Challenges of Transportation System on Upland Rice Production: A Case Study of Ojjor Rice Producing Community in Uzo Uwani Local Government Area of Enugu State Nigeria

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Abstract**—** *Transportation challenges facing upland rice production in Ojjor community in Uzo Uwani Local Government Area of Enugu State of Nigeria is studied. Rice is the most populous cereal and a major staple food in Nigeria whose demand is constantly on the increase owing to the growing demand by the increasing population. Upland rice refers to rice grown under dry condition which depends on rainfall for growth. Agricultural products are biological materials which often are vulnerable to external influences such as environment and handling techniques. It depends heavily on elaborate bulk handling system for bringing inputs to farm, evacuation of farm produce from the farm storage centers or to market, delivering the products to processors and finally to ultimate consumers. Survey trips were made to the study area during which primary data was collected from 100 respondents who were randomly chosen. These respondents were administered with structured questionnaires designed to assist in obtaining information that were analyzed to reach to the results, conclusion and recommendations made in the study. Result show that about 77% of the respondents are engaged in agricultural production, 12% are in petty trading, while the rest (1%) is engaged in one form of business or another. The prevailing mode of transportation in the study area is head portage (71%), other modes of transportation are: wheel barrow (13%), bicycle and motorcycle (11%) and public transport using motor vehicle (5%). The predominant types of access roads in the area are bush paths (79%), followed by earthen roads (13%). The study revealed that the inadequate transportation system in the area is adversely affecting upland rice cultivation in the study area*.

Keywords— Upland Rice Production, Transportation Mode, Agricultural Development, Rural Area.

I. INTRODUCTION

Rice has become one of the most important crops in the world, and now being consumed by more than 50% of the world's population (World Bank, 1996). In Nigeria, rice is the most populous cereal and a major staple food whose demand is constantly on the increase owing to the growing demand by the increasing population. Nigeria is the largest producer of rice in West Africa and second largest producer in Africa after Egypt (Imolehin and Wada, 2008). However, local demand for the product has far outstripped production which has made the Federal Government of Nigeria to commence importation of rice into the country to avert hunger (Muochebe, 2021). For instance, the Federal Ministry of Agriculture and Water Resources in July 2008 reported that the actual production of rice in Nigeria dropped from 3.18 million metric tons (mmt) in 1999 to 2.76mmt in 2006. Oladeebo (2006) reported that Nigeria produces only 525,000 metric tons of rice per annum, from about 1.4 million hectares of land while it consumes about 2.5 mmt per annum. Central Bank of Nigeria (2007) reported that import bill on rice were $259 million, $655million, and $578 million in 2000, 2001, and 2002 respectively while $750 million was spent on importation of 2.2mmt of rice in 2007 alone.

IFPRI, (2013) attributed food crises in Nigeria to low investment in agricultural sector of economy and recommended to the Federal Government of Nigeria to formulate programmes aimed at improving food security in the country, adding that the food crisis could be resolved if Nigeria government could pay more to agriculture. The Presidential Initiative on Rice Production and Export which was launched in 2003 aimed at raising Nigeria's rice production capacity from 2.3 mmt to 5 mmt in 2006 and to 6.0 mmt in 2007 could not achieve much as desired. Umeghalu (2013) noted that some of the reasons responsible for

failures of government policies and programmes aimed at fighting food crisis in Nigeria are inconsistency of government policies, lack of funding, poor infrastructure in rural areas, lack of commitment, bureaucracy and entrenched corruption in government businesses.

1.1 Upland Rice Production in Nigeria:

Upland rice refers to rice grown on dry soil rather than on flooded rice paddies which depends on rainfall for moisture (Ukoha *et al*. 2010; Umeghalu *et al*, 2013). It can be grown under a wide range of rainfall regime from as low as 400mm to 4,000mm per annum. Rice can be cultivated in a broad variety of climate and soil circumstances and is produced in more than 100 nations except in Antarctica (Nguu and Aldo, 2006; Shaobing *et al*. 2009). Approximately more than 50% of the world's rice is cultivated in emerging nations such as Asia (Paul *et al.* 2009). However, *O. Glaberrima* rice variety is cultivated on a tiny scale in Western Africa, particularly in the inland of the Niger Delta; the Sokoto-Rima Valley and other floodplains in the extreme northern part of Nigeria. As seen in Table 1, Nigeria has the most arable land for rice cultivation in West Africa (Somado *et al*., 2008).

