IMPACT OF ROAD TRANSPORTATION ON ECONOMIC GROWTH IN OYO STATE, NIGERIA.

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Abstract

Investments in road infrastructure typically result in changes in travel times, and these changes have economic implications over time. The advantages of mobility that come with higher transportation efficiency include significant time savings for other useful endeavors. The study aims to examine how road transportation affects Ibadan's economic growth in light of the aforementioned issue. The city of Ibadan was the site of the study. The research population comprises individuals that utilize road transportation in the metropolitan area of Ibadan, either as individuals or public transportation providers. Adopted was the primary data source. According to the survey report, 68.7% of the sample size, or 103 units, agreed that effective transportation can affect how much each and every road user spends on a daily basis. The free flow of goods and services is hampered by a number of issues, which further impedes a country's ability to thrive economically. The survey also showed that the majority of respondents from the study area named the transport calendar as the main obstacle to the free flow of transportation via road, accounting for 89 (59.3%) of the sample size, followed by the availability of vehicle routes, accounting for 31 units (20.7%) of the sample size. The summary of regression analysis demonstrates that there was a positive correlation between the quantity of road transportation infrastructure and all of the independent variables, including labor availability, market size, production scale, and lower access prices. 198.055 is the F-ratio, and it is statistically significant at $p<0.05$. The investigation came to the conclusion that no human activity could be accomplished without effective road transportation. According to the report, there should be sufficient infrastructure to meet high travel demand.

Keywords: *Economic growth, Transportation, GDP, Route, Mobility*

Introduction

Nigeria's road transport development history began when existing bush pathways were converted into motorable highways prior to 1910. As per Jackson & Zakariah (2022), the emergence of road transport in Nigeria was a subsequent development that skipped the stage of animal-drawn carts. Before motor cars were invented in the 1920s and 1930s, roads were not constructed. In actuality, the country's all-season road network became sufficiently developed for both passenger vehicle and truck

traffic by the end of World War II (1945). The roads were planned with two main goals in mind, according to Khanan *et al*. (2021). Initially, their purpose was to expand the economic hinterlands made accessible by the government railways by establishing connections between the closest metropolitan centers and the main railway terminals. The other goal was to lessen the burden that the inland provinces bore from providing porters to the British Colonial Officers. A nation's ability to diversify its economy, increase trade, manage population growth, alleviate poverty, and enhance environmental conditions is all influenced by how well-equipped its road transport infrastructure. Good road transportation infrastructure in Nigeria is necessary to bridge the gap between the major production hubs and the final consumption locations, even though the exact relationships between infrastructure and development are still up for debate. This is because well-maintained roads increase productivity, particularly in the agricultural sector of the economy, and reduce production costs.

A dependable and effective transportation system is one of the most important factors influencing a region's economic growth. This is primarily because a well-developed transportation system allows for adequate access to the region, which is a prerequisite for the labor, housing, retail, and manufacturing markets to operate efficiently (OCHEI & MAMUDU, 2020). One important component of economic development and growth is transportation. It is a lucrative industry in and of itself, but poor transportation restricts a country's ability to distribute food and other completed commodities, link the manufacturing and agricultural sectors, and provide facilities for healthcare, education, and other infrastructure needs. For the sake of the country's prosperity, it is consequently necessary to maintain and upgrade the current transportation system and construct new infrastructure. GDP, or gross domestic product, is a measure of the pace of economic growth and an indicator of national wealth (Ekeocha *et al.*, 2021).

There is numerous cost and distributional benefits for all income levels from legalizing informal transportation and implementing laws that promote a competitive environment for both formal and informal services (Alcorn & Karner, 2021). Nigeria launched a smartphone app to manage unofficial transportation services, which contributes to improved customer safety, increased safety perception and happiness, and a greater daily income (Mogaji & Nguyen, 2023) overall. Security concerns continue to be a problem in spite of transport choices and interests, necessitating enabling policy adjustment that addresses safety concerns and promotes transportation access. The study tends to investigate the effect of transportation on economic growth based on the aforementioned issue. As a result, this research project is justified by the necessity to find a long-term solution to issues like underdevelopment, low production rates, conflicts between tribes, and religious

bigotry. It also provides a feasible scenario for economic growth and addresses road infrastructure management. This study is noteworthy as a result.

