

Residents' Perception of the Effects of Arterial Roads on Economic and Physical Development in Akure, Nigeria

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ABSTRACT

This study investigates the effect of arterial roads on economic and physical development in Akure, Nigeria. The broad investigates the spatial pattern of business outfits along the routes, effects of building transformation on economic development and effects of arterial road network on physical development. The research methods include in-depth fieldwork, observation, questionnaire administration, interviews, collation and processing of field data. Out of the total number of buildings, 4,242 were for commercial use, 2,120 were for mixed uses, that is, residential / commercial buildings and 1,062 were residential buildings. A sample size of 5% was used for questionnaire administration that gave 371 respondents. Descriptive statistics were used to analyse data collected for the study. The result of the study revealed that majority of the respondents believed that the arterial road has resulted in increase in commercial activities along the corridors. Also, the finding reveals that at nodal points there is very high level of connectivity and easy movement of people and goods. However, the results show that buildings were transformed from old and dilapidated structures to modern ones and most of the respondents opined that these buildings were transformed for trading purposes among others. The research recommends planning standards, building codes and government giving top priority to construction, maintenance, and rehabilitation of arterial roads.

Keywords: Residents' Perception; Arterial Roads; Economic Development; Physical Development; Urban Development; Road Infrastructure

1.0. Introduction

Transportation is very important in physical and economic development of towns and cities all over the world. Property and land values tend to increase in areas with expanding transportation networks and increase less rapidly in areas without such improvements. Rapid and continued rise in housing and land prices are expected in cities with transportation improvements and rapid economic and population growth. Oyesiku (2002); Oyesiku, Somuyiwa and Oduwale (2020) affirm that nations, regions and the world would be severely limited in development without transportation, which is a key factor for physical and economic growth. Land use and transportation systems are interdependent. In fact, findings of earlier studies show compelling and consistent connections amongst them (Ewing and Cervero, 2001); (Ewing and Cervero, 2010, 2017).

Transportation route is part of distinct development pattern or road network and mostly described by regular street patterns as an indispensable factor of human existence, development and civilization. The route network coupled with increased transport investment result in changed levels of accessibility reflected through Cost Benefit Analysis, savings in travel time, and other benefits. These benefits are noticeable in increased catchment areas for services and facilities like shops, schools, offices, banks, and leisure activities (Bailey, Mokhtarian, and Little 2008). According to Mannering and Washburn (2020), road networks are observed in terms of its components of accessibility, connectivity, traffic density, level of service, compactness and density of roads. Level of service is a measure by which the quality of service on transportation devices or infrastructure is determined, and it is a holistic approach considering several factors regarded as measures of traffic density and congestion rather than overall speed of the journey.

Said and Shah (2008) and Atubi (2021) stated that access to major roads gives relative advantages consequent upon which commercial users locate to enjoy the advantages. Industries, trades, modern businesses and general activities depend on transport and transport infrastructure, with movement of goods and services from place to place. Oyesiku (2002); Aderibigbe, Fadare and Gumbo (2024) affirmed that urbanization in Nigeria has a long history in its growth and development. Extensive development being a feature of the 19th and 20th centuries, with concentration of economic and administrative decision-making in Lagos, Ibadan, Kaduna, Jos and Enugu. High degree of specialization and larger population associated with greater specialization of goods and services are concentrated in such areas. Urban areas have tendency to develop at nodal points in transport network and places with good road network will possess relative advantage over locations having poor network. Urban locations with such relative advantage are found where different transport routes converge with high degree of compactness, connectivity, density, length and accessibility exhibited within the intra- and inter- urban road networks, (Mete and Yomralioglu, 2023).

Akure became capital of Ondo State in 1976 with improved road networks developed to cater for increase in concentration of pedestrian and vehicular movements. Similarly, economic activities like banking, retail / wholesale businesses, and professional services congregated to take advantage of nearness to seat of governance. Concentration of activities attracted consumers and ancillary service providers. This partly caused increase in demand for commercial space and its concomitant effects on economic development along arterial roads in the study area. The present position concerning commercial activities in Akure is that majority of such structures are located along arterial roads that deliver much of the vehicular and pedestrian movements. There have been increases in rental values along the individual arterial roads although not at equal rates. This was as a result of arterial road development. The typical examples are: dualization of Arakale road and Oyemekun / Adesida road axis as well as frequent upgrading and expansion of Akure / Owo express - way. It is against this background that this research assesses the effect of arterial roads on the economic and physical development of Akure, Nigeria. The study investigates the spatial pattern of business outfits along the routes, effects of building transformation on economic development and effects of arterial road network on physical development (Ayeni and Oloukoi, 2022).

