

CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

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Czech University of Life Sciences Prague

**Faculty of Tropical
AgriSciences**

**EFFECTS OF MIGRATION AND REMITTANCE
ON AGRICULTURE IN NORTHERN NIGERIA
(CASE STUDY BAUCHI STATE)**

MASTER'S THESIS

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Declaration

I hereby declare that I have done this thesis entitled “**Effects of migration and remittances on agriculture in Bauchi state Nigeria**” independently, all texts in this thesis are original, and all the sources have been quoted and acknowledged by means of complete references and according to Citation rules of the FTA.

In Prague April 2019

.....

Auwalu Umar

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Abstract

The contribution received from migrants both national and international, serves as the main component of household income and is increasingly recognized as an indispensable resource for development and poverty reduction particularly in rural areas. The aim of this research was to analyse the effect of migration and remittances on food security and perceived importance of remittance used. The study employed primary data collected in 2018 using structural questionnaire. Data were collected in the face-to-face interviews from purposively selected six local government areas, two from each zone of the state. In the selected local government areas, 180 households were selected and interviewed. The collected data were analysed in three main stages; the first stage included the calculation of the food security indicators related to each household while the second stage involved the analysis of the factors that affect migrant and forms of remittances received by each of the households. The importance of remittances to household heads was also analysed in the second stage of the analysis. The Statistical package for Social Sciences IBM (SPSS) Data Entry technique, STATA Data technique and MS Excel were employed for the analysis. Objective one and two were analysed by subjecting the data to quantitative data analysis using arithmetic mean, variance bar chart and tables. While objective three was examined using the ordered probit regression model. Household head considered the remittance as important used for buying food, education fees, health expences. Households who receive remittance are more likely to be food secured and have better livelihood. The more the number of migrants, the more the poor household are to be food secured.

Key words: Food security, Investment Household head, Livelihood, poverty,

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List of the abbreviations used in the thesis

ECOWAS: Economic Community of West African State

HT: Harris – Todaro model

CBN: Central Bank of Nigeria

FDI: Foreign Direct Investment

GDP: Gross Domestic Product

LGC: Local Government Council

CSI: Crime Scene Investigation

DDI: Dietary diversity Indicator

FCS: Food Consumption Score

1. Introduction and Literature Review

1.1. Introduction

Globally, more than 1 billion people live in extreme conditions of poverty (UNDP 2005) 75% of which lives in rural areas and dependent on agricultural activities for their survival (IFAD 2007). Although they are often very context-specific, natural disasters (drought and flooding etc), civil conflict and structural inequalities are among the common causes of poverty and food insecurity in rural communities. Such phenomena limit their access to available resources and opportunities for securing sustainable livelihood. Poor families living in rural areas resorts to sending someone among the family members to nearby urban areas for remunerated job in the absent of local available solution.

The contribution received from migrants both national and international, serves as the main component of household income, which is increasingly recognized as an indispensable resource for development and poverty reduction (Cotula & Toulmin 2004). In the context of developing countries, migrants and their commuting serve as routine part of livelihood strategy of their family in rural areas (Deshingkar 2005).

Remittance flow from developed countries is currently ranked as the second inflow received by developing countries (OECD 2003; Ratha 2003) amounting to \$57 billion in 2001 (OECD 2003) which comparable to \$72.3 billion of recorded global remittance of the same year (World Bank, 2003). As reported by Maimbo and Ratha (2005) Nigeria was the largest recipient of remittance among Sub-Sahara African countries. It receives 2% of global remittance and 30%-65% of what flows to the region (Orozco 2003). Nigeria received a remittance of \$2.8 billion from different parts of the world in 2004 (World Bank 2004) which is only less than what was received in oil export as earning from foreign exchange. It was therefore ranked among the first 20 developing countries that received remittance in 2003 (Ratha 2005).

It was a common believe that remittance plays significant role in income that flow to villages, which was estimated at 2% 7% of the total village income (Lipton 1988). Most of the migrants in Nigeria originate from rural agricultural areas . Even though many

benefits are derived from migration through remittance, its effect on agricultural sector is open for discussion.

1.2. Literature

1.2.1. Migration system in developing countries

According to [Farid et al. \(2009\)](#), human migration is the permanent or temporary movement of people from one place to another for purposes of residence and/or employment. This has been largely necessitated due to the quest for a better life as a result of failure in agriculture in rural areas, challenges in climatic and natural disaster. Migration is often necessitated whenever a community is deprived of its resources as result of a natural disaster or conflict and government response to these issues is slow or not forthcoming at all ([Adepoju 2000](#)). Migration is therefore seen as a survival strategy utilized by the poor, particularly the rural dwellers ([World Bank 2005; Ajaero 2013](#)). Internationally, migration provides valuable remittances for frustrated unemployed workers who might otherwise present serious domestic problems ([Farid et al. 2009; Olowa & Awoyemi 2012](#)). In Nigeria, internal migration has since the 1950s been from rural areas to the main city of the state ([Olowa & Awoyemi 2012](#)), however in recent time with advancement of the capital city (Abuja) as a result of investors and tourism, it has become a major destination. Generally, the youths migrate from rural areas where employment opportunities are almost absent to city in the hope of finding a better life. However, when they are unable to satisfy their incessant desires in these cities, they resort to further migration abroad hoping to improve and get better earnings in the industrial and service sectors of their host countries which are more developed. According to [Olowa and Awoyemi \(2012\)](#), Nigeria has experienced a much increase in emigration to South Africa, Middle East, North America and Europe from late 1980's following economic crisis, emergence of liberalization measures and repressive military dictatorships. Migration has been seen as a catalyst of empowerment and its benefits are not only felt by the individual migrant but also the family he left behind and subsequently his entire community. [Ajaero and Onokala \(2013\)](#) have viewed the remittances from migrant and the income multipliers it creates as crucial resources for

the sustenance, households, as well as agents of regional and national development.

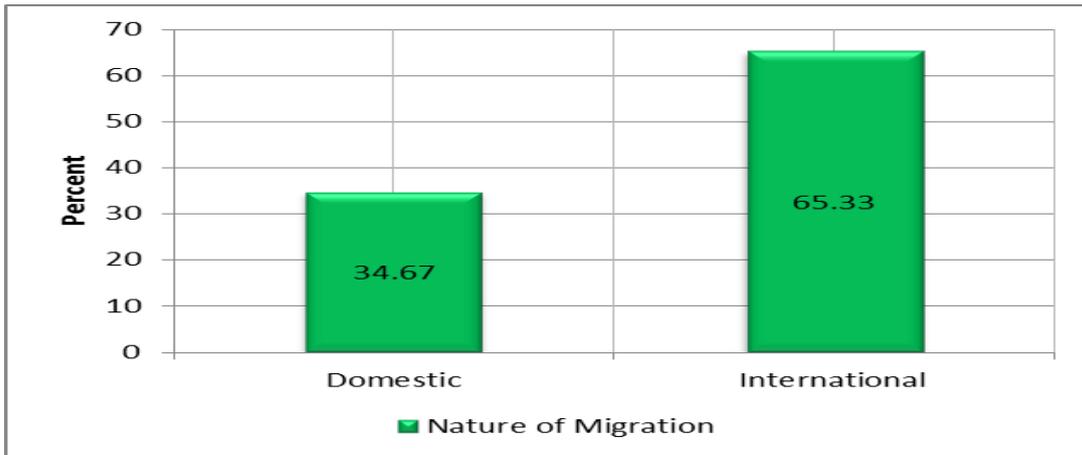


Figure 1: Percentage distribution of migrant populace

Source: (Rahman et al. 2015).

Figure 1 shows the average amount of remittance sent by both domestic and international migrants. Cash and kind both source of remittance have been considered in the transfer value in developing countries.

The remittances sent back by migrants are usually in the forms of money, food, and clothing and at a routine interval with most of them remitting once a month. Furthermore, rural-urban migrants also engage in the execution of some developmental projects in their rural communities (Ajaero & Onokala 2013). Poverty-reducing impacts are larger for those countries, where migrants are concentrated in the bottom income deciles. However, not all migrants are sending remittances and migration will not always have positive, poverty-reducing impacts on a household-level (Hagen-zanker 2015).

1.2.1.1. Migration system in Nigeria

The rapid growth rate of the population of large urban centres through migration was a great concern to successive governments in the country since the second half of the 1950s. From 1952 to 2006, the living in urban centres in Nigeria population increased from 11 percent to an estimated 46 percent (Oluwasola 2007; UN DESA 2008). In the hard-economic crisis and political uncertainty, Nigeria has since the last decade been witnessing increasing levels of emigration. This is responsible for quite worrying phenomenon in which the nation has come to relate. Global movement, particularly in the West African region, also got to be escalated inside of the system of the Economic Community of West African States emerging (ECOWAS) (Navratri 1997).

There is large volume of internal migration in Nigeria, caused by poor soils, declining crop yields, scarcity of land, crop failures and soil erosion, among others. Migration patterns are the wide variation and exceedingly concerned of micro economic and social motivations to the migrant, the same motivations seem to support decisions to migrate in every part of region (Navratri 1997). Acquiring a certain level of education or skills is also an important factor that encourages migration. Internal migration takes different models and forms, however the most significant which is the movement from rural to urban centres. The rural migration is overtaking for the population in some rural areas, and the influx of people in towns and cities (Navratri 1997).

1.2.1.2. Effects of Rural-Urban Migration on Rural Communities

For long, the concept and ideology behind migration has been well established. People migrating from remote areas to well developed cities in search of better life is not a novel concept (Adepoju 2000). However, what have changed over the years in the advertent and willinful movement of high skill and high wage workers as well as low skill and low wage workers from rural areas to more developed urban centre. In this context, rural-urban migration is motivavted by the poor basic amenities and inequalities in wealth distrition in these rural areas (Madu 2006; Adegoje2011). Secondly, the lack to seek out desired job opportunities (boredom in agriculture, absence of industries) in geographic area is factors that push folks from rural areas. what is more, the natural disasters, insurrection and terrorist attacks area unit social factors that instigate migration (Makinwa 2007).

1.2.1.3. Migration theories

In the finding of (Todaro 1969; Harris1979) they provide a theoritical framework widely accepted explaining the connection that exist between rural and urban migration.

In accordance to the HT model, migration is taken into account as associate degree adjustment technique by that employee's area unit distributed among the various labour markets, most of this distribution is in urban and few rural areas whereas making an attempt to effectively maximize their expected financial gain. The model has given rise to several applied studies that confirmed that relative wages and perceived keep of finding employment area unit vital determinants of call to migrate.

The call of a member of a family to migrate in most cases is commonly a family call and not a sole decision by the possible migrant. Recent studies powerfully counsel that interdependencies between members of the family and the existence of links with the place of origin area unit of importance for achieving a more robust understanding of the decision-making method of migration and viewing migrants as prospective investors in causing cities (Collier & Lal 1984; Banerjee 1981; Lack 1986). When relocating to receiving town, the members of the family area unit expected to pool and sharing of their financial gain as a variety of insurance against the unsure flow of specific financial gain.

