produce thereby discouraging enterprise diversification.

Similarly, The major serious constraints to livelihood diversification strategies as identified by the female gender and presented in Table 4.14 revealed increase cost of production (\bar{X} = 4.34), inadequate access to credit (\bar{X} = 3.91) and poor market information (\bar{X} = 3.78) ranked 1st, 2nd and 3rd, respectively, among the serious constraints faced by the female household heads to livelihood diversification strategies. Other constraints identified by the female household heads include poor wages for skilled labour (\bar{X} = 3.72), unstable electricity (\bar{X} = 3.65), problem of gender discrimination and price fluctuation of produce (\bar{X} = 3.64), poor access to urban markets (\bar{X} = 3.58) and high taxes rate (\bar{X} = 3.52) ranked 4th, 6th, 8th and 9th, respectively were among the serious constraints faced by the female household heads.

Constraints	VS	S	Ι	NS	NVS	WS	WM	Rmk	Rank
Increase cost of agric. production	54	27	4	2	5	399	4.34	S	1^{st}
Inadequate access to credit	49	14	7	16	6	360	3.91	S	2^{nd}
Poor market information	38	22	14	10	8	348	3.78	S	3^{rd}
Poor wages for skilled labour	25	33	24	3	7	342	3.72	S	4^{th}
Unstable electricity supply	37	25	9	3	18	336	3.65	S	5^{th}
Problem of gender discrimination	26	16	42	7	1	335	3.64	S	6^{th}
Price fluctuation of produce	28	31	15	8	10	335	3.64	S	6^{th}
Poor access to urban markets	35	18	7	29	3	329	3.58	S	8^{th}
High taxes rate	17	34	22	18	1	324	3.52	S	9^{th}
Poor management system	14	24	16	15	23	267	2.90	NS	10^{th}
High cost of business premises	13	16	20	25	18	257	2.79	NS	11^{th}
Bad weather condition	7	24	9	45	7	255	2.77	NS	12^{th}

Table 4.14: Constraints faced by the female households in livelihood diversification (n=92)

Source: Field Survey, 2019

Note: VS=Very Serious (5), S=Serious (4), I=Indifferent (3), NS=Not Serious (2), NVS =Not Very Serious (1), WS=Weighted Sum, WM=Weighted Mean and Rmk=Remark. The Mean Score is 3.0.

4.7 Test of hypotheses

4.7.1 Hypothesis I

The null hypothesis I stated that there is no significant relationship between the selected socio-economic characteristics of the male and female household heads (age, marital status, household size, education, farming experience and farm size) and their poverty

status along the gender differential in the study area was tested using the z-values from the Logit regression analysis at 5% level of probability. From the estimated z - value result presented in Table 4.15, household size (3.08) and farm size (1.73) of the male household heads were significant at 1% and 10% level of probability, respectively, hence the null hypothesis was rejected based on the household and farm size. Age (-0.89), marital status (1.46), education (1.08) and experience (1.53) of the male household heads were not significant, therefore, the null hypothesis on age, marital status, education and experience was accepted that there is no significant relationship between these variables and poverty status of the male household heads in the study area. In the same vein, age (-1.84), marital status (-2.23) and farm size (2.58) of the female household heads were statistically significant at 10%, 5% and 1% level of probability, respectively, hence the null hypothesis was rejected based on the age, marital status and farm size. Household size (0.90), education (-0.21) and experience (0.81) were not significant, therefore the null hypothesis on household size, education and experience were accepted that there is no significant relationship between these variables and poverty status of the female household heads in the study area.

