

Socio-economic impacts of urban road dualization: Evidence from Ikare-Akoko, Nigeria

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Article history:

Received: April 28, 2025
1st Revision: August 29, 2025
Accepted: October 30, 2025

DOI:

[10.14254/jsdtl.2025.10-2.5](https://doi.org/10.14254/jsdtl.2025.10-2.5)

Abstract: *Purpose.* This study examines the socio-economic impacts of urban road dualization in Ikare-Akoko, Ondo State, Nigeria, focusing on accessibility, economic activities, and quality of life for residents and business operators along the dualized corridor. *Methodology.* A multistage sampling procedure was employed, selecting five quarters through purposive and systematic random sampling. Data were collected from 170 household heads using structured questionnaires and analyzed through descriptive and inferential statistics (SPSS). *Results.* Road dualization generated mixed outcomes: positive effects included direct employment (22.4%), enhanced economic development (37.1%), reduced travel time and costs, and improved access to markets. However, significant negative consequences emerged, including property loss (62.9%), business displacement (81.2% lost customers), increased distance to destinations (92.9%), and elevated environmental costs (52.4%). Chi-square analysis confirmed a statistically significant relationship between road dualization and economic activities ($\chi^2 = 40.2$, $p < 0.05$). *Theoretical Contribution.* This research contributes to urban transport geography and infrastructure development literature by demonstrating the dual nature of road dualization impacts in developing urban contexts, highlighting the need for integrated planning frameworks that balance infrastructure modernization with social equity. *Practical Implications.* Findings recommend complementary infrastructure development (shopping centers, utilities), improved urban planning standards to minimize property displacement, sustainable road maintenance policies, and public education programs on proper road usage to maximize socio-economic benefits while mitigating adverse effects.

Keywords: urban road infrastructure, transport accessibility, economic development, infrastructure impacts, urban planning, Nigeria

Sustainable Development Goals (SDGs): SDG 9: Industry, Innovation, and Infrastructure; **SDG 11:** Sustainable Cities and Communities; **SDG 8:** Decent Work and Economic Growth; **SDG 10:** Reduced Inequalities

1. Introduction

Transportation by road is an important mode of moving goods, services, animals and people across the different geographical location or points in order to enhance socio-economic and cultural activities among others. The transportation of goods and services from geographical location or points has become a viable and inseparable unit for survival both at the rural settings and urban centers. Transportation is defined as the mobility of goods and services along transportation corridor or route source. One fundamental fact is that transportation is an indispensable component of the economy that plays a major role in spatial relations between two locations. Hence, the inadequacy in transportation system hinders the necessity to maximally utilize the available natural resources, distribution of food and agricultural produce, hinders socio-economic integration between communities, supply, medical and other infrastructural facilities.

Ogunbodede and Ale (2015) efficient transportation creates valuable links between people at all level. Overtime, transportation has been and still playing a significant role in production and consumption of economic goods and services at different levels, which allows specialization of products to occur as well as the distribution of those products to take place at different levels. Transportation infrastructural development is undertaken to improve accessibility at a regional or urban level and to relieve traffic congestion in these areas, as such the necessity of road dualization cannot be over emphasized both at the developing and in the developed nations.

However, the effects of new roads or dualization of existing road in any particular area continues to have effects on the existing socio-economic activities of such area, these effects includes all-weather reliability, transportation costs, increased access to various land uses, employment opportunity which could be both direct (operations and maintenance of infrastructure) and indirect (surplus services and materials), better access to facilities and other social services, and strengthening of local economies activity by opening of new residential areas. Aderamo (2003) and Olubomehin (2012) noted that road network improvement and rehabilitation constitutes an important element in urban development as roads provide accessibility to the different land uses in the urban area. Thus, the proper functioning of an urban area depends on an efficient transportation network and general accessibility largely depends on transport facilities.