It was asserted that the major reason why people migrate is economic based. (Skeldon 1997) added that apart from economic reasons, distance and population densities influence migration patterns. People are pushed to migrate from low income and less populated areas to highly populated areas which means migration movements are triggered towards a spatial-economic equilibrium which is the push-pull theories assumption. The movement of labour based on demand and supply is explained by the neo-classical economic theory at the macro-level. These differences in wages makes workers move from low wage areas most times the rural areas where there is enough labour to high wage area where labour is scarce. At this point, migration will make labour available at receiving area and scarce at sending areas.

The theory sees migration as a form of optimal allocation of factors of production to countries of origin and destination. In this perspective of "balanced growth," the reallocation of labour from the sending areas to urban industrial sectors within or across borders is considered a criterion for economic growth (Todaro 2009). In the works of Todaro (1969) neo-classical migration theory sees migration to be a form of allocating the factors of production to its optimum, benefiting both the sending cities and receiving cities. The reshuffling of labour from rural area (agricultural sector) to urban area (industrial sector) is considered an indicator for economic growth. It is also perceived by this theory to be a "balanced growth".

Previous studies based on rural-urban migration are the reason for this optimistic view. In the same period of post-war migration of labour on a large scale from "developing" to "developed" countries began to grow. Many labour surplus countries are involved in the migration process with high expectations of advancing development (Papadimitriou

1985). For example, the government of developing countries in the Mediterranean began to actively encourage emigration, which they regarded as one of the main instruments to foster development (Adler 1981; Penninx 1982; Heinemeijer et al. 1977). At the macro-level, money sent by migrants have been considered a vital source of hard currency while at the meso-level and micro-level, it leads to economic improvement of regions of origin of migrants. Remittances would improve the distribution of income and quality of life beyond what other development approaches available could provide (Keely et al. 2010). Furthermore, it was expected that migrant workers or guest workers would re-invest their returns substantially in companies in the country. Migrants were regarded as representing a hope for the industrial development of their countries of origin (Beijer 2007) and it was widely felt that the significant scale relocation can add to the rapid growth in the immigrants' country of destination and fast development in the nation (Kindleberger 2005).

1.2.1.4. Impact of migration on livelihood

Migrants' overall perception on the impact of migration on menage food security concerned comparison of the scenario of food production, availableness and access between the areas of origin and destination (Tegeje 2014). Migration reduces impoverishment at the menage level. Impacts of poverty-reduction are more for those countries wherever migrants are targeted within the bottom financial gain deciles. However, not all remittance received by households from their migrants always have positive poverty-reducing impacts at the household-level (Hagen-zanker 2015). This revealed that migration can be seen by such households as a form of portfolio diversification in which remittances play an important role (Iheke 2010).

1.2.2. Impact of remittance in developing countries

Since impoverishment and food insecurity are the elemental reasons for migrating in most cases, remittance, once the migrant finds associate economic activity is 'obligatory'. International remittances are recognized as a very important driver of the economy of most developing countries. It plays important roles in impoverishment reduction, financial gain distribution and economic development, particularly in rural areas. Remittances sent to family and friends through financial transfers from overseas migrants are outlined (Nwaru & Iheke 2015; Zanker 2015) because they exceed

development aid and foreign direct investment volumes and frequently cater for food, school fees, hospital bills, farming and different family investments which are the main aims needed to be achieved by the migrants' back home (Ajaero & Onokala 2013).

It was found in several literature that remittances scale back poverty; like Lokshin et al. (2010) in Nepal; Prabal and Ratha (2012) in India, Gupta et al. (2009) for SSA, and World Economic Outlook (2005) draw an equivalent conclusion in a world study. Zanker (2015) nonetheless found that remittances tend to be received by better-off households, they're going to have lower poverty-reducing impacts. He equally points that the power to remit may be a function of the degree of integration in to the labour market that the flows to individual households and in contrast to loans, it attracts? ? no interests. Two main channels for remittances has been known: namely formal and informal channels. The formal channel embrace cash transferred by banks and non-bank monetary establishments whereas informal channels can embrace hand carrying (of cash) and transfer through unregulated money transfer operators. Any of those channels were found to own some blessings and inconveniences and the alternative of a channel may be a function of various factors.

1.2.2.1. Migration Remittance and household survival

Today, remittances have played a substantial role directly or indirectly in the national economy and household budget (Gammeltoft 2003). Remittances is incessantly increasing due to the continues increase in migration resulting to a corresponding increase in income of the migrant. Remittance is often used in solving problems such as basic consumption (medical expenses, food, school fees, building). Furthermore, remittances have also played a vital role in boosting the economy by giving farmers financial opportunities to buy basic needs for farm operation (implements, improve seeds, fertilizers). Thus, this implies that remittances are really spent on luxury goods. Moreover, remittance have assisted a lot in mitigating the vulnerability of poor families to hunger, sickness and poor education of children. In the study by Gammeltoft (2003), on comparison of randomly selected household found out that household with grant have less challenges on basic necessities of life, and they could pay school fee of children.

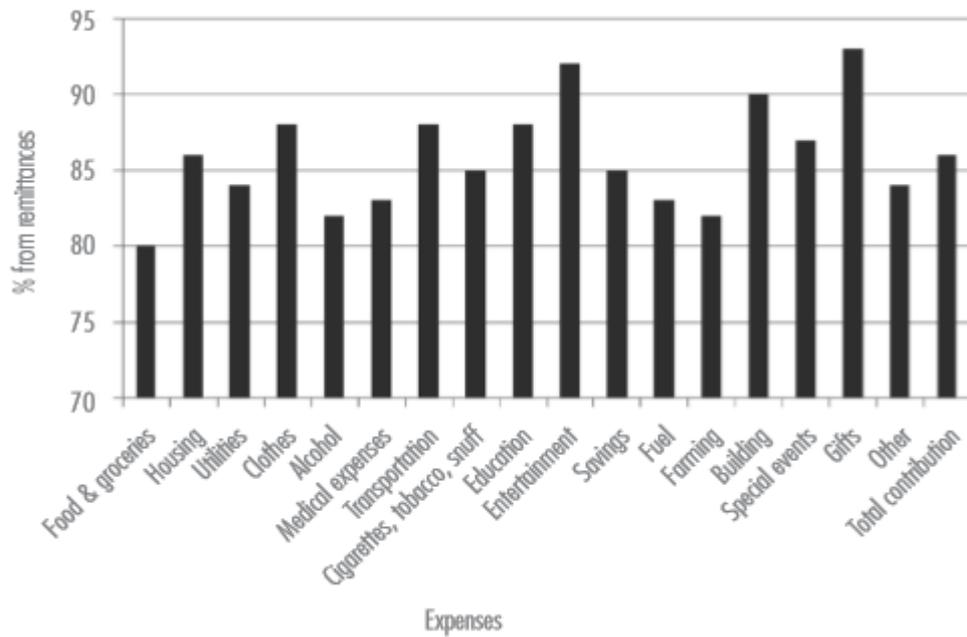


Figure 2: Average Share of Expenses Paid from Remittances in Zimbabwe's

Source: (Crush & Cape 2010).

1.2.2.2. Remittances in Nigerian economy

According to [Iheke \(2012\)](#), among Sub Saharan African countries Nigeria is the largest recipient of remittances. It was reported to receive nearly sixty-five of formally recorded remittal flows to the region and a pair of world flows. The financial institution of Nigeria (CBN) reported about US\$2.26 billion received in remittances for 2004. The development of Nigerian emigrants thought-about as associate escape hardship on the house front and a depletion of human capital is somehow paying off for the country. .This can be seeing able of the revelation that the country's economy was raised through Nigerians abroad by a humongous \$7billion within the year 2008. Remittances replicate the native labour operating within the international economy and are shown to elucidate part the affiliation between growth and integration with the globe economy ([Addison 2004](#)).

Remittances enhance the mixing of states into the world economy and replicate the native labour operating within the globalized economy. Remittance has become a crucial supply of revenue each for state through tax and charges and for households. It helps in increasing consumption smoothing and financial gain at households' levels ([Azeez & Begum 2017](#)) and also increase saving and quality accumulation ([Rahman city](#)

& Sayeda 2015), improve health services access, nutrition and raise education level (Edwards 2003). Likewise, at village/community level, remittance financial gain will facilitate stimulate native trade goods markets and native employment opportunities. Remittances have well-trying to be less volatile, less procyclical and additional reliable supply of financial gain (for agricultural production and alternative house uses) than alternative capital flows to developing countries, like foreign direct investment (FDI) and development aid (Ratha 2003).

Most of the Nigerians dwell in rural communities and intrinsically, husbandry is that the principal activity. In fact, quite eightieth of farmers within the country square measure subsistence farmers or questionable smallholders (Mgbenka & Mbah 2016). Whereas international standards contemplate all farms but ten hectares as little scale, the Nigerian department of the Federal Government of Statistics (1999) defines granger farmers as those whose farm holdings fall between 1 and 4.99 hectares.

The reception of remittances stands out jointly of the consequences of migration on the causation rural communities. These migrants equally perform biological process? comes in their communities of origin. Though' some migrant house tends to 'waste' their remittances (that is once spent on unproductive or status-oriented consumption), most are found to speculate theirs particularly ashore and businesses. Remittances square measure? largely used for basic consumption (e.g. for food, faculty fees, medical expenses and for building). a tiny low variety of households are able to use their remittances to extend financial gain through the acquisition and sale of products or by investment in transportation or farming.

Measuring the influence of remittances is sometimes complicated as a lot of factors need to be given utmost consideration. One of such factors is the mobility of remittances to the receiving family. Thus, this simply implies that a family that is relatively poor would frequently be in need of money to sustain it livelihood, thus request assistance often from the migrant abroad. Likewise, a migrant whom desert affluent family in the village just for a better life would not care much on sending aids back home as the pressure and request from the family less (McKenzie & Saskin 2007).

Remittances square measure? definitely spent on luxury merchandise however solely a low minority of households will afford to pay a great deal on these merchandises. The households whose members receive remittances square measure typically larger,

younger, and higher educated, so representing the foremost dynamic a part of the society. The HBS estimates of the labour offer functions showed that remittance recipients also are additional probably to reply to economic incentives, like higher agricultural shadow wages. what is more, it emerged that recipients tend to exchange family labour and autogenous inputs (seeds, seedlings, and animal feed) with services provided by contractors and purchased inputs, respectively (Piras et al. 2018).