2)	emale (n = 92)	Fe	Male (n = 138)			Constraints
z-value	Std. error	Coeff.	z-value	Std.	Coeff.	
				error		
-1.84*	0.3632	-0.6669	-0.89^{NS}	0.1322	-0.1177	Age
-2.23**	3.3441	-7.4558	1.46^{NS}	1.2938	1.8863	Marital
0.90^{NS}	0.6985	0.6268	3.08***	0.3306	1.0195	Household
-0.21 ^{NS}	0.2108	-0.0440	1.08 ^{NS}	0.1188	0.1285	Education
0.81 ^{NS}	0.2174	0.1761	1.53 ^{NS}	0.1739	0.2653	Experience
2.58***	1.0062	2.5969	1.73*	0.2222	0.3834	Farm size
	0.3032 3.3441 0.6985 0.2108 0.2174 1.0062	-7.4558 0.6268 -0.0440 0.1761 2.5969	-0.89 1.46 ^{NS} 3.08*** 1.08 ^{NS} 1.53 ^{NS} 1.73*	0.1322 1.2938 0.3306 0.1188 0.1739 0.2222	-0.1177 1.8863 1.0195 0.1285 0.2653 0.3834	Marital Household Education Experience Farm size

 Table 4.15: Logit regression estimates of the null Hypothesis I

Source: Field Survey, 2019

Note: ^{NS} implies not significant, ***implies significant at 1%, **implies significant at 5% and *implies significant at 10% level of probability.

4.7.2 Hypothesis II

The null hypothesis II stated that there is no significant difference in poverty depth of the rural households along the gender differential in the study area was tested using t – test statistics. The result of the pair-wise t – test is presented in Table 4.16 and it showed t – statistic value of 2.069 at 5% level of probability. This implies that there was a significant difference in the mean poverty depth of the male and female gender in the study area. The null hypothesis was therefore rejected, while the alternative hypothesis which stated that there is a significant difference in the poverty depth of the rural households along the gender differential was accepted. Adoption of different livelihood diversification strategies had really helped in alleviating poverty of the rural households, although, significant depth still exist along the gender differential as the male household heads.

Table 4.13: T-test estimate for null hypothesis II

	Mean	Standard	t – value	Decision
		dev.		
Poverty depth of the male gender	0.3638	0.0616	2.069**	Reject
Poverty depth of the female gender	0.2011	0.0545		
Mean difference	0.1627	0.0071		

Source: Field survey, 2019 ** = significant at 5% probability level

CHAPTER FIVE

5.1 Conclusion

This study concluded that both the male and female household heads were in their most productive stage of life and have the capacity to diversify their livelihood through adoption of various livelihood strategies. There is a relatively moderate literacy level among the gender with the male gender found to be more educated compared to the female gender. The male and female household heads are relatively experienced which could easily influences their decision to adopt different livelihood strategies. Household size was fairly large with male household heads having more household size as compared to female household heads, while male household heads had moderate farm size as compared to their female counterpart who had small farm size. However, access to extension services and cooperative membership was more with female household heads as compared to male household heads except in access to credit facilities.

The livelihood diversification strategies of the male and female household heads encompasses crop, livestock and non-farm enterprises diversification strategies. Thus, the male household heads main crop, livestock and non-farm enterprise diversification strategies engagement was rice, chicken and self – employment, respectively, while the female household heads main crop, livestock and non-farm enterprise diversification strategies engagement was vegetables, chicken and self–employment, respectively. There seem to be similarity in livelihood diversification strategies along the gender, but male household heads have a higher probability of engaging in crop, livestock and non-farm livelihood diversification strategy than the female household heads.

In terms of the poverty status of the respondents, some of the male and female household heads were found to be non - poor, some were poor and few fall into the core - poor category. However, there were more poor male household heads as compared to the female household heads which could be due to their adoption of livelihood

diversification strategies that helps in alleviating poverty status. Thus, female household heads had lower incidence of poverty (i.e people living below the poverty line) as compared to the male household heads in the study area.

The effect of livelihood diversification strategies on poverty status of the male household are influenced by household size, farm size, livelihood strategies, income, extension, credit and cooperative while age, marital status, farm size, livelihood strategies, income, expenditure, extension and cooperative influenced the poverty status of the female household heads. The livelihood diversification strategies adopted by the male and female household heads had significant effect on their likelihood of being poor or not. Thus, engagement in livelihood activities reduces the risk of poverty among the rural households in the study area.

