International Journal of Agricultural Science, Research and Technology in Extension and Education Systems (IJASRT in EESs)
Available online on: http://ijasrt.iau-shoushtar.ac.ir
ISSN: 2251-7588 Print
ISSN: 2251-7596 Online
2025: 15(4): 241-247
10.71505/

Received: 20 May 2025
Reviewed: 01 August 2025
Revised: 16 August 2025
Accepted: 11 September 2025

The Role of Road Transportation in the Marketing of Agricultural Produce among Farmers in Ekiti State, Nigeria

Olagunju O. O.[1]*, Oludipe K. O.[2], Toluwase, S. O. W [2]
[1]*Department of Agricultural Extension and Rural Development, Faculty of Agriculture, Adekunle Ajasin University, Akungba-Akoko, Ondo State, Nigeria*
[2]*Department of Agricultural Economics and Extension Services, Faculty of Agriculture, Ekiti State University, Ado - Ekiti, Ekiti State, Nigeria*
[*]*Corresponding Author Email: oluwatoyin.olagunju@aaua.edu.ng*

Abstract

This study investigates the pivotal role of road transportation in the marketing of agricultural produce among farmers in Ekiti State, Nigeria. Road transportation is a critical infrastructure that facilitates the movement of goods from rural agricultural areas to urban markets, thereby linking producers to consumers and enhancing market accessibility. Multi-stage sampling techniques were used to select ten (10) respondents from each of the twelve communities across the three local government areas with the aid of structured interviews. Descriptive statistics and Multiple regression techniques served as the main method of data analysis. The study's findings uncovered a positive influence of road quality, road provision and maintenance, mode of transportation, and age and a negative influence of the annual income of farmers in the study area. The research found that the road network has a big impact on the marketing of agricultural produce in Ekiti State. Based on the result of the study it was recommended that adequate logistic services that will reduce quantitative and qualitative losses should be made available to marketers by the government as this will help to reduce post-harvest losses, deterioration in quality, and transportation problems facing marketers in the study.

Keywords
Marketing, Agricultural produce, Farmers, Road transportation

1. Introduction

Nigeria's economy is still based mostly on agriculture, which generates a large amount of the country's GDP and employs a sizable percentage of its labour force (Oyaniran, 2020). Agriculture is essential to maintaining lives and promoting economic progress in Nigeria (Akintayo *et al.*, 2022). However, the efficient marketing of agricultural produce is a persistent challenge that is frequently hampered by inadequacies in infrastructure, with transportation infrastructure being a prominent example (Kaiser & Barstow, 2022). Despite the state's fertile soil and conducive climate for agriculture, insufficient transportation infrastructure has made it difficult to move agricultural goods from farms to markets, which hurts market accessibility, lowers farmer profit margins, and impedes overall economic development (Wudad *et al.*, 2021).

Transportation stands out as one of the most important variables impacting agricultural marketing (Abdulraheem *et al.*, 2021; Thakur *et al.*, 2023). Transportation networks' efficacy and efficiency have a significant impact on how easily agricultural products may reach markets, which in turn affects market dynamics, pricing, and farmers' lives (Woodhill *et al.*, 2022). Understanding the significance of road transportation in aiding the selling of agricultural output becomes crucial in the setting of Ekiti State, where agriculture is the predominant industry (Adelugba, 2020). According to Okeke *et al.* (2023), Nigeria's road network is the foundation of the nation's transportation infrastructure, carrying over 90% of all freight and passenger traffic. Nevertheless, although playing a vital role in the state of Ekiti, the road transportation industry suffers a number of difficulties, including poor road maintenance, inadequate road infrastructure, and traffic, all of which raise transportation costs and make it more difficult to deliver agricultural products on time (Adepoju, 2021).