Remittance receiving countries have to be compelled to give a friendly economic atmosphere through sound macro-economic policies, basic physical infrastructure, stable exchange rates, reliable money and alternative establishments, improved market integration, clear system and smart governance. External stimulation may prime the economy for development and equip it adequately to profit. This can be significantly necessary if remittances square measure to be attracted and used as development capital. In in our own way remittances may influence house call-making is by impact on recipient households“ decision on what proportion labour it ought to offer, reckoning on if the receiving households see it as additional profitable to provide additional leisure once the additional form of financial gain or not (Jadotte 2009).

According to the World Bank (2006), in the past recent decades, particularly international remittances, has become a really engaging supply of foreign earning for developing countries. The massive size of remittances relative to alternative external flows and to the gross domestic product (GDP) in several countries counsel that political economy effects of remittances could also be of crucial importance to several countries. In addition, therefore in developing countries like Nigeria wherever underdeveloped financial set-up and structural rigidities create the compilation and analysis of such remittances troublesome. The massive increase in remittances from international migrants has generated optimism concerning the potential development benefits of those capital flows in migrant-sending economies, particularly in rural communities wherever market failures square measure rife. There are, however, necessary considerations concerning the tumultuous effect of a loss within the productive personnel to migration. Whereas uninflected the effects of remittances from the effects of migration is very important to distinction these tow mechanisms, empirical studies that severally establish the remittance and therefore the migration effects on the causation economies square measure rare. This paper provides separate estimates of the

effect of remittances and therefore the effect of migration on agriculture within the Philippines, one in all the most important exporters of migrants within the world.

According to [Adams \(2006\)](#) despite the increasing size of internal remittances to zero in developing countries, there has been very little attention on examining the impacts of those remittances on the households in these countries and so the economy at giant. It typically reduces the extent and severity of economic condition and often result in higher human capital accumulation, higher health and education expenditures, higher access to data and communication technologies, larger money access, little business investment and entrepreneurship.

1.2.2.3. Impact of remittance on food security

[Generoso \(2015\)](#) studied the impacts of remittances on food security in rural African country. Results of the supply regression model indicated that households with remittances have higher food security standing than those while not remittances within the Saharan zone however contend that the profit to resolve food insecurity is temporary. However, within the same study, no applied math association and contribution was determined for remittances on food security within the Sahelian Zone, Mali. A study by [Fransen and Marzacotto \(2014\)](#) reveals that for units in poor wealth class the payment receiving household finances area unit inflated and therefore the food security standing improved. According to [Crush and Cape \(2010\)](#) revealed that remittances are actually used for basic consumption, such as food , school fees, medical expenses and for building. However, when put next to wealthier households, receiving of remittances didn't have an effect on the unit food security. According to [Crush and Cape \(2010\)](#) Remittances have high impact on livelihood of the household, result showed that almost 90% of household in Zimbabwe regard remittance as important or very important very on food security. [Azam et al. \(2006\)](#) on the Effect of Migration on food security it was observed that poor households are under food security when migrants mainly originate from relatively poor households. Thus, migration is more likely to imply greater food security for poor household.

A systematic review by [Thow et al. \(2016\)](#) centered on the impacts of remittances on diets and nutrition and therefore the studies reveal that households with remittances have higher food consumption, minimised vulnerability and higher food security state of affairs than the households that don't have remittances. Exploitation the ordered

supply regression, [Atuoye et al. \(2017\)](#) investigated the impact of remittances on unit food security among rural and concrete households in Gold Coast. The findings demonstrate that rural and concrete unit that receive payment were a lot of probably being in severe food insecurity class than urban households without remittances. [Bhalla et al. \(2018\)](#) studied the impacts of money transfers on unit food security in Republic of Zimbabwe and reveal that the cash transfer may be a major determinant of unit food security and diet diversity. [Nugusse et al. \(2013\)](#) who examined that cooperative membership plays a substantial role to ensure food security in northern Ethiopia. The study realized that 21% of household who do not participate in any cooperative activity were food unsecured.

1.2.3. Food security

According to the [\(Kerstin 2004\)](#) Food security can be defined as the ability of all people to have both physical and economic access to adequate, nutrition and safe food to meet their dietary needs and food preference for an active and healthy life.

The findings of [\(Mgbenka & Mbah 2016\)](#), concluded that flooding and Drought (i.e. natural disasters), conflicts and structural inequalities are some of the known common causes of poverty, poorness and food insecurity particularly in rural communities. Despite having an expanse of nine hundred and eighty-three million hectares, with seventy-four million hectares suitable for farming [\(Mgbenka & Mbah 2016\)](#) but half its productive land is presently not being exploited.

The country's population is growing, and its food security challenges can not clearly be said to commensurate with growing population as a result of the current rate of domestic food production. This is evidenced from the inability of Nigeria to meet the food needs of its growing population. Like in most of the other developing countries, the agriculture sector could be a major leader in Nigeria. However, ironically this sector contributes little or nothing to the gross domestic product (GDP) of nation. Among the factors to blame for this, is that the incontrovertible fact that farmers have restricted access to credit facilities that reduces their productivity. Domestic food production can get to expand at a quicker rate if any affordable modification is desired. To combat the looming food security crisis, [Mgbenka and Mbah \(2016\)](#), enumerated many issues facing the farmer that should be addressed. This embody issues just like the lack of

support from regime councils (LGCs), lack and high price of labour in rural areas, lack of data to little holder farmers, restricted access to fashionable agricultural technology, lack and high price of farm inputs, and inadequate agricultural credit.

1.2.3.1. Major concept of food security

According to [FAO \(2003\)](#). Food security may be a scenario that exists once all individuals, always, have physical, social and economic access to enough, safe and nourishing food that meets their dietary wants and food preferences for a vigorous and healthy life. Generally, food security is predicated on four pillars.

- Physical availableness of food: implies that there's a regular and reliable supply of quality food.
- Economic Associate in Nursing the physical access to food: would also be outlined as an assured ability to accumulate acceptable foods in socially acceptable approach (without exploitation any header methods, e.g. stealing, resorting to emergency food provides and alternative acceptable ways).
- Adequate food utilization: includes the access to adequate health care, sanitation and water and applicable use supported data of basic nutrition ([FAO 2003](#)).
- Stability of the opposite three dimensions over time: households and people should always have access to adequate food to be food secure.

Food insecurity is outlined as unsure or restricted availableness of safe and adequate food and restricted ability to urge acceptable food in acceptable ways that while not exploitation any unacceptable header methods ([USDA 2012](#)). At macro level food availableness presents a mixture of business food imports, domestic food production and food stock, food aid. Food access is secured once all people and households have enough resources to satisfy their dietary wants and food preference ([Riley & Mook 1995](#)).

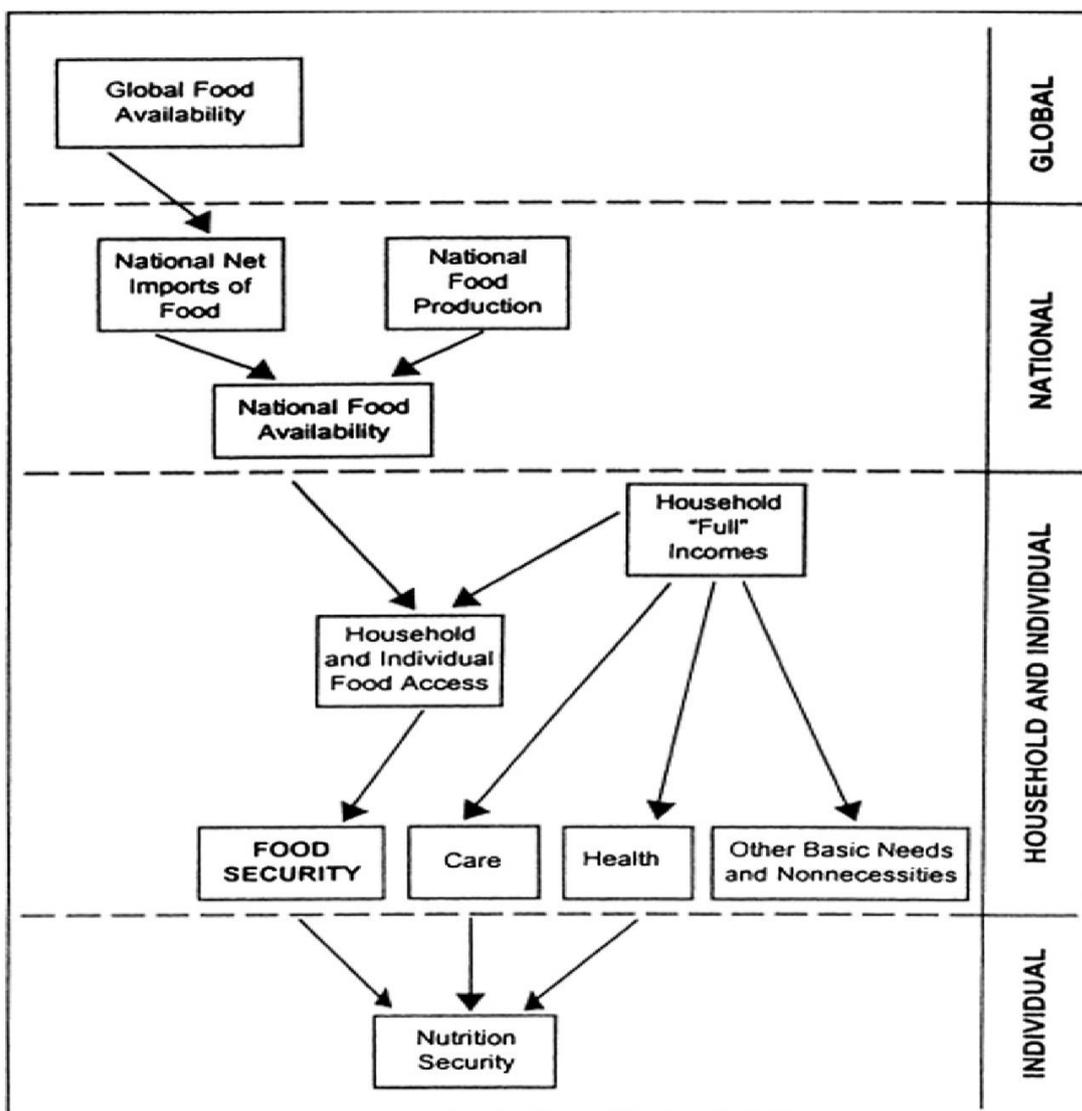


Figure3: Conceptual Framework of Food and Nutrition Security.

Source:(Smith et al 2000).

1.2.3.2. Dimension of food security

The main important factors of the food security system at the macro-level is economic growth and its distribution, macroeconomic stability, governance, public spending and quality of institutions. External and internal balance of Nigeria may be included between the main indicators for macroeconomic stability. Food security may be improved due to economic growth through generating tax revenues and foreign exchange earnings through exports and resulting increases in beneficial investments and public spending. Besides trade , health and education, agriculture has its important role

in food security. It may significantly improve food access by providing food, supplying services and assets essential for food insecurity prevention and by generating household incomes. Generally, growth of agriculture has mostly strong linkage effects driving overall growth and contributing to lower food prices (Christiansen 2005).