1.1. Statement of the problem

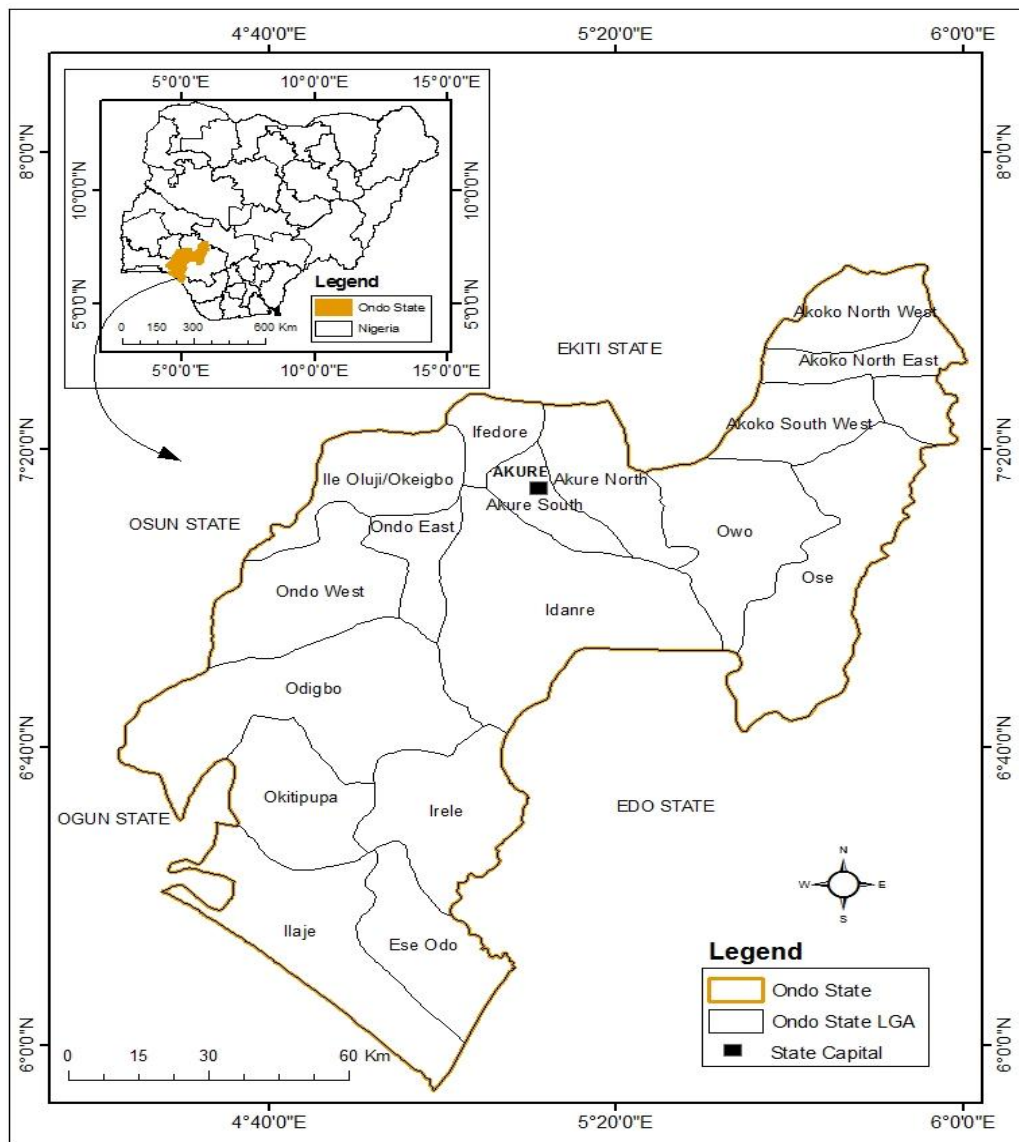
Road networks remains the dominant means of mobility in the hinterlands and over space, which account for not less than 80% of the tonnage of goods convey in Nigerian's Sea-Port when compared to other modes of transportation system, as they provide virtually connectivity of countless origin and destination (Allen 2003 and CBN, 2003).

Despite of the importance of road transport, road network remain unattended to in many developing nations, most especially in Nigeria; these is because road network are given little or low considerations in government budget yearly, climatic factor, deteriorating and road conditions construction standard are often low and national roads networks are not coordinated effectively (Wasike 2000 and Shemmy, 2000). Despite of the heavily investment by the past administrations in Nigeria, development of road infrastructure remained generally poor, (Buhari, 2000). It was estimated that the loss of man-hour and goods and services due to bad roads is valued at N80 billion, while additional vehicle operating cost resulting from bad road is valued at N53.8 billion bringing the total loss per annum to N133.8 billion and an estimated US \$5 billion was needed to maintain and expand vertically the various road types and other infrastructure in Nigeria for the next 10 years (CBN, 2003 and Okonjo (2007). It becomes important to examine the effects of road dualization of Ikare-Oke-Igbede-Semusemu road that was flagged-off in March 2018 by the Ondo State government on the economic development of the study area.

