

An assessment of road transport infrastructure development in Bukuru, Jos South, Plateau State, Nigeria

¹Ilenwabor J.O., ¹Labiru M.A., ¹Ibimode A.A., ¹Maigida G.T., ¹Maton S. M., ³Alalade O. & ²E.N. Moseri

¹Department of Geography and Planning, University of Jos, Plateau State, Nigeria

²27, Iguma Street, Opposite Winners, Sapele Road, Benin City, Edo State, Nigeria

³Kaduna Polytechnic, Department of Estate Management, Kaduna State, Nigeria

Email: muhammadlabirua@gmail.com

Abstract

This study assesses road transport infrastructure development in Bukuru, Jos South, Plateau State, Nigeria. A total of 150 copies of questionnaire were administered in the study area and 123 copies were returned for analysis. The data collected were analyzed using descriptive analysis. The findings of the study revealed that road transportation facilities play a major role in how the activities of the commuters are carried out such as how fast, safe, and when they can reach their various destinations and locations to carry out their various activities daily. The findings also revealed that most of the roads in the study area are in a deplorable state because they were either constructed with substandard materials or are not maintained properly. Based on the findings, the study recommends that roads should be fixed and maintained using quality materials, widening of narrow roads and construction of flyovers at strategic places to ease traffic flow in such areas.

Keywords: Road transport, Transportation facilities, Infrastructure, Development

Introduction

Transportation infrastructure development (including roads, airports, and seaports) is widely considered to be the core infrastructure required for economic growth (Heintz et al., 2009; Hasselgren, 2018), as it can directly support production and manufacturing activities in an economy (Fourie, 2006; Torrisi, 2009). Adequate and efficient road transport infrastructure serves as the pillar for the social and economic growth of any nation, and where it is lacking or inadequate, it usually creates a memorable hardship for road users. Several studies have attempted the evaluation of transport infrastructure, especially in the urban areas of countries across the globe, and have come up with findings of varying degrees worth noting for appropriate recommendations.

Olorunfemi (2021) conducted research on the performance assessment of road transport infrastructure in selected urban centers in Kogi State, Nigeria. One thousand, two hundred and fifteen (1,215) household heads in the selected urban centers were selected to elicit information on the perception of the urban dwellers with the state of road infrastructure. Findings revealed that disparity exists in the provision of road infrastructure across the selected urban centers in the study area, and respondents (urban dwellers) were dissatisfied with the condition of the road network and fairly satisfied with the state of the bridge and drainage system, lay-by and walk-way, street light, traffic/road sign, and parking spaces available. Odesanya and Edoreh (2020) also assessed the road transport infrastructure in Lagos State. Their study found that the challenges facing road infrastructure development in Lagos State are inadequate parking spaces, traffic congestion, environmental pollution, poorly maintained roads, flooding, and accidents, with a relative importance index (RII) of 0.3625, 0.3725, 0.3725, 0.3725, 0.3725, 0.3725, 0.3825, 0.4025, 0.4025, 0.4050, and 0.4350, respectively. They, however, recommend that attention be paid to providing

adequate road transport infrastructure, as this could lead to the reduction of many negative environmental externalities of road transportation in the study location.

Rafiu *et al* (2019) viewed traffic congestion as one of the most significant urban transport problems, which is experienced when the supply of urban transport networks can no longer meet the demand for them. In his study, “Analysis of road transport infrastructure and traffic congestion in the city of Ogbomoso, Nigeria”, results indicated that there exists road infrastructure in the study area, like bridges, bus tops, and motor parks, among others, of which most are in fair condition, and it was also observed that 66.7% of respondents were of the opinion that the level of traffic congestion along the route is high due to the deficit or inadequate transport infrastructure. Pedestrian Safety Measures and Prohibition of On-Street Parking, among others, are some of the recommendations suggested to enhance smooth road traffic in the study area. Adepoju (2021), in his article titled “Analysis of road transportation infrastructure construction and maintenance for sustainable development in South-Western Nigeria,” opined that there is a gap between the expected life span of roads in Nigeria and the actual life span after putting the infrastructure into use. He stresses that some challenges in road construction are erosion, inadequate skilled labor, capital for equipment, funding, user’s problems, and machinery repairs. The effects of bad roads include: road crashes (27%), high vehicle maintenance costs (21%), capital flight (17%), passengers’ discomfort (14%), high transportation costs (11%), and drivers’ fatigue (10%).