Agriculture is very important for achieving of food security at national level because it supplies food and generates household's incomes. Moreover, exports in agriculture help providing of substantial earnings, generating revenues for public spending, food imports and investments. Generally, households are food secure when their members may live healthy and active lives during all year. In practice, it means that households can produce and/ or purchase the food which is needed by all family members to meet their food preference, dietary requirements and able to have access to the services and assets necessary to achieve an adequate nutritional status. FAO (2010) recognizes that healthy and well-nourished people are both the outcome of successful economic and social development and constitute a basic input into the development process. In 2007-20011 Nigeria was rocked by many crises; of political and monetary character, ethnic strife and drought cause by some groups combined with forest fires.

The urban poor people were hit by this crisis the hardest. Rural poor were able to cope with the food insecurity due to their agricultural production (Levisohn 2005). Despite this fact, small farmers and people employed in agriculture are still considered as the most vulnerable groups to food insecurity (Gillespie 2015). According to the World Bank (2014) the number of people living below poverty line raised from 11.3 % in 1996 to 17.9 % in 1998. The households hit by the crises tried to cope by boosting the proportion of their income spend on staples, e.g. oil and rice and by reducing the allocations on food such as vegetables and meet and on education, health care, housing and recreation (Soekirman 2001).

1.2.3.3. Households' vulnerability

Vulnerability says one thing concerning the amount of risk for households or communities regarding threats to their lives and bread and butter. Vulnerability at the menage level is decided by the power of a topic to address shocks and risks like flooding, drought, conflicts, government policies or another crisis. The length and magnitude, the time and length of the shock are important factors. Households should use cope methods to avoid the foremost severe impacts of shocks so as to make sure

adequate food access. We should always distinguish vulnerability and impoverishment, though underlying impoverishment contributes to magnified vulnerability in most emergencies (Klennert 2005).

Three factors that are subsequently combine with household vulnerability to food insecurity such as:

- The external hazards touching the community over that they need little probability to regulate them, e.g. floods, drought or political upheaval.
- Underlying community vulnerabilities; can't be modified by the people and relates to factors as well as impoverishment and climate.
- The internal capability of the community to address food insecurity situation; it's associated with household's skills, resources and networks that facilitate them to beat a troublesome scenario of food insecurity.

In the research (Kurosaki 2011). The interior and capability are found all told subjects. Some households will overcome true higher than others. a number of them is exposed to hazards or face durable unwellness within the family which may be the rationale for losing their capability to cope (IFRC 2006). cope methods are thought-about as activities that menage members use or opt for as ways that of living through troublesome times brought on by some form of shock to their customary or traditional ways that of living. There is a protracted social science tradition of considering cope methods within the face of meagrely access to food (Klennert 2005) menage ought to distinguish completely different stages of cope; early coping methods are not essentially abnormal and therefore the don't cause lasting injury. These methods might embrace commercialism non-essential assets, aggregation wild foods or causing menage members to figure elsewhere. a lot of radical methods might for good deflate future food security, e.g. distress migration of whole families, sale of land or deforestation. Shocks is classified as quality shocks or financial gain shocks.

According to Carter et al. (2007) the primary sort includes floods; storms might cause a decline in an exceedingly physical quality and will decrease financial gain. It is going to slightly influence rich households however tends to influence poor households for a protracted amount expertness maltreatment of the CSI revealed that food insecure households used four basic varieties of consumption cope strategies such as:

- Change their diet. It means that they rather switch food consumption from most well-liked to cheaper (less preferred) foods.
- and intense immature crops or seed stocks.
- Reduce the number of individuals that they need to feed by causing several them elsewhere, e.g. causing the youngsters to grandparents or to neighbours).

Manage the food insufficiency, e.g. (cutting portion or the amount of meals, or skipping whole days while not eating) (Maxwell 2008).

Santo et al. (2014) revealed that there was no effect of different land tenure systems studied on food security. However, Wossen et al. (2017) shown that the registration land allocation process had possibility to ameliorate or better food security in a long run since contributions towards agricultural outputs have been well established. Moreover, Ghebru and Holden (2013) who observed that tenure secure households measured by provision of land certificates, have a much better positive association with food security in Ethiopia. Merten and Haller (2008) investigated the effect of property rights on child growth and the food security of households in customary land tenure in Zambia. It was revealed that insecure property has a great negative effect on the food consumption pattern of the household. Furthermore, Babatunde et al. (2007) stated that younger house hold heads are stronger and are expected to cultivate large size of farm than their older counterparts. Thus, this implies age of the household head play a substantial role in ensuring food security as well. In related study in Bangladesh by Nasir and Uddin (2011) evaluated tenure systems that were classified as share tenants without land rights and cash tenants who hold secure land rights. The cash tenants who hold secure land rights were found to be better food secured as they save more money that could have been used in paying for other logistics before getting the farm.

1.2.3.4. Rural livelihood strategies and sustainability

According to Dercon (1996), The strategies by which the households cope with upset depend on alternativees available, e.g. activities and assets, capabilities that are strategy of household livelihood. Households from different socioeconomic groups have various strategies which ensure various levels of resilience to food insecurity. Hence, these different households (e.g. farm household and household whose main income comes from public sector) need different interventions. Then, national food security strategies should be tailored to various groups and households according to their needs and

household livelihoods. The forceful factors of each livelihood strategy are therefore decisive for improving the response mechanism related to food security of the households (Ellis & Freeman 2000).

The factors influence people's ability to struggle a sustainable choice of livelihood. Institutions and policies operating at different levels from international to local may either support people in making a living. Certain household assets are required to make a living. These assets may be divided into five main groups;

- Financial – sources of income, assets which may be sold or traded, savings, financial services or objects/ resources/ activities that may generate cash.
- Natural – water, forest, soil, environmental assets, natural resources such as land used to produce crops or grazing.
- Physical – houses, schools, roads, clinics, physical structures such as buildings including shops and markets.
- Human – health, skills, education, knowledge and motivation.
- Social – family links, support network, leadership, conflicts, the family structure (DFID 1999; Ellis and Freeman, 2007).

1.2.3.5. Dietary diversity indicators (DDI)

According to Jensen and Miller (2010) dietary diversity indicators are measure as very effective food and nutrition security indicators. There are two basic reasons for these, first, dietary diversity captures consumption of both macro and micronutrients. Second, economic theories of demand suggest that individuals will diversify into higher-value micronutrient-rich food (e.g. fish, meat, milk products, fruits and vegetables) only when they satisfied their basic caloric needs. For these important reasons, dietary diversity indicators became popular and many organizations found them useful, e.g. in the WFP's Emergency Food Security Assessments. Mostly, these indicators consist of answers to recall questions about the consumption of food groups or items over a recent period (usually from 24 hours to 2 weeks).

According to (Kennedy et al (2010) the most used? dietary diversity indicator is Food Consumption Score (FCS) that is calculated from a seven-day household food consumption recall. The FCS and the HDDS share a common emphasis – they are both focused on food access. They differ in the number and definition of food groups, recall

period and in the weighting of food groups. They are the Food Variety Score (FVS), the Dietary Diversity Score (DDS), and the Food Frequency Score (FFS). The indicators provide a count of the number of different food groups or items, usually between 7 and 15 food groups (Headey et al. 2012). The highest weights are connected to meat, fish, and milk, followed by pulses, cereals, vegetables and fruits, and sugar and oil (Headey et al. 2012). From the research of Hoddinott (2002) who conducted an analysis of ten countries identified a strong relationship between dietary diversity at the household level and consumption and energy availability per cap

2. Aims of the Thesis

The aim of the research is to carry out a household-level migration and remittance survey for the study area which will permit us to investigate the impact of remittance flows on the household of the receiving community, especially on smallholder farms in Bauchi State Nigeria.

2.1. Main Objective

The aim of the research is to analyse the effects of migration and remittance on food security of smallholder farms in the northern Nigeria.

2.1.1. Research Question

1. Which types of remittances the rural household received?
2. What is perceived importance of different types of remittances to household?
3. Does remittance and migration influence food security?

3. Methods

3.1. Study area

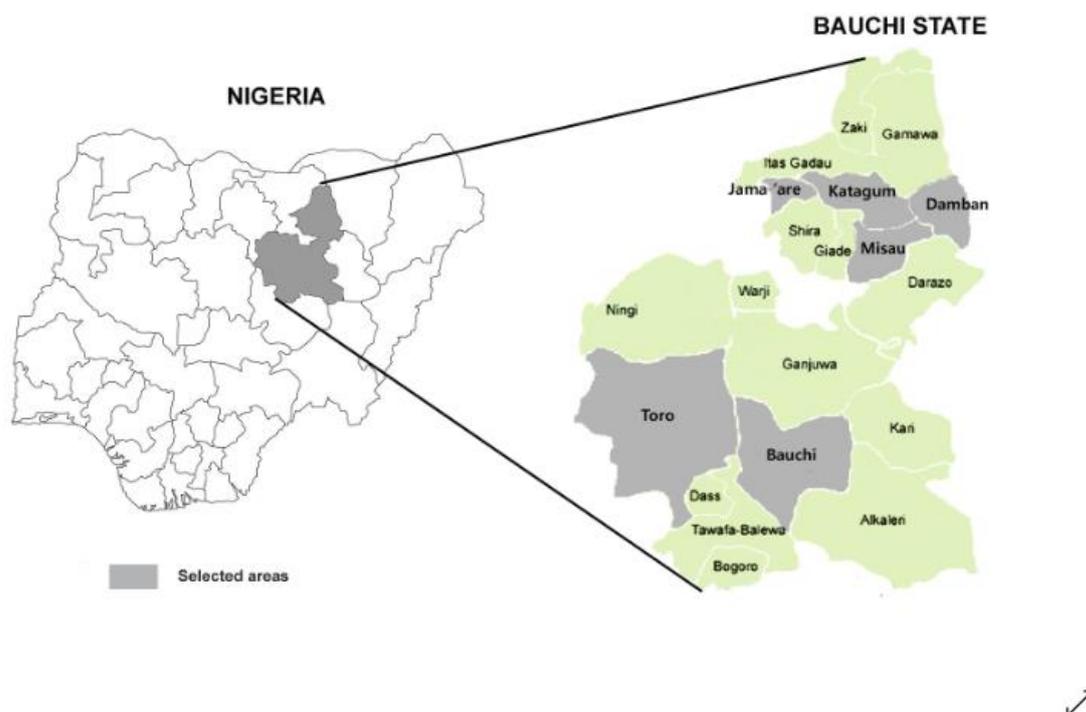


Figure 4: Map of the study areas

The study was conducted in Bauchi State, Nigeria. Bauchi State is one of the states in Northern Nigeria. The State was formed in 1976 when the former North – Eastern state

The state was created in 1976 within the North-Eastern State in Nigeria. According to the [population's census \(2006\)](#) had a population of 4,653,066. Bauchi State has gone through tremendous transformation over the years. The State obtained three political zone with twenty local government areas, and it occupies a total land area of 49,199km² represent about 5.3% of Nigeria's total land mass and is located between latitude 9° 3' and 12°3' north and longitude 8°50' and 11° east. The main crops grown in a state include, groundnut, millet, maize, mango, sorghum, guava, tomatoes, cowpea, cashew and okra. Small ruminants such as goat, sheep, and non-ruminants such as rabbits and

poultry are also reared in the state. The state had two distinct seasons, the wet and the dry seasons. The wet season started in March and ends in October while the dry season starts in November and ends in February. Farming is the major occupation of the Bauchi State indigenes (BSADP1996).