1.2. Study area

Ikare Akoko is located in Akoko North East Local Government Area of Ondo state. It's about 1000km form Akure capital of Ondo state, see Fig. 1.1 and Fig. 1.2. The study area lies between latitude 7°31'29.3"N and a longitude of 5°46'0.67"E and North of the equator. Bounded in the north by Arigidi Akoko and Akungba-Akoko to the south, while in the east, bounded by Ugbe and Iboropa and in the west by Ogbegi Akoko. Ikare-Akoko, a 180sq km city, experienced a population increase from 61,669 in 1963 to 126,625 in 2006 (NPC,2006). The city's rapid growth has led to increased migration, commercial banking, and small-scale industries. However, this has also led to a high generation of waste products. Ikare Akoko is a trading point for cocoa, palm kernel, Kola nut, and food crops.

Figure 1: Map of Nigeria, Ondo state



Source: Ale (2017)

Map of Ikare - Akoko showing major features (Figure2).

transport infrastructure has seen significant capital investment from both the federal and state governments, particularly in urban areas. Despite the advancement of the road transport system in Nigeria overall and in urban areas specifically, these areas continue to face a number of transportation-related issues, such as traffic congestion, particularly during working hours, a decline in travel speed and an increase in travel time, a deteriorating pedestrian environment, and a lack of non-motorized transportation options (Odeleye, 2001, Olaliyola et al., 2005). This is due to the fact that the construction of transport infrastructure is occurring at a slower pace than the population growth and area expansion of urban areas, resulting in a large discrepancy between the supply and demand of urban infrastructure and services (Atubi and Onokala, 2003). Urban transport stimulates social and economic activity. It is essential to the movement of knowledge, information, and commercial commodities and is considered the lifeline of every metropolitan setting. It offers a way to transfer people and things across time and space (Ladan, 2007). Therefore, better urban mobility will promote social interaction, economic growth, and the efficacy of government initiatives. In addition, Nigerian metropolitan areas are seeing the expansion and development of various land uses (Musa, 1994). Consequently, it has drawn a lot of attention in many regions of the nation. Ogunsanya (2002) did a good job of articulating its function in the evolution of Nigerian urban centres when he said that transit was a "maker and breaker" of cities. Urban transport has made it possible for people to live farther away from their places of employment, but it has also increased the number and ownership of vehicles on the road, as well as the spatial distribution and diffusion of goods, services, and ideas throughout Nigerian cities. However, competition for urban land has intensified due to advancements in urban transportation (Aderamo, 2003).

3. Methodology

3.1. Population and sample frame

The targeted population for this study were the residents and the business men and women of Ikare Akoko, most especially residents along the major dualization road Oke-Igbede area to Semusemu area (Table 1).

Table 1: Showing sample population for the study

S/N	Wards Name	Population	Sample Size (4%)
1.	General motor Park	853	34
2.	Oke Gbede	834	33
3.	Alapata	790	32
4.	Jubilee	791	32
5.	Semu Semu	986	39
	Total	3708	170

Source: Field Survey 2025

3.2. Sampling techniques and method

The five (5) quarters picked for administration of questionnaire for this research work were selected using systematic sampling techniques. Both administration of questionnaire and personal observation methods were considered for collection of data in the area. Multistage sampling procedure will be adopted for this research work. The first step was selection of five (5) quarters that are seriously affected by the road expansion using purposive sampling method. Random sampling method was used to select buildings from each quarter of the affected areas. 4% of the total population was considered for this research sampling. However, a total of one hundred and seventy (170) copies of set of structured questionnaire was be administer in the selected quarters.

Descriptive statistics was used to present the data collected which are tables and charts, frequencies and percentages of the variables were shown using Statistical Package for Social Science (SPSS) Version 2020.

4. Results and discussion

This section presents the findings from the field survey and statistical analysis, examining the socio-economic characteristics of respondents, road conditions, and the multifaceted impacts of road dualization on economic activities in Ikare-Akoko.