Literature

Kaplan (2020) defines transportation as the movement of people and products between locations. It is a way to transport people and commodities (raw materials, manufacturing equipment, operating inventories, semi-finished items, and finished goods) to and from locations where they are required, whether for non-commercial or commercial reasons, at the desired time. Therefore, one of the most important needs that must be sufficiently met in any society in order to achieve any significant level of social interaction, cooperation, production activities, economic and other types of development, and the improvement of human welfare is the mobility (transportation of people and materials). Road transportation is sometimes referred to as the "engine and wheel of society" since it makes the world turn and work.

When we take into account the daily activities of the normal individual, it becomes clear why vehicle transportation is necessary in society. He travels by car to his business or place of employment. He receives the products he purchases by road conveyance. With the help of road transportation, he travels to church events and moves about to engage with people. For the police to properly do their jobs and maintain his peace and security, they rely heavily on road transportation (Flodén & Woxenius, 2021). Road transportation offers the necessary activities of time and location, claim Karami & Kashef (2020). Making things available when needed is what is meant by the utility of time. Daily newspaper publishing is one of the sectors where time utility is crucial. For this industry to make sure that its vendors and papers reach customers early in the morning when the news they deliver is still considered fresh, road transportation is crucial. The news gets stale and loses its worth as the day goes on.

Onokala & Olajide (2020) state that there are numerous issues with how road transportation and road transport services are run in Nigeria. The majority of these issues were brought about by the government's inadequate maintenance of the roads and the road transportation service providers' disregard for their clients' needs. Among these issues include drivers' carelessness, an insufficient quantity of transit vehicles, an inadequate road network, poor roads, the threat of highway robberies, and poor upkeep of transit vehicles.

The Harrod Domar growth hypothesis, which describes the rate of economic growth in terms of capital and savings, asserts that there is no inherent reason for an economy to grow in a balanced way (Gudieva et al., 2023), respectively. Neoclassical economists argued that the Harrod-Domar theory had shortcomings, particularly with regard to the instability of its solution, which sparked a debate in academia in the late 1950s and resulted in the development of Solow-Swan theory,

which built upon the Harrod-Domar model by adding labor as a factor of production and non-fixed capital-output ratios. As a result of these developments, increasing capital intensity may now be recognized from technological advancement. Solow claims that a key tenet of the instability implications of the Harrod-Domar model is the constant proportions production function. This is furthered by his own research, which explores the inevitability of human nature. One significant criticism of Harrod's initial work is that it did not specifically use a fixed proportions production function and did not concentrate on economic growth.

The effects of road transportation as well as the trend and pattern of the length of federal roads in Nigeria between 1995 and 2014 were empirically investigated by Babalola (2020). The study's findings showed a positive correlation between road transportation and economic growth, suggesting that road transportation has had a positive impact on the real economy's manufacturing and agricultural sectors. As a result, it is assumed that road transportation directly affects economic growth. This study also shows that the government has made every effort to improve citizen welfare by building more motorable roads.

Based on an analysis of Chinese data, Zou et al. (2022) conclude that improved transportation infrastructure contributes significantly to higher economic growth levels and that public spending on building roads in impoverished areas is essential to both growth and the reduction of poverty. According to Konno et al.'s results from 2021, productive public investment in road infrastructure has a beneficial impact on Spain's relative provincial productivity performance. However, when fixed effects are taken into account, a panel of U.S. state level data suggests that there is minimal evidence of an effect from infrastructure to income growth (Rogowski et al., 2022; Hooper et al., 2021; Leduc & Wilson, 2013). The relationship between transportation infrastructure and economic growth has garnered significant attention from economists, policy makers, and politicians since the early 1990s (Banerjee et al., 2020). However, it is still unclear whether the causal relationship is from transportation infrastructure to economic growth, vice versa, or both.

