

Impact of Road Transport on Maize and Cassava Output in Etsako West Local Government Area, Edo State

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Abstract

Original Research Article

This paper examines the impact of road transport on maize and cassava production in Etsako West local government area of Edo state. The study objectives are, taking inventory of cassava and Maize suitability, Examining existing road transport facilities, Assessing the effect of roads on maize and cassava productions and Analyzing the impact of the road transport on maize and Cassava output in the study area. Using both primary and secondary data for the study, the primary data were obtained through the use of questionnaires administered on 12 wards in the study area, administering 485 questionnaires in total and Scheduled interviews with the LGA secretariat. This was done using a systematic random sampling method. The study showed that the conditions of roads are poor, such that some settlements are not connected with accessible road, while many roads are eroded filled with potholes. This had impact on the agricultural activities as many farmers could not access their farms, and agricultural produce get perish in their farms. The impact of this is that farmer's loss interest in farming, while some other farmers change their occupation from farming. This leads to low Produce and standard of living of the farmers very poor. Among others, it is recommended that the three tiers of government come to the aid of Etsako West in areas of road transport provision and maintenance in order to improve on the development of agriculture of the area.

Keywords: Transport, Maize and Cassava, Development, Road, Etsako West, Transport Infrastructure.

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Introduction

This study is concerned with road transport and agricultural product output with emphasis on maize and cassava. A strong interrelationship exists between the road networks and agricultural development. The demand for moving people and goods and the resulting transport networks are functions of landuse patterns (Honan, 1998). Road transport is one of the main forces shaping the spatial distribution

and density of human activities (Olaseun, 2004, Ojeifo, 2005). Hence, activities generate movement and when movements are generated, there exist interactions among the activity areas which lead to development.

Rural development connotes all the strategies directed towards enhancing the quality of rural people and the rural environment. Adewale (1990) defined rural development as a process of not only increasing the level of per capita income

in the rural sector, but also the standard of living of the rural population. It is as a result of this that road transport is viewed as a means of enhancing rural development, hence road transport could be seen as an infrastructure for agricultural transformation (OECD, 2022).

Obademi, Chibuzo and Omale, (2023), in their study aimed at investigating the effects of roads on rural development with a focus on Otukpo and Agatu Local Government Areas of Benue state, revealed that people in rural areas of Otukpo and Agatu LGA do not have access to good roads, and that bad roads in rural areas have hampered agricultural development in Otukpo and Agatu LGA. They concluded that there was a need to give attention to rural roads as they can impact positively on the lives of rural dwellers and the whole country at large. Hence, recommended, among other things, that, in order to improve rural development in these areas, good roads should be provided by the government in conjunction with private organizations to better the lives of rural dwellers across the two local government areas.

Adeniyi, Akinrinmade, and Abiodun, (2018), in their study aimed at assessing road transportation impact on rural development, noted that Rural transportation is a significant channel of ensuring effective movement of rural people and the collection and exchange of goods and services to enhance rural economy and development in Nigeria. The study revealed that the rural roads are in poor condition which influences the cost of transporting farm produce and economy of the area and therefore recommended for the improvement of the existing road condition of the study area, equipping the LGA with finance, personnel and equipment to manage and maintain rural roads to ensure effective movement and collaboration between Federal and State Governments on various policies such as upgrading and maintenance of rural road, rural empowerment and development, rural infrastructure improvement and development towards enhancing rural development in Nigeria.

Edo state is located in the Southern part of Nigeria. The study area is Etsako West Local Government, Edo State (see figure 1). Its headquarters is in Auchi. Etsako West comprises

six clans, including Uzairue, Auchi, South Ibie, Awain, Jagbe, and Aviele clans. The local government area covers approximately 1950 km². Etsako West Local Government Area is located at latitude 7.05°N and longitude 6.16°E. The local government area is approximately 300 km from Abuja, the federal capital, and 140 km from Benin, the state capital. The local government is bounded by Akoko-Edo and Etsako East LGAs in the northeast and northwest, respectively. To the east, it is bounded by Etsako Central LGA; to the south, by Esan West, Esan Central, and Esan North East LGAs; and to the west, by Owan West LGA, see figure 2. The local government is divided into wards, with a total of 12 wards, and more than 80 percent of the population is involved in farming.