Socio-economic profile of the respondents

The socio-economic profile of respondents includes gender, age, marital status, educational qualifications, occupation, and monthly income. These characteristics provide context for understanding the study's findings.

Gender structure

From table 2, 27.6% of the respondents were male, while 72.4% of the respondents were female. This signifies that the number of female respondents were greater compare to that of the male counterpart.

Table 2: Gender distribution of respondents

Variables	Frequency	%
Male	47	27.6
Female	123	72.4
Total	170	100.0

Source: Field Survey 2025

Age of the respondents

Table 3 revealed the analysis of the age structure of the respondents. It was discovered that, 15.2% of the respondents were below the age of 20 years, 14.7% are between the age range of 21 and 30 years, 29.4% between the age range of 31 to 40 years, 12.9% of the respondents are between the age range 51 years and 60 years while 27.6% of the remaining respondents are between the age range of 60 years and above.

Table 3: Age structure of respondents

Variables	Frequency	%
Below 20 years	26	15.3
21 years to 30 years	25	14.7
31 years to 40 years	50	29.4
51 years to 60 years	22	12.9
Above 60 years	47	27.6
Total	170	100.0

Source: Field Survey 2025

Marital status of the respondents

In the same vein, the analysis of marital status of the respondents was also carried out in Table 4, it was discovered that 44.1% of the respondents are still single, 42.9%, this set of people are not married. 49% were married while the remaining 12.9% are divorced. This implies that larger percentages of the respondents are still single.

Table 4: Marital status distribution of respondents

Variables	Frequency	%
Single	75	44.1
Married	73	42.9
Divorced	22	12.9
Total	170	100.0

Source: Field Survey 2025

Occupation of the respondents

The occupation of the respondents in table 5 shows that 14.7% of the respondent were famers, 22.6% of the respondents were into trading, 12.9% of the respondents are civil servant, 30% of the respondents are artisans while the remaining 14.7% were into other occupation and few of them were students, self-employed, unemployed and others into one or the other occupation not mentioned.

Table 5: Occupational distribution of respondents

Variables	Frequency	%
Farming	25	14.7
Trading	47	27.6
Civil Servant	22	12.9
Artisan	51	30.0
Others	25	14.7
Total	170	100.0

Source: Field Survey 2025

Monthly income of the respondents

Lastly, the monthly income of the respondents was examined in table 6 and the result revealed that 14.7% of the respondents earn below ₦10,000 monthly, 22.9% of the respondents earns between ₦21,000 to ₦30,000 monthly, 23.5% of the respondents earns between ₦31,000 to ₦40,000 monthly, 11.8% of the respondents earns between ₦41,000 to ₦50,000 monthly and the other respondents 27.1% earns between ₦50,000 and above monthly.

Table 6: Monthly income distribution of respondents

Variables	Frequency	%
Below ₦10,000	25	14.7
₦21,000 to ₦30,000	39	22.9
₦31,000 to ₦40,000	40	23.5
₦41,000 to ₦50,000	20	11.8
Above ₦50,000	46	27.1
Total	170	100.0

Source: Field Survey 2025

Road infrastructure conditions

The analysis of roads condition in Ikare Akoko was examined and the result is present in Table 7.

Table 7: Perceived road condition in Ikare-Akoko

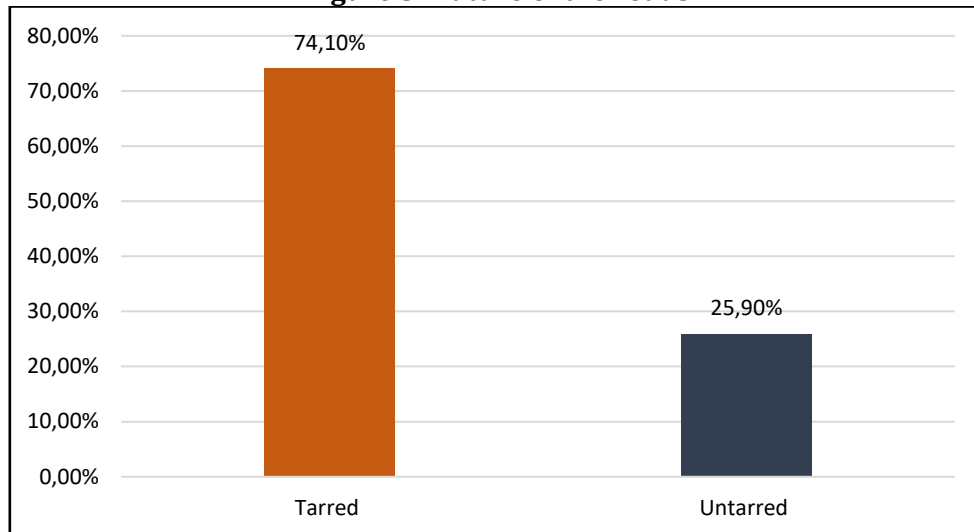
Variables	Frequency	%
Very Good	25	14.7
Fair	50	29.4
Poor	69	40.6
Very Poor	26	15.3
Total	170	100.0