Famakinwa (2019) identified the absence or inadequacy of facilities such as lay-by, traffic signs, street lights, roadside drainage, speed breakers, pedestrian crossing, side kerbs, control mechanisms, culverts, and smooth road surfaces as the major limitations to road transportation in one of his studies while analyzing urban road transportation infrastructure in Owo, Ondo State, Nigeria. Appropriately, the study made recommendations towards the achievement of effective transportation infrastructure. These include effective transport policy, public-private partnership, availability of required data, enforcement of standards, effective monitoring, adequate funding, reduction or eradication of corruption, a culture of maintenance, a practicable legal framework with effective and continuous public participation and education as ways of ensuring a smooth, safe, efficient, and congestion-free road transportation system in the study area and applicable in other urban centers in Nigeria.

Zhang and Cheng (2023) investigate the relationship between transport infrastructure development and economic growth in the UK over different time spans using principal component analysis. Empirical results suggest that transportation infrastructure has a long-run positive effect on economic development. However, in the short run, this effect turns out to be significantly negative. Gambiyo (2021), in his thesis titled “Economic Implications of Transport Infrastructure on the Nigerian Economy: A study of Road Transport Choice and Cost of Doing Business,” examines the current state of road transport infrastructure with emphasis on travel choice and its impacts on the cost of doing business. The results of the marginal effects show that worsening conditions in the terrain affect transport choice, the preferences of individuals, and the cost of doing business. This has implications for the price of transportation, agricultural productivity, and the cost of transactions.

This study assesses road transport infrastructure development in Bukuru, Plateau State, Nigeria.

Materials and Methods

Plateau State is located in the middle belt zone of Nigeria and lies between latitude 8° 24’N and Longitude 8° 32’ and 10° 38’ of the equator. It shares a boundary with Bauchi State in the

North, Taraba State in the East, Nasarawa State in the South Western part and Kaduna State in the West. The study was carried out in Bukuru, Jos South LGA, of Plateau State which is about 15 km from the State capital, Jos. The local government area has four districts: Du, Gyel, Kuru and Vwang districts. The local government area has a total land area of about 1,037 km² with a population of 436,853 (2019 projected population, (National Population Commission of Nigeria, 2006). The road network connecting the different parts of Bukuru is shown in figure 1.