Road transportation in the area is prominent along the route from Benin City to Abuja. This passes through Agbede, Auchi, to Opkella. The traffic on the road is very high as motorists use the road to connect other states in the federation. The second major road is the Auchi, Fugar to Agenebode road, which connects the area to Idah in Kogi state through the River Niger by boat crossing. The third major road is the Auchi, Ekperi to Agenebode road. The other roads in the area are connected to settlements within the local government, see figure 2

1.1 The Aim and Objectives of the Study

This study aims to assess the impact of road transport on maize and cassava output in Etsako West Local Government Area, Edo state.

This will be achieved through

- 1 Taking inventory of cassava and Maize suitability in the study area,
- 2 Examining existing road transport facilities in the area,
- 3 Assessing the effect of roads on maize and cassava productions and
- 4 Analyzing the impact of the road transport on maize and Cassava output

1.2 Method of Study

The data for this study were obtained mainly

from primary and secondary sources. The research population of the study area is the households. One settlement each was selected from each ward for this study. This was based on the most populated settlement in the ward. A sample size of 4.5% of the households from the population was taken, representing 485 respondents. A systematic random sampling technique was adopted, using an interval of 10 households in each settlement.

2.0 Literature review

2.1 Road Infrastructure Development in Nigeria

The rural transport infrastructure sector is a critical force for sustainable development that is interwoven with many other sectors. Rural transportation is an underlying driver of many of the Sustainable Development Goals (SDGs) and a crucial contributor to many socioeconomic benefits for rural people around the world, (Kaiser and Barstow, 2022). According to Transport & ICT (2016), One-third of the global rural population—approximately one billion people—live farther than 2 km from an all-season road, creating isolated communities with little access to essential services. Without safe access, devastating consequences are faced by communities, including higher under-five infant mortality and lower gross-domestic product (GDP) per capita (Sustainable Mobility for All, 2019). Investment in infrastructure has been shown to play an important role in global development, whereby networked infrastructure supports 72% of the Sustainable Development Goals-SDGs (Thacker, et al, 2019). While the importance of rural transport infrastructure has been studied significantly over the past several decades, spending on infrastructure is still prioritized for urban development where economic growth and policy is focused (Ernest and Young, 2015). According to Ali and pernia, (2003), rural infrastructure investments can lead to higher farm and nonfarm productivity, employment and income opportunities, and increased availability of wage goods, thereby reducing poverty by raising mean income and consumption. If higher agricultural and nonagricultural productivity and increased

employment directly benefit the poor more than the non-poor, these investments can reduce poverty even faster by improving income distribution as well

In its report, World Bank Group, (2019), submitted that Transport connectivity is an essential part of the enabling environment for inclusive and sustained growth. In many developing countries, particularly in Africa, the vast majority of people are still not connected to local, regional, or global markets. Such rural accessibility is crucial to reduce poverty and promote inclusive economic growth.

Sadly, the report noted that the vast majority of the road network is considered to be in poor condition. No updated road inventory data are available in Nigeria. It is only estimated that 10 to 15 percent of the total network is paved. Only about 15 percent of the federal network are estimated to be in good to fair condition. Out of the country's 160,000 km of state and rural roads, less than 10- 15 percent are likely to be in good to fair condition. Based on the available data, about 40,200 km of roads are paved, out of which about 12,100 km were in good condition, 12,900 km in fair condition and the rest in poor condition. Only about 1,200 km or less than 2 percent of the unpaved road network is in good condition (World Bank Group, 2019).