From Table 7, it was revealed that 14.7% of the respondents agreed that the road in the study area were in a very good condition, 29.4% of the respondents also agreed that some of the roads are fairly alright while the remaining 4.6% and 15.3% of the respondents agreed that the roads in the study area were in poor condition and very poor condition respectively.

Nature of the roads in Ikare Akoko

The natures of the roads in the study area were also considered an analyzed as shown in Fig. 3.

Figure 3: Nature of the roads



Source: Field Survey 2025

It was vividly shown that the natures of roads in Ikare Akoko were examined and according to the respondents 74.1% of the roads were tarred while the remaining 25.9% of the roads were untarred.

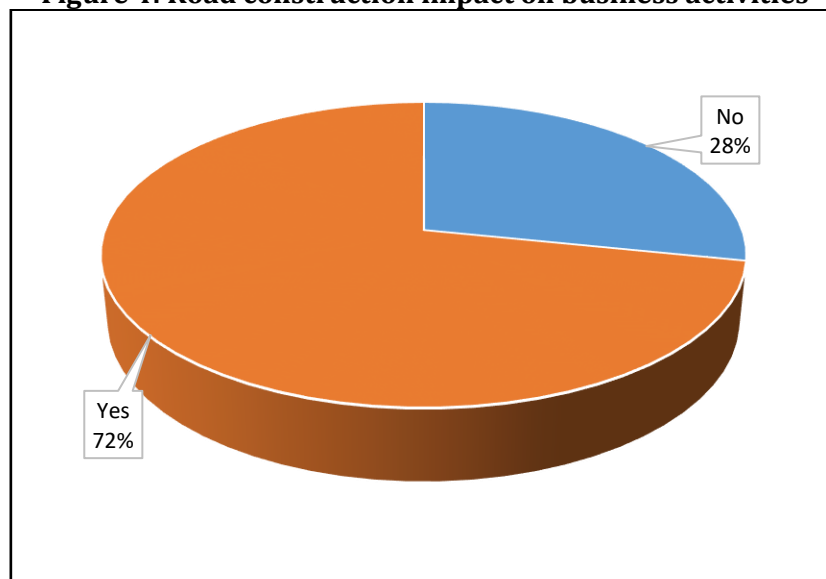
Socio-economic impacts of road dualization

The analysis of the type of impact road dualization has on the business activities in Ikare-Akoko were examined and the result revealed the positive impact and the negative impact of the road dualization on trading activities in the study area. The identified positive impact of dual-road construction include; provision of parking space, reduction in traffic congestion, easy access to work place and market and other places, open up of new areas. While the negative impact include lack of access to the business this was agreed with by 15.3% of the respondents while 97% 57.1% of the respondents identify other impact of the road dualization on the business activities in Ikare.

Impact of dual-road construction on trading activities in the study area

The impact of dual-road construction on trading activities in the study area was examined and the result presents in Figure 4.

Figure 4: Road construction impact on business activities



Source: Field Survey 2025

From Figure 4.2 above it was revealed that 72% of the respondents agreed that dual road construction have significant impact on trading activities on Ikare Akoko, while the remaining 28% of the respondents are of the opinion that dual-road constructions do not have any significant impact on trading activities of Ikare Akoko.

Level of business patronage

The analysis of the level of business patronage in Ikare Akoko, was examined and present in Table 8 below.

