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Sustainable Transportation Solutions for Enhancing Periodic Market Patronage in Ado Ekiti, Nigeria

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Abstract

Road, train, boat, plane, or pipeline travel moves people, goods, and services. A strong economy and government require reliable transportation. This study examines transport's role in socio-economic development and market activity. Multistage sampling surveyed 400 Ado Ekiti residents from 25 towns and villages. The study assessed road conditions, travel distances, waiting times, transportation, and market patronage through questionnaires and physical surveys. According to the study, road conditions affected transport costs, rural market patronage, and periodic market commodity prices. The results show that road conditions strongly influence periodic market patronage. Road infrastructure improves market-goers' mobility and lowers transport costs, increasing market attendance. Poor roads decrease market patronage, raise transport costs and lower commodity prices. The study supports the idea that rural socio-economic development depends on transportation. In addition, the research emphasises the importance of road maintenance in rural transportation system efficiency. This research illuminates the role of road transport in rural market activities and emphasises the need to invest in rural road infrastructure to boost economic growth and reduce rural poverty. It also highlights the relationship between road conditions, market patronage, and periodic market commodity prices.

Keywords: Transportation, Sustanable Development, Market Patronage, Ado Ekiti

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Introduction

People, products, and services can be transported by transport modes like roads, trains, boats, planes, and pipelines (Ogunleye and Ibitoye 2005). Transport plays a crucial part in a region's economy and government growth. It is the primary artery connecting communities and society's disparate sections. It has also been acknowledged internationally for its critical role in driving change in economies from the industrialised to the developing globe (Ogunleye 2011). Providing secure, reliable, and reasonably priced rural transport infrastructure and service is crucial to easing the way for people living in remote areas to reach urban centres for necessities like groceries, medical care, and higher education (Research for Community Access Partnership, 2017).

Adebayo, Oluwaseyi, and Olalekan (2017) observed that as a society expands in population and functions, interaction between its components becomes essential,

necessitating effective and efficient transportation systems. In the words of Munby (1968), "There is no escape from transport even in the most remote and least developed of inhabited regions." Transportation is essential to human activity, forming the basis of all socio-economic development. A sound transport system is critical to support economic growth and development. There seems to be no other type of development that can drastically change developing nations' economic and social conditions except transport". Recognising the importance of transportation to the socio-economic development of any society and desiring to encourage the rapid socio-economic development of rural areas (Ahmed, Haruna, Mukhtar, and Khalifa, 2018) is essential in the physical and economic development of towns and cities worldwide. Adebayo et al. (2017) concluded that Nigeria's Federal, State, and Local Governments have been working towards improving and developing the transport system. For instance, in the first, second, third, and fourth National Development plans, 9%, 23%, 22%, and 15% of the total capital outlay went to the transport sector. These investments in the industry are not only aimed at increasing the level of rural-urban accessibility but also relate to the accessibility of rural people to the various public facilities located in different parts of the rural environment.

Transport is inherently central to the development of nations, and it is not only a necessity of life but has a resultant effect on all aspects of our existence (Oyesiku, 2002). it also provides access to goods and services as well as providing access to untapped resources in the rural areas. Transport Is also fundamental in breaking isolation and thus strengthening individuals' capital base (World Bank, 2002). transport opens up rural areas for development and easy transportation of rural resources and raw materials to places of demand in urban centres. The poor state of roads in rural communities has become an issue of great concern; this has rendered the rural area unattractive and less economically viable. Due to the increasing pace of urbanisation, especially in developing countries, due to rural-urban migration, many people still reside in rural areas (Olawepo, 2002). rural areas have remained largely inaccessible, which has affected rural productivity; moreso, perishable goods are wasted, and other food crops are left destroyed due to rural transport problems. As a result, the prices of agricultural products are greatly affected due to the deteriorating condition of rural roads.