Data collection



Figure 5: Sample picture for data collection

3.2. Sampling method

The study was conducted using a multistage selection procedure involving purposive and simple random sampling techniques. In this technique, the study area (Bauchi state) was divided into three zones, namely; Bauchi south (zone A), Bauchi central (zone and Bauchi north, (zone C). Two local governments were randomly selected from each of

the zones that is, Bauchi and Toro local governments from zone A, Misau and Damba local governments from zone B, Katagum and Jama 'are local governments from zone C.

This resulted to six local government areas selected. Subsequently, two council wards were randomly sampled from each of the local governments selected and a total of twelve council wards were selected with two council ward each from rural areas respectively. The selection of the council wards was based on the economic distribution of the populace into rural areas. Using a systematic approach. This brings the sample size to a total of 180 respondents. That was guided by the following features, village in different location and villages with comparable tenure systems, a total of fifteen smallholder farmers were selected from each of the council wards. While questionnaires were prepared for migrant and non-migrant households. Questions related to socio-economic and demographic characteristic, consumption patterns and livelihood activities were asked. The questionnaire was pretested before actual data collection on July 2018, for ten peoples were selected in two village such as Shara shara, district and Duhuwar kura, all in katagum Local Government Area.

3.3. Data analysis

The collected data were analysed in three main stages; the first stage included the calculation of the food security indicators related to each house hold while the second stage involved the analysis of the factors that affect migrant and form of remittances received by each of the households. The importance of remittances to household heads was also analysed in the second stage of the analysis. The Statistical package for Social Sciences IBM (SPSS) Data Entry technique, STATA Data technique and MS Excel were employed for the analysis. Objective one and two were analysed by subjecting the data to quantitative data analysis using arithmetic mean, variance bar chart and tables. While objective three was examined using the ordered probit regression model.

3.3.1. Measuring the influence of remittance on food security

Food Consumption score (FCS) was used as indicators. Given the lack of consensus on indicators to measure food security, [\(Carletto et al. \(2013\)\)](#) suggested that a useful approach is to assess the food security situation of each dimension and specify the level-

national, or household. In addition, the research of [Heady & Ecker \(2013\)](#) in agreement, revealed that in measuring food security, a criterion to gauge the indicators is based on the demand of decision makers for a wide range of information. The aim of the research is to carry out a household-level migration and remittance survey for the study area which will permit us to investigate the impact of remittance flows on the food security of the receiving community. Therefore, one indicator was used to measure food security, namely the food consumption score (FCS).

3.3.2. Food Consumption Score (FCS) calculation

The FCS was developed by the world food programme as a frequency weighted dietary diversity score ([Leroy et al. 2015](#)). Different studies have applied the FCS indicator: [Mason et al. \(2015\)](#) in Tanzania.

The effects of remittances on households were examined using the "food consumption score" (FCS) model of ([Jones et al. 2013](#)).

$$FCS = a_1b_1 + a_2b_2 + a_3b_3 + \dots + a_8b_8 \quad (1)$$

where a = frequency (1-week recall period), 1-8 = Food group, and b= weight (meat, milk and fish) = 4, pulse = 3, staple = 2, vegetables and fruits =1, oil and sugar = 0.5.

3.3.3. Ordered probit model

This model was employed to assess the factors influencing the achievement of food security status in the study area. Ordered probit model is specified implicitly as to examine the effect of the chosen factors as influencers on food security in the household from the study area

Table 1 : Description of variables

Variables	Description	Means (SE), n= 180
Dependent Variable		
Food security indicator Food consumption score	Three categories, 1= poor (<21.5), 2= borderline (21.5-35), 3= acceptable (>35)	2.88 (0.36)
Independent variables		
Household head characteristics		
Age	Age of household head	59.82(7.17)
Education	What is your level of education 1 = formal education, 2= no formal education	1.29(0.72)
Gender	1 = male, 2 = female	1.26(0.43)
Marital status	1 = married, 2 = not married,	1.29(0.63)
Household characteristics		
Total number of migrants	How many members migrated last year? 1= 1 migrant to 5= more than 4 migrants.	2.21(1.52)
Livelihood	How often did you share the remittance for livelihood, scale 1 to 5, 1= very often, 5= never	2.50(1.04)
Remittances	If your received remittance how many percentages, it covered out of your income received last year	4.38(1.52)
Household size	How many members do you have in the household	9.57(3.67)
Dependence ratio	Dependency members divided by active members per household	1.42(1.13)
Farm characteristics		
Land owner ship	Percentage of agricultural land owned	87.57(19.17)
Used of inorganic fertilizers	How often did you used inorganic fertilizers last year? 1 to 5 scale, 1 = very often, 5 = never	2.41(0.95)
Buying high quality seed	How often did you use remittance to buy high quality seed last years, scale of 1 to 5, 1=very often, 5=never	1.77(0.42)
Institutional characteristics		
Access to bank account	Do you have bank account? 1= yes, 2= no	1.42(0.49)
Access to extension services	How often did you use extension services? scale of 1 to 5, 1 = very often 5 = never	1.47(0.49)
Information from group of farmers	How often did you use sources of information from farmers group? Scale of 1 to 5, 1 = very often, 5= never	3.39(0.72)

The ordered probit regression model for the determination of the third objective was calculated as follows

$$Y_i^* = x_i\beta + e_i, \quad i = 1, 2, \dots, N \quad (2)$$

where $E(e_i|x_i) = 0$ and $\text{Var}(e_i|x_i) = 1$. Treating Y_i , the observed variable, as a categorical variable with J response categories and as a proxy for the theoretical (unobserved) random variable, y^*_i , and defining

$\mu = (\mu_{-1}, \mu_0, \mu_1, \dots, \mu_{J-1}, \mu_J)$ as a vector of unobservable threshold (or cut point) parameters, the relationship between the observed and the latent variables can be written as;

$$Y_i = j \text{ if } \mu_{j-1} < y^*_i \leq \mu_j, \quad j = 0, 1, 2 \quad (3)$$

Where $\mu_{-1} = -\infty$, $\mu_0 = 0$, $\mu_J = \infty$ and $\mu_{-1} < \mu_0 < \mu_1 < \dots < \mu_J$.

The probabilities will thus be given as follows:

$$\begin{aligned} \text{Prob}[Y_i = j] &= \text{Prob}[\mu_{j-1} < y^*_i \leq \mu_j] \\ &= \text{Prob}[\mu_{j-1} - x'_i\beta < e_i \leq \mu_j - x'_i\beta] \\ &= \Phi(\mu_j - x'_i\beta) - \Phi(\mu_{j-1} - x'_i\beta), \end{aligned} \quad (4)$$

where Φ is the standard normal cumulative distribution function and J is the response categories, in this case 1, 2 and 3 since there are three categories for food security in the objective three, since there is no meaningful conditional mean function and the marginal effects in the ordered probability models are not straightforward, the effects of changes in the explanatory variables on cell probabilities are normally considered (Chris 2008; Bruce 2013).

(a) Dependent variables

The dependent variables are the FCS. Is ordered into three categories, namely poor, borderline and acceptable categories.

(b) Explanatory variables

The selection of explanatory variables is based on findings of previous research. The variables were classified into four groups: i) household head characteristics ii) household characteristics iii) farm characteristics iv) institutional characteristics. The household head variables include gender, age, education level, and marital status

;household characteristics include number of migrant, household size, remittances, livelihood, dependency ratio; farm characteristics, using of high quality seed, using inorganic fertilizers, land ownership; institutional characteristics includes access to bank account, information from farming group, access to extension services (Carletto et al. (20013)).The variables were tested for multicollinearity.The variance inflation factors (VIF) value were in the range lower than 10 indicating no multicollinearity problem.

3.3.4. Description of Variables

The variables used in the model of this study are presented in (Table 1). The means of the variables from household head characteristics (age, education, gender, marital status), household characteristics (total number of migrant, livelihood, remittance, household size, dependency ratio), farm characteristics (land ownership, use of inorganic fertilizer, buying high quality seeds) and institutional characteristics (access to bank account, access to extension services, information from group of farmers) were set as independent factors in this model while food consumption score was set as dependent variable.

4. Result

4.1. Sample description

4.1.1. Socioeconomic characteristics

The result on socioeconomic characteristics of respondents is presented in (Table 2). The key socio-economic characteristics of interest are sex, age, marital status, educational status and household size.

Table 2: Socio-economics characteristics

Variables	Description	Percentage (%)
Gender	Male	73.8
	Female	23.8
Age	Less than 50	13.8
	51 – 65	70.6
	Above 65	15.6
Marital status	Married	76.3
	Single	23.7
Education	Formal education	83.8
	No formal education	16.2
Household members	1 -5	4.4
	6 – 10	63.6
	11 – 15	23.8
	16 – 20	5.6
	Above 20	2.6

The result indicated that there are more households headed by males 73.86% than households headed by females 26.14. This is nature of the study area where the men,

most often the husband, takes major resolution concerning the household excluding when he died. This could be as a result of the ability of the males to withstand the stress involves in the family issues than the females as well as the land tenure system practice in the studied area that permits the males to own lands. The result on the age of the respondents showed that 70.6% of the respondents are of the age between 51-65 years. On the marital status, the result showed that 76.6% of the household head are married and as such, are defendable, while 23.4% of the household head are not married. The result on the educational statuses of household head, revealed that 83.8% of household head had formal education while 16.2% of the household head do not had formal education. The result on the household size shows that 63.3% of the household had had a household size between 6-10 members and the mean of household size is 9.74 members.