Table 8: Level of business patronage

Variables	Frequency	%
Very High	47	27.6
High	98	57.6
Nil	25	14.7
Total	170	100.0

Source: Field Survey 2025

The level of business patronage in Ikare Akoko was examined and the result revealed that 27.6% of the respondents concur that the level of business patronage in Ikare Akoko is very high, 57.6% agreed that the level of business patronage in Ikare is high and the remaining 14.7% do not give any respond on the business patronage in Ikare Akoko.

Road dualization and economic activities in the study area

This section presents the analysis of the effect of proposed road dualization in Ikare on the economic status of the area, the result is shown in Table 9.

Table 9: Road dualization and economic activities

Variables	Yes		NO		Total				
	F	%	F	%	F	100	%	F	%
Rendered me Homeless	107	62.9	63	37.1	170	100	37.1	170	100.0
Rendered me Jobless	73	42.9	97	57.1	170	100	57.1	170	100.0
Loss of Customers	138	81.2	32	18.8	170	100	18.8	170	100.0
Affected the Educational status of my Children	107	62.9	63	37.1	170	100	37.1	170	100.0
Increase in Distance to Destination	158	92.9	12	7.1	170	100	7.1	170	100.0

Source: Field Survey 2025

From Table 9 above the effect of the proposed road dualization on the economics status of Ikare Akoko was revealed, according to the respondents the findings shows that the proposed dualization of road has rendered 62.9% of the residents in Ikare respondents homeless, while 37.1% of the remaining respondents disagreed with the other respondents, meaning that it has not rendered larger percentage of the residents homeless. Also table 9 above revealed that the proposed road dualization in Ikare Akoko according to the respondents rendered 42.9% of the residents jobless, while the proposed road dualization has not rendered the residents jobless according to 57.1% of the respondents. Another effect of road dualization identified by the respondents in Ikare Akoko as a result of proposed road dualization is loss of customer 81.2% of the respondents affirmed to this, while 18.8% of the respondents disagreed with this statement. Furthermore, 62.9% of the respondents concurred that the proposed road dualization in Ikare Akoko has affected the educational status of Ikare resident's children, while 37.1% of the respondents disagreed with this statement. Finally, larger percentage of the respondents agreed that the proposed road dualization in Ikare has increase the distance to their destination while the remaining percentage of the respondents 7.1% disagreed with this statement.

Advantage of road dualization in Ikare Akoko

Table 10 below present the analysis on the advantage of road dualization in Ikare Akoko.

Table 10: Advantage of road dualization in Ikare Akoko

Variables	Frequency	%
Direct Employment	38	22.4
Enhanced Economic Development	63	37.1
Reduced Travel Time	51	30.0
Reduced Travel Cost	14	8.2
Reduced Vehicle Operating Cost	4	2.4
Total	170	100.0

Source: Field Survey 2025

The advantage of road dualization in Ikare was examined and the result shows that 38(22.4%) of the respondents agreed that the proposed road dualization in Ikare will lead to direct employment, 63(37.1%) concurred that it will enhance the economic development of Ikare Akoko, also 51(30%) and 14(8.2%) of the respondents agreed that the proposed road dualization in Ikare will reduce traveling time and cost respectively, while the remaining 4(2.4%) of the respondents agreed that dualization of roads in Ikare Akoko will reduced vehicle operating cost.

Disadvantage of road dualization in Ikare Akoko

The disadvantage of proposed road dualization in Ikare Akoko was examined and the result is analysis in Table 11 below.

Table 11: Disadvantage of road dualization

Variables	Frequency	%
Loss of Properties	40	23.5
Increased environmental cost	89	52.4
Increase crime rate	32	18.8
Increased safety	9	5.3
Total	170	100.0

Source: Field Survey, 2025

From table 11 it was revealed that the disadvantage of road dualization in Ikare Akoko, the following are the result 23.5% of the respondents identified loss of properties as one of the disadvantage of the proposed road dualization in Ikare, 52.4% of the respondents are of the opinion that the proposed road dualization will lead to increase in environmental cost, while 18.8% and 5.3% of the respondents agreed that the proposed road dualization will lead to increase in crime rate and increase in safety respectively.

Challenges faced by resident before road dualization

Table 12 present the analysis of challenges faced by the residents in Ikare Akoko during the proposed road dualization in the area, the result of the findings is present and show in table below.