TABLE 1
TOTAL AREA OF LAND UNDER RICE CULTIVATION IN VARIOUS ECOLOGIES ACROSS COUNTRIES IN WEST AFRICA

Country	Total area (ha)	Mangrove Swamp	Deep Water	Irrigated lowland	Rainfed lowland	Rainfed Upland
Mauritania	23,000	0	0	23,000	0	0
Senegal	75,000	6,000	0	33,750	35,250	0
Mali	252,000	0	161,280	52,920	30,240	7,560
Burkina Faso	25,000	0	0	6,750	16,250	2,000
Niger	28,000	0	14,000	14,000	0	0
Chad	31,000	0	28,520	620	1,860	0
Cameroon	15,000	0	0	14,700	300	0
Gambia	19,000	2,660	0	1,330	12,160	3,040
Guinea-Bissau	65,000	31,850	0	0	14,300	18,850
Guinea	650,000	84,500	65,000	32,500	162,500	305,500
Sierra Leone	356,000	10,680	0	0	103,240	245,640
Liberia	135,500	0	0	0	8,100	126,900
Côte d'Ivoire	575,000	0	17,250	34,500	69,000	454,250
Ghana	81,000	0	0	12,150	12,150	56,700
Togo	30,000	0	0	600	5,400	8,190
Benin	9,000	0	0	360	360	8,190
Nigeria	1,642,000	16,420	82,100	262,720	788,160	492,600
Total	4,011,000	160,440	360,990	481,320	1,243,410	1,764,840

Source: (Somado, Guei and Keya, 2008).

In Nigeria, upland rice is mostly grown by small subsistence farmers. The grain yields are generally low between 0.5 to 1.5 metric tons per hectare (mt/ha) in Africa and 1 – 4mt/ha in Latin America. A broad variety of indigenous and enhanced rice varieties can be found in Nigeria, in particular, *NERICA*, which has been launched in the last two decades (Somado et al.,

2008). According to Muochebe (2021), new rice varieties known as *Africa Rice* have now been developed and circulated by research agencies such as the National Cereal Research Institute (NCRI) and the West African Rice Development Association (WARDA).

One reason for the failure of most agricultural ventures in Nigeria is insufficient study of geographical conditions. Inadequate knowledge of climatic, soil, and vegetation data, and hydrographical conditions are some of the vital factors which make any large-scale agricultural development scheme a risk (Onwualu *et al*. 2006). The use of primitive implement for production such as hoes and cutlasses also contribute to low agricultural productivity. These implements are labour intensive and discourages the younger people who are energetic for agricultural production to leave the rural areas where agricultural production are practiced for urban areas searching for white collar jobs that are not there (Nwuba.....). The result is that the aged and aging persons left behind to undertake agricultural productions are now too weak to farm and whose numbers are critically decreasing by the day (Onwualu *et al.,* 2006). This has significantly been contributing to low agricultural production in the country.

1.2 Factors affecting upland rice production in Nigeria.

The high cost of modern implements like tractors, harvesters, and threshers which can aid and increase agricultural productivity prevent small farm holders to expand their farm holdings. In addition, the conservative attitudes of farmers to their primitive ways of agricultural production due to illiteracy contribute to the backwardness of mechanizing agricultural practices in the country. Most farmers find it very difficult to accept modern methods of agricultural production for fear of unknown. Many of the researches carried out by agricultural officers are not adopted by the farmers; as they believe that it is risky using the new methods which they are not sure of its success (Odigbo, 2008). Even agricultural inputs such as fertilizers, herbicides, insecticides which will enhance the growth of their crops and better crop yields are difficult to be accepted by the farmers.

Lack of marketing facilities is another reason for poor agricultural production. A farmer is discouraged to expand his production when what he has previously produced is not sold because of poor marketing facilities. He may decide to crop less hectares to avoid the loss he suffered during the previous season (Oni *et al*., 2009). Farmers who may wish to increase their production or improve their methods of cultivation find it difficult to obtain loans; while those who were able to obtain loans do not make proper use of them or obtain enough harvest to enhance their breaking even. However, when obtaining a loan from the banks is possible, poverty prevents farmers to provide the required security required by banks for obtaining loans. Lack of processing and storage facilities make it very difficult for farmers to process and store their products after harvest especially during rainy season production. These forces farmers to sell off their products immediately after harvesting but often, prices offered for these products at this time are generally low leaving farmers with little or no profit margin which would encourage or enable them to increase their production.