In empirical terms, a number of studies have shown that a clear and positive relationship exist between growth in Gross National Product GNP and a measure of mobility that expresses the quality of an existing of transport system (Gbakeji 1989, Onokerhoraye 1999, Ojeifo 2005, Olajuyin & Adeyinka 2007, Okhani 2012). Such studies have also demonstrated that transport has also aided non-economic factors, such as political and social cohesion which in turn are necessary conditions for economic development.

The Rural Access Index is estimated at 25.5 percent in Nigeria. It is estimated that about 92.5 million rural people do not have good access to the road network in the country. There is significant variation in rural accessibility across states: Southern states tend to have relatively high accessibility, such as Lagos (49.7 percent), Imo (48.3 percent) and Delta State (41.0

percent). The northeastern region is lagging behind (e.g., 10.5 percent in Taraba, 12.8 percent Adamawa and 13.7 percent in Yobe State), (World Bank Group, 2019).

2.2 Socio-economic Activities and Road Transportation in Rural Areas

Development can be defined as improving the welfare of a society through appropriate social, political, and economic conditions. The expected development outcomes are quantitative and qualitative improvements in human capital (e.g. income and education levels) as well as physical capital such as infrastructures (utilities, transport, telecommunications). According to Ogunleye, Ajibola, Enilolobo, and Shogunle, (2018), transportation is a non-separable part of any society. It exhibits a very close relation to the style of life, the range and location of activities and the goods and services which will be available for consumption. It is therefore a major factor in all economic activities (Ajiboye and Afolayan, 2009). As an economic factor of production of goods and services, transportation provides market accessibility by linking producers and consumers. An efficient transport system offering cost, time and reliability advantage permits goods to be transported quickly (Rabello and Nassi 2015). It is not an arguable fact that the rural communities started before the urban areas. Thus, most Nigerians who were born in the rural areas witnessed the rural area before the urban and many have even remained in the rural area throughout their history.

Rural transformation is perceived as a design to improve the economic and social conditions of rural inhabitants, which must involve strategies for extending the benefits of the development of the rural majority (Ukoha, 2016). According to him, the objectives of rural transformation efforts include the elimination of poverty, creation of rural employment opportunities, elimination of major inequalities, and ensuring adequate participation of the rural populace in the transformation process. A number of strategies have been adopted for this process and these include agricultural development, infrastructural development, industrialization,

and integrated rural development and community development in Nigeria (Emenike, 2016).

2.3 Land suitability and Viability for Maize and Cassava production

Soil characterization and land evaluation provides a powerful resource for the benefit of mankind, especially in the area of food security and environmental sustainability (Sharu et al., 2013). Sustainable agricultural production cannot be achieved if the soils are not properly evaluated (Ezeaku, 2011). Fadare et al. (2019) attributed food insecurity in Nigeria to lack of land evaluation for crop production. Land evaluation enables management guidelines in order to promote a more sustainable use of the soil and environmental resources. The need for land evaluation arose from the fact that soil survey, soil maps and the accompanying legends do not meet the needs of farmers and other land users (Ogunkunle, 2016). Proper recognition of land qualities and allocation of them to the best and most profitable use and stable revenue operation systems have critical importance for preventing of ecosystem destruction (Ukabiala, Pelebiri, Ajoagu, Asadu, and Ezeaku, 2024).

According to Abagyeh, Idoga, and Agber, (2016), decisions on land use are being based on comprehensive analysis of the production and potentials of natural resources such as climate, soil and hydrology. Land evaluation is very important in this direction as it provides information on the potentials and constraints of land for a defined land use type in terms of crop performance as affected by the physical environment. Soil suitability classifications are based on knowledge of crop requirements, prevailing conditions and applied soil management methods (Ande, 2011).

Therefore, sustainability in agricultural production is a measure of how well the qualities of a land unit match the requirements of a particular form of land use (FAO, 1976). Developing and adapting an ideal land use plan based on the soil quality and constraints for plant growth is of immense use for achieving sustainable crop production system without degrading soil health and environmental quality

(Ukabiala, Pelebiri, Ajoagu, Asadu, and Ezeaku, 2024).