4.1.2. Household status of migrant members

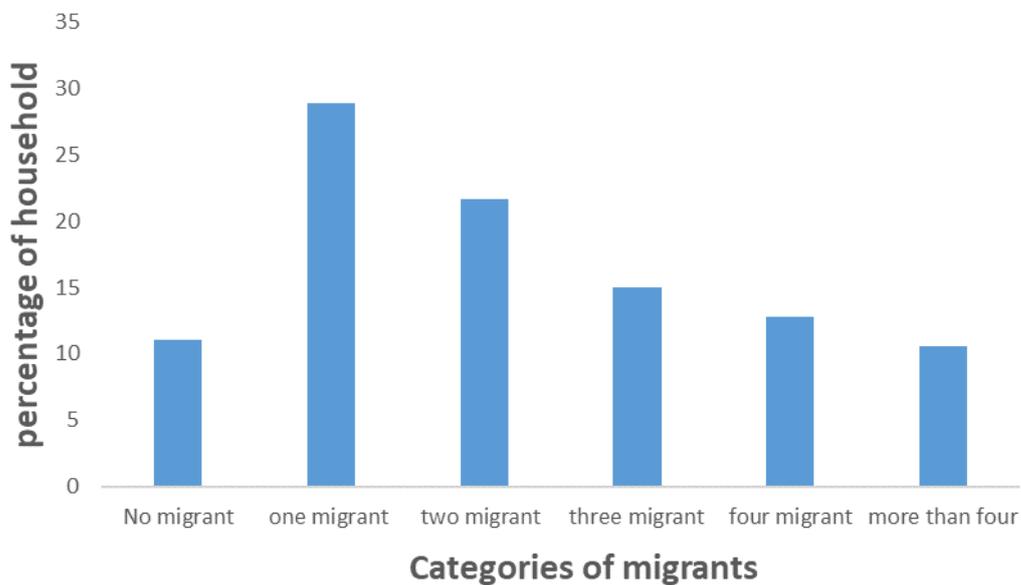


Figure 6:Numbers of migrant per household

As shown in figure 6 above, 11.1% of household they don't have migrant, 28.9% had one migrant member, 21.7% had migrant of two member, 15% had three migrants, while 12.8% and 10.6% had four migrant and more than four migrants respectively. Means that Migration of a family member had contribution to the restructuring of

household also relations within household which it effects the food security in the household.

4.1.3. Household head access to credit

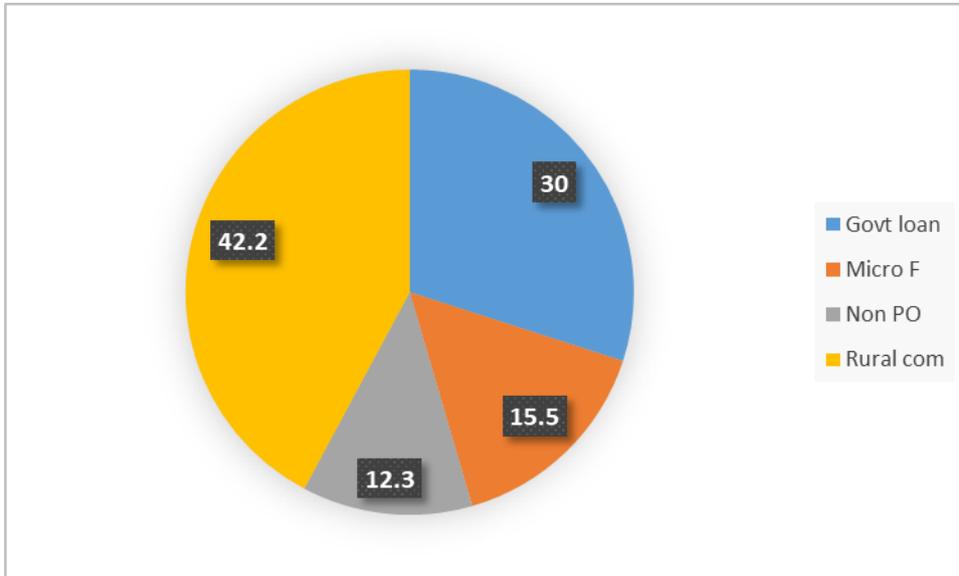


Figure 7: Household head access to credit.

In this study the result shows (figure7) most of the households' head had access to credit for farm production, more than 40% had access to rural community were 30%, 15.5% and 12% have access to government loan, micro finance bank, and non-profit organization. This result shows that most of the household head were more likely to have access credit through community group than others institutional sources of credit.

4.1.4. Main sources of food of the household head

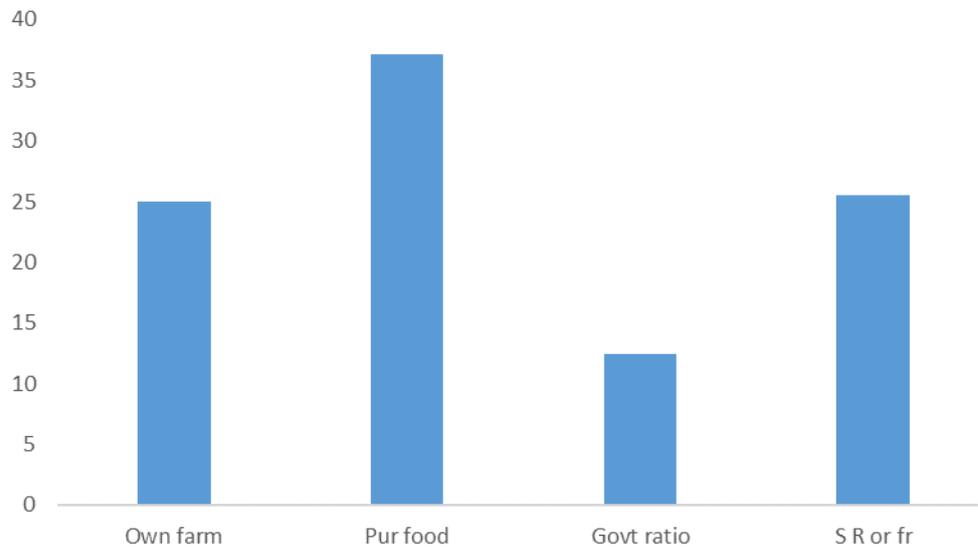


Figure 8: sources of food of the household head

As shown in (figure 8) most of the household head there normally buying food from the market, further more the smallholder farmer do not have enough food produce in their farm.

4.1.5. Household categories on (Food Consumption Score) level

For the description of food consumption score of the household (figure 9), the result shows that 2% of the household are in the poor category, 9% are within the borderline and 89% of household fall into the acceptable category.

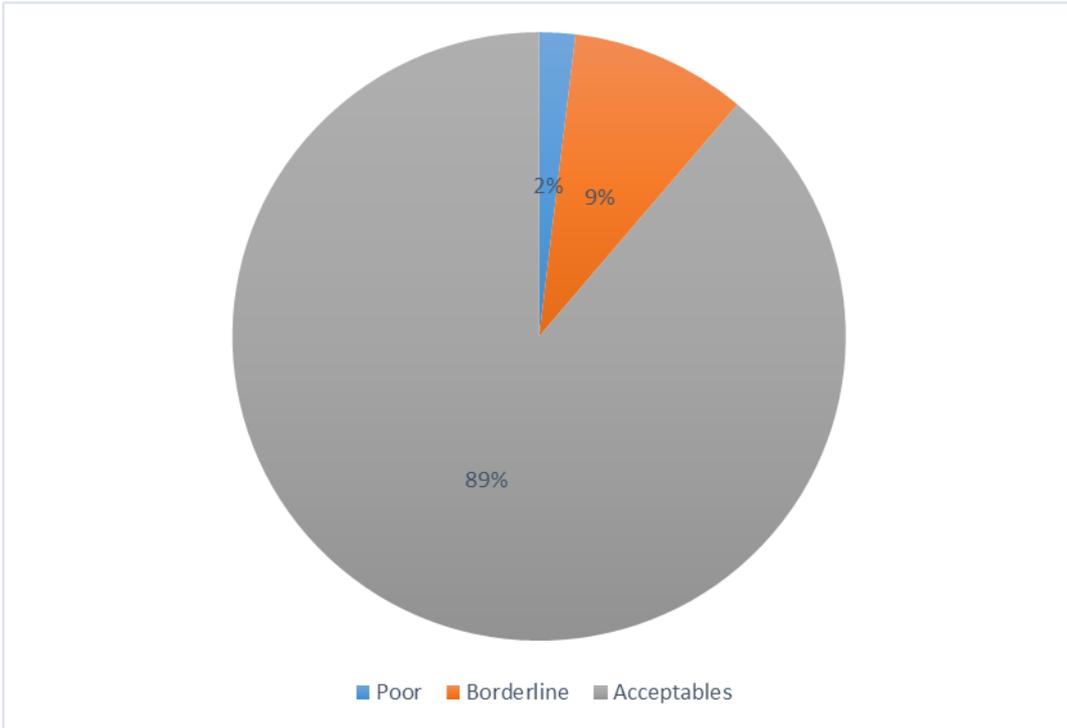


Figure 9: Household categories level on (Food Consumption Score)

4.2. Types of goods migrant send to household as remittances

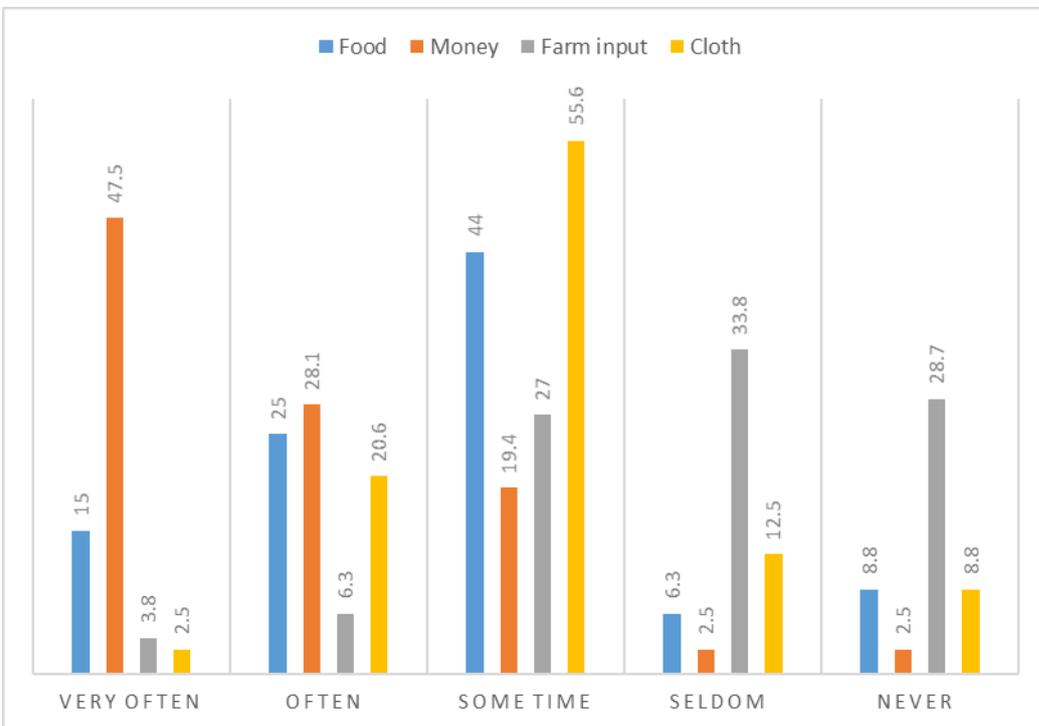


Figure 10: Result on types of goods send by migrant to household

frequency level of sometime received food, 47.5% at the frequency of very often received money, 33.8% with frequency level of Seldom received farm input and 55.6% at the frequency level of sometime received cloth. The result explain that migrant have more chance to send money than any types of goods to the household.