Furthermore, as the world community continues to struggle with the pandemic's effects, it becomes imperative to investigate novel solutions and strategies to improve the effectiveness and dependability of road transportation in support of the marketing of agricultural produce in Ekiti State. The COVID-19 pandemic has further highlighted the vulnerabilities within the agricultural supply chain, highlighting the need for resilient transportation systems capable of adapting to unforeseen disruptions (Agrawal *et al*., 2023; Kashem *et al*., 2024). The importance of tackling transportation issues in improving the sale of agricultural products in Ekiti State has been highlighted by recent research. Transportation limitations were noted as one of the main causes of post-harvest losses and a barrier to agricultural goods reaching larger markets in a study released by the Ekiti State Ministry of Agriculture and Rural Development in 2023. Furthermore, a poll carried out in 2022 by the Ekiti State Farmers' Association found that more than 70% of farmers saw inadequate road infrastructure as a significant barrier to successfully distributing their crops.

Nigeria has enormous potential for both economic expansion and food security through its agricultural sector. Even yet, there is still a great deal of difficulty in effectively selling agricultural products (Edafe *et al*., 2023). The condition of the infrastructure supporting road transportation is one of the key elements affecting the sale of agricultural products (Adelugba, 2020). In Ekiti State, road transportation plays a complicated and diversified role in the selling of agricultural goods. Reduced profitability for farmers and other stakeholders throughout the agricultural value chain, substantial post-harvest losses, and restricted market access are all caused by subpar road networks, inadequate transportation facilities, and ineffective logistical systems (Oluwasusi & Adeyemo, 2021).

Moreover, the consequences of insufficient road transportation go beyond financial ones and also touch social and environmental domains (Agbigbe, 2016). In addition to impeding economic growth, higher transportation costs, product delivery delays, and restricted market accessibility further worsen food insecurity and complicate rural development initiatives (Baek, 2016). Although many parts of Nigerian transportation infrastructure and agricultural marketing have been the subject of research, there is still a lack of knowledge on the particular potential and problems associated with the use of road transportation for the selling of agricultural output in Ekiti State. In addition, new empirical data and analysis are required to guide the creation of policy and intervention plans due to the dynamic nature of infrastructure development and evolving agricultural practices.

In light of this, this study aims to investigate the many ways that road transportation contributes to the marketing of agricultural products in Ekiti State, Nigeria. Through an examination of current patterns, obstacles, and prospects in the transportation domain, this study seeks to offer significant perspectives and suggestions to decision-makers, interested parties, and professionals concerning the efficacy and efficiency of agricultural marketing procedures. In Ekiti State, Nigeria, road transportation and agricultural marketing have complex interactions that this study aims to explore. This study intends to give insights that can influence policy interventions, infrastructural investments, and strategic efforts targeted at improving the marketing efficiency of agricultural commodities by looking at current changes, difficulties, and possibilities. This study, which focuses on Ekiti State specifically, aims to add to the body of knowledge already available on agricultural marketing and transportation dynamics in Nigeria through a quantitative analysis. There is a need therefore to examine the role of road transportation in the marketing of agricultural produce in Ekiti State, Nigeria. The study objectives are to:

i. describe the socio-economic characteristics of the respondents;
ii. determine the conditions of a road transportation system that affected the marketing of agricultural produce;
iii. examine the factors that contributed to inadequate road transportation in the marketing of agricultural produce in Ekiti State

identify the constraint to effective road transportation of agricultural produce in Ekiti State.

2. Materials and Methods

The study was carried out in Ekiti State, Nigeria, with the study population consisting of farmers who grow arable crops in the study area. Three (3) local government areas: Irepodun/Ifelodun, Oye, and Ise-Orun were purposively sampled in stage one of the multi-stage sampling procedure because they have inadequate rural road networks in Ekiti State. In stage two, a total of twelve (12) communities were selected at random from the chosen local government, four (4) of which were known to have a poor road transportation network. Ultimately, out of the twelve (12) communities, ten (10) respondents were randomly selected making a total of one hundred and twenty (120) respondents. Descriptive statistics like frequencies, percentages, and means were utilized to examine the data that was gathered from the respondents, and inferential statistics were also employed. The regression model is specified mathematically as:

$MAP = f(RQ, RT, RM, MT)$ .....*1*.