One of the primary flaws in the research on the economic impact of transportation infrastructure, according to Peter et al. (2015), is that the simultaneous effects of economic growth and the expansion of the transport system have not been sufficiently taken into consideration. The direction of causality between the expansion of the transportation sector and economic growth could not be confirmed by earlier research using the Cobb-Douglas production function. Furthermore, panel or cross-sectional data regressions have generally been the basis for the majority of these investigations. A common issue with this research is that they presume or implicitly impose cross-sectional homogeneity on coefficients, which may differ between nations due to variations in institutional, social, economic, and geographic

contexts. Therefore, the overall findings of these regressions only show an average association that might or might not be relevant to specific nations in the sample (Franzese & Hays, 2007).

Methodology

The research area under investigation is Ibadan, situated in the southwest region of Nigeria. It is situated 530 kilometers (330 miles) southwest of Abuja, the federal capital, and 128 kilometers (80 miles) inland northeast of Lagos. It is a well-known crossing point between the nation's coastline region and its interior. Part of the historic defensive walls that surrounded the city of Ibadan, which served as the administrative hub of British colonial control, still intact today. The Yoruba people and a number of other communities from around the nation make up the majority of the city's population. Oyo State in Nigeria has Ibadan as its capital and largest city. The research population comprises individuals that utilize road transportation in the metropolitan area of Ibadan, either as individual or public transportation providers. Moreover, the study encountered resistance in five (5) specific areas inside Ibadan, Oyo State. Mokola, Iwo Road, Ojo, Challenge, and Apete are a few such areas. The vast volume of traffic using the road transport system will determine which locations are chosen. To choose 150 respondents from five (5) chosen automobile parks in Ibadan, Oyo State, Nigeria, a multi-stage sampling technique would be used. Initially, the chosen motor parks within the research region would be divided into five groups. In the second phase, a sample size of thirty (thirty) transport operators per cluster will be chosen at random. For the aim of data analysis, the adopted primary source data as well as descriptive and inferential statistics were used. The elicited data, particularly for the socioeconomic factors and determining the available and most often used methods of transportation by the respondents, are summarized using descriptive statistics, which include the use of frequencies, percentages, and pie charts. Multiple inferential statistics were employed to assess certain aims.

Model Specification

$Y= a+b_1+b_1x_1+b_2 x_2+b_3x_3 +b_4x_4 +e$

Y= Road Transportation

a = constant

b=regression coefficients

x_1= Access to labor

x_2 = Larger market

x_3 = Scale of production

x_4 = Access costs

e = error term

Results and Discussion

Demographic characteristics of the respondents

The following table summarizes the findings of the survey, which examined the respondents' age, gender, level of education, and work experience. Table 1 below illustrates the gender representations of the field respondents. Of the 150 respondents chosen from the study region, 139 responses, or 92.7% of the sample size, were male, while the remaining 11 responses, or 7.3%, were female. This demonstrates that men made up a higher proportion of the population in the studied area.

The frequency table also showed that 39 respondents, or 26% of the sample, are between the ages of 41 and 50, while 45 respondents or 30% of the sample size, fall into the 31–40 age category. Additionally, 26 respondents, or 17.3% of the sample size, are older than 50, while the remaining 13 respondents, or 8.7% of the population, are younger than 20. Together, these 27 respondents represent 18% of the population and are between the ages of 21 and 30. This suggests that the age range of 31 to 40 years old comprises the bulk of the study participants who completely engaged.

The table also displays the respondents' educational backgrounds. According to the survey, 33 respondents, or 22.7 percent of the total population under study, had completed their primary school; 34 respondents, or 22.7 percent of the population, had completed their secondary school; and 41 respondents, or 27.3 percent of the population, had obtained a diploma. Moreover, 13 respondents, or 8.7% of the population, possessed MSC credentials, while 29 respondents, or 19.3% of the population, held a degree or an HND certificate.