2.4 Maize and Cassava Production in Etsako

According to Angar, (2004), in the early years of Nigeria's independence, agriculture accounted for nearly 60 percent of Gross Domestic Product (GDP) and 80 percent of export earnings (Shaib, Aliyu, and Bakshi, 1997). Today agriculture accounts for a third of GDP and less than one percent of export earnings, oil accounting for the rest. Etsako land is naturally blessed with arable farmlands, natural minerals, freshwater streams, and rivers including the Niger River, well distributed in every community across the vast plains, valleys, and hills, including mineral-rich mountains that decorate Etsako land. Agriculture is a major component of the Etsako economy. The region benefits from fertile soil and a favorable climate, which support the cultivation of a variety of crops. Key agricultural products include yams, cassava, maize, plantains, and vegetables. Cassava and Maize are particularly significant, with their processing into products such as Garri and cassava flour, Corn and Corn-flour, being an important economic activity, (Etsako Economy (2024). Cassava has a unique characteristic in that it can be continuously harvested and marketed throughout the year. This provides a consistent supply of product, available for immediate processing at a fairly predictable price throughout the year. This could be cassava's greatest attribute (Federal Ministry of Agriculture and Rural Development, 2002).

Nigerian cassava production is by far the largest

in the world; a third more than production in Brazil and almost double the production of Indonesia and Thailand. Cassava production in other African countries, the Democratic Republic of the Congo, Ghana, Madagascar, Mozambique, Tanzania, and Uganda, appears small in comparison to Nigeria's substantial output. Maize is an important crop in Nigeria, where it is largely cultivated by smallholder farmers over 6.5 million hectares of land across diverse agroecological zones of the country (Onumah et al., 2021). Until the mid to late 1970s, maize production in the Nigerian savanna was limited to homesteads. However, as demand for maize grain for food, animal feed, and other industrial products increased, significant expansion in maize production occurred in the savannas where it became a prominent commercial crop competing with other indigenous cereals (Smith et al., 1994)

3.0 Results

3.1 Types of Agricultural Practice: The major types of agricultural practice in the area are shifting cultivation, crop rotation and continues cropping as shown in Table 1. The agricultural practice involves the preparation of soil, sowing, adding manure and fertilizers, irrigation, removal of weeds, harvesting and storage of produce. When examined spatially, shifting cultivation is the most prominent type of agricultural practice, which represents 91.1%, followed by continuous cropping and crop rotation which represents 5.6% and 3.3% respectively. This is shown in Table 1

Table 1: Types of Agricultural Practice

Type of Agric Practice	Percentage (%)
Shifting Cultivation	442 91.1%
Crop Rotation	16 3.3%

Continues Cropping	27 5.6%
Total	485 100%

Source: Field Survey, 2026

3.2 Average Production Output of Maize and Cassava between 2018 to 2025 per Farmer

The production output of maize and cassava from 2018 to 2025 shows that the output reduced within the said period. There was a sharp

reduction in 2019/2020 as a result of COVID 19. However, maize production output has dropped from 8 bags in 2018/2019 to 3 bags in 2024/2025. While cassava output has dropped from 70 bags in 2018/2019 to 35 bags in 2024/2025 respectively in the farming seasons as shown in Table 2.

Table 2: Average Production Output of Maize and Cassava between 2018 to 2025 per Farmer

Crops	Production/Output (bags)						
	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
Maize	8	4	7	6	6	3	3
cassava	70	42	55	50	50	40	35
Total	78	46	62	56	56	43	38

Source: Agriculture Department, Etsako West Local Government Secretariat, 2026

3.3 Types and Condition of Roads used to Farms:

The types of roads used to farms are mainly footpaths, earth roads and Tarred roads as shown in Table 3. The footpaths are not motorable by vehicles, hence the evacuation of farm produce from the farms becomes difficult. Farm produces are carried from the farms on foot by human efforts and motorcycles. The earth roads are

characterized with eroded and failed portions, and no linkage to majority of the farms. The tarred roads are not maintained, they are full of port holes with eroded portions, and they do not link the majority of the farms which leads to the perishing of large quantities of cassava and maize, as shown in Table 3