Similarly, poor transportation in rural areas poses a significant challenge to rural development efforts in Nigeria as it has continued to make most of the rural areas isolated from the mainstream of modern societies (Aloba, 1986; Stutz, 1976). This poor transportation has led to low productivity, low income, a decline in rural residents' standard of living, and a high poverty rate.(Adesanya, Philips and Titilayo, 2000) Observed that rural travel and transport in most rural areas in Nigeria still have great difficulties, compounding and worsening the problem of rural productivity and rural poverty. Studies have been conducted on the nature and characteristics of rural accessibility. The problems of low traffic volumes on rural roads coupled with periodic variations and sharp seasonality in demand for transport are factors contributing to the apparent neglect of roads in rural areas by most of the state governments in Nigeria. Filani (1993) observed that motorable roads in rural areas in Nigeria are primarily of unpaved surfaces, narrow widths, circuitous alignment, and low-quality bridges. In some instances, the roads are characterised by potholes, while others are unpaved; unsurfaced roads are nearly impassable, especially during the rainy season when vehicles become mired in mud or when the flood washes away makeshift bridges of cut-free tree trunks. In addition, some vehicles on rural roads are unlicensed and not roadworthy. They are typically sluggish, inconsistent, inefficient, and hazardous (Aloba, 1983).

The survey carried out by CBN indicated that most roads, especially in the southern and Eastern parts of the country, are in deplorable condition and require complete rehabilitation. The report documented that some roads were constructed over 30 years ago and have not been rehabilitated for once. It resulted in significant cracks (longitudinal and transverse)

depressions, broken donor bridges, and numerous potholes, making road transport slow and unsafe. The report further documented that in many of the roads, some part of the significant component of the streets had eroded off, putting the roads in near-passable conditions. of the roads require total rehabilitation, asphalt overlay, and reinstatement of the shoulder, filling of potholes and building of collapsed bridges. It also established that every transportation system generally consists of three main interrelated parts: the travel way, the vehicle, and the terminal facilities (Onokerhoraye and Omuta, 1977). it was observed that no transport system is complete without transport services. Therefore, transport services constitute a crucial element of rural transport. Starkey et al. (2002) state that rural road transport systems comprise transport infrastructure, operations (services), and users. The appropriate infrastructure, transport services, maintenance, and traffic management must exist for any transport system to function effectively.

Rural transportation has hindered rural development efforts in the country, resulting in some difficulties, including the isolation of many rural areas from larger settlements from which they can access higher-order socio-economic services. Low productivity, low income, and a decline in rural residents' standard of living contribute to a high rate of poverty (Aderamo and Magaji, 2010). Transportation challenges in Nigeria generally relate to providing access services at affordable rates. The work of Ovubude (2000) has shown that the movement of passengers and freight in rural areas of Nigeria is comparatively smaller than that of intra-urban movement. In rural areas, people travel less than their urban counterparts, which is not an easily affordable means of motorised public transport. While all these variables are available, this research looks at sustainable transportation solutions for enhancing periodic market patronage in Ado Ekiti, Nigeria.

Study Area

With its administrative centre in Ado-Ekiti and a total population of approximately 262,377 in 1977, the Ado-Ekiti region is one of the 299 Local Government areas created nationwide in 1976. Its geographical extent includes the Ado Local Government Area and the Irepodun/Ifelodun Local Government (the defunct Ekiti Central Local Government). In 1989, the central Local Government of Ekiti was split in two, creating the present-day Local Government Areas of Ado and Irepodun/Ifelodun. Physiographic units, drainage basins, climatic belts, vegetation, and human populations are all relatively consistent throughout the region. For administrative purposes, the territory around Ado-Ekiti is defined as the geographic area where the city serves as a social and economic hub. A region is defined as an area where the administration of the surrounding communities is centralised. Thus, the rural roads the surrounding towns and villages provide are how most of the state's agricultural products go to Ado township. Ado-Ekiti is found between coordinates located between latitudes 7°31 and 7°49^{1} North of the equator and longitudes 5°07^{1} and 5° 27^{1} east of the Greenwich meridian in Nigeria. As can be seen on the map, it is limited to the north by the LGAs of Ido-Osi and Oye, to the west by the LGAs of Ijero and Ekiti West, to the east by the LGAs of Gboyin and Ekiti East, and to the south by the LGAs of Ekiti South West, Ikere, and Ise-Orun (fig. 1)