The table that follows displays the respondents' work experience. Of the 150 respondents who took part in the survey, the majority of the samples, or 64 (42.7%) responses, had between one and five years of experience in relation to the impact of road transportation on Nigeria's economic growth. These were followed by 35 responses, or 23.3 percent of the total population, who had experience exceeding fifteen years, 29 responses, or eleven to fifteen years, and 22 responses, or 14.7 percent of the population, who had between six and ten years of experience. This demonstrates that the bulk of sample sizes are not novel in their respective fields.

Table 1.1 Demographic characteristics of the respondents

Variable	Frequency	Percentage
AGE		
Less than 20yrs	13	8.7
21-30 yrs	27	18
31-40yrs	45	30
41-50yrs	39	26
Above 50yrs	26	17.3
SEX		

Male	139	92.7
Female	11	7.3
Education Qualification		
Primary	33	22
Secondary	34	22.7
Diploma	41	27.3
Degree/HND	29	19.3
M.Sc	13	8.7
Working Experience		
1-5yrs	64	42.7
6-10yrs	22	14.7
11-15yrs	29	19.3
Above 15yrs	35	23.3

Source: Field work, 2024.

Influence of road transportation on economic growth.

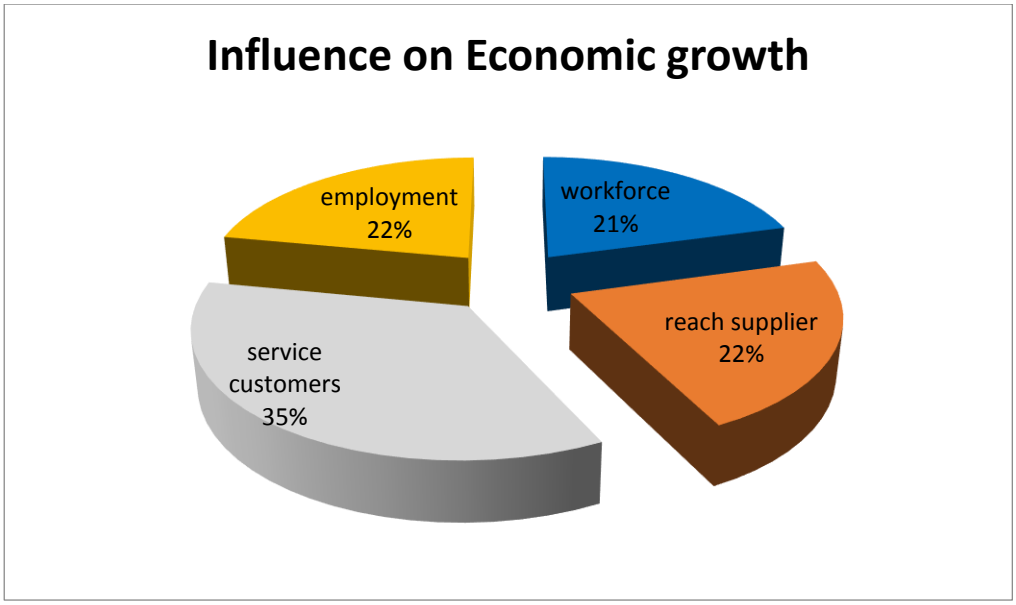
The impact of road transportation on economic growth in the research area was shown in Table 2 below. Door-to-door service delivery facilitated by road transportation enhances an area's economic development. The frequency distribution demonstrates the several facets of economic growth that were impacted by road transportation. The majority of study participants, or 53 units, (35.3%), thought that effective road transportation would improve customer service. This was followed by respondents who thought that efficient road transportation would increase employment opportunities and suppliers (33 units, or 22%), and respondents who thought that responsive road transportation would raise the standard of workforce in the study area (20.7%).