Infrastructures such as roads, electricity, and good contribute to low agricultural productivity. Farming in Nigeria is mainly carried out in rural areas where good roads are absent. This prevents the use of farm machineries when available as there is no road to take them to the farms. Electricity which is necessary for storage of most of farm products is absent in most rural areas.

1.3 Transportation

Economic and agricultural activities are primarily concerned with the production, distribution and consumption of goods and services which are of value to humans. People must use the natural resources of the earth to satisfy the necessity of life, to provide food, clothing and shelter to the teeming population of the country. Not only for these basic necessities but also to use the resources to make life more pleasant, comfortable and rewarding. However, these resources are not usually found all in one place and no location is endowed with all the resources. There is therefore need to transport some of these natural resources from places where they abundantly available to areas where they are needed but not available. Transportation has made it possible for consumption of goods or food items produced in distant places because the transportation cost is low. Foods that are produced in only certain climates and soil condition are now available almost everywhere. According to Tunde and Adeniyi (2012), transportation is a means of breaking down the spatial barrier between the production and consumption.

Transportation is a vital aspect of the production process starting from gathering of raw materials, factors of production, mobility and distribution of the final product to consumers (Ijeoma and Alphonsus, 2014). Following Dorosh *et al.* (2009) in

the study of the assessment of the implications of location and transport investments for crop production and productivity in Sub-Saharan Africa (SSA), by adopting his conceptual framework in which transport investments affect both the supply and demand for crop production; on the supply side, the production of crop *j* under production system *l* in a location *i* depends on the agronomic potential *pj*, under the production system *l* in location *i*, and un-observed location-specific variables (Ωi) such as output and factor prices, and available technology. Demand for a crop produced in location *i* depends on the size of the local market surrounding location *i*, which is in turn determined by the population, distribution of per capita incomes, and trade regime.

The effects of better transportation are assumed to take place through a reduction in the transport costs of goods and services, which raises the producer prices of crops. Reduced transport costs also lower the costs and profitability of supplying modern inputs such as fertilizers, seeds, extension services, and other technologies (Ahmed and Hossain, 1990). As lower transport costs result in a greater percentage reduction in the price of perishable and bulky items such as vegetables, the profitability of these items increases relative to nonperishable crops, (Minten and Kyle, 1999). They also discovered that the more perishable and the higher value the agricultural products, the less distance they are transported. Again, it is generally recognized that transport operating costs, are higher on rough roads than on good quality bitumen roads and generally this will be reflected in passenger fares and freight tariffs.

Transport charges and costs by conventional vehicles are not uniform. Not only are there large differences in costs between different countries for the same type of transport (particularly between Africa and Asia), there are large differences between rural short haul transport (usually carried out by pickups or small rigid trucks) and long distance interurban transport that is more often carried out by heavy tractor and semi-trailer, (Yunusa *et al*. 2002; Oni *et al*. 2009; Ijeoma and Alphonsus, 2014). The proportion of transport charges to final market price will vary with a range of factors such as commodity type, the efficiency of the transport and marketing sectors and travel distance. The impact of total transport costs on agriculture will be higher than these figures indicated because the critical factor is the relationship between transport costs and what the farmer receives for his produce at the farm gate, (Oni and Okanlawon, 2006; Ogunsanya, 1993). Both marketing margins and transport costs (including the high cost of head loading produce to the village or roadside) need to be subtracted from the final market price. The results will, of course, vary from country to country, season to season and year to year. For instance, A wide range of transport costs have also been found in different countries for similar types of transport operation on similar roads. This indicates that there is substantial scope for improving efficiency of transport operations in the rural areas of many countries. A comparative study of rural transport carried out in Ghana, Zimbabwe, Thailand, Pakistan and Sri Lanka in 1994-5 (Ellis and Hine, 1998) has shown that Ghana and Zimbabwe have transport charges that are two to two and half times more expensive than for Asian countries for comparable journeys of up to 30km. In this case data was collected from a variety of different types of vehicles including tractors, power tillers pickups and trucks.

Road investment has an important part to play in reducing transport costs; however improving short lengths of feeder roads may have little impact if no change in transport mode occurs. It has been calculated that upgrading 5km of feeder road from earth to gravel standard might only increase farm gate prices by about one tenth of one per cent (Queiroz *et al*. 1992). The above analysis has largely assumed that changes in transport costs will be passed to farmers and not go to transporters, food wholesalers and retailers or the final urban consumers. Competitive transport and food marketing is required to ensure that the benefits from reductions in transport costs are passed on to farmers and to final consumers. Therefore, transportation cost is also connected with road roughness and seasonality (Oni and Okanlawon, 2006).