Econometrically, the regression Analysis is specified as:

$MAP = \alpha_0 + \beta_1 \mathrm{RQ} + \beta_2 \mathrm{RT} + \beta_3 RM + \beta_4 MT + \varrho_t$

Where: *MAP* = Marketing of Agricultural Produce; *RQ*= Road Quality; *RT*= Road Traffic; *RM*= Road Maintenance; *MT*= Mode of Transportation; $\varrho_t = \mathrm{error\ term}; \alpha_0 = \mathrm{Control}\ ;\ \beta_1 - \beta_4$

3. Results and Discussion

3.1 Socio-economic characteristics of respondents

Table 1 shows that the average age of farmers in Ekiti State is 42 years old, with almost half (34.1%) falling between the ages of 41 and 50. Merely 3.3% of them were older than 60 years old. This demonstrates that the respondents were within the economically engaged and productive age range and were comparatively young, making them qualified to sell agricultural products. This suggests that the majority of young people were quite quick to participate in marketing initiatives in the research area. This result is consistent with that of Falaye et al. (2022), who found that young people were more likely than older people to be capable, industrious, resilient, and able to handle the demands of marketing activities. Just 28.4% of farmers were women, and males (71.6%) made up the majority of farmers. According to this distribution, males are more likely than women to patronise agricultural produce. In contrast to what can be found in Sub-Saharan Africa, where roughly 50% of females dominated the active farming activities. This result shows a higher percentage of males compared to females, reflecting the fact that the study area has more male-dominated farmers in terms of crop production (FAO, 2011; Olagunju, 2022). There may be fewer women farmers than men because they have less access to resources and decision-making capacity (Pionce-Gutierrez, 2016; Olagunju & Akinbile, 2020).

Similarly, the results revealed that while 16.6% of the respondents were single, a significant portion of them (72.5%) were married. whereas 2.5% are divorced and 8.4% are widowed. The fact that a higher proportion of them are married suggests that marketing agricultural goods is not hampered by marriage. According to Table 1, over half of the farmers (63.4%) have university education, while 26.6% have secondary education, 7.5% have primary education, and 2.5 have no formal education. The majority of respondents appear to have some degree of education, which may be advantageous for marketing and consumer support of agricultural products. According to Ninh (2020), education helps farmers in Vietnam acquire, interpret, and make sense of information. This helps them use the knowledge more effectively and find relevant answers to problems related to production, markets, and funding. Table 1 also displays the farmers' major occupation. Of them, 35.5% were involved in trading, while nearly half (47.5%) were mostly involved in farming. This suggests that most of the respondents were active in farming and that the majority of them were probably interested in selling agricultural products.

The survey also discovered that farmers had 8.4 years of experience on average. 80.8% of them have fewer than ten years of experience. According to the results, the respondents were not recent arrivals in the agricultural produce marketing industry. This suggests that a sizable portion of the studied farmers had the agricultural expertise and knowledge to effectively manage the consequences of transportation. This is consistent with the findings of Thakur et al. (2023), who found that farmers' preferences for various marketing channels were influenced by factors such as farm income, farm experience, market intelligence, and distance to the market. The farmers' average household size was 4.6, and most of them (70.8%) had between 4 and 6 households. Furthermore, a sizable portion (44.1%) of farmers inherited the land they utilized for farming, whereas 30.0% and 21.6%, respectively, rented or bought the property used for farming. This suggests that most farmers inherited their land, which would lower their cost of production in comparison to those who pay rent annually, which has a detrimental impact on their revenue.

Regarding the method and effectiveness of transportation, all farmers (100%) marketed their agricultural products by road, and most of them (97.5%) said that using the road for transportation was inefficient. This suggests that a significant portion of farmers' profits was lost to transportation because of the poor quality of the roads in these areas. This conclusion was in line with the findings of Ogunleye et al. (2018) and Olagunju (2022), who verified that lower transportation costs would boost rural demand and raise rural income due to improved roads. A 10% significant improvement in the status of the roads results in a 12% rise in agricultural production output and a 2.2% increase in total family income. This shows how road quality has significantly impacted productivity and revenue.

