CORRELATES OF RURAL ROAD TRANSPORT INFRASTRUCTURE AND FARMERS' INCOME IN OSUN STATE FARM SETTLEMENT

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Abstract
Poor road conditions, high transport costs and distant markets have been identified as factors that hamper improved market access for emerging farmers in rural areas. Infrastructure imparts welfare such utility derivable from existing and budgeted income, productivity and capacity to earn income and household and also national stock real wealth in the rural and urban economies. Inadequate or low quality infrastructure has serious implication for welfare and persistence of poverty. The study therefore sought; to examines the correlation between rural road transport infrastructure and farmers' income in Osun State farm settlement. A cross sectional survey research design was used for the study. The primary data were obtained through administration of structured questionnaires for the farmers in Osun state farm settlement. The purposive sampling method was used to select (354) three hundred and fifty-four rural farmers from all the nine farm settlements in Osun State. Descriptive and inferential statistics such as frequencies, tables and Pearson product moment correlation coefficient used to test the relationship between existing rural road transportation infrastructure and farmers' income. Results revealed a significant positive relationship between road access conditions and farmers' annual income ($r = 0.579$, $p < 0.05$). The study concluded that rural road transport infrastructure has significant relationship on farmers 'income in the studied area. Furthermore, the study recommends that government should address farmers to rural market services which are in bundles, and policies targeted towards rural infrastructural development most especially rural roads should be formulated because bulk of farm produce comes from the rural areas.

Key words: *Transport, Income, Agricultural produce, Roads and Farm settlements.*

Introduction

Osun state in Nigeria is predominantly agrarian with Agriculture being a major source of livelihood for many residents living in the rural areas. According to Adetunji (2020) the state's economy benefits significantly from Agricultural Activities, with crops like cocoa, yam and cassava etc. being prominent in the region Rural road transport

infrastructure plays a crucial role in the social-economic developments of farm settlements. Ogunleye et al (2018) highlights that poor road conditions are common in many rural areas of Osun state. These conditions hinder Agriculture Productivity, limit Access to markets and affect the overall efficiency of Agricultural Activities. The inadequacy of rural road infrastructure impacts farmers 'income due limited access to markets, higher transportation costs, and challenges in getting produce to buyers. According to Yakubu and Alhaji (2025) enhancing rural road infrastructure can lead to better market access, reduced post-harvest losses and improved livelihoods for farmers. Efficient rural road transport systems are essential drivers of economic development. Rural areas cannot exist and global trade cannot grow without rural road transport system to move people and agricultural produce affordably and efficiently but inadequate rural roads make it hard for farmers to produce more and to transport any surplus agricultural outputs after harvest. Also, traffic on most rural roads still consists mainly of pedestrians often carrying head loads. The study therefore, examine the relationship rural road transport infrastructure and farmers' income in Osun State Farm settlement.

Literature Review

Abdul Raheem M.I et al (2021) assessed the impact of transportation on agricultural practices and productions in rural areas: implication for sustainable food security in Igboora. A descriptive survey research design was employed using a structured questionnaire was administered to 100 farmers. Data were analyzed using percentage and frequent counts. The result of findings indicates that causes and effects of poor road network caused by lack of provision for maintenance of roads, flooding during raining season leads to high cost of transportation to the market therefore reduce farmers' income and quality of goods available in the marker. Kaiser (2022) reviewed the impacts of rural transportation infrastructure in Low –middle and middle-income countries. The review paper expands upon, enhances, and cross references in the perspectives outlined in previous rural infrastructure-focused review papers. The paper concludes that enhancement, improvement and extension of rural transportation infrastructure brings significant benefits to rural dwellers.

Haiyan Lu et al (2023) explored the heterogeneous impact of road infrastructure on rural residents' income of rural residents at the municipal. The study used data from china family panel survey from 2010 -2018 using instrumental variable regression model. The result of the study revealed those rural residents' household incomes benefits from road infrastructure.

Methodology

The study was conducted in Osun State, Nigeria. The paper used cross sectional survey research design to correlate rural road transport infrastructure and farmers' income in Osun State farm settlement. Primary data was obtained through administration of structured questionnaires on farmers' socio-economic characteristics, determine the relation between the rural road transport infrastructure and farmers' income in the study area. Data derived from these sources were further complemented with personal interviews of the farmers in the farm settlement. Furthermore, The study population covered all the farm settlement across the state and farmers and three thousand and one hundred farmers were selected for the study. Therefore, the population of study is three thousand and one hundred (3,100). The sample size was determined by the use of Taro Yamane 1967 formulae: n = $N/1 + Ne^2$

Where n = sample size, N = Population size under study e= level of significance, 1 = constant. The summation of population for the study shall be Z, and by substitution with level of significance of 0.05.

N =N÷ $(1+N (e)^2$

n =3100 ÷ $(1+3100(0.05)^2$

n =354.