The price of transport is not the only disincentive to increased agricultural production. There is evidence from all over Sub-Saharan Africa that sometimes, crops remain un-harvested, or are spoiled once they have been harvested, because of inadequate supply of vehicles to transport them from the farm to the market or to the place where they would be processed.. For example, Gaviria (1991) presented evidence from Tanzania that in some regions after the 1987/88 harvest that up to 89% of harvest remained stranded with typical figures in the region of 10-40%. Additionally, an improved transport reduces operating costs to vehicle users and provides more direct and cost effective access to public utilities (World Bank, 1989).

Notwithstanding that agriculture that formed the backbone of Nigerian economy until oil was discovered in the country in the 1960's has been neglected, agriculture still plays major role in the socio-economic and political life of the country in the areas of food security, provision of raw materials for the industries, employment, and foreign exchange earnings for the country.

However, regardless agricultural impact on the country's economy, its production is predominantly practiced in rural areas by the rural dwellers. Most of these rural dwellers are traditional peasant farmers who employ outmoded methods in agricultural practices (Umeghalu, 2013). Though their individual contribution is insignificant, but collectively they form an important bed-rock for economic life of the country which represents about 90% of food and fiber produced in Nigeria (Ajiboye and Afolayan, 2009).

1.4 Effect of Rural Transportation System on Agricultural Productivity in Nigeria.

Rural transportation can be defined as a derived demand which serves to bridge the distance between origin and destination (Tunde and Adeniyi, 2012; Ajiboye, 1995). According to Adesanya et al. 2011), transportation serves as a connector while distance is a major determinant of the intensity of relationship between various sets of phenomenon distributed in space of other sectors of the economy with agriculture inclusive in space.

The dominant mode of transport in Nigeria rural space is head portage (Adedeji *et al.*, 2014). This form of transport persists principally because of road inadequacy and the state of disrepair of the entire rural road network especially during the rainy season. All these have serious implications on the cost and volume of products being moved on the road network (Sieber, 1999; Aloba, 1986). Agricultural buoyancy, productivity and development are anchored by road network infrastructure, because poorly maintained road militates against evacuation of farm products to the market, or processing centers. Also so many economic benefits will accrue to areas that are linked with good network of roads.

1.5 Prevalent routes in Rural Areas in Nigeria.

There are three types of routes prevalent in rural areas of Nigeria which are bush paths, un-surfaced rural roads, and surfaced rural roads. However, bush paths are very rampant and the least developed compared with other types of routes. These bush paths link the villages with farmsteads and they are usually narrowed, winding and sometimes overgrown by weeds especially during the rainy season (Oni et al., 2009). Where in the rural areas motorable roads exist, they are mostly of unpaved surface, narrow in width, circuitous alignment and with low quality bridges. In most cases, they are clad with potholes or characterized by depressions and aging (Filani, 1993). Most of the rural areas in Nigeria still have no access roads while about 90% of the rural roads which were estimated at between 130,000km and 160,000km nationwide were in poor condition (FERMA, 2003). Most rural roads deteriorate and become impassable during the rainy season, and this poses a threat to sustainability of rural socio-economic development. Tunde and Adeniyi (2012) noted that the condition of most rural roads is very poor compared with inter-urban and intra-urban roads in the country.

It could be right to say that in Nigeria, the more remote a rural area is, the lower its degree of transport infrastructural development. Availability of transport facilities is a critical investment factor that stimulates economic growth through increased accessibility, its efficiency and effectiveness (Ajiboye, 1995; Oyatoye, 1994). When these are lacking in our society, then transportation system will not be effectively utilized. These facilities include: good tarred inter-village, inter-community and inter-state roads to enhance easy conveying of agricultural products.

II. MATERIALS AND METHODS

2.1 Study Area:

Fig. 1 below shows the map of Enugu State of Nigeria. The State is within the South East Geopolitical Zone of Nigeria. She is bordered to the North by Kogi and Benue States, Ebonyi State to the East and Abia State to the South, while to the West is Anambra State. Enugu State is located within 6º 30'N and 7º 30'E of Greenwich Meridian. The State is located within the Tropical Rain Forest Zone of Nigeria, however, man's activities has turned most of the state's vegetation into Derived Savanna. Enugu State has an area of about 7,534 km^2 with a population of 4.4 million people (NPC, 2016).

The Mean Annual rainfall in the state hovers around 1,738.4 mm (NMA, 2009) which favours crop production in the state such as rice, yam, maize, cassava, palm products, vegetables etc. Coal is mined in commercial quantity in Enugu State.