Table 1. Distribution of respondents based on their selected socio-economic characteristics

Selected socio-economic characteristics	Frequency (n=120)	Percentage	Mean
Age (Years)			
≤ 30	26	21.6	
31-40	27	22.5	
41-50	41	34.1	41.9
51-60	22	18.3	
> 60	4	3.5	
Gender			
Male	86	71.6	
Female	34	28.4	
Marital status			
Married	87	72.5	
Single	20	16.6	
Divorced	3	2.5	
Widowed	10	8.4	
Educational level			
No formal education	3	2.5	
Primary education	9	7.5	
Secondary education	32	26.6	
Tertiary education	76	63.4	
Primary occupation			
Farming	57	47.5	
Trading	42	35.5	
Artisan	8	6.6	
Transporter	13	10.4	
Farming experience (Years)			
≤ 10	97	80.8	
11-20	12	10.0	8.4
21-30	6	5.0	
> 30	5	4.2	
Household size			
1-3	24	20.0	
4-6	85	70.8	4.6
> 6	11	9.2	
Means of land acquisition			
Inheritance	53	44.1	
Purchase	26	21.6	
rent/lease	36	30.0	
Communal	5	4.3	
Mode of transportation			
Road	120	100	
Efficiency of road transportation			
Efficient	3	2.5	
Not efficient	117	97.5	

3.2 Factors that contributed to inadequate road transportation in the marketing of agricultural produce

With an F-statistic of 14.90 and a p-value of 0.000, Table 2's analysis demonstrates the linear model's goodness of fit. Additionally, the R^2 value of 0.625 indicates that only road quality, road provision and maintenance, age, yearly income, and mode of transportation could account for 62.5% of variations in the marketing of agricultural produce. The remaining 37.5% of variations were caused by variables outside the regression model that also had an impact on the marketing of agricultural produce in the study area. This indicates that, out of the 7 independent variables, 5 have a considerable impact on the selling of agricultural output. At the 10 percent significance level, road quality has a positive effect on the marketing of agricultural produce. This suggests that in the research area, there is a significant relationship between the sale of agricultural produce and the quality of the roads. This implies that agricultural produce may be marketed and sold more successfully the better the roads are.

Table 2. Regression analysis for factors that contributed to inadequate road transportation in the marketing of agricultural produce

Variable	Parameters	Coefficient	Std err	T-ratio
Road quality	X_1	0.6780*	0.3865	1.75
Road traffic	X_2	-0.2391	0.3110	-0.77
Road provision and maintenance	X_3	0.3071***	0.1089	2.82
Mode of transportation	X_4	0.5835***	0.1747	3.34
Age	X_5	0.0325**	0.0145	2.23
Annual income	X_6	-0.6861**	0.3458	-1.98
Household size	X_7	0.3014	0.3155	0.96
Constant	X_0	22.323	0.3143	71.01
Diagnostics statistics				
R^2=0.625				
F statistic=14.90				
N=120				

*Significance at 10%, **Significant at 5%, *** Significance at 1%

Similarly, the provision and maintenance of roads have a favourable and substantial influence at 1%, suggesting that improved road conditions and maintenance aid in the marketing of agricultural produce. The importance of choosing the appropriate mode of transportation for the marketing of agricultural goods is shown by the fact that the mode of transportation is also favourably important at the 1% level. At the 5% level, age is positively significant. This suggests that an individual's influence on the selling of agricultural goods increases with age. Conversely, the 5% negative significance threshold for yearly income suggests that the marketing of agricultural products declines as personal income rises. This can be the result of changing consumer buying habits or preferences as income rises. In a separate research, Abdulraheem et al. (2021) reaffirmed the impact of good roads on farmers' incomes and the selling of their agricultural products. The majority of farmers found that poor road conditions decreased their revenue per capita when selling their output.