Table 3: Types and Condition of Roads used to Farms

Types of Roads	condition	Location/Name of Road
Footpaths	Not Motorable by Vehicle, Only Accessible by foot and Motorcycles	Iyuku – Imeke Iyamho – Uluoke Iyora – Ikabigbo
Earth Road	Eroded and Failed Portions	Iyuku – Okhu II Jagbe - Ewora Nichoho Barake - Imeke
	No Road Linkage	Ewora – Idegun Afashio – iyerekhu Ayoghena - Ikholo
Tarred Roads	Port Holes with Eroded portions	Igbira Camp – Aibotse Ayogwiri – Irekpa Elele – Afowa

Source: field survey 2026

3.4 Effects of the Condition of Roads on Crop (Cassava and Maize) Production:

The effects of the condition of roads on crop production is discussed by examining the access to farms, farm size, cost of transportation, loss of harvest and occupational change.

- a) **Poor Accessibility to Farms:** The majority of roads to farm are not motorable by vehicles and only

accessible by foot and motorcycle. This condition makes accessibility to farm very poor, and 49.1% of the farm roads are in this condition. Hence assessing farms, and evacuating maize and cassava produce is very difficult. The harvested products perish on the farm due to inability to transport the farm products to the market, as shown in Table 4

Table 4: Poor Accessibility to Farms

Types of Roads	condition	Accessibility	Percentage (%)
Footpaths	Not Motorable by Vehicle, Only Accessible by foot and Motorcycles	238	49.1%
Earth Road	Eroded and Failed Portions	112	23.1%
	No Road Linkage	88	18.1%

Tarred Roads	Port Holes with Eroded 47 portions	9.7%
Total	485	100%

Source: field survey 2026

b. Time Spent in Accessing Farms: The time spent to go to the farm and from the farm to the communities is shown in Table 5. The farm sites are far from the neighborhoods; hence they spend more time on roads, especially with the

poor condition of the roads. The longer time on road reduces the needed time to be spent in the farms. This condition reduces crop production since there is always little time left to work in the farm after spending much of it on the road.

Table 5: Time on Farm Road

Settlements	Average Time Spent on Roads		Total
	To Farm	From Farm	
Iyora	1h30min	1hrs 30mins	3hrs
Aibotse	1hr 30mins	1hr 30mins	3hrs
Iyerekhu	1hr 30mins	1hr 30mins	3hrs
Agbede	1hr	1hr	2hrs
Idegun	1hr	1hr	2hrs
Jagbe	1hr	1hr	2hrs

Source: field survey 2026

c. Inability to Cultivate Large portion of Farm: The average farm size for crop production in the study area are between 1 hectare to 7 hectares as shown in table 6. The farmers engage in small farm sizes in order to reduce their produce getting

perished when farms are large. There are no roads to evacuate produce to the final consumers, due to poor roads and No-road connection between their farms, market and other settlements.

Table 6: Reduction in Farm Size by Farmers

Location to Farm	Farm Size (Hectares) in 2018		Farm Size (Hectares) in 2025	
	Cassava	Maize	Cassava	Maize
Iyora	5	2	3	1

Aibotse	5	2	3	1
Iyerekhu	5	2	3	1
Agbede	7	4	4	2
Idegun	7	4	4	2
Jagbe	7	4	4	2

Source: field survey 2026

- d. Cost of Accessibility to Farms:** The average cost of transport to and from farm in the study area between 2018 to 2025 is shown in Table 7. The cost includes both to and from farm per day.

The percentage increase in the cost of assessing farms is between 80.0% to 85.0% in 2018 and 2025. The high cost of transport to farm reduces the profits from the farms.