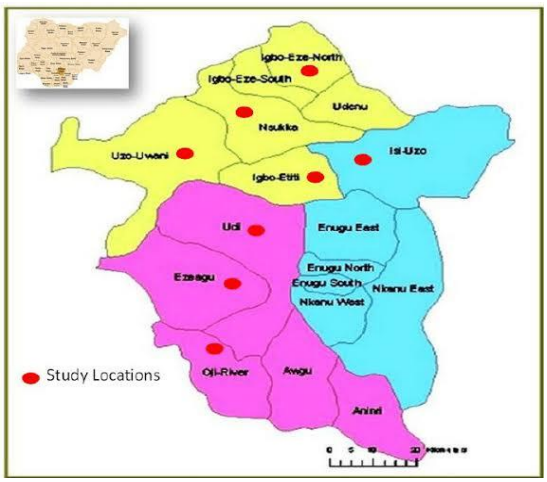

FIGURE 1: Map showing Enugu State with its local government areas.

Ojjor community, the study area is in Uzo Uwani Local Government Area of Enugu State. Uzo Uwani Local Government Area of Enugu State with their neighbor Anambra West Local Government Area in Anambra State are blessed with natural resources including crude oil and natural gas which is rated as having the highest crude oil reserve in Nigeria with large amount of untapped natural oil and gas. The local government area council is bordered to the north by Kogi State and Nsukka Local Government Area of Enugu State, to the East by Udi Local Government Area, to the South by Ezeagu Local Government Area and to the West by Anambra State.

Uzo Uwani Local Government Area lies within 6º 30' 22'' N and 7º 06' 01" E and covers approximately an area of 855km^2 and has the population of about 182,500 persons (NPC, 2016).

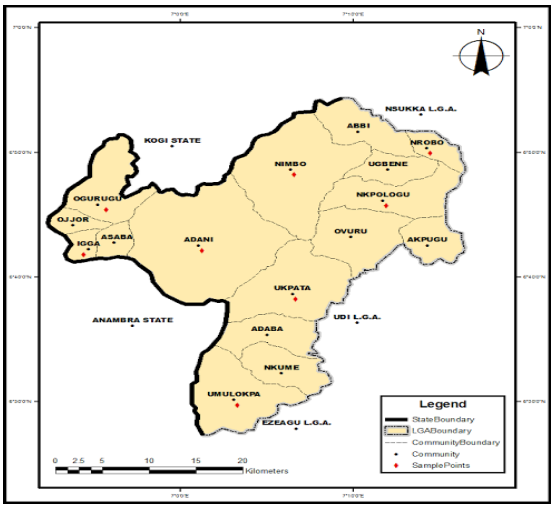

FIGURE 2: Map showing Uzo Uwani Local Government Area of Enugu State and the study area.

2.2 Data Collection and Analysis.

Primary data for the study was collected from respondents during the survey trips made to the study area with the aid of structured questionnaires designed to assist in obtaining information such as the age of respondents, level of education, size of house hold, nature of roads, occupation, size of farm holding, mode of transportation, accessibility to farms and markets etc. The questionnaires were administered to 100 respondents selected randomly from the community. In addition to the structured questionnaires, other instruments such as Focus Group Discussion (FGD) and interviews were conducted with other stakeholders such as transporters and traders in the study area. The interview was relevant for profiling the transportation mode in the study area and factors that facilitate or mare upland rice cultivation and agricultural development in general in the area. Secondary data was obtained from news paper publications. The data collected were statistically analyzed which assisted in arriving at the conclusions and recommendations given at the end of the study.

III. RESULTS AND DISCUSSION

3.1 Socio- Economic Characteristics of Farmers

TABLE 1
SOCIO- ECONOMIC CHARACTERISTICS OF FARMERS

S/N	Frequency	Percentage (%)
Male	73	73
Female	27	27
Total	**100**	**100**
Age bracket		
18-30	18	18
31-50	46	46
above 50	36	36
Total	**100**	**100**
Marital Status	**Frequency**	**Percentage %**
Married	34	34
Single	66	66
Total Education	**100**	**100**
None	0	0
Primary	30	30
Secondary	50	50
Tertiary	20	20
Total	**100**	**100**
Record Keeping		
Yes	62	62
No	38	38
Total	**100**	**100**
Group Farming/ Cooperative		
Yes	46	46
No	54	54
Total	**100**	**100**
Land Acquisition		
By inheritance	62	62
By Leasing	8	8
By Purchasing	30	30
Total	**100**	**100**
Farming Experience		
Below 5 years	8	8
6-10 years	54	54
11-20 years	24	24
above 20years	14	14
Total	**100**	**100**
Farming Practices		
Mono-cropping	44	44
Mixed Cropping	56	56
Total	**100**	**100**