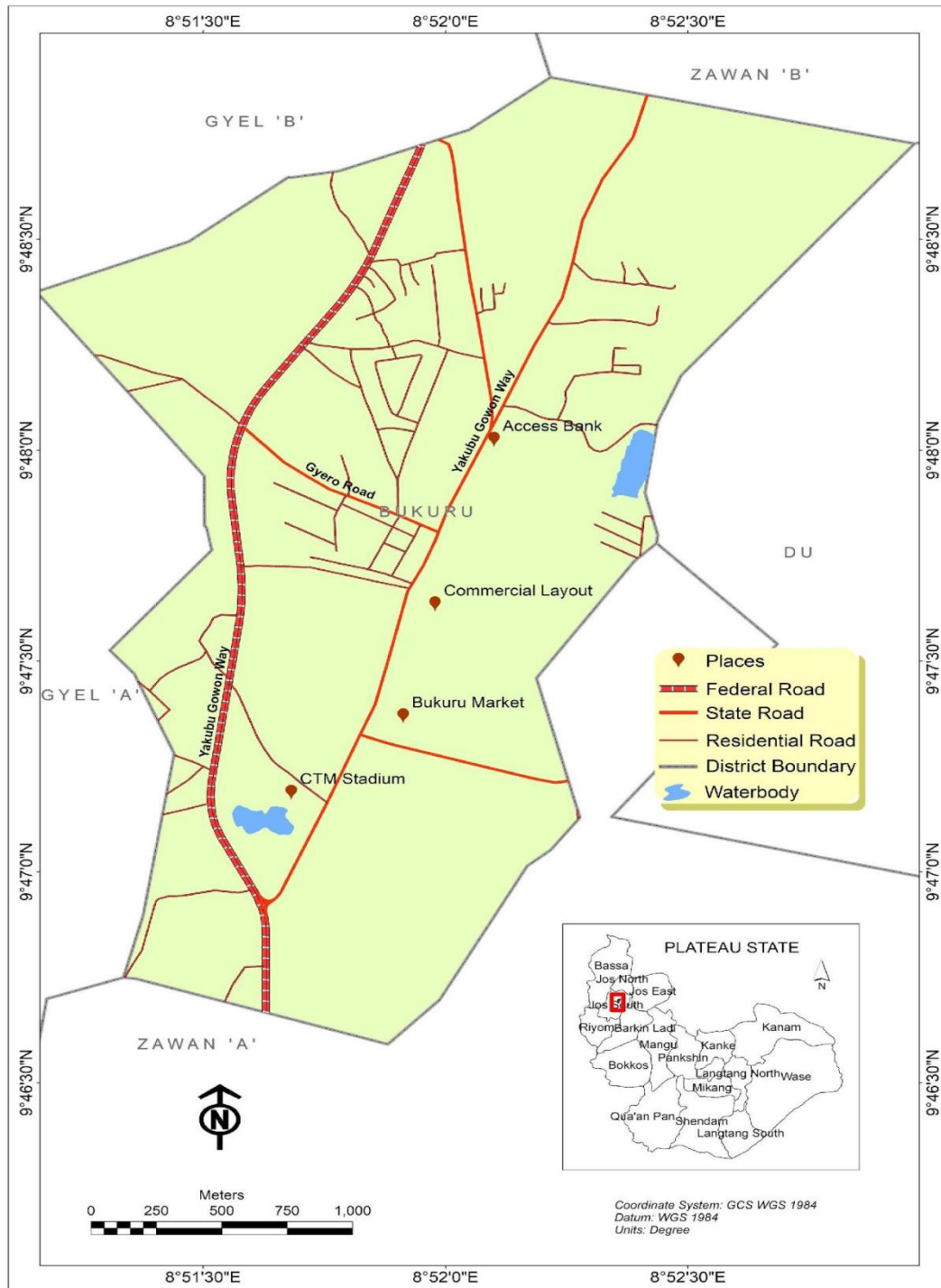


Figure 1: Map Showing the Road Transportation Network in Bukuru, Jos South Local Government Area Plateau State.

Source: GIS LAB, University of Jos (2020)

Data for the study was collected through primary and secondary sources. The secondary data consist of online materials, published books, journal papers and information from relevant government Ministries and agencies. The primary data was obtained from field survey and use of questionnaire to elicit information from residents in the study area. The sampling technique used in this study was the multi sampling technique (stratified random sampling technique). The population of the study area was divided based on specific characteristics (race, gender identity and location) of respondents. A total of 150 copies were administered within a period of three weeks on respondents in the study area and only 123 copies of the questionnaire were returned for analysis. The questionnaire was administered in a paper-based form and also involved face to face contact to generate responses from respondents who live in the study area. Data from the field were collated, coded and entered in the computer using the data-based management system. Data presentation and analysis were made in tabular form and the frequency of respondent’s responses were calculated in percentages.

Result of the findings

Demographic characteristics of respondents

Table analyzing the demographic characteristics of respondents in the study area.

Table 1: Demography of respondents

Gender			Age (Years)			Qualification/Level			Occupation		
	Freq	%		Freq	%		Freq	%		Freq	%
Male	74	60.2	< 20	17	13.8	Primary	7	5.7	Student	60	48.8
Female	49	39.8	21-40	84	68.3	Secondary	15	12.2	Farmer	13	10.6
			41-60	19	15.5	Tertiary	96	78	Miner	11	8.9
			> 61	3	2.4	None	5	4.1	Business	17	13.8
										Civil servant	9
								Others	13	10.6	
Total	123	100		123	100		123	100		123	100

Source: field survey, January, 2020

Table 1 shows that out of the total number of 123 respondents, 60.2% of the population were of the male gender, 39.8% of the population were of the female gender. Table 1 indicated that out of 123 respondents, 13.8% of the population were below 20 years. 68.3% of the population were between 21-40 years, 15.5% of the population is between 41-60 years. 2.4% of the population were above 61 years.