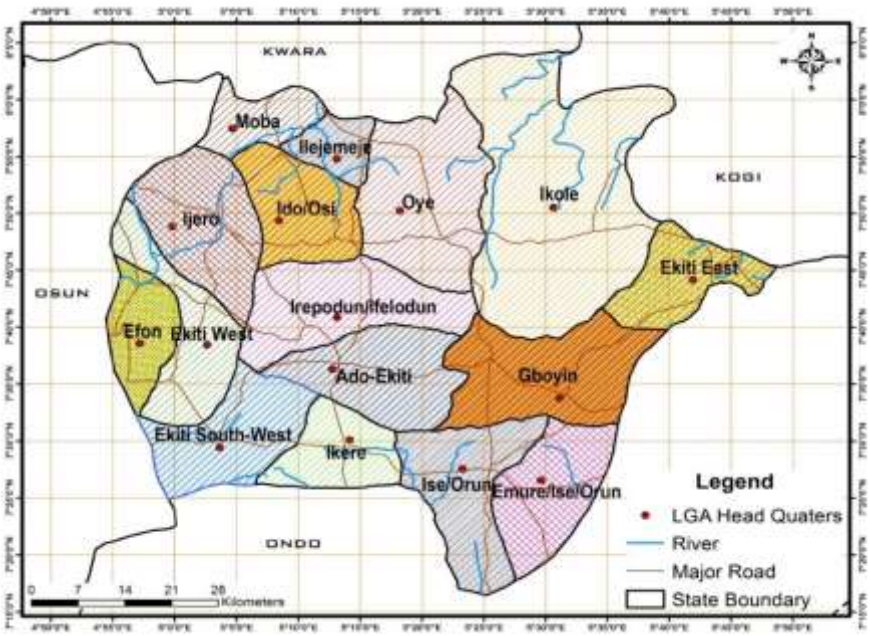

Figure 1: Map of Ekiti State
Source: Arc GIS (2019)

Methodology

This study was conducted with 400 participants from 25 different towns and villages, which were selected using a multistage sampling procedure. In the first stage, 25 towns and villages were chosen based on their commercial activities, cash and food crops such as cocoa, kola nut, and rice production, and access to healthcare facilities. The second stage divided these 25 locations into three categories based on their population size: large, medium, and low. The high-population towns included Igede, Iyin, Iworoko, and Igbemo, while the medium-population towns were Awo, Eyio, Iropora, Esure, Are, Afao, Odo-uro, and Igirigiri. The low population villages consisted of Aroto, Igimokogo, Idege, Ita-Eku, Elemi, Iketun, Ejigbo, Araromi-obo, Araromi Iyin, Obaiduajola, Erifun, Ile-Ona, and Ago-Aduloju. Finally, in the third stage, a simple random sampling technique was used to distribute questionnaires to 38 participants in the high-population towns, 18 in the medium-population towns, and 8 in each of the 13 purposively selected villages.

The physical survey method was used to collect data. A biological survey of the road network characteristics of various categories of roads (Federal, state, and local) was done. Actual measurements were taken at intervals; road surfaces, potholes, bends, condition of drainages, culverts and bridges, and other transport infrastructures such as bus stops and pedestrian walkways were noted and recorded. Four hundred copies (400) of the questionnaire were administered to respondents, while 396 were retrieved to ensure 99% returns, all good and used for analysis. The data collected were processed and analysed using the Statistical Package for Social Sciences (SPSS) version 23. The results were presented using tables, pie charts, bar graphs, frequencies, and percentages. Spearman Rank Order Correlation was statistically used to test the hypothesis to show whether there exists any relationship between the condition of road networks and patronage of periodic markets.

Results and Discussions

Impact of road transport system on the patronage of periodic markets in the study area

Table 1 presents the impact of the road transport system on the patronage of periodic markets in the study area. The result reveals

that 163(41.2%) respondents travel 1 km – 2 km from home to regular markets around them, 44(11.1%) travel 2km-3km, 26(6.6%) travel 3km-4km, 10(2.5%) travel 4km-5km while 153(38.6%); representing the majority, travel 5km and above. Concerning the waiting time before getting a car/motorcycle to convey you to the market, 101(25.5%) indicated 20-30minutes, 20(5.1%) indicated 30-40 minutes, 40-50 minutes, and 50-60 minutes in each case, while 235 (59.3%), representing the majority indicated 60 minutes and above. It can be seen from the analysis above that the majority of the market men and women travel about two kilometres with their goods to the market. In contrast, a sizeable number of them travel long distances. The majority of them wait between 30 - 60 minutes before getting a means of transport to convey them to the market, which is primarily through motor cycles with few commercial cars, while some of them, especially those residing within an average distance of two kilometres do result to head loading and tracking having waited for a long time.