4.3. Perceived impotent of remittance used to the household

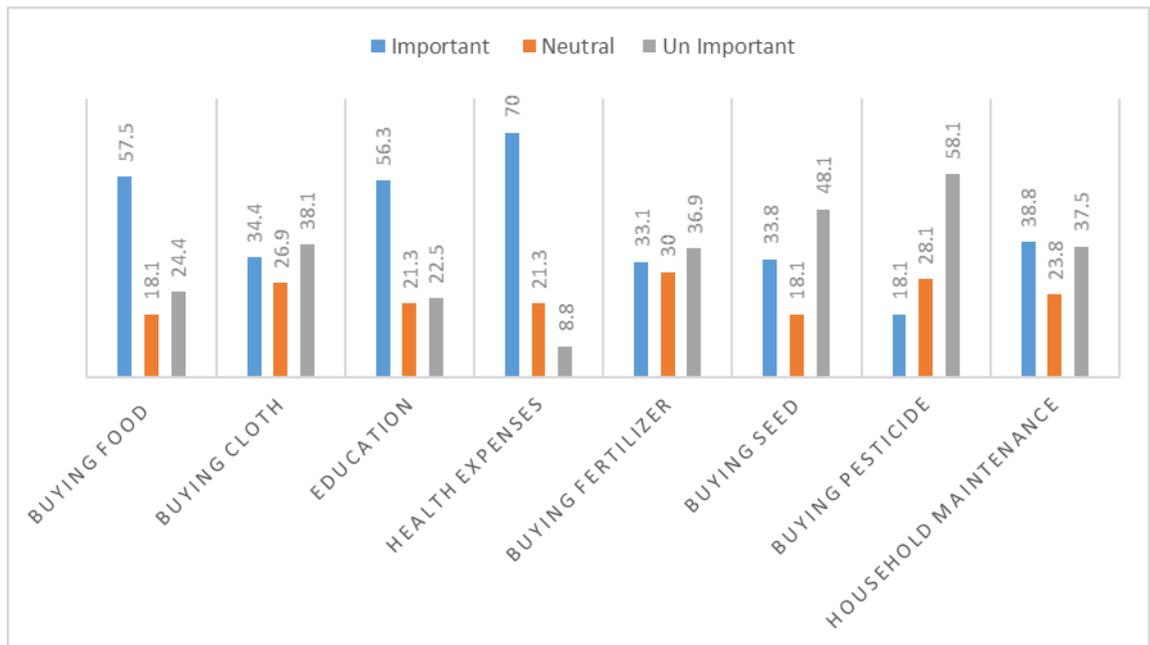


Figure 11: Result on perceived of remittance used by household

The result indicated that 57.5% of the household find important in buying food with their remittances, 24.4% of the household find it unimportant in buying of food with their remittances while 18.1% of the respondents find indifferent in buying of food with the remittances received. 34.4% of the respondents find it important to buy clothes with the remittances received from abroad, while 38.1% of the respondents did not find buying of cloths with the remittances received important and 26.9% of the respondents showed neutrality in the buying of clothes with the remittances, they received from their relatives elsewhere. The result also showed that, education and health were very important to most of the respondents as 56.3%, and 70% of the respondents spend their remittances on food, education and health respectively. 22.5%, and 8.8% of the respondents did not see any importance in spending on food, education and health respectively while 21.3% and 21.3% of the respondents believed that they can either spend or not spend on, education and health with the remittances receive from members

elsewhere. On the house hold maintenance, the result showed that 38.8% of the respondents were very concerned with the maintenance of their house hold with the remittances received from their relatives, while 37.5% of the respondents did not find it important. 23.8% of the respondents said that they can decide to spend or not to spend on their households. The result implies that the household have different priorities on the use of their remittances. It further expresses that health, food and education were most important to the respondents while pesticides, seeds and clothes were least or unimportant to the respondents.

4.4. Effect of migration and remittance on food security

Table 3: Effect of migration and remittance on food security

Variables	Coefficient	Std error	P >	Marginal effect
Household head characteristics				
Age	-0.0013	0.0290	0.964	0.004
Education	0.7309	0.2667	0.006***	0.024
Gender	1.2081	0.5925	0.041**	0.040
Marital status	0.4287	0.3518	0.223	0.014
Household characteristics				
Dependency ratio	0.5606	0.3387	0.098*	-0.018
Household members	0.0375	0.0597	0.529	0.001
Livelihood	0.2464	0.1908	0.97*	0.082
Remittances	-0.0326	0.1345	0.808	0.011
Total number of migrants	-0.2611	0.1394	0.061*	0.086
Farm characteristics				
Buying high quality of seed	0.0024	0.0112	0.830	0.008
Using of inorganic fertilizers	0.5913	2700	0.029**	0.019
Own farm land	0.0379	0.0139	0.006***	0.013
Institutional characteristics				
Access to bank account	-0.7606	0.4165	0.068*	0.002
Access to extension agent	0.8079	0.3035	0.08***	0.026
farming group member	-0.6149	0.2481	0.013**	0.602
Cut1	5.5014			
Cut2	6.9443			
Number of observations	160			
Prob>chi2			0.001	
Pseudo R ²	0.3689			

Note: *Significant at 10%; **significant at 5%; ***significant at 1%.

4.4.1. Household head characteristics

The result show that household head on gender are positively coefficient has significant level at 10% with the marginal effect of 0.40%. While age has negative coefficient and it is not significant, marital status is a positive relation but it also not significant,

education has a positive coefficient it is significant at 1% level, with marginal level of 0.13%.

4.4.2. Household characteristics

The result reveals that total number of migrants has negative coefficient but it significant at 5% with marginal effect of 8.6%, while household member and dependency ratio they positive relation but there not significant and by surprised remittance have negative coefficient it is not significant which have an increment with marginal effect of , and livelihood has positive relation it significant at 5% level which a marginal effect of 8.2%.

4.4.3. Farm characteristics

The result shows that used of breeding seed have positive relation, but it is not significant, while used of inorganic fertilizer has positive relation at 5% level of significant. Own farm land it is positive relation and high significant at 1% level with marginal effect of 1.3%.

4.4.4. Institutional characteristics

The result shows that access to bank account has a positive relation with significant level at 5% and marginal effect of 0.02%. The result shows that access to extension agent is positive relation and high significant at 1% level with marginal effect of 2.3%. While access to farming group has negative relation but it is high significant at 1% level which a marginal effect of 6.02%.

5. Discussion

This chapter had to start with the discussion based on findings of a study in relation to the research question of the study and to established base on how effect of migration and remittances on agriculture especially on food security in rural household can be for a future research.

5.1. Descriptive statistics result

The first to discuss the sample descriptive of socio-economics characteristics, and to discuss the research question of the study revealed the, types of goods send by migrant, and the perceived important of remittance used in the household.

Socioeconomics characteristics of household head The result on socioeconomic characteristics of respondents is presented in (table 2). The key socio-economic characteristics of interest are sex, Age, Marital status, Educational status and household size. Furthermore, the result also indicated that (73.86%) of the remittance receiving household was headed by men than households headed by females (26.14%). This is nature to the household head in the study area where the men, most often the husband, to takes major resolution concerning the household excluding where he is not alive. This result is like the finding of [Nwaru and Iheke \(2015\)](#) revealed that 60 percent of the remittance receiving households were headed by men.

Could be as a result of the ability of the males to withstand the stress involves in crude farming than the females as well as the land tenure system practice in the studied area that permits the males to own lands. The result was in tandem with the work of [Amaza et al. \(2006\)](#) who said that households headed by males have higher probability of being food secured than households headed by females.

The result on the age of the respondents showed that 70.6% of the respondents are of the age between 47-50 years, whereas food secured household heads were between the age of 41 and 60 years. The result implies that households with young adult heads are more food secured than households with aged adult heads. This could be as a result of young adults having the maximum physical power and skills needed in farming

business as well as their ability to obtain off- farm jobs to boost their incomes to access more food. The result agrees with the findings of [Babatunde et al. \(2007\)](#) who stated that younger house hold heads are stronger and are expected to cultivate large size of farm than their older counterparts. On the marital status, the result showed that 76.6% of remittance received household are married and as such, are dependable, while 23.4% remittance received of the respondents are not married. Similar result of finding [Nwaru and Iheke \(2015\)](#) revealed that 70% of remittance receiving households were married. The result on the educational statuses of household head, revealed that 83.8% of receiving remittance household head had formal education while 16.2% of the received remittance not have formal education. The result is desirable because in the finding of [Obasi \(1991\)](#) revealed that the level of education of a smallholder's farmers not only increases productivity of his farm but continues his ability to understanding and evaluated new production techniques.

On the household size shows that 63.3% of the remittance received household had a household size between 6-10 members and the mean of household is 9.74 per each household. Similar result of [Nwaru and Iheke \(2015\)](#) revealed that 56.67% of the remittance receiving households had a household size 6-10 person and mean of the household size is about 7 members per household. This is deliberation, and great important in to farm production as rural households depending more on members of their households than rent or hired workers for labour on their farms. In the work of [Nwaru \(2004\)](#) reveals that if members of the household are not made up the age or very young members, otherwise scarce of capital resource it should being employed to the farm production could be channelled to the up keep of their dependent household members.

In this study on sample description of the variables effect on food status of household shows that total numbers of migrant in the household from the study area (figure 6) shows that most of the household head have only one migrant. means that Migration of a family member have contribution to the restructuring of household also relations within household which it effects the food security in the household status.

5.2. Types of goods send by migrant

The first research question this was confirmed by measuring the percentage of goods sent by migrants through banks and friends in the (figure 10) above. The result revealed the amount of goods which migrant sent to the households was measured as a percentage of the variety of items received. In this study showed that .44% at the frequency level of sometime received food, 47.5% at the frequency of very often received money, 33.8% with frequency level of Seldom received farm input and 55.6% at the frequency level of sometime received cloth. This implies that the money is the easiest item follow by food and cloth which the migrant was opportune to send to the household to adjust the food consumption and livelihood. According of [Ajaero and Onokala \(2013\)](#) revealed that the rural – urban migrant the are usually send back remittances in a form of food, money and cloth, at an interval in which most of them they are remitting once in a month. And also, this study is relevant to the finding of [Bhalla et al. \(2018\)](#) studied the impacts of money} transfers on unit food security in Republic of Zimbabwe and reveal that the cash transfer may be a major determinant of unit food security and diet diversity. The results additional demonstrate associate degree improvement in food security for households that area unit recipients of money transfers. Due to my result and compared which relevant theories it revealed that most of the rural household have much easily to received money and food to improve their food consumption than any goods from migrant.