Table 7: Cost of Accessibility to Farm in 2018 and 2025

Location to Farm	Cost in 2018 (₦)	Cost in 2025 (₦)	Increase (₦)	Percentage Increase (%)
Iyora	800	4000	3,200	80.0%
Aibotse	1000	5000	4,000	80.0%
Iyerekhu	1000	5000	4,000	80.0%
Agbede	600	4000	3,400	85.0%
Idegun	600	4000	3,400	85.0%
Jagbe	600	4000	3,400	85.0%

Source: field survey 2026

- e. Loss of Harvest Due to Poor Accessibility:** There is loss of harvest in the study area as a result of the nature of roads on crop production. In the 2018/2019 farming season there was 35.9% loss of harvest of maize and cassava while in 2024/2025 farming season, there was 36.8% loss of harvest of maize and cassava produce. The high rate of loss of harvest is as a result of the non-accessibility to the farms because of

the poor conditions of the roads while the produce perished in the farms. In respect of farm site that are not accessible by road, the evacuation of farm produce to markets and settlements becomes impossible, the agricultural extension workers do not have access to educate the farmers on modern methods of farming. The farm produce are not harvested, hence they get perished at the farm site as shown in Table 8

Table 8: Average Output and Loss of Maize and Cassava between 2018 to 2025 per Farmer

Crops	Production/Output (bags)					
	2018/2019			2024/2025		
	Output	Loss	Percentage (%)	Output	Loss	Percentage (%)
Maize	8	3	37.5%	3	1	33.3%
cassava	70	25	35.7%	35	13	37.1%
Total	78	28	35.9%	38	14	36.8%

Source: Author's Analysis, 2026

3.5 Impact of Low Crop yield on Farmers

The impact of low crop yield on farmer is discussed through the evaluation of the income, interest, and change of occupation of the farmers in the area of study.

- a) **Low Income:** From the average income from crop production from farm in the study area over a period of 7 years, the study shows a steady decline in the income from farms. In 2018/2019 farming season, the average income was ₦1,950,000, while the following year

2019/2020 farming season experienced a sharp decline to ₦1,150,000 due to the outbreak of COVID 19. In 2021/2022 farming season, the average income was ₦1,400,000 showing a steady decline. This is further corroborated by the figures of 2024/2025 farming season of ₦950,000, (see Table 8). As a result of the low income, the farmer becomes poorer and unable to meet up with basic expenses, which invariably leads to poor standard of living of the farmers.

Table 8: Average Income of Respondents

Year	Average Income from Farms (₦)
2018/2019	1,950,000
2019/2020	1,150,000
2020/2021	1,550,000
2021/2022	1,400,000
2022/2023	1,400,000
2023/2024	1,075,000
2024/2025	950,000

Source: Field Survey, 2026

- b) **Loss of Interest in Farming:** From the study, it was revealed that there is a decline in the interest on farming. This is

because their produce could not be evacuated from the farm to the market for sale. A reasonable quantity of the farm

produce get perished in the farm. 14.1% of the farmers left farming entirely, while 45.8% reduced their farm size and combined farming with other

occupations (see Table 9). This is so, in order to allow the farmer to meet up with the general expenses of the family and improve on their standard of living.

Table 9: Interest in Farming

Interest	Respondents	%
Still Farming	227	40.1%
Left Farming	79	14.1%
Combined Farming with Others	259	45.8%
Total	566	100%

Source: Field Survey, 2026

c. Occupational Change: The effects of the nature of road on crops production influence the occupational change of some members of the communities from farming to other occupations as shown in Table 10. 14.1% left farming to other occupations such as Electrical/Electronic trading, Barbing/Hair Dressing salon, Building Materials trading, food sellers,

boutiques shops and automobile. 45.8% of the respondents combines farming with other occupations such as vigilante, Mansory, carpentry, electricians, provision store trading, food stuff trading, transportation (taxi, Motor Bike and Truck) and Tailoring. This occupational change is as a result of the low crop output yield.