Table 1: Impact of road transport system on the patronage of periodic markets in the study area

S/N	ITEMS	RESPONSES	F	%
1	How far do you travel from your homes to the periodic markets around you?	< 1km	-	-
		1km-2km	163	41.2
		2km-3km	44	11.1
		3km-4km	26	6.6
		4km-5km	10	2.5
		5km and above	153	38.6
2	How often do you travel to periodic markets?	Daily	71	17.9
		Two times a week	107	27.0
		Every week	104	26.3
		Two times in a month	104	26.3
		Every month	63	27.0
			51	17.9
3	What is the duration of time you normally wait before getting a car/motorcycle to convey you to the market	< 20 minutes	-	-
		20-30minutes	101	25.5
		30-40minutes	20	5.1
		40-50minutes	20	5.1
		50-60minutes	20	5.1
		60minutes and above	235	59.3
4	Your means of transport to periodic markets is	Walking	109	27.5
		Bicycle	29	7.3
		Motorcycle	192	48.5
		Commercial bus	25	6.3
		Personal car	41	10.4

Table 2 presents the impact of the road transport system on the patronage of periodic markets in the study area. The result reveals that 221(55.8%) respondents agreed that motorable roads facilitate easy movement of market men and women from rural areas to the market centres, 108(27.3%) strongly agreed, 39(9.3%) disagreed, 25(5.8%) strongly disagreed and 7(1.8%) undecided. (43.7%) respondents agreed that the condition of the roads determines the cost of transport to periodic market, 127(32.1%) strongly agreed, 65(16.4%) disagreed, 20(5.1%) strongly disagreed, and 11(2.8%) undecided. Whether bad roads reduce the level of patronage of periodic markets, 178(44.8%) agreed, 91(23%) strongly agreed, 96(24.4%) disagreed, 26(6.6%) strongly disagreed, and 5(1.3%) undecided. Whether rural roads need constant maintenance to be in good shape, 178(44.9%) agreed, 91(23%) strongly agreed, 96(24.2%) disagreed, 26(6.6%) strongly disagreed, and 5(1.3%) respondents were indifferent 202(51%) respondents agreed that rural roads need constant maintenance to be in good shape, 107(27%) strongly agreed,

48(12.1%) disagreed, 31(7.8%) strongly disagreed and 8(2%) undecided. (44.7%) respondents agreed that the price of commodities in the periodic markets is greatly affected by the condition of roads, 103(26%) strongly agreed, 69(17.4%) disagreed, 38(9.6%) strongly disagreed, and 9(2.3%) undecided. It is seen from the analysis above that the majority of the respondents believe that motorable roads will facilitate the easy evacuation of agricultural products; it can also be seen that when the condition of the road is bad, it will reduce patronage of market men and women and also increase transport cost, thereby affecting the prices of commodities in the market.

This study's findings corroborate his studies on markets, which noted that any market will grow due to improvements in transport facilities. It also explains that the cheapness of transport fuses markets, bringing together buyers and sellers. In conclusion, transport facilities, the market, and the people are important in socio-economic development. Mumby (1968) opined that there is no escape from transport, emphasising the importance of transport even in rural economies and development. Ibitoye (2017) also noted that periodic markets are very significant in the enhancement of economic activities for the development of a region.

Table 2: Impact of road transport system on the patronage of periodic markets in the study area

S/N	ITEMS	A	SA	D	SD	UND
1	Motorable roads facilitate easy movement of market men and women from rural areas to the market centers.	221 55.8%	108 27.3%	37 9.3%	23 5.8%	7 1.8%
2	The condition of the roads determines the transport cost to the periodic market.	173 43.7%	127 32.1%	65 16.4%	20 5.1%	11 2.8
3	Bad roads reduce the level of patronage of periodic markets	178 44.9%	91 23.0%	96 24.2%	26 6.6%	5 1.3%
4	Rural roads need constant maintenance to be in good shape	202 51.0%	107 27.0	48 12.1%	31 7.8%	8 2.0%
5	The price of commodities in the periodic markets is greatly affected by the condition of roads.	177 44.7%	103 26.0%	69 17.4%	38 9.6%	9 2.3%

Hypothesis Testing

Ho_1: There is no significant relationship between road conditions and patronage of periodic markets in the study area.

Hi_1: There is a significant relationship between the condition of the road and patronage of the periodic market in the study area.

Table 3 revealed a significant relationship between the road network condition and the periodic market patronage in the study area ($r=0.344$, $p<0.05$). The null hypothesis (H_o) is rejected, while the alternate hypothesis (H_i) is accepted. The correlation between the road network condition and patronage of periodic markets in the study area is low, positive, but statistically significant at 0.05 level.