More so, household size, education, experience, farm size, credit, income, expenditure, extension and occupation influenced the livelihood diversification strategies of the male household heads, while experience, credit, expenditure, cooperative and extension influenced the livelihood diversification strategies of the female household heads. Therefore, the assumption of gender difference in the factors that influences livelihood diversification strategies is appropriate since some factors which influences livelihood diversification strategies for male household heads do not necessarily influences that of female household heads.

The major constraints to livelihood diversification strategies identified by the male household heads was inadequate access to credit, poor market information and unstable electricity, while major constraints to livelihood diversification strategies identified by the female household heads was increase cost of production, inadequate access to credit and poor market information.

5.3 **Recommendations**

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

i. The study revealed that the respondents were young and in their most productive stage of life but educational level was moderate which could impede advance livelihood diversification for greater income. It is therefore recommended that there is need for NGOs and extension agency to educate and develop the skills of the rural households through capacity building and skills acquisition training. They could also be encourage to go beyond secondary educational level that will help expose them to a lot of livelihood opportunities.

ii. Relevant stakeholders including Government at all levels should partner to formulate and promote livelihood enterprise diversification intervention (project or programme) involving mixed farming (crop and livestock interaction) and non-farming enterprise diversification to serve as an effective strategy for enhancing household food security and reducing household poverty in the rural area.

iii. The female household heads were found to have lower incidence of poverty (i.e people living below the poverty line) as compared to the male household heads in the study area. It is therefore recommended that saving mobilization promotion among rural households through cooperative societies should be encouraged to help secure loans for investment in livelihood enterprise activities and alleviation of their poverty situation.

iv. Several factors were found to influences livelihood diversification strategies of both the male and female household heads in the study area. It is therefore recommended that rural households, government and non-governmental agencies should promote effective social networks and social investment policy that will promote livelihood diversification decisions.

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v. Inadequate access to market information and poor linkages to urban market was identified as constraint. It is recommended that Government should provide enabling environment like provision of basic infrastructures that will encourage private sectors and Non-Governmental Organizations (NGOs) to invest on improved market infrastructures such as market stalls, community storage facilities, rural access roads and transportation facilities as well as agricultural price information systems.

vi. Both the male and female household heads identified inadequate access to credit as a constraint. It is therefore recommended that, formal financial institutions especially Bank of Agriculture (BOA) and Bank of Industry (BOI) should come up with flexible policy on credit that will enhance access to credit by resource poor rural households who do not have suitable collaterals for engagement in livelihood diversification strategies.

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APPENDIX 1

DEPARTMENT OF AGRICULTURAL EXTENSION AND RURAL DEVELOPMENT, SCHOOL OF AGRICULTURE AND AGRICULTURAL TECHNOLOGY, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGER STATE, NIGERIA

RESEARCH QUESTIONNAIRE

Dear respondent,

I am a Postgraduate student of the above stated Department and University. I am conducting a research on the "gender differentials in livelihood diversification strategies and its effect on poverty reduction of rural households in Niger State, Nigeria". This questionnaire aims at gathering relevant information that would assist the researcher to effectively carry out the study. All the information supplied here shall be solely for research purposes and will be treated as confidential. You are therefore required to fill in the answers to the following questions and mark or tick as appropriate.