This suggests that nothing human can accomplish is possible without effective road transportation. Put differently, the research area's road transportation and economic growth are positively impacted.

Table 1.2: Influence of Transportation on Economic Growth.

Variables	Frequency	Percentage
Workforce	31	20.7
Reach supplier	33	22.0
Service customers	53	35.3
Employment opportunity	33	22.0
Total	150	100

Source: Field work, 2024.



Source: Field work, 2024.
Fig. 1.1: Chart representing Influence of road transportation on economic growth.

Ho$_1$*: There is no relationship between road transportation and economic growth in Nigeria.*

In this study, the relationship between road transportation and Nigeria's economic growth was calculated for a few particular variables. All of the independent variables, including labor availability, market size, production scale, and lower access prices, exhibited a positive correlation with the quantity of road transportation infrastructure, according to the summary of regression analysis. The F-ratio is 198.055, indicating statistical significance at $p<0.05$. The results demonstrate how the various components of road transportation during travel supply had an impact on economic growth and development. The independent variable was reliant upon these parameters. The combined impact of the independent variables on the dependent variable, access to labor, is indicated by the multiple correlation coefficient R, which has a value of 0.919 and an R2 of 0.845. Greater market size, manufacturing scale, and lower entry costs, with relative beta values of 0.561, 0.561, 0.139, and 0.219, are significant at $p<0.05$. The above mentioned identified variables plays a significant influence on the economic growth of any identify area. However, it means that an effective and adaptable road transportation infrastructure can promote economic development.

The entire number of prospective customers or buyers in a specific market segment is known as the market size. Before introducing a new service or product, an organization or small business might benefit from estimating the size of the market

to make sure it reaches the target customer base. Also, manufacturing scale is the amount of things produced to meet consumer demand employing assembly line techniques and cutting-edge technologies. Finally, company's inventory that was bought at cost is contrasted with the inventory's market worth in the lesser of cost or market inventory valuation technique

Table 1.3: Model Summary of Relationship between Road Transportation and Economic Growth in Nigeria.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.919[a]	.845	.841	.35157

a. Predictors: (Constant), access to labor, Larger market, scale of production, reducing access costs

Source: Field work, 2024.

Table 1.4: ANOVA of Relationship between Road Transportation and Economic Growth in Nigeria.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	97.918	4	24.480	198.055	.000[b]
	Residual	17.922	145	.124		
	Total	115.840	149			

a. Dependent Variable: Road transportation

b. Predictors: (Constant), access to labor, Larger market, scale of production, reducing access costs

Source: Field work, 2024.

Table 1.5: Coefficients of Relationship between Road Transportation and Economic Growth in Nigeria.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.876	.090		9.780	.000
	Larger market	.095	.027	.139	3.585	.000
	scale of production	.459	.089	.561	5.135	.000
	reducing access costs	.429	.087	.561	4.910	.000
	access to labor	.255	.083	.219	3.067	.003

a. Dependent Variable: Road transportation

Source: Field work, 2024.

Summary

In order to facilitate the movement of products and services from points of origin to destinations, transportation is a crucial activity. Such study is an essential component of business planning in a variety of professions, including marketing, sales, and business consultancy, since many investors carry out market sizing studies prior to starting a new company. These experts will also be better able to comprehend your objectives and suggestions if they know you have done your homework. In the same vein, lower costs per unit and mass production are made possible by large-scale manufacturing. In manufacturing, "scaling up" refers to the balanced expansion of all business process facets.

The investigation came to the conclusion that no human activity could be accomplished without effective road transportation. A well-functioning transportation network will facilitate social, political, and economic growth. It is evident that the transportation network is a crucial component of human endeavor and the cornerstone of all economic activities. Finally, an effective and responsive road transportation infrastructure can promote economic growth and development. According to the report, there should be sufficient infrastructure to handle high travel demand and policies that will protect all users of the roads from the negative effects of road traffic on economic growth.

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