The hypothesis was tested to know if there is a significant relationship between the condition of road networks and patronage of periodic markets. The Spearman Rank Order Correlation showed that the correlation coefficient value of $r = 0.387$ is low but positive and statistically significant at 0.05 level, which is an indication that there is a relationship between the condition of road transport, which is a means of conveyance of the market men and women and their luggage and the rate at which people patronise the periodic markets both within and outside the study area. This study's findings agreed with the Research for Community Access Partnership (2017) findings. Results of their study in Vietnam Statistically showed that rural roads are essential for economic growth and people's access to public services and markets. The study also noted that improvement in rural road networks and transport services are vital drivers of socio-economic development in a region.

The Research for Community Access Partnership (2017) findings established a connection between the condition of road networks and the rate at which the periodic markets are patronised. Results revealed that good rural road infrastructures and services promote connectivity and social cohesion and derive commercial activities and accessibility to social and economic facilities necessary to counteract poverty, isolation, and exclusion. The study also showed that access to markets and employment opportunities through better rural transport infrastructure and services is essential to generating rural income and reducing poverty.

It also corroborates the study of Tracey-White (2005), who finds that a lack of transportation facilities and the unavailability of good roads hampers mobility in rural areas. It canvasses the need to study how transport systems affect the marketing channels. Noted that length and time of journey, means of transport used and cost of transportation all affect the efficiency of marketing system. also pointed out that an improved transport reduces operating cost to vehicle users and provides more direct and cost-effective access to market and other public utilities. No wonder Rabirou et al. (2012), in their study in Nigeria, found out that if road quality improves, farmers and traders will have lower marketing costs and gain access to wider markets. They will experience little or no delay in moving their commodities and only record a few losses. The study, however, noted that improving rural roads alone is not enough and that there must be parallel improvement in other infrastructures like markets and schools

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Table 3: Spearman Rank Order Correlation showing the condition of road and patronage of the periodic market in the study area

Variable	N	Mean	SD	r	p
Condition of road	396	40.71	5.84		
Patronage of periodic market	396	64.78	7.47	0.344*	0.000

*p<0.05

Conclusion and Recommendations

In conclusion, this research underscores the critical role of road transport infrastructure in shaping the patronage of periodic markets in rural Nigeria, with a specific focus on Ado Ekiti. The study has revealed several key findings: The condition of road networks significantly influences the ease of movement for market-goers in rural areas. Good road conditions facilitate accessibility to periodic markets, while poor road conditions hamper transportation, leading to decreased patronage.

The state of rural roads is closely linked to the transport cost to periodic markets. Poor road conditions result in higher transport costs, affecting rural residents' affordability of reaching these markets. Bad road conditions have a detrimental impact on the level of patronage of periodic markets. Reduced accessibility due to road conditions leads to lower market participation, which, in turn, affects rural economic activity. Regular maintenance of rural roads is essential to ensure their sustainability and functionality. Neglecting road maintenance can result in deteriorating road conditions, increased transport costs, and decreased market patronage. The prices of commodities in periodic markets are significantly affected by the condition of road networks. Poor road conditions can lead to increased consumer prices and reduced profits for market traders.

Based on the research findings, several recommendations can be made to enhance the role of road transport in rural market activities:

i. Invest in Rural Road Infrastructure: Governments at various levels should prioritise investments in rural road infrastructure. Building and maintaining well-constructed roads will promote economic growth, reduce transportation costs, and improve market accessibility for rural residents.

ii. Regular Road Maintenance: It is essential to establish a system for regular road maintenance to prevent road deterioration. Timely

repairs and maintenance will ensure that rural roads remain in good condition, facilitating market access and economic activity.

iii. Transport Subsidies: Consider providing transport subsidies or incentives for rural residents, especially in areas with poor road conditions. This can help alleviate the financial burden of transportation to periodic markets.

iv. Market Development: Simultaneously invest in infrastructure development, such as upgrading market facilities, providing secure storage, and improving sanitation. This will complement efforts to enhance road transport.

v. Collaboration and Partnerships: Encourage collaboration between government agencies, local communities, and private sector stakeholders to address road infrastructure and market development in rural areas jointly.

vi. Education and Awareness: Conduct awareness campaigns to educate rural residents about the importance of well-maintained roads and their role in market patronage and economic development.

vii. Research and Data Collection: Continuously collect and analyse data on road conditions, market activities, and their economic impact. Research findings can guide policy decisions and resource allocation.

viii. Monitoring and Evaluation: Establish mechanisms for monitoring and evaluating the effectiveness of road infrastructure investments in improving market patronage and rural economic development.

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