Yours Faithfully,

HUSSAINI ILIYASU

RESPONDENT IDENTIFICATION

Name of respondent (optional): Government Phone number: Government Local Government Area: of Name of Village: Ouestionnaire No: Respondent's category: (i) Male gender [] (ii) Female gender []
SECTION A: SOCIO-ECONOMIC CHARACTERISTICS OF THE
RESPONDENT
1. Sex: (a) Male [] (b) Female []
2. Age of farmer in years
3. Marital Status: (a) Single [] (b) Married [] (c) Others specify
4. Head of household (a) Male [] (b) Female [] 5. House held size (a) Man (b) Warran (a) Children helew 1977 (d)
Above 18vrs
Above Toyls
6. What is your level of formal education?
(a) Primary [] (b) Junior Secondary [] (c) Senior Secondary [] (d) Tertiary []
(e) Non formal education [] (f) Quranic education [] (e) Non-formal []
7. How many years did you spend in school?
8. For how long have you been into crop farming?
9. What is your level of involvement in fice farming? (a) Full filme [] (b) Part filme [
10 What is your primary occupation?
(a) Farming [] (b) Gathering [] (c) Trading [] (d) Civil Servant [] (e) Artisan [
]
(f) Agro-processing [] (g) Others (specify)
11. What is your Secondary occupation?
(a) Farming [] (b) Gathering [] (c) Trading [] (d) Civil Servant [] (e) Artisan [
$\int (f) A \operatorname{gro} \operatorname{proposing} \left[-1 (g) Others (\operatorname{groot} f_{i}) \right]$
12 Do you have contact with Extension Agent? (a) Yes [] (b) No []
13. If yes, indicate frequency of visit by the extension agent(s).
(a) Weekly [] (b) Fortnightly [] (c) Monthly [] (d) Quarterly [] (e) Annually []
14. How do you have contact with extension agents
(a) Phone [] (b) Face to face [] (c) Group meetings []
15. Do you have access to credit? (a) Yes [] (b) No []
16. What purpose do you acquire credit for?

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

Source of Credit		Agricultural Credit		Off-farm business Credit		Household	
		Amount	Interest			Consumption	
		Taken (N)	Paid (N)		•		
				Amount	Interest	Amount	Interest
				taken (N)	paid (N)	taken (N)	Paid (N)
1	Farmers'						
	organization						
2	Family and friends						
3	Microfinance bank						
4	Bank of Agriculture						
	(BOA)						
5	Commercial bank						
6	Cooperatives						
7	Others (specify)						

17. If yes, from which sources? (Tick as many as appropriate)

18. Do you belong to cooperative society or any farming group? (a) Yes [] (b) No []

Ordinary For how Frequency of participation Farmers Exco group/cooperative Members Long Whenever Sometimes Never (years) conducted Production cooperative Marketing cooperative Consumer cooperative Credit and thrift Others (specify)

19. If yes, kindly indicate the farmers/cooperative you belong to in the table below.

20. What is the total size of your farmland(s) in hectares?.....

21. What is the means of your land acquisition?

- (a) Inheritance [] (b) Purchase [] (c) Rent/Lease [] (d) Gift []
- 22. Do you have access to health centers? (a) Yes [] (b) No []
- 23. Do you have access to skill acquisition and endowments? (a) Yes [] (b) No []

24. If yes, what are the skills you have been trained on?

S/No	Skills	sponsors

SECTION B: PRODUCTION ENTEPRISES INVOLVED

25. Production goal:

(a) Food security () (b) Profit maximization () (c) Both () (d) Others (specify).

26. What type of arable crop(s) do you plant? List them below in the table

S/No	Crop	Farm	Quantity	Quantity	Quantity of	Cost/bag	Total
		size	harvested	consumed	crops	(N)	returns
			(number of	(number of	consumed by		(N)
			bags/kg)	bags/ Kg)	household		
1	Maize						
2	Millet						
3	Sorghum						
4	Yam						
5	Mellon						
6	Rice						
7	Potato						
8	vegetables						
9	Others						

27. Do you participate in livestock production? Yes () No () 28. If yes, kindly list the livestock you raise and numbers?