3.3 Constraints to effective road transportation of Agricultural produce

The several constraints to efficient road transportation of agricultural products in the research area as shown in Table 3. Inadequate logistic services were the majority's (99.1%) main constraints. Produce transportation from the site of production to the place of purchase is a component of logistics services. The marketing of agricultural goods is impacted by poor road mobility, which makes it difficult for logistic services to reach remote rural areas far from the market. Farmers and producers can benefit from greater access to markets, higher pricing for their produce, and more efficient produce transportation and storage through the construction of new highways and logistical services. With 49.1%, the existence of intermediaries placed 5th in this criterion. By buying commodities from farmers and reselling them to retailers or wholesalers, middlemen are sometimes referred to as mediators. The fact that intermediaries frequently pocket a sizable portion of the proceeds from the sale of agricultural goods is one of the main problems with them. Farmers may have less money as a result of other costs like transportation. Reducing the role of intermediaries or finding ways to make their participation more efficient may be important to increase the efficacy of road transportation of agricultural commodities. Another constraint that came in 4th rank with 64.1% was the cost of transportation. Farmers may find it challenging to efficiently and affordably deliver their goods to market as a result. The price of gasoline, upkeep expenses, and the distance to be covered are just a few of the variables that can affect the total cost of transportation. The general cost of transportation is also influenced by the state of the roads. Transporting agricultural products can become more expensive and challenging when roads are in poor condition. This study aligns with research conducted by Shekhar *et al.* (2023), who highlighted that farmers disclosed that agricultural produce is lost as a result of incorrect handling and storage, insect infestation, inadequate storage, poor logistics, and a lack of transportation infrastructure.

Table 3. Constraints to effective road transportation of Agricultural produce

Constraints	Frequency	Percentage	Rank
Inadequate logistic services	133	99.1	1st
Lack of service	95	79.1	3rd
Cost of transportation	77	64.1	4th
Poor market infrastructure	96	80	2nd
Presence of a middleman	59	49.1	5th
Others	59	49.1	5th

*Multiple responses

4. Conclusion and Recommendations

The results demonstrated the need of taking these aspects into account when developing marketing strategies for agricultural goods. They also showed the positive and substantial influence of road quality, road provision and maintenance, age, and method of transportation. Improved marketing results are a result of a better road network, efficient road maintenance, and suitable transportation alternatives. Age and income considerations can also give a more complete picture. The study's findings also suggest that farmers who have access to more markets will be able to earn more income. That being said, it's important to note that while road traffic and household size were not found to have a significant impact on the marketing of agricultural produce, they are still relevant and play a part in the transportation and logistics of the agricultural industry as a whole.

The following recommendations are made, based on the findings of the study;

•Agricultural products may be delivered to markets more swiftly and effectively if road infrastructure is maintained and improved. This might involve building new roads to increase accessibility as well as doing routine maintenance on the ones that already exist.

•Promoting the use of environmentally friendly forms of mobility including bicycles, electric cars, and public transit can assist in lowering the agriculture sector's carbon footprint.

•Investing in cold storage facilities and other logistical infrastructure created especially for the agriculture industry may help guarantee that the product is transported and kept in a way that maintains its quality and freshness, increasing its market value.

•Farmers may raise the value of their food and boost their revenue by receiving information and training on how to package, sell, and enhance the quality of their produce.

References:

1. Abdulraheem, M. I., Adefare, T. E., Okpakhalu, L. D., Iderawumi, M. A., Ajetunmobi-Adeyeye, R. I., Oyetoro, B. A., ... & Obene, S. A. (2021). Impact of Transportation on Agricultural Practices and Production in Rural Areas: Implication for Sustainable Food Security. Biomedical Journal of Scientific and Technological Research, 35(2), 27475-27479.

2. Adelugba, I. A. (2020). Effect of Road Network on The Marketing of Agricultural Produce in Irepodun/Ifelodun Local Government Area Of Ekiti State, Nigeria. IJO-International Journal of Business Management (ISSN 2811-2504), 3(04), 01-10.

3. Adepoju, O. O. (2021). Analysis of road transportation infrastructure construction and maintenance for sustainable development in South-Western Nigeria. Journal of Sustainable Development of Transport and Logistics, 6(1), 49-58.