The socio- economic characteristics of the sampled farmers are shown in Table 1 which reveals that the larger percentage (73%) of the farmers in the study area are male while (27%) are female. This implies that there are more male farmers in the study area than female. Farmers of ages between 18 – 30 years constitute (18%), those of age between 31 -50 years and about 46% while farmers of age above 50 years are about 36%. About 34% of the farmers are married while 66 % are unmarried. About 30% of the farmers have primary school education, 50% acquired secondary education while about 20% of the farmers had tertiary education. This implies that the farmers are educated and can easily adopt new farming technics that can improve their agricultural productivity. It is also seen that about 38% of the farmers do not keep record of their yearly farming activities while about 62% of the farmers keep. The majority of the farmers do not participate in a Farmers' Association or in any Agricultural Cooperative Societies probably due to lack of incentives from such associations, levies and laws guiding the association, so most farmers decide to be on their own. Most food farmers who acquired their land by inheritance are about 62%, followed by about 30% who acquired their land through purchase and those who acquired through lease are about 8%.

Furthermore, the study reveals that about 8% of the sampled farmers have less than 5 years farming experience, 54% of the farmers have at about 6-10 years farming experience, and 24% of the farmers have between 11 and 20 years' experience while about 14% have more than 20 years' experience in farming. . This indicates that most of the farmers sampled have enough farming experience. However, majority of the farmers (56%) practice mixed cropping while others 44% practice mono-cropping mainly upland rice farming.

3.2 Types of Crop Grown:

Respondents were asked about the major crops grown in the study area. Their responses revealed that they grow crops like rice, cassava, cocoyam, yam, potato, maize, melon as well as vegetable plants. They indicated that 56% grow grains such as rice, maize etc as shown in Fig. 3. About 32% of the farmers produce root/tubers which include yam, potato, etc. it was further revealed that 12% of the farmers grow other crops other than grain and root crops, which includes vegetable, leguminous crops, etc.

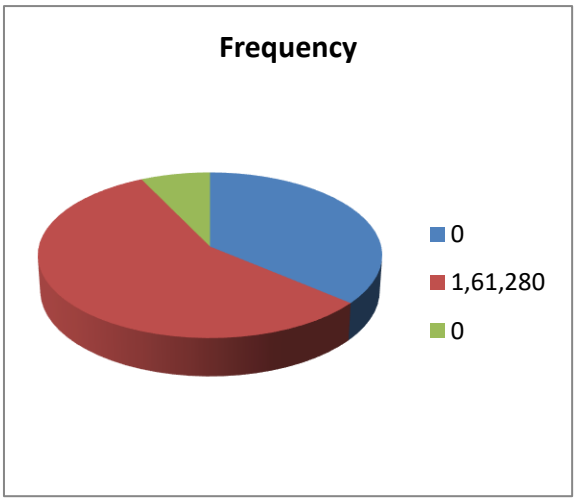

FIGURE 3: Pie chart representing various crops grown in the study area

3.3 Modes of Transportation

Road is an important transport component that encourages the use of intermediate modes of transportation (IMT). The study reveals that mainly non-motorable paths lead to the farmers' farm scattered at various distances from their homes. This is the resultant of the nature of the land tenure system which is characterized by land fragmentation, however, farmers' attitude to farm fertile lands for good harvest also lend credence to this. Respondents were however asked about the different modes of transportation of produce to their houses as well as the market. The study reveals identified the mode of transportation in the study area to include head porterage, motorcycle, wheelbarrow, public transport such as pick-up vans. Figure 4, shows that about 71% of the farmers use head porterage which is readily available, 5% of the respondents use public transport, 13% use wheel barrow while the remaining 11% use motorcycle.