S/No	Livestock	Quantity			
		Adult male	Adult female	Young ones	
1	Cattle				
2	Sheep				
3	Goats				
4	Pigs				

5	Chickens		
6	Ducks		
	Guinea fowls		

29. Kindly indicate how many livestock you own and also provide other related information.

	Number of livestock presently owned	How many did you have last year?	How many have you sold this year?	How many have you consumed this year?	Amount of animal products consumed last week (quantity/ units)	Amount of animal products sold last week (quantity/unit)
Cattle						
Sheep						
Goats						
Pigs						
Chickens						
Ducks						
Guinea fowls						

30. Kindly fill the table below

Livestock	Quantity sold	Unit price (N)	Total price (N)
Cattle			
Sheep			
Goats			
Pigs			
Chickens			
Ducks			
Guinea fowls			
Others (Specify)			

31. Kindly list the assets purchased or obtained from the main source of livelihood you adopted

Asset	Years purchased / obtained	Expected monetary value
Total value		

SECTION C: LIVELIHOOD DIVERSIFICATION

- 32. Have you diversify into non-farm income enterprise Yes () No ()
- 33. If you have diversified into any of the income activities listed below, please tick (**V**) all that applies to you.

S/no	Income source	Amount per Week	Amount per month
1	Self employed (farming, trading, blacksmith,		
	carpentry, crafts, barbing, etc)		
2	Private employed (salaried)		
3	Government employed (salaried)		
4	Remittance from children and relatives		
5	Gifts		
6	Pension/government bonus		
7	Revenue from leasing out land and other resources/rent		
8	Wage from agricultural labour supply on other people's farm		
9	Other sources specify		

34. Why did you diversify your operations? Please tick (**V**) one main reason from the list below.

S/no	Reason for diversification	
1	To generate sufficient income	
2	To diversify away from agriculture	
3	Availability of government grant	
4	Conservation & environmental reasons	
5	to employ family members	
6	identification of market opportunity	
	Other specify	

SECTION D: HOUSEHOLD EXPENDITURE

35. Indicate the amount purchased of the following items for household consumption.

Item	Item purchase consumption	ed last week or month or (please indicate whether	last year for household for a week or month).
	Yes = 1, No	Purchased value (N)/	Purchased value (N)/

	= 2	week	Month
Salt/Potash/Maggi			
Groundnut oil			
Palm oil			
Other oils, specify 1.			
2.			
Fish (fresh/dried/smoked)			
Meat (beef/mutton, etc.)			
Sugar			
Bread			
Cigarettes, tobacco, kola nuts			
Drinks (beer, local sweet drinks,			
minerals)			
Shoes (leather, plastic, slippers)			
Clothing (fabric and clothing)			
Purchase of motor vehicles			
Purchase of motor cycles			
Purchase of bicycles			
Repairs of vehicles/bicycles			
Home repairs (painting, roofs,			
plastering)			
Kitchen utensils (pots, cups,			
cutlery, plates, spoons, etc.)			
Furniture (beds, tables, chairs,			
cartons, etc.)			
Petrol for vehicles			
Kerosene			
Detergents (soaps)			
Pomades			
Toothpaste			
Remittances/Gifts/Donations			

NON-FOOD EXPENDITURE

Non – food expenditure	Amount /week (N)	Amount/ Month (N)
Clothing(fabric, clothes, beddings, foot		
wares)		
Purchase of vehicles/motor cycles/bicycles		
Repairs Of Vehicles/motor cycles/Bicycles		
Home Repairs(Painting, Roofs, Plastering)		
House rent, water bill, electricity, GSM bills		
Kerosene, charcoal, firewood, gas cost		
Alms, offering, tithe, charity		

Radio/Television/Fan	
Ceremony- wedding, naming, funerals, graduation	
Extra Land	
Other non-food expenses specify	

SECTION E: CONSTRAINTS FACED BY HOUSEHOLD

Constraints	Very	Serious	Indifferent	Not	Not very
	serious (5)	(4)	(3)	serious (2)	serious
					(1)
Lack of access to formal loan					
Unavailable skilled labour					
Poor access to market					
Low market					
Discrimination of gender					
High tax rates					
Unstable electricity					
Increase cost of production					
High cost of business premises					
Poor management system					
Price fluctuations on primary					
business					
Bad weather					
Others					
(Specify)					