Results

Condition of Rural Road Transportation Infrastructure

Table 1 presented the relationship between existing rural road transport infrastructure and farmers' income in the study area. Rural road transport infrastructure has been identified as perhaps the prime mover in the analysis of spatial structure and functions. Consequently, areas with good roads and infrastructure tends to benefit more from the provision of social amenities than their counterparts with bad roads condition and connectivity. Unpaved roads which form the greater length of all roads in the study area, have many disadvantages as not all of them can be accessible in all seasons, maintenance costs are high and they reduce the life span of vehicle, loss of valuable farm produce and loss of revenue. The neglect of road transport infrastructure has been obvious and the existing road transport is deficient and poorly accessible. In terms of the quality, a greater number of roads in rural areas are single lane, unpaved, earth road and lateritic in nature. Potholes, depressions and sagging surfaces are common features on the roads which impede farmers' distribution of farm produce and free flow of traffic. Paved and unpaved roads can negatively or positively impact on farmers' income. Agricultural produce provided at the right time, place and at the right quantity enhances farmers' income, thus enhancing farming capabilities and living conditions (See table 1below)

Table 1: Category of Road Access Condition

Variable	Frequency	Percentage (%)
Category of Road Access Condition:		
Paved	99	28
Unpaved	255	72
Total	**354**	**100**

Source: Data Analysis (2025).

Farmers' Income in the Study Area

In Table 2, 53.4% of the farmers have an annual monetary yield of N451,000 and above, 26.3% account for N251,000 – N350,000, 9.3% account for N151,000 – N250,000, then 8.5% account for N351,000 – N450,000 while the remaining 2.5% of the farmers have an annual monetary yield of N50,000 – N150,000.

Table 2: Farmers' Annual Income

Variable	Frequency	Percentage (%)
Monetary value of annual total yield:		
N50,000-N150,000	9	2.5
N151,000-N251,000	33	9.3
N251,000-N350,000	93	26.3
N351,000-N450,000	30	8.5
N451,000 and above	189	53.4
Total	**354**	**100**

Source: Data Analysis (2025).

Relationship between Existing Rural Road Transport Infrastructure and Farmers' Income

H_{o1}: There is no relationship between existing rural road transport infrastructure and farmers' income in the study area.

Pearson Product Moment Correlation Coefficient (PPMCC) was used to test the relationship between existing rural road transport infrastructure and farmers' income. Farmers' income is proxy with annual monetary yield, while existing rural road transportation infrastructure is proxy with the category of road access condition for farmers. Meanwhile, the critical p – value between category of road access condition for farmers and annual farmers' income is 0.000 which is lower than p = 0.05. This implies that the null hypothesis which states that there is no relationship between existing rural road infrastructure and farmers' income is rejected and the alternate hypothesis which states that there is relationship between existing rural road infrastructure and farmers' income is accepted at 0.05 level of significance.

Table 3 revealed that the Pearson Correlation value between category of road access condition and monetary value in annual total yield is 0.579. This implies that there is

moderate correlation between category of road access condition for farmers and annual monetary yield in naira in the study area. Hence, the better the condition of road access for farmers, the higher the annual monetary yield accruable to the farmers. This is consonance with the findings of Abdulraheem *et al.,* (2021); Haiyan Lu *et al.,* (2023) that provision of adequate rural transportation facilities influences reduction of transport cost, enhances farmer's income and stimulates desire and will to travel. Thus, enhancing economic growth and improving accessibility to various places of economic importance. It has also become evident that availability of good rural road will result to decrease in food prices because of reduced distribution cost, and this will impact positively on poverty amelioration and thus lead to the achievement of the government's effort on food security strategy.

Table 3: Correlation Analysis of the Relationship between Rural Road Transport Infrastructure on Farmers'Income.

Variables		**CRAC for farmers**	**MV**
Category of Road Access Condition	Pearson Correlation	1	.579**
	Sig. (2-tailed)		.000
	N	354	354
Monetary Value	Pearson Correlation	.579**	1
	Sig. (2-tailed)	.000	
	N	354	354

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Data Analysis (2025).

Conclusion

This study has been able to ascertain the relationship between existing rural road transport infrastructure and farmers' income in Osun State farm settlements. The study was conducted in all the nine farm settlements in Osun State. Cross sectional survey research design was used to correlate rural road transport infrastructure and farmers' income in Osun State farm settlement, three thousand and one hundred farmers were selected for the study (3,100) copies of the questionnaire were administered on the farmers in the farm settlements. The instrument for data collection was the questionnaire and the interview schedule. The questionnaire was divided into sections to elicit information on conditions of access roads and farmers income in the studied area. While the uneducated respondents were interviewed based on the questions contained in the questionnaires.

Data generated were analyzed using both descriptive and inferential statistics. Descriptive statistics such as frequencies and percentages. While inferential statistics

such as Pearson Product Moment Correlation Coefficient (PPMCC) was used to examine the relationship between existing rural road transport infrastructure and farmers' performance(income) in the studied area.

In Table 2, 53.4% of the farmers have an annual monetary yield of N451,000 and above, 26.3% account for N251,000 – N350,000, 9.3% account for N151,000 – N250,000, then 8.5% account for N351,000 – N450,000 while the remaining 2.5% of the farmers have an annual monetary yield of N50,000 – N150,000.

The result of the Pearson Product Moment Correlation Coefficient shows that there exists a relationship between existing rural road infrastructure and farmers' performance (income) in the study area with $r = 0.579$, at $p < 0.05$ level of significance. The study concluded that road conditions influences farmers' performance(income). Hence, it became pertinent to recommend that government and its various developmental agencies like Osun Rural Access Mobility Programme (O – RAMP) should improve on roads networks connectivity in the farm settlements and upgrade them to paved road surfaces where they are strategically needed within the farm settlements.

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