Most locations in Akure do not have thorough road network to facilitate and promote physical and economic development. The existing ones are in deplorable conditions. Pot-holes, collapsed bridges, blockage drainage (in most cases there is no drainage at all); narrow roads, traffic jam and environmental pollution are general phenomena. The situations are such pathetic that there is no sufficient fund to maintain the existing roads talk less of constructing new ones. As a result of these, some settlements are cut off from the central business districts. This leads to isolation which eventually aggravates poverty level and lower standard of living (Cantoon, 2021 and Stiglitz, 2011). Poor and masses do not have access to competitive markets. They have to confront with the imperfect markets contributed by the following material conditions: Dispersed and low population density; high transportation costs; seasonal rainfall causing seasonal demand for agricultural labour; and simple technologies without significant economies of scale (Holden and Otsuka, 2014).

Market imperfections are common in Akure, Ondo State. One of the major causes of market imperfections may be insignificant transaction costs caused by poor infrastructure, especially the transport infrastructure since Ondo State has the lower road density in Nigeria, which is even far below the average African standards (Cantoon, 2021). The current state of the road network and in particular arterial roads seems an obstacle to physical and economic development. Taking this into consideration, the state government has emphasized development of road transportation from time to time. Consequently, the road network has increased in the state especially in Akure. As a result of this, walking time to the nearest all weather road has decreased drastically.

Roads are not only assets but also liability. Roads need maintenance for better and faster services, lower transport costs and travel time. However, the roads are not in good condition because of lack of proper maintenance in the state, nationwide and at Akure in particular. The government needs huge sums of money to maintain the existing roads as well as to build new roads. Nigeria is saddled with countless number of responsibilities and does not have enough money to allocate for road transportation development (Stiglitz, 2011). It seems that there is a trade - off between the maintenance of existing road network and construction of new roads (Ondo State Ministry of Transport, 2024).

It is generally believed that the improvements of transportation services have major implications for efforts to reduce poverty, food insecurity (malnutrition) and for increasing income. Hence improve standard of living as well as economic status and physical out-looks. However, roads do not necessarily bring development. Inappropriately planned and designed road projects can have negative effects such as involuntary resettlement, increased traffic accidents, deforestation, soil erosion and the spread of HIV/AIDS (Bharat, 2004; Adom - Asamoah, Amoaka, and Adarkwa, 2020).

In addition, as transport being one of the factors of development, complementary investments are necessary to reap the benefits from road transportation. In this research, attempt was made to examine whether arterial roads in the study area contribute to economic and physical development such as increased accessibility, business performance, influence on commercial activities, employment generation, status of space and road construction among others zone.

2.0 Methodology

2.1 The Study Area

Geographically, Akure the state capital of Ondo State is located on latitude 6° 95' and 7° 15' North of the Equator and longitude 5° 15' and 5° 40' East of the Greenwich Meridian, at a height about 370 metres above the mean sea level. Akure can also be referred to as a nodal town because most of surrounding towns have direct access to it. In the north, Akure is bounded by Itaogbolu, Owo to East, Ondo to the South and Owena to the West. The morphological linearity of the road network within Akure metropolis with the Oyemekun / Oba Adesida Road, from Ado / Owo Road, from NEPA Road through Arakale road towards Ondo Road, is quite remarkable.

The 1991 national population census, however, puts the population of Akure at 239,124 and its population in 2006 was 353,211 (NPC, 2006). At present 2025, using a growth rate of 3.18 percent, the city is estimated to have 640,266 people (Fasakin, Gabriel and Akande, 2018). Commercial activity is found in every neighbourhood of Akure, although its intensity varies from one place to another. Mixed use of the ground floors of residential buildings were converted to commercial use and accommodate different commercial and light manufacturing activities. The main commercial areas of Akure are aligned along major roads; these include Oba Adesida Road, Ondo Road, Arakale Road, Oke-Ijebu Road just to mention a few.