Table 1 shows that 5.7% of the population only had Primary school education. 12.2% of the population had attended up to secondary education. 78% of the population had a tertiary level of education. 4.1% of the population had no educational qualification whatsoever. Table 1 shows that 48.8% of the population were students, 10.6% of the population were farmers, 8.9% of the population are miners, 13.8% represent of the population are into various kinds of businesses, 7.3% of the population were civil servants and 10.6% of the population were involved in other forms of occupation

Table indicating the different types of road transport infrastructures in the study area.

Table 2: Road Transport Infrastructure in the Study Area

Type of infrastructure	Frequency	Percentage (%)
Street Lights	24	19.5
Pavements	19	15.5
Drainages	20	16.2
Paved roads	20	16.2
Unpaved roads	40	32.5
Total	123	100

Source: Field Study, January, 2020

Table 2 shows that 19.5% of the respondents indicated that there are streetlights in the area. 15.5% of the respondents stated that there are pavements on the roads. 16.2% of the respondents stated that there are drainage's by the sides of the roads. 16.2% also stated that there are paved roads in the area, and finally, 32.5% of the respondents stated that the roads are unpaved which shows that most of the roads are on paved and not suitable for vehicles.

Table indicating the state of the conditions of the road transport facilities in the study area

Table 3: State of Road Transport Facilities in the Study Area

State	Frequency	Percentage
Very poor	9	7.3
Poor	35	28.5
Average	66	53.6
Good	9	7.3
Excellent	4	3.3
Total	123	100

Source: Field Study, January, 2020

From Table 3, 7.3% percent of the respondents claimed that the road transportation facilities are in a very poor state, 28.5% of the respondents stated that the road transportation facilities are in a poor state. 53.6% of the respondents indicated that the road transportation facilities are average. 7.3% of the respondents agreed that the road transportation facilities are in good condition. 3.3% of the respondents indicated that the road transportation facilities are in an excellent state.

The reasons behind the claims by the respondents as reflected in Table 3 is as a result of the poor present state of the road facilities such as their poor maintenance, poor network, no signs for the control of traffic, no street lights until recently, over population of markets that spill over to the roads, poor construction, traffic conjunction, heavy duty vehicles, lack of parking space, the roads are too busy, vandalization of road transportation facilities, some road law enforcement officials are bias and at the sometime they don't have good and proper mobility and poor governance in terms of infrastructural development.

Table indicating the perceptions of respondents on road transport facilities in respect to cost, availability of road transport facilities and associated health risks link to road transport facilities.

Table 4: Respondents Perception of Road Transport Facilities in the Study Area

Thought	Frequency	Percentage
Transport Fares are too expensive	9	7.3
Inadequate road Transport Facilities	15	12.2
Lack of parking space	36	29.3
Health risks associated with road facilities	16	13
Total	123	100

Source: Field Study, January, 2020

Data in Table 4 has shown that 7.3% of the respondents indicated that transport fares are too expensive, 12.2% of the respondents indicated that there are inadequate road transport facilities in the area. 29.3% of the total respondents indicated that there are no parking spaces in the area which has lead to a clustering of vehicles by the road sides in the area, 13% of the respondents indicated that there are health risks associated (like noise and air pollution which could lead to different respiratory diseases) with the road facilities in the area.

Table indicating the effects of cost on roads transport patronage in the study area.

Table 5: Effect of cost on road transport patronage in the study area

Effect of cost on patronage	Frequency	Percentage
Increase patronage	20	16.3
Reduce patronage	61	49.5
No effect on patronage	42	34.2
Total	123	100

Source: Field Study, January, 2020

Table 5 indicated that 16.3% of the respondents stated that there is increase of patronage of road transport despite the cost of transport in the area.49.5% of the respondents indicated that there was a reduction the patronage of road transport which due to the increase in the cost of transportation in the area.34.2 % of the respondents were neutral and indicated there was no effect on patronage of road transport as a result of cost of transportation in the study area.

Table indicating the effects of road transport infrastructure on daily commercial activities in the study area.