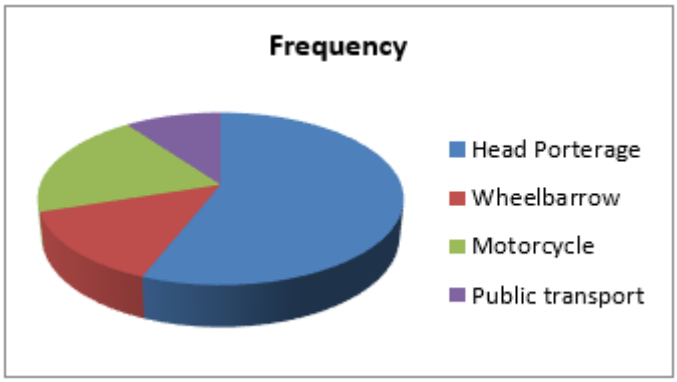

FIGURE 4: Pie chart representing various mode of transportation in the study area.

3.4 Transportation Costs of Agricultural Produce

Cost of transportation of agricultural produce from the farm sites to the market has a great impact on production and income of farmers. This is because transport charges on agricultural produce vary with type of crops, the efficiency of the transport and distance travelled. Fig. 5 reveals that 53% of farmers spend at above N1600 to transport their produce from the farm to the market. 35% spend between N600-N1500, while 12% spend below N500.

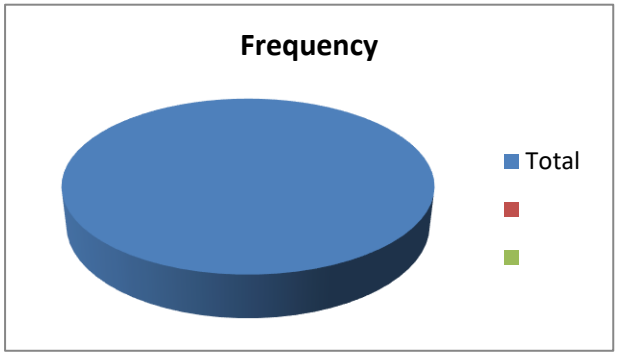

FIGURE 5: Pie chart representing cost of transportation from farm to the market.

3.5 Costs of transportation from the farm to farmers homes or to storage centers.

On the other hand, Fig. 6 shows that about 58% of farmers spend at above N1600 to transport their farm produce from their farm to their homes either for long term or temporary storage before taking the products to the market. About 29% of respondents spend between N600-N1500, while 13% spend below N500. This means that a significant proportion of the farmers' income is spent on transportation as a result of inadequate road infrastructure in the study area. The high cost of transportation would definitely translate to high selling price and however, if the price is too high when compared with farmers' products from other areas, customers will not buy and this may result to their selling at a loss. High transportation cost on the other hand will also limit their production capacities; hence they may likely decide to reduce their production.

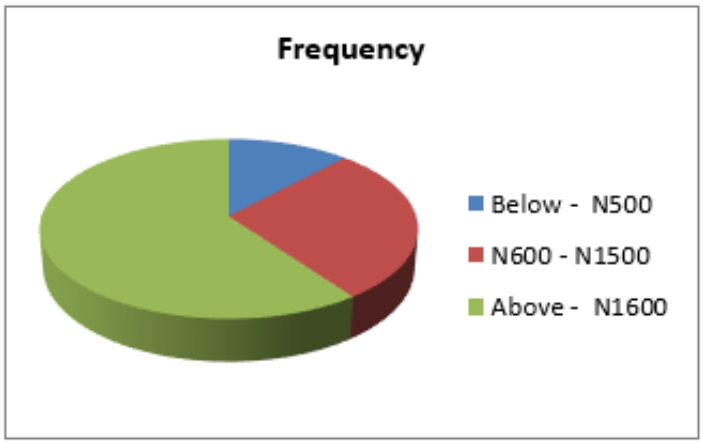

FIGURE 6: Pie chart representing cost of transportation from the farm to their homes or storage centers.

3.6 Farmer's Agricultural Productivity Level in Relation to Transportation of their Produce

Some factors are found to influence the quantity of crops produced by farmers in the study area and these vary from farm to farm and settlement to settlement. Such factors include availability of transport facilities, distance to markets, farm size and costs of farm input. Transportation problems contributed significantly to reduction in farmer's production capacity. This is because after a bumper harvest, most of the farm produce deteriorates if not transported to the market for sale within a limited period of time.

3.7 Distances between farmers farm and the nearest motorable roads.

Fig. 7 below reveals that about 45% of the farmers travel a distance of about 3-5km from their farms to the nearest motorable road before harvested can be transported to the market or industry. About 37% of the respondents travel less than 2km while 18% travels above 5km respectively before having access from their farms to motorable roads.