Table 10: Occupational Change

Occupation changed to	Respondents	%
Electrical/ Electronic material Trading	11	13.8%
Barbing/ Hair dressing salon	9	11.4%
Building Material Trading	15	19.0%
Food Sellers	15	19.0%
Boutique shops	12	15.2%
Automobile (mechanic, Panel Beating, spare parts)	17	21.5%
Total	79	100%
Combined Farming with other Occupations		

Vigilante (security)	62	23.9%
Mansory	31	12.0%
Carpentry	27	10.4%
Electrician	13	5.0%
Provision Trading	54	20.9%
Food Stuff Trading	41	15.8%
Transportation (Taxi, Bike riding, Truck Driving)	12	4.6%
Tailoring	19	7.4%
Total	259	100%

Source: Field Survey, 2026

5.0 Summary of findings

The study area is predominantly agrarian, with shifting cultivation as the most prominent practice, accounting for 91.1% of respondents, while continuous cropping and crop rotation represent 5.6% and 3.3%, respectively. This indicates a traditional, land-extensive system that depends heavily on access to large arable land (Field Survey, 2026).

There is a steady decline in average output per farmer for both crops between 2018/2019 and 2024/2025. Maize production dropped from 8 bags to 3 bags, while cassava dropped from 70 bags to 35 bags. A sharp decline was observed in 2019/2020 due to COVID-19. Total output declined from 78 bags to 38 bags, representing over a 51.2% reduction within 7 years (Agriculture Dept, Etsako West, 2026). This aligns with the World Bank (2020) that poor rural accessibility reduces agricultural productivity.

The major farm access roads are footpaths (49.1%), earth roads with eroded and failed portions (23.1%), no road linkage (18.1%), and tarred roads with potholes (9.7%). Most footpaths, such as Iyuku-Imeke and Iyamho-Uluoke, are non-motorable by vehicles, forcing evacuation by head portorage and motorcycles (Field Survey, 2026). This confirms FMEnv (2022) that the lack of all-season rural roads is a critical constraint to agricultural development.

Farmers spend an average of 2-3 hours daily on roads to and from farms - Iyora, Aibotse, and Iyerekhu spend 3 hours, while Agbede, Idegun, and Jagbe spend 2 hours. This reduces effective farm work time (Field Survey, 2026). This is one of the effects of poor roads on crop production

Average farm size reduced significantly between 2018 and 2025 because poor roads reduced crop production. For instance, cassava farms reduced from 5-7 hectares to 3-4 hectares and maize from 2-4 hectares to 1-2 hectares. Farmers deliberately reduce size to minimize perishability due to lack of evacuation roads (Field Survey, 2026; Adeleye, 2020).

The cost of accessing farms increased due to the effects of poor roads on crop production by 80% to 85% between 2018 and 2025, from N600-N1000 to N4000-N5000 per day. This erodes farm profit margins (Field Survey, 2026; Brealey et al., 2022).

As a result of poor roads affecting crop production, Post-harvest loss remains high due to inaccessibility. In 2018/2019, 35.9% of the total harvest was lost - 37.5% maize and 35.7% cassava. In 2024/2025, 36.8% loss was recorded - 33.3% maize and 37.1% cassava. Produce perishes on farms because extension workers and buyers cannot access farm sites (Author's Analysis, 2026; WHO, 2021).

There was a serious impact of low yield on

farmers. This is because average farm income declined from N1,950,000 in 2018/2019 to N950,000 in 2024/2025, with a sharp drop to N1,150,000 in 2019/2020 due to COVID-19. This has led to a poor standard of living (Field Survey, 2026).

Another Impact of low yields on farmers has led to loss of interest and occupational Change. Only 40.1% are still fully farming. 14.1% left farming entirely to trade in building materials, electrical materials, automobile and boutique shops. 45.8% now combine farming with other occupations such as vigilante, masonry, provision trading and tailoring to supplement family expenses (Field Survey, 2026). This supports Glasson et al. (2013) that infrastructural failure drives livelihood diversification and rural-urban shift.