5.3. Perceived important of remittance

The second research question on perceived used of remittance of household head in this present study (figure11) revealed that the perceived importance of remittances can also be assessed through their contribution to various basic household expenditure categories. Expenses largely covered by remittances included buying food, education, health expenses, while the least used of remittance is farm input. Remittances are extremely important to household survival and sustainability in rural household about

This study showed that buying food ,education and health were very important to most of the household as 57.5%, 56.3%, and 70% of the respondents spend their remittances on food ,education and health respectively.24.4%, 22.5%, and 8.8% of the respondents

did not see any importance in spending on food ,education and health respectively while 18.1%,21.3% and 21.3% of the respondents believed that they can either spend or not spend on food, education and health with the remittances receive. The most spread of remittance use is to buy food It is similar finding of [Crush and Cape \(2010\)](#) revealed that remittances are actually used for basic consumption, sucha as food , school fees, medical expenses and for building. And aslo it is in line with finding [Hagen-zanker \(2015\)](#) remittance it has more important on education health and housing maintenance than food consumption.

The result implies that the household have different priorities on the use of their remittances. It further expresses that health, food and education were most important to the respondents while pesticides, seeds and clothes were least or unimportant to the respondents.

5.4. Effect of migration and remittance on food security

The effect of migration and remittances on food security was analyse by using ordered probit model are presented in (Table).

5.4.1. Household head characteristics

The findings from this present study revealed that by using food consumption score as an indicator to evaluate food security status for household head, the FCS model shows that household heads who are more educated are 2.4% more likely to be in food security than their less educated counterparts. This result explains that the household head with high education are more likely to use the remittance received from the household members effectively to improve the level of their food security status than less educated household head. Moreover, the outcome from this study par with that of mason et al. (2015) who use food consumption score as an indicator of food security to determine the factors influencing food security in Tanzania. They found that households whom are highly educated had better food security status. This also shows that educated household head are more likely to support the migration of their household members than the less educated, it also recognizes more the importance of migration as a livelihood diversification option. according to the work of Iheke (2010) revealed that migration

can be seen by such households as a form of portfolio diversification in which remittances play an important role.

5.4.2. Household characteristics

Remittance and migration play a cardinal role on agricultural production, food security and thus migration; this is evident as seen in several studies. In the study of [Azam et al. \(2006\)](#) on the Effect of Migration on food security it was observed that poor households are under food security when migrants mainly originate from relatively poor households. Thus, migration is more likely to imply greater food security for poor household. Considering the present study, (Table3) remittance was found to have a positive but weak relationship with migration and food security, while migration had negative relationship with food security which was apparent. The researcher also observed that the poor family usually benefit from remittance as compared to relatively rich farmers in the study area. Moreover, some family does not have male household head and there is a stereotype of female participating in agricultural activity. Some of the migrant usually refuses to send remittance back home while some of the poor farmers find it difficult to communicate with their beloved ones in the city and extend their difficulty to seek assistance.

The household that always depending on remittance to the livelihood were 0.82% are more likely to be food security than less receiving household. Remittances on livelihood have high impact on survival household and sustainability , similar to the work of [Crush and Cape \(2010\)](#) remittance have high important on livelihood which founded that almost 90% of household survival in Zimbabwe regard remittance is very important on food security. This result shows that the probability of the household that have received more remittances from migrant to sustain their lives, in terms of food availability or food security is higher than less received household. Remittance in the form of cash and kind are equally important for household to improve livelihood.

5.4.3. Farm characteristics

In considering land tenure system as a panacea to food security (table 3), this study reveal that the household with customary land tenure have a better chance and

opportunity to be food secure. In accordance to the study of Merten and Haller (2008) on the effects of property rights on child growth and food security of households in customary land tenure in Zambia, it was revealed that insecure property has a great negative effect on the food consumption pattern of the household. Similarly, Nasir and Uddin (2011) in Bangladesh realized that household that have secure land right are in a better condition of food security than household whom classified as share tenant. The finding from this study is in line with the study of [Ghebru and Holden \(2013\)](#) whom also found out that tenure secured household by provision of land certificate in Ethiopia were more secured under food security. However, in the study of [Santo et al. \(2014\)](#) in Bangladesh it was shown that land tenure system does not have a statistical influence on food security. Meanwhile, it was pointed out that land tenure would possibly has a positive effect on food security in the long run, since secure farmers have better chance of engaging in farming and increase in agricultural production.

5.4.4. Institutional characteristics

The findings from this study revealed that, members or household who participate in extension program, cooperatives and farming group are more food secured than those who are not. The finding from this present study is also in line with the study of [Nugusse et al. \(2013\)](#) who examined that cooperative membership plays a substantial role to ensure food security in northern Ethiopia. The study realized that 21% of household who do not participate in any cooperative activity were food unsecured. Furthermore, [Wossen et al. \(2017\)](#) in Nigeria, investigated the effects of access to extension service and membership to cooperative on household welfare in rural areas the finding from the study shows that cooperative membership plays a vital role in reducing poverty which indirectly implies that these farmers are more food secured.

6. Conclusion

Bauchi is one of the 36 states in Nigeria with a wide spread of migration from rural to urban areas. Migrants are often seen migrating to major cities such as Kaduna, Kano, Abuja and Lagos in search of a good job for a better livelihood and to assist their love ones back home. Bauchi state is also a state where food insecurity and malnutrition are prevalent with limited improvement in recent decades. The state toward increase remittance flow has put substantial amount of resources into the hands of migrant household, risen the possibility that such flow will improve food consumption that will enhance food security and nutrition. This study was designed to determine, the types of goods migrants sent to the household as remittance, perceived important used of remittance and to analyses the effect of migration and remittance on food security in Bauchi state, Nigeria. The outcome from the study will be important not only to bridge a gap in the migration literatures but also to assist the Bauchi state government in designing and implementing cost effective policies to promote benefit of migration and remittances.

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Appendices

List of the Appendices:





Dear respondent,

I would like to thank you in advance for participating in this questionnaire survey. The survey will take approximately 15 minutes to complete. The questionnaire is voluntary and completely anonymous. Thank you for your time and your help.

MIGRATION

1) Please write down the household members who migrated from your household in the last five years

No	Gender (M –male, F – female)	Age (years)	Highest level of education	Place of destination (city, country)	Occupation Options

2) How often did you receive the following items from the migrant in the last year?

	Very often	Often	Sometimes	Seldom	Never
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Food					
Money					
Farm input					
Cloth					
Others					

3) Please indicate the share of your livelihood which was covered by money or stuff sent by migrant members last year:

0-25%	<input type="checkbox"/> ca 25- 50%	<input type="checkbox"/> ca 50-75 %	<input type="checkbox"/> More than 75%	<input type="checkbox"/>
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4) Do your household had to deal with the lack of labor available for work in agriculture?

About 5 years ago:

Very often <input type="checkbox"/>	Often <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Seldom <input type="checkbox"/>	Never <input type="checkbox"/>
-------------------------------------	--------------------------------	------------------------------------	---------------------------------	--------------------------------

Last year:

Very often <input type="checkbox"/>	Often <input type="checkbox"/>	Sometimes <input type="checkbox"/>	Seldom <input type="checkbox"/>	Never <input type="checkbox"/>
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5) How many family members work in the household farm?

Part time	Full time.....
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REMITTANCE

6) Please indicate the importance of remittances to cover the following:
(5 is highest importance and 1 is lowest importance).

Importance of remittances	1 Lowest	2	3	4	5 Highest
Buying food					
Buying clothes					
Education					
Health expenses					
Buying seed					
Buying pesticide					
Buying fertilizer					
Buying agricultural tools and machines					
Investment in private business other than agriculture					
Repay debts					
Buying animals					
Financing migration costs of additional family members					
House construction and maintenance					

FARM INVESTMENTS

7) Please write down what did you purchase in the last year?

	Purchased last year (yes/no)	Value of expenditures last year in Naira
Buying farm land		

Renting farm land		
Purchase of animal		
Hiring of labor		
Buying farm machinery (tractor etc.)		
Buying high quality seed		
Buying irrigation		

8) Please indicate how often did you use following treatment in crop production last year:

	Never	Seldom	Some times	Often	Very often
Inorganic fertilizers					
Organic fertilizer including manure					
Chemicals (Pesticides, insecticides, herbicides..)					

ACCESS TO CREDIT

9) Please specify, if you used credits from following lender last year

	Used last year (yes/no)
Government loan	
Microfinance	
Non-profit organization	
Rural community	
Others	

8) Do you have bank account?

- Yes
 No

FOODS SECURITY

9) Please indicate what were the main sources of food for the household last year?

<input type="checkbox"/> Own farm production	<input type="checkbox"/> Purchased food	<input type="checkbox"/> Government ratio	<input type="checkbox"/> Supply from relative/friend	<input type="checkbox"/> Others
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10) How often did you eat following food in the past five Week?

	Never	Less than 1 time per week	1-3 times per week	4-6 times per week	1 time per day	2-3 time per day	4 or more times per day
Cereals (maize, millet, rice, sorghum etc.)							

Vegetable (carrots, potatoes etc.)							
Chickens (fried chicken, in soup etc.)							
Fish and seafood (tilapia, crabs, claria, etc.)							
Beef meat (steak, meatballs etc.)							
Beans and soya beans							
Eggs							

PERSONAL CHARACTERISTICS AND HOUSEHOLD COMPOSITION

11) Please write down information regarding your household

Gender		
Age		
Marital status		
What is your highest level of education?		
Ethnics		
Religion		
Number of peoples in the household	Male	Female
Age below 5 years		
Age between 5-17 years		
Age between 18-30 years		
Age between 31- 59 years		
Age above 60 years		

12) What was the percentage of household income received by following sources in the last year?

% of household income	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Agriculture										
Business										
Remittance										
Pension										
Services										
Others _____										

LAND OWNERSHIP

13) Please write down information regarding the land you cultivate:

Agricultural land (ha)	Number of plots	Tenure (percent of agr. land owned)

EXTENSION SERVICES AND INFORMATION

14) Please indicate how often did you use following extension services and sources of information on agricultural production in the last year:

	Never	Seldom	Some	Often	Very
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			times		often
Governmental extension services					
Private extension services					
Internet information					
Printed media (Books, journals,)					
Radio, television					
Information from other farmers					