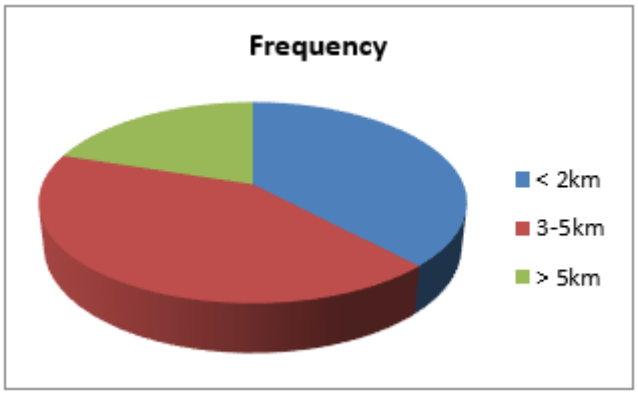

FIGURE 7: Pie chart representing of distance to nearest motorable road.

The respondents also expressed belief that transportation influences their level of agricultural production level although this varies from settlement to settlement. In absence of adequate transport facilities, farmers would likely not be motivated to produce more since they would not be sure of the means to evacuate their products from their farms. Thus, the prices of the little available crops in the markets would be very high that many people may not be able to afford it. Similarly, it would negatively affect the health of the citizenry, the production level of the agro-based industries and the general economy.

Some of the respondents believed that an improvement on road condition among other factors can motivate them to grow more crops and this in essence will mean more improvement in transport services will attract more buyers to the area leading to farmers increasing their holdings for possible higher profit margins for the products. It was further gathered that road transport does not only have impact on the development of the agricultural production but also on the socio-economic development of the rural people as a whole.

Transporters also pointed out that they prefer to be plying settlements that are well connected with good roads than those that are not. They noted that bad road conditions cause serious damages to their cars forcing them to spend much on maintenance of their vehicles. Furthermore, they indicated that their patronage of the study area is act of patriotism for being indigenes the community.

Field observation also show that the roads are characterized with unpaved surfaces, narrow width, circuitous alignment, bushy and filled with potholes, water logged and are generally in deplorable state. Moreover, most of the roads are seasonal in nature and are used mainly during the dry seasons as they remain flooded and impassable almost all part of rainy seasons. This seasonal nature of the roads was also observed to be a by- product of poor drainage, flooding and inadequate maintenance of roads. The poor quality of the roads in the study area affects the quality/ freshness of farm products which makes them attract low price and indirectly affect also the quality of life and well-being of the farmers. This is because farmers' spend their little income on buying drugs and treating themselves for sprains, pains, headaches and overall body ache due to long distances and hours of trekking with loads on their head because of absence of adequate transport facilities.

IV. CONCLUSION

Transport plays significant role in determining the level of agricultural production and marketing. The lower transport cost is for transportation of agricultural produce to the market or to other places they are needed, the more difference in the level of

rural incomes. Agricultural products are biological products and are vulnerable to deterioration as soon as they are harvested, therefore, adequate transportation facilities are necessary to enhance their quick evacuation to the places they are required to avoid spoilage.

It is pertinent to avoid losses experienced by farmers especially during flooding when they are forced to harvest their crops prematurely. Absence of transportation facilities which would have enhanced quick evacuation of the crops lead to many farmers losing various percentage of their crops.

However, this study reveals that transportation of agricultural productivity in study area is not easily available when required and also very costly due to poor transport infrastructure. These leave farmers with heavy losses and little or no profit which discourages them from increasing their productivity. Where seasonal flooding is experienced like in the study area, farmers are forced to harvest their crops prematurely this also leads losses due to absence of drying and preservation facilities thus, this also reduce farmers productivity.

The study further reveals that adequate and efficient transportation system forms the corner stone which will encourage farmers in the rural areas to increase their farm produce and make more income and profit that will raise their standard of living create more employment and reduce poverty level in the rural areas.

V. RECOMMENDATIONS

Based on the identified problems and findings in this study, some useful recommendations are made which are all geared towards ensuring greater income and improved standard of living of rural farmers as well as inhabitants in the study area.

1. All roads in the rural areas should be converted to all weather roads connecting farmers to their farms to enhance easy evacuation of farm produce, improve rural spatial integration and accessibility to goods, services and opportunities.
2. Government should build collection centers equipped with processing facilities such as dryers and storage facilities in the study area to assist farmers minimize losses of their agricultural produce especially during rainy season. Paddy rice harvested during the rainy period is prone to deterioration if they are not dried immediately to reduce their moisture content.
3. Standard drainage systems, bridges and channels should be constructed for easy flow of flood water. This will minimize flooding.

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