Table 6: Effects of road transport infrastructure on daily commercial activities

Effect	Frequency	Percent
Increased commercial activities	13	10.6
Reduced commercial activities	78	63.4
No effect on commercial activities	32	26
Total	123	100

Source: Field Study, January, 2020.

From table 6,10.6% of the respondents indicated that there is an increase in the daily commercial activities as a result of the road transport infrastructure in the area.On the other hand 63.4 % of the respondents indicated that there was a reduction in the daily commercial activities in the area.This can be connected to the poor state of the road transport infrastructure in the area.26% of the respondents did not notice any changes whether increase or decrease in the daily commercial activities as a result of the road transport infrastructure in the area.

Conclusion and Recommendations

Based on the funding of the study, the following recommendation were put forward:

1. Road congestion can be reduced by widening narrow roads, building more pavements, the addition of streetlights to mitigate vandalization of road transport infrastructures.
2. Proper drainage construction by the state government and local government authorities is imperative.this has to be done to reduce the impact of flood during the raining season on the road infrastructures. This will reduce accidents as a result of washed away portions of the roads. To protect the integrity and quality of road transports infrastructure in the area parking spaces should be created. This would reduce road congestion and road accidents.
3. The state government and local government authorities in the area should urgently fix and maintain roads using quality construction materials. Most of the roads in Bukuru are in bad

conditions because they were constructed with substandard materials and there is also a poor maintenance culture overtime.

4. To protect the integrity and longevity of road transport infrastructures in the area parking spaces should be constructed. This would reduce road congestion and road accidents.
5. Road transport infrastructures plays a crucial role in the daily commercial activities of any area and Bukuru is not an exception. The overall economic growth of the area is largely dependent on how properly developed the road infrastructures are. There is a need for the government at all levels: Federal, State and Local to make laws and implement these laws to ensure that good roads and road networks are not only constructed but there should be penalties for those who intentionally vandalize road transport infrastructures.

References

- Adepoju, O.O. (2021): Analysis of road transportation infrastructure construction and maintenance for sustainable development in South-Western, Nigeria: *Journal of Sustainable Development of Transport and Logistics*, Vol.6, pp. 49-58, April 2021.
- Famakinwa and Lawrence, A. (2019). Analysis of Urban Road Transportation Infrastructure in Owo, Ondo State, Nigeria. *International Journal of Innovative Research in Education, Technology & Social Strategies* p-ISSN: 2465-7298
- Fourie, J. (2006): *Economic Infrastructure: A review of definitions, theory and empirics*: South African Journal of Economics, 74(5), pp. 530-556. 2006.
- Gambiyo, S.P. (2021): *No Infrastructure on the Nigerian Economy: A Study of Road Transport Choice and Cost of doing Business*. Thesis Submitted to School of Economics, Finance and Banking, College of Business University Utara Malaysia, in Fulfilment of the Requirement for the Degree of Doctor of Philosophy.
- Hasselgren B. (2018): *Transport Infrastructure in Time, Scope and Scale: An Economic History and Evolutionary Perspective*: Springer International Publishing AG, Switzerland (2018).
- Herintz, J., Pollin, R., and Garrett, H (2009): *How Infrastructure Investments Support the US Economy, Employment, Productivity and Growth*: Political Economy Research Institute, University of Massachusetts Amherst, Massachusetts (2009).
- Odesanya, J.F and Edoreh, R.T. (2020): *Assessment of Road Transport Infrastructure in Lagos State*: *Indian Journal of Engineering*, 2020, 17(47), pp. 182-192.
- Olorunfemi S., (2021). *Performance assessment of the state of road infrastructure in selected urban centers in Kogi State in Nigeria*, *Prace Komisji Geografii Komunikacji PTG*, 24(1), 31-43.
- Torrise, G. (2009): *Public infrastructure: definition, classification and management issues*: *Economic Management Finance Mark.*, 4(3). pp. 100-124. 2009.
- Zhang, Y. and Cheng, L. (2023). *The role of transport infrastructure in economic growth: Empirical evidence in the UK*. *Transport Policy* 133 (2023) 223–23. Elsevier Publishing.