The climate in Akure is determined by two air masses namely: The Tropical Continental and Equatorial Maritime. Minimum temperature for the coldest month is about 20 °C and maximum temperature is about 35 °C. The mean temperature varies between 20 °C and 35 °C, giving a relatively small annual range. The temperature ranges annual and daily has an average of 10 °C (Ministry of Environment, 2024). Available statistics show that an extreme mean minimum of 2.5 hrs / day in the months of January and October are registered. In the months of July and August about 20.8% of sunshine is recorded. 54.1% is registered in the peak period of January and October (Ministry of Environment, 2024). Its vegetation is tropical rainforest. Socio-cultural background of Akure reflected that major residents are Yoruba descendants and thus their ways of life are quite similar to other ancient Yoruba cities in terms of feeding, clothing, housing and festivals.

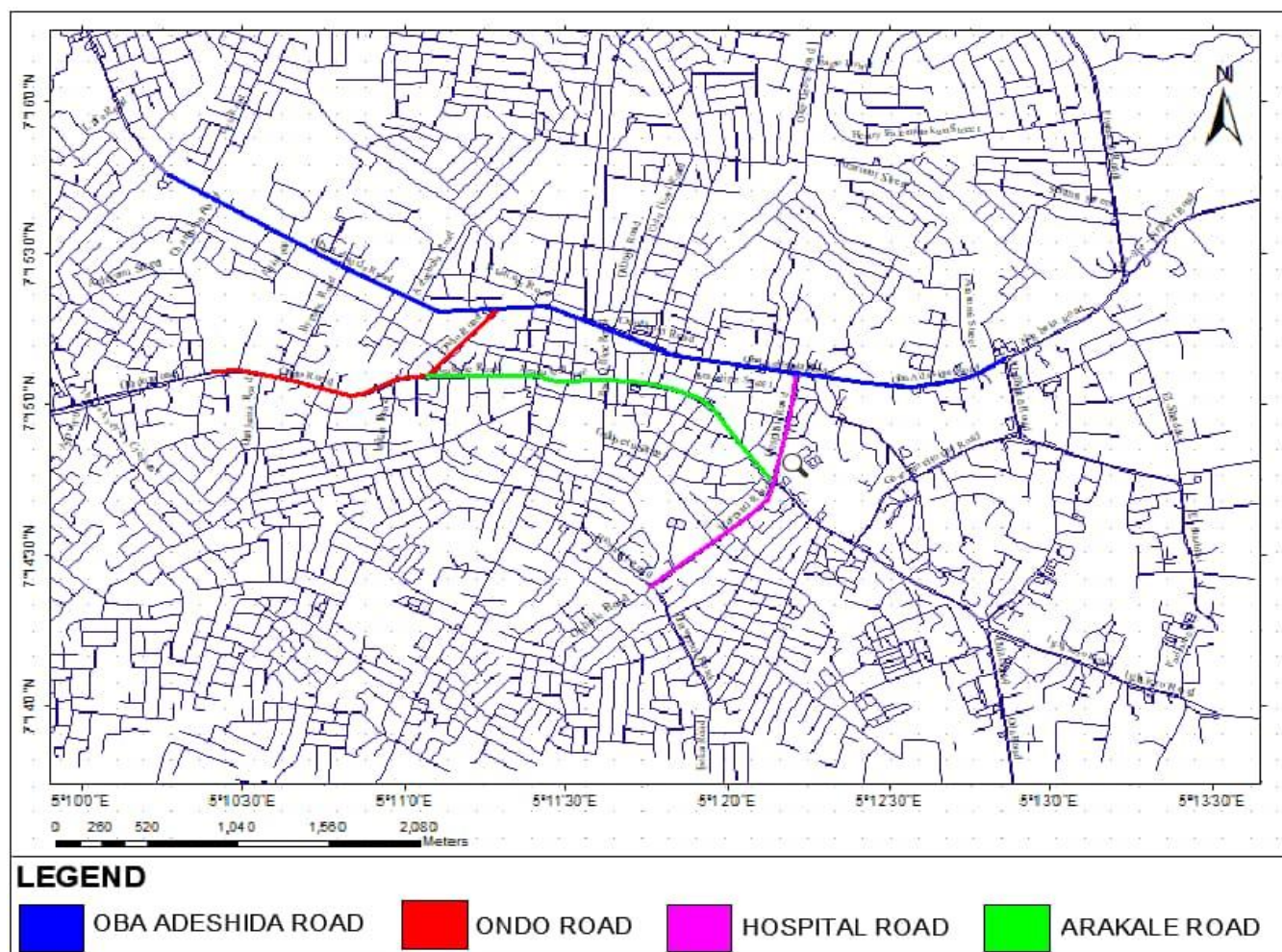


Figure 1: Map of Akure showing road networks and study areas.

Source: Adapted from Ondo State Ministry of Physical Planning and Urban Development, 2025.

2.2 Methods

A set of questionnaires was used to collect data from the marketers and the people living around the study area on their perception on the effects of arterial road network on physical and economic development. In addition, photographs of the study area were taken including personal observations and interviews. Another set of questionnaires was used to obtain data from government officials. This set of questionnaires was open-ended, allowing the respondents to freely express their views and experiences on the issue at hand in the study area. Information derived from existing literatures which include published and unpublished materials on transportation from undergraduate and post graduate dissertations and information guidelines were also used. However, information gathered from internet, institutions and agencies related to this study were also used among others.

For this research, four arterial roads were randomly selected because of their historical importance and unique features. The selected arterial roads are: Arakale road, Hospital road, Adesida / Oyemekun road and Ondo road. Buildings along the selected arterial roads were counted with the aid of Goggle Earth (image map) and 7,424 buildings were identified. These were buildings abutting the arterial roads in Akure. From reconnaissance survey three categories of building uses were identified, namely: residential, commercial and mixed uses. Out of the total number of buildings, 4,242 were for commercial use, 2,120 were for mixed uses, that is, residential / commercial buildings and 1,062 were residential buildings. A sample size of 5% was used for questionnaire administration that gave 371 respondents. This was so because the study area possessed the same socioeconomic attributes and similarity which include occupation, annual rent, employment generation, value of land, influence of nodal and arterial roads on commercial activities among others. A systematic sampling technique was employed in selecting the respondents, where every fifth house along the route involved was used for

questionnaire administration. This was due to financial constraint, time factor as well as limited available resource and man - power. In addition, tables, charts and photographs were used to present, interpret and discuss research findings.

3.0 Results and Discussion

3.1 Spatial Location of Business Outfits

From Table 1, it was discovered that at Ondo road a total of 153 buildings (41.2%) were sampled while at Arakale road a sum of 56 buildings (15.1%) were sample along road corridor. The Table 1 contains one categorical variable (business outfit). The Chi – Square goodness of fit test was used to test the hypothesis that ‘Business outfits are equally distributed across the four roads (Ondo road, Adesida / Oyemekum road, Hospital road and Arakale road)’. The result obtained for Chi – Square under degree of freedom 3 and critical value 0.05 is 66.19. Table value of Chi – Square at degree of freedom 3 with critical value 0.05 is 7.815. Since $66.19 > 7.815$, the null hypothesis is rejected. This indicated that the observed distribution of business outfits differs significantly from an equal distribution. Therefore, this inferred that business transaction was more prominent along Ondo road than other selected routes under study. Hence, economic development was more feasible along Ondo road.

Table 1: Spatial Location of Business Outfits

Business outfits	Frequency	Percent
Ondo road	153	41.2
Adesida / Oyemekun road	102	27.5
Hospital road	60	16.2
Arakale road	56	15.1
Total	371	100.0

Source: Authors' Field Survey, 2025.

3.2 Accessibility of Roads to the Major Road

Figure 2 showed that out of the total respondents, 5.1% were of the opinion that the level of accessibility of the access road to the major road was poor, also 40 % of the respondents accounted for good and 55 % of the respondents were of the view that the level of accessibility of the access road to the major road was very good. This explained reasons for high concentration of vehicular / pedestrian movements and business activities along such roads with high concentration of converted and purpose-built commercial properties to take advantage of the levels of accessibility. Furthermore, the importance of this finding was that the accessibility of the arterial roads might be a guide to property developers who consider accessibility as major factor of physical criteria in determining the feasibility and viability of a development project to make choice out of the alternative arterial roads in the study area.

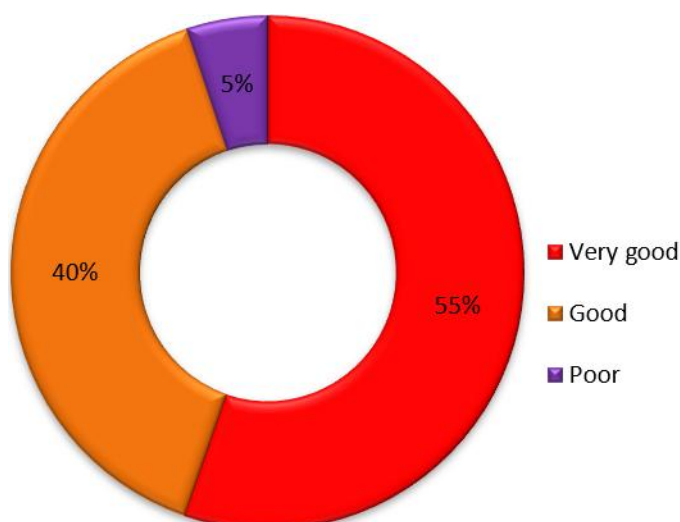


Figure 2: Accessibility Source: Authors' Field Survey, 2025.



Figure 3: Effect of road on physical development along Ondo Road, Akure (gentrification) Source: Authors' Field Survey, 2025.

Level of accessibility to hotel and event hall above (figure 3) was very high. Hence, level of patronage was very high, and road network has brought betterment to both building and landed property abutting it.

3.3 Business Performance for Alternative Locations

From figure 4, it was discovered in the study areas that majority of respondents (65%) were strongly disagreed that they would not have perform better if located off the present locations (that is, arterial roads). It also revealed that 15% of the respondents were strongly disagreed, about 10% of the respondents were neutral (which also meant indifference) while 6% said that they agreed. Only a very small percentage i.e. 4% strongly agreed. From the findings, one of the salient reasons for this was that road networks promote trading activities because such goods and services can be easily reached and accessed.

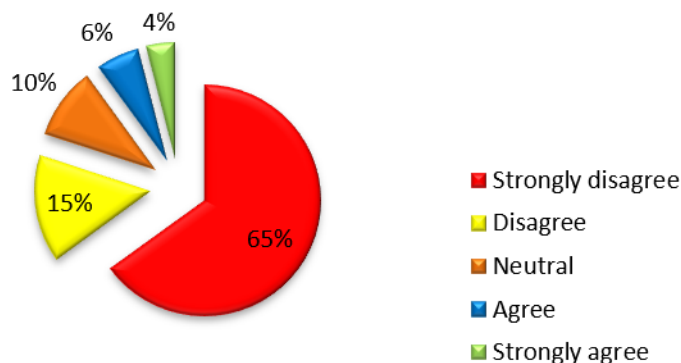


Figure 4: Business Performance. Source: Authors' Field Survey, 2025.

3.4 Influence of the Nodal Point on Business

Figure 5 below revealed that majority of the respondents (71%) agreed that nodal points gave a better advantage to business than any other location. 12% of the respondents were strongly agreed; about 7% of the respondents were neutral (which also meant indifference) about it while 8% said that they disagreed. Only a very small percentage 2% strongly disagreed. Nodal points are strategic locations in Central Business District of urban setting. At these points, there is very high level of connectivity and easy movement of people and goods. Hence, rate of business transaction is high since there is more awareness of such goods and services at these locations.

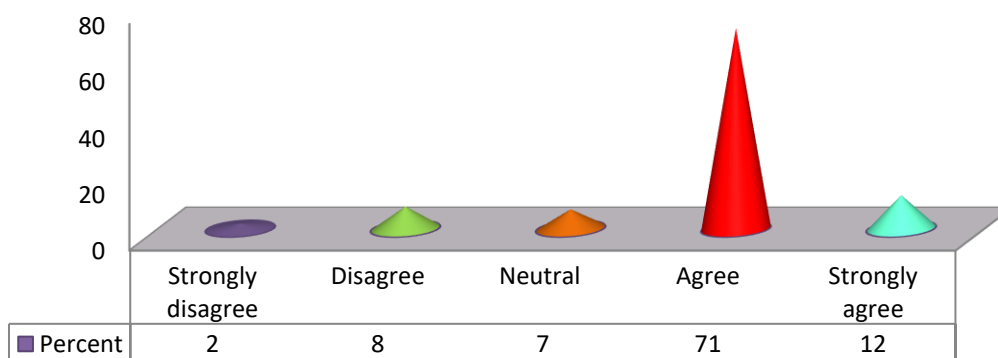


Figure 5: Influence of the Nodal Point on Business. Source: Authors' Field survey, 2025.

Influence of nodal point was quite noticeable along NEPA road where Hospital road, High Court road, Investment road and Arakale road were linked with one another, that is, NEPA roundabout See figures 6 and 7.



Figure 6: NEPA market in Akure located at the NEPA roundabout nodal point. Source: Authors' Field survey, 2025.



Figure 7: Nodal point at NEPA roundabout in the study area. Source: Authors' Field Survey, 2025.

3.5 Influence of Arterial Roads on Commercial Activities

A Chi-Square goodness-of-fit test was conducted to determine whether respondents' perceptions of the influence of arterial roads on commercial activities were evenly distributed across the five response groups. The analysis revealed a statistically significant difference between the observed and expected frequencies, $\chi^2(4, N = 371) = 574.64, p < 0.001$. Since the p-value is less than 0.05, the null hypothesis is rejected. The distribution of responses differs significantly from what would be expected if respondents were equally distributed across the five response groups.

The findings indicate that respondents did not respond equally across the categories. Precisely, the majority of respondents either agreed (69%) or strongly agreed (15%) that arterial roads influence commercial activities, while relatively few respondents disagreed (4%) or strongly disagreed (3%) with the statement. These results suggest a strong consensus among respondents that arterial roads play a significant role in influencing commercial activities within the study area.

Table 2: Influence of Arterial Roads on Commercial Activities

Response	Frequency	Percent
Strongly disagree	11	3
Disagree	15	4
Neutral	32	9
Agree	256	69
Strongly agree	57	15
Total	371	100.0

Source: Authors' Field Survey, 2025.



Figure 8: Commercial activities along Oja Oba road, Akure. Source: Authors' Field Survey, 2025.

Figure 8 showed typical situations of commercial activities along Oja Oba road. Road network has attracted various commercial activities, and this has led to rapid development of shopping complexes, banks, filling stations and most importantly conversion of residential buildings to commercial buildings.

3.6 Employment Generation

From Table 3, significantly higher frequencies of respondents who agreed (64%) and strongly agreed (20%) indicate that perceptions of employment generation were predominantly positive in the study areas. Chi-Square goodness-of-fit test was conducted to determine whether the observed distribution of responses differed significantly from an equal distribution across the five response categories. The Chi-Square goodness-of-fit test revealed that respondents' opinions regarding employment generation were not equally distributed across the response categories, $X^2 (4, N = 371) = 482.85, p < 0.001$. Therefore, the null hypothesis that respondents' opinions are equally distributed across response categories is rejected because the calculated Chi - Square value is far greater than the critical value.

The overwhelming majority of respondents (84%) either agreed or strongly agreed that employment generation had improved, while only 14% expressed disagreement and 2% remained neutral. This statistically significant result indicates strong empirical support for the assertion that the initiative has positively contributed to employment generation. It was also noted that a lot of the residents in the town were engaged in different types of businesses because of the road corridors. Author's opinion actually varied in the argument on value of good road network as far as job creation is concerned. It was believed that good road network attracted high labour - intensive service industry and hence a valuable source of employment.

Table 3: Employment Generation

Response	Frequency	Percent
Strongly disagree	32	9
Disagree	18	5
Neutral	8	2
Agree	237	64
Strongly agree	74	20
Total	371	100.0

Source: Authors' Field Survey, 2025.

3.7 Increase in Tax Payment

In this study, efforts were also made to know if there has been increase in tax payment generated along the corridor. Information revealed in table 4 showed that 94.9% of the respondents opined that there has been an increase in tax charges while 5.1% of the respondent were not sure if there has been an increase in tax. From the findings, more revenue may have been generated along the corridor from the occupants of the buildings, commuters and from the on-street traders.

Table 4: Increase in Tax Payment

Response	Frequency	Percent
Yes	352	94.9
Not sure	19	5.1
Total	371	100.0

Source: Authors' Field Survey, 2025.

3.8 Status of the Present Space

Table 5 showed that 80.1% of the respondents said that the space occupied by most of the respondents was converted while 19.9% were of the view that the space occupied was purpose-built. From the findings, one can deduce that most of the spaces were initially built for residential purpose until they were converted.

The findings also went further to know why the buildings were transformed and most of the respondents opined that buildings were transformed for trading purposes. Findings revealed that the initial occupants have no alternative than to relocate to the peripheral areas of the town for conducive environment while, the city core was transformed into commercial hub / centre so as to harness their economic importance.

Table 5: Status of the Present Space

Status	Frequency	Percent
Purpose –built	74	19.9
Converted	297	80.1
Total	371	100.0

Source: Authors' Field Survey, 2025.



Figure 9: A building about to be converted from residential to commercial use along Adesida / Oyemekun road, Akure.

Source: Authors' Field Survey, 2025.

3.9 Effect of Road Construction on Physical Development

Investigation into the effect of the road development revealed that 85.0% of the respondents agreed that the effect of the road on physical development was positive while 10.0% said it was negative and 5.0 % said there was no impact. From this analysis, it can be inferred that the effects of road on physical development were positive because it provides more employment opportunities and generates income in terms of tax revenue. In addition, more commercial buildings were spring up along the corridors which made the study area commercial hub for the state.

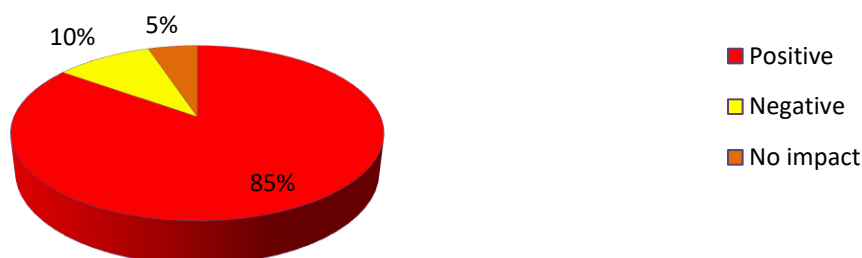


Figure 10: Effect of the road on physical development. Source: Authors' Field Survey, 2025.

Conclusion

The study revealed the effects of arterial roads on the economic and physical development of Akure. Findings showed that the number of commercial buildings was very high along Ondo Road. 5.0% of the respondents were of the opinion that the level of accessibility of the access road to the major roads is poor, while 40 % accounted for good and 55 % were of the view that the level of accessibility of the access road to the major road was very good. It also showed that road networks promote trading activities because goods and services can easily be reached and accessed. Nodal points are strategic locations in Central Business District of urban setting. At these points, there was very high level of connectivity and easy movement of people and goods. Hence, rate of business transaction was high since there was more awareness of such goods and services at these locations. However, 84.6% of the respondents revealed that the arterial road has resulted to increase in commercial activities along the corridors. The findings also went further to know why the buildings were transformed and most of the respondents opined that buildings were transformed for business purposes. In addition, effect of road development revealed that 85.0% of the respondents agreed that the effect of road on physical development was positive while 10.0% said it was negative and 5.0 % said that there was no impact.

In line with the findings of this study, the following recommendations were made.

- (i) Ondo State government should enact planning standards along the study areas. Planning standards such as set back from roads, sufficient parking lots, building codes and pollutant pay principle should be adopted so as to create conducive atmosphere as well as avoid slum creation.
- (ii) Governments at all levels should consider the construction, maintenance, and rehabilitation of arterial roads to be of great essence and top priority. This is because land and land/buildings are measures of wealth of a nation and enhanced value through provision of good road network.
- (iii) The State Government should enact stringent traffic and road management laws in order to ensure easy flow of goods and services, particularly along the study areas.

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