

Analysis of Urban Road Transportation Infrastructure in Owo, Ondo State, Nigeria

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Abstract

The role of transportation cannot be overemphasized in the development of any economy, and such development is usually contingent on the quality of required transportation infrastructure available in such economy. This study analyses the availability and quality of road transportation infrastructure in Owo, Ondo State of Nigeria. The study identified eight traffic zones within the study area and twenty questionnaires were scientifically administered on respondents in each traffic zone. Analytical tables and statements were used in discussing the issues, and challenges of transportation infrastructure for the entire study area. The study identified the absence, or inadequacy of facilities such as lay by, traffic signs, street lights, road side drainage, speed breakers, pedestrian crossing, side kerbs, control mechanisms, culverts and smooth road surfaces as the major limitations to road transportation in the study area. Appropriately, the study made recommendations towards the achievement of effective transportation infrastructures. These include effective transport policy, public-private partnership, availability of required data, enforcement of standards, effective monitoring, adequate funding, reduction or eradication of corruption, culture of maintenance, practicable legal framework with effective and continuous public participation/education as ways of ensuring smooth, safe, efficient and congestion free road transportation system in the study area, and applicable in other urban centres in Nigeria.

Keywords: *Transportation, Infrastructure, Urbanization*

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Background to the Study

Transportation simply put, is the movement of people, goods, services and information from one location to another through modes such as road, rail, water, air, pipeline and cable. Human settlements either rural or urban, represent a spatial organization of functions that are meant to serve human needs like employment opportunities, housing, work, recreation and exchange. Transportation infrastructure constitutes the channel and other equipment required to satisfy such needs and movements, hence are like arteries and veins that allow blood to flow without hitch across the human body. The facilities refer to the structure, capacity, terminals, route and control equipment which all combine to determine the quality of the infrastructure.

The alarming rate of urbanization resulting in an increase in spatial size population and vehicular ownership, often necessitates the development and implementation of a virile transportation system, where the issue of infrastructure becomes very important. Equally, the adequacy or otherwise of available transportation infrastructure has major serious impacts on the performance of the transportation system. The inadequacy of road transportation infrastructure does not only hinder smooth traffic movement but also lead to unwanted consequences of bunching and damage, psychological impacts on operators, prolonged travel time, higher travel cost, increase in vehicular depreciation, increased pollution and the disruption to vehicular-pedestrian friendly environment. Bosede, et al., (2013) confirmed that transportation infrastructure is very crucial to the growth of the economy and the situation with Nigeria's transportation infrastructure is in a poor state. Osunsanmi (2005) is of the view that urban centres due to their high concentration of population, socio-economic land use mix and other activities, normally have high proportion of transportation needs, in terms of infrastructure, vehicles and traffic management. Owo as a fast growing urban centre based on the establishment and development of Rufus Giwa Polytechnic, Federal Medical centre, State General Hospital, Achievers University and the Local Government headquarter is already witnessing serious pressure on the existing road transportation network.

As agreed by Okoko (2006) and Famakinwa and Omosulu (2006). The importance of transportation, through which other human activities flow, deserves great attention, hence the importance of a careful study of the system; its importance, problems and solutions to the identified problems. Many researchers and writers have worked on transportation problems and management strategies, street parking, causes of road accidents, choice of mode, modal split and mass transit, but more effort is required in the direction of analysis and assessment of the quantum of available road transportation infrastructure as a follow up to the emerging urban situations and changes. Since the attainment of independence in 1960, the problem of the Nigerian transportation system includes bad roads, inadequate fleet of buses or trucks, irregularity, overcrowding and congestion, lack of enough trained man power, capital restructuring bottleneck, issues of institutional reforms and ineffective traffic regulations. This study is therefore meant to analyze the existing road transportation infrastructure in Owo, Ondo State of Nigeria.

The paper covered the developed part of Owo urban area. It identified the traffic zones, the existing transportation infrastructure, determined the adequacy or otherwise of the road transportation infrastructure, examined recent efforts by government, groups and individuals and thereafter propose ways of improving the quantum of road transportation infrastructure in the study area. The lack of relevant and required secondary data, adequate funding and uncooperative attitude of some respondents at institutional, association and individual levels constitute some limitations which however did not hinder the achievement of required results.

Historical, Geographical and Economic Background of Owo

The origin of the people of Owo like other Yoruba towns, is traced to Oduduwa; the great ancestor of the Yoruba race and Ile-Ife as the cradle. The first Oba of Owo was Ojugbolu and his followers from Ile Ife were made to head different quarters constituting the town: Ilale, Iloro, Ijebu and Idasen. Urbanisation and government presence later led to the Government reservation areas (GRA) and many adjoining settlements like Emure, Isuada, Iyere, Ipenmen, Isijogun and Ipele. The establishment of the quarters and settlements led to the expansion of transportation routes because goods, services and information must move within the quarters and settlements, and from one quarter or settlement to another. Different activity areas of land uses, continued to develop with the need for adequate road transportation.

Owo is situated in South Western part of Nigeria, on latitude 7° 11' 0" North of the equator and longitude 5° 35' 0" East to the Greenwich meridian. The topography is fairly undulating but becomes hilly towards the northern part. There are two annual seasons: the rain or wet, and the dry or harmattan. The wet season lasts from March to October when storm water run-off is usually high, leading to the erosion of some facilities and culvert, and drainage blockage. The dry season is from November to February when construction, replacement and maintenance of transportation infrastructure are more convenient. The average daily minimum temperature in Owo is 23°C and the average maximum temperature is 33°C.

The population of Owo according to the National Population Commission of Nigeria was put at 30,662 people in 1953, 60,388 people in 1963 and 78,386 people in 1991. The recommended 2.5% national growth has therefore been used as projection to get 152,680 people for 2018.

Farming and lumbering constitutes the traditional occupation of Owo people and they produce food and cash crop such as plantain, yam, cocoyam, cassava, pepper, maize, potato, cocoa and palm oil. In recent years however, the establishment of the Polytechnic, Federal Medical Centres, Local Government Headquarter Offices and Achiever's University are major land use that have tremendously increased the economic base of Owo and changed the occupational structure of the residents. They generate traffic which require adequate road infrastructure.

Owo Land use Pattern

The land use pattern of Owo is a reflection of most Yoruba traditional towns where the Obas palace, Obas traditional market and major public uses are at the core area constituting the

central business district (CBD). The Obas palace in Owo has a vast land reserved for the traditional shrines which have however partly given way to public buildings like school, market extension and administrative offices. The core area is of mix-use mainly residential and commercial, of old tradition bungalows and single storey buildings. Commercial stores for durable and perishable goods are along the main streets but residential, commercial, recreational, public/semipublic and industrial uses are scattered all over the town especially at the outer ring. The urban planning office in the town confirmed that 65% of the urban built up land area is dominated by residential development.

Owo Road Classification pattern

Each road type performs some level of particular service in facilitating vehicular travel between points of trip origin and destination, and in providing access to property. The classification justifies the quantum of services they provide to the public, thus a road hierarchy is established. There are urban freeways, urban arterials, urban collectors and urban local or access roads in Owo. The existing road transportation network is dominated by the Otapete-Okeogun-Uka Junction-Iyere-arterial road which serve as the towns through fare. It is the only two lanes dual carriageway recently constructed by the State Government. This is because the freeway is at the outskirts of the town, from Akure through Rufus Giwa Polytechnic and Ikare Junction to Benin-City. The collector roads link the different quarters and the arterial roads while the local access roads provide direct access to abutting properties where origins and destinations are common along the length of the roads, they do not carry through traffic and vehicular speed is low.

The eight traffic zones identified are: Otepete/Rufus Giwa Polytechnic, Idasen/Uka, Farm centre/General Hospital, Ijebu/Iyere, Ikare road/glass quarters, Okedogbon/Otutu, Isuada road, and Palace/post office/Mobil (CBD). A total of 160 roads were identified within all the traffic zones.

Method of Data Collection

Firsthand information to identify land use, road patterns, nature of commuting the behavior of operators and commuters, condition of roads and major landmarks in the town, was embarked upon through reconnaissance survey before the commencement of the actual survey. Structural questionnaire was used for primary data while secondary data was sourced from publications, maps and records from the urban planning office, ministry of transport, Nigeria Police Force, Population commission, Federal road safety commission and drivers' union.

The target population constituted the commuters, operators, pedestrians and other road users and a sample size of 10% was scientifically chosen from the identified 160 roads. Twenty questionnaires were thereafter administered through purposive sampling method on each of the two chosen roads from each traffic zone, thus a total of 320 respondents. The required standard for the different elements of urban transportation infrastructure were identified through suggestion by Obateru (2005) to achieve acceptable assessment of the existing facilities. Information on the cause and rate of road accidents were collected from the Federal Road Safety Office and the Police Station in the study area.

The Nature of Urban Transportation Problems in Nigeria

In the attempt to examine the nature of the urban transportation infrastructure problem in Nigeria, it may be necessary to examine the views of some authors. Okoko (2006) argued that with the lower rate of car ownership compared to the advanced economies, the cities in poor economies still suffer more from poorly functioning traffic management schemes, poor road maintenance and much lower provision for road facilities.

Almost all street roads in the major activity centres of Nigerian towns and cities are used for non-transportation functions, especially street trading. The street network of these urban centres in most cases are therefore inadequate to meet the increasing vehicular traffic. They form a confusing pattern where there is no regularity in the size and shape of the street road network hierarchy, (Ogbazi, 1992). I quite agree with him because the conversion of bus stops, laybys, walkways and road reservations for street trading has become a common feature in our urban centres. Chikolo (2004) explained that an efficient transportation system is expected to provide a reliable, safe, comfortable and easily accessible service at reasonable cost and adequate infrastructure is required to achieve the attributes. Ogunbode (2004) believes that the use of transport infrastructures is an approach to reducing the negative impacts of transportation. Eboh, et al, (2005) is of the opinion that majority of roads in Nigeria are not constructed with standard specification and done without the necessary infrastructure, thus leading to the degradation of the road networks, while Okonjo (2007) believes that in the event that a road is not maintained, every Dollar saved on road maintenance increases vehicle operating cost, the net cost to the economy is therefore being inadvertently increased. She goes further, "if the issue of playing politics