6.0 Conclusion

The study provides empirical evidence that road infrastructure is the most critical bottleneck to maize and cassava production in Etsako West LGA. The dominance of shifting cultivation, which requires extensive land access, cannot be sustained without all-season farm roads. With 90.3% of farm roads being either footpaths, eroded earth roads, or roads with no linkage, the study area is in a state of agricultural isolation. This isolation has manifested in five interlinked outcomes: increased commuting time of 2-3 hours daily, an 80-85% rise in transport cost, a deliberate reduction of farm size by 40-50%, high post-harvest losses of 35.9-36.8%, and over a 51% decline in output and income.

The consequence is occupational change, where 59.9% of farmers have either abandoned or are partially abandoning farming. Therefore, poor road conditions are not just a transport problem but a direct threat to food security, rural livelihoods, and the attainment of SDG 2 - Zero Hunger in Etsako West. Without intervention, the trend of declining output from 78 bags to 38 bags will continue, and Etsako West will shift from a food-producing LGA to a food-dependent LGA (Canter, 2019; World Bank, 2020; Glasson et al., 2013).

7.0 Recommendation

Based on the findings and conclusion reached in this study, the following recommendation is therefore set forward to address the defined problems therein.

1. **Immediate Rehabilitation of Priority Farm Roads:** The Edo State Ministry of Agriculture and Etsako West LGA should prioritize construction of all-season roads in the six worst-hit communities. For example: Grade and culvert the Iyuku-Okhu II road to connect 50 farms, open the Ewora-Idegun no-linkage road with a 2km earth road, and patch potholes on Igbira Camp-Aibotse tarred road. This should be listed as a key VEC - Valued Ecosystem Component in the ToR of any EIA for rural projects in the LGA (FMEnv, 2022; World Bank, 2020).
2. **Establishment of Community-Based Aggregation and Storage Centers:** To reduce immediate evacuation pressure, build 3 aggregation centres at Agbede, Iyora and Jagbe with concrete drying floors and ventilated storage for cassava. Example: If cassava can be stored for 7 days at Agbede centre, farmers can accumulate 100 bags and hire one truck instead of daily motorcycle trips, cutting cost by 60% (WHO, 2021).
3. **Subsidized Farm Evacuation and Input Support Scheme:** Government should provide subsidized farm trucks that go round farms on market days - Tuesdays and Fridays - at N500 per bag instead of N2000 charged by private motorcycles. Also provide tricycles to youth cooperatives on hire purchase for farm evacuation. Agricultural extension workers should be given motorcycles and fuel allowance to reach farms like Ayoghena-Ikholo that are currently inaccessible for farmer education (Brealey et al., 2022; Adeleye, 2020).
4. **Promotion of Cooperative Farming and Communal Maintenance:** Encourage farmers in Iyora, Aibotse and Iyereku to form cooperatives to jointly maintain footpaths like Iyora-Ikabigbo through self-help, with LGA supplying laterite and tools. This reduces individual maintenance cost and ensures 365-day access. Cooperatives can

also jointly negotiate transport rates (Canter, 2019).

5. **Policy Integration and Monitoring:** The LGA should integrate road access indicators into its agricultural policy: Every annual budget should allocate at least 15% to rural road maintenance. A monitoring committee comprising farmers, the LGA works department, and traditional rulers should inspect farm roads quarterly, especially before planting season in March and harvest season in September (Glasson et al., 2013).
6. **Farm Mechanization Policy:** The floodplain at Agenebode, Ekperi, Anegbete, and Agbede should be opened to mechanize farming for Cassava and maize on a large scale. Industrial farmers could be invited to establish large farms with large-scale storage facilities in these areas, such as the Leventis Farms and the Dangote Farms.
7. **Establishment of viable markets within relative distances in the settlements:** The establishment of markets within relative distance for local communities that have different products for sale will be more viable (Asunogie and Shaka, 2017). This has become necessary since, according to Jikun and Rozelle (1995), the development of markets is key to societal growth and development

8.0 References

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