Table 12: Challenge faced by resident during road dualization

Variables	To a large extent		To a little extent		To no extent		Total	
	F	%	F	%	F	%	F	%
Loss of time due to traffic diversion	112	65.9	33	19.4	25	14.7	170	100.0
Reduction in vehicular speed	91	53.5	57	33.5	22	12.9	170	100.0
Reduction in business revenue	49	28.8	96	57.6	23	13.5	170	100.0
Noise and air pollution from construction activities	81	47.6	62	36.5	27	15.9	170	100.0
Stress of squeezing through alternative road	80	47.1	80	47.1	10	5.9	170	100.0

Source: Field Survey 2025

Analysis of the challenges identified by the respondents as a result of the proposed road dualization in Ikare, 65.9% of the respondents agreed to a large extent that road dualization in Ikare will be accomplished by loss of time due to traffic diversion also 19.4% of the respondents agreed with this statement, while 25(14.7%) of the respondents disagreed with this statement. According to 53.5% and 33.5% of the respondents to a large extent and little extent respectively, road dualization in Ikare Akoko will reduce vehicular speed in the area, while the remaining 12.9% of the respondents disagreed with reduction in vehicular speed. Furthermore, 28.8% and 57.6% of the respondents identified reduction in business revenue as one of the challenges that could arise before and during road dualization in Ikare, while 13.5% of the respondents disagreed that to no extent will road dualization in Ikare lead to reduction in business revenue. Another challenges identified by the respondents during the road dualization in Ikare is noise and air pollution from construction activities, 47.6% and 36.5% of the respondents agreed to a large and little extent respectively, while 15.9% of the respondents disagreed with this statement. Lastly, 47.1% of the respondents agreed to a large extent and little extent respectively that dualization of roads in Ikare will lead to stress of squeezing through alternative roads, while 5.9% of the respondents disagreed with this statement.

Significant relationship between road dualization and socio-economic activities

The analysis of the stated hypothesis for this research work is shown in table 13 below; the hypotheses are;

H_0 = Road dualization has significant effect on the socio-economic activities of Ikare Akoko

H_a = Road dualization has no significant effect on the socio-economic activities of Ikare Akoko

Table 13: Chi-Square table

Variables	O	E	O-E	O-E ²	$\frac{O-E^2}{E}$
Yes	72	85	13	169	2.0
No	28	85	-57	3249	38.2
Total	170	170	-44	3,418	40.2

$\chi^2=40.2$ ($P>0.5$) table value =3.84

Source: Field Survey 2025

Since the calculated value in the chi-square table (Table 13) is greater than the table value of 3.84 at the degree of freedom of 0.05, this means that there is statistically significant relationship between road dualization and economic activities in Ikare Akiko. Therefore the alternative hypothesis is accepted and the null hypothesis is rejected.

5. Conclusion and recommendation

The study examines the effect of road dualization on economic activities in Ikare Akoko, Ondo state. It was established that road project clearly contribute to economic activities and also improve the living conditions of people and by augmenting the opportunities available for trade and employment. The economic development of Nigeria has reflected the development of her transport systems. This is particularly true of the road transport system, which is by far the most widely used mode of transport in the country. This study, therefore, recommend that government should make more efforts in developing other infrastructural facilities to complement the existing such as modern shopping mall along the roads, steady water and power supply to make life comfortable for the populace. Also, property owners should always build to meet up with the required standard, enough set back and plan should approved by town planners to avoid high level of demolition of properties. Furthermore, there should be good maintenance policy on how to take proper care of the newly constructed roads, day to day cleaning of drainage, sweeping of the roads, and carrying out repairs regularly to prolong the life span of the roads and public enlightenment on proper uses of the road.

Ethical considerations

This study adheres to academic integrity, ensuring informed consent and confidentiality for all participants. The research avoids conflicts of interest and provides unbiased analysis.

Funding

This research received no external funding.

Conflicts of interest

The authors declare no conflict of interest.

Citation information

Ogunade, A. O. (2025). Socio-economic impacts of urban road dualization: Evidence from Ikare-Akoko, Nigeria. *Journal of Sustainable Development of Transport and Logistics*, 10(2), 85-97. doi:10.14254/jsdtl.2025.10-2.5.

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