4. Agbigbe, W. A. (2016). The impact of transportation infrastructure on Nigeria's economic development. Walden University.

5. Agrawal, N., Sharma, M., Raut, R. D., Mangla, S. K., & Arisian, S. (2023). Supply Chain Flexibility and Post-pandemic Resilience. Global Journal of Flexible Systems Management, 24(1), 119-138.

6. Akintayo, O. I., Oyedokun, M. O., & Akindele, M. O. (2022). Agricultural productivity and access to market among farmers in Ekiti State, Nigeria. Agro-Science, 21(2), 79-84.

7. Baek, D. (2016). The effect of public transportation accessibility on food insecurity. Eastern Economic Journal, 42, 104-134.

8. Edafe, O. D., Osabuohien, E., Matthew, O., Olurinola, I., Edafe, J., & Osabohien, R. (2023). Large-scale agricultural land investments and food security in Nigeria. Heliyon, 9(9),89-95.

9. FAO (2011): The state of food and agriculture 2010–11. Women in agriculture: Closing the gender gap for development. https://www.fao.org/publications/sofa/2010-11/en/

10. Kaiser, N., & Barstow, C. K. (2022). Rural transportation infrastructure in low-and middle-income countries: a review of impacts, implications, and interventions. Sustainability, 14(4), 2149.

11. Kashem, M. A., Shamsuddoha, M., & Nasir, T. (2024). Digital-Era Resilience: Navigating Logistics and Supply Chain Operations after COVID-19. Businesses, 4(1), 1-17.

12. Okeke, D. C., Obasi, O., & Nwachukwu, M. U. (2023). Analysis of road transport response to COVID-19 pandemic in Nigeria and its policy implications. Transportation Research Record, 2677(4), 851-864.

13. Olagunju, O., & L.A. Akinbile. 2020. Farmers' perceptions of the effect of rural transportation systems on farming income in Ondo State, Nigeria. Sarhad Journal of Agriculture, 36(3), 985-994.

14. Olagunju, O. (2022). Impact of rural transportation networks on farmers' income in Ilaje Local Government Area of Ondo State, Nigeria. Agricultura Tropica et Subtropica, 55(1), 9-18.

15. Oluwasusi, O. J., & Adeyemo, A. O. (2021). Effects of Road Infrastructure on Plantain Production among Farmers in Ekiti Southwest Local Government Area of Ekiti State, Nigeria. ABUAD International Journal of Natural and Applied Sciences, 1(1), 39-46.

16. Oyaniran, T. (2020, September). Current state of Nigeria agriculture and agribusiness sector. In AfCFTA Workshop Retrieved from https://www. pwc. com/ng/en/assets/pdf/afcftaagribusiness-current-state-nigeria-agriculture-sector. pdf 14pp.

17. Pionce‐Gutierrez E. G. (2016): Agricultural performance in northern Ghana: a gender decomposition. M.Sc. thesis, Kansas State University, Manhattan, USA.

18. Ninh, L. K. (2021). Economic role of education in agriculture: Evidence from rural Vietnam. Journal of Economics and Development, 23(1), 47-58.

19. Shekhar, S., Singh, R., & Khan, S. (2023). Barriers to Minimisation of agri-products wastage through Optimizing logistics in India: An ISM modelling approach. Heliyon, 9(11), 1-18.

20. Thakur, P., Mehta, P., Devi, C., Sharma, P., Singh, K. K., Yadav, S., ... & Mishra, P. (2023). Marketing performance and factors influencing farmers choice for agricultural output marketing channels: the case of garden pea (Pisum sativum) in India. Frontiers in Sustainable Food Systems, 7, 1270121.

21. Woodhill, J., Kishore, A., Njuki, J., Jones, K., & Hasnain, S. (2022). Food systems and rural wellbeing: challenges and opportunities. Food Security, 14(5), 1099-1121.

22. Wudad, A., Naser, S., & Lameso, L. (2021). The impact of improved road networks on marketing of vegetables and households' income in Dedo district, Oromia regional state, Ethiopia. Heliyon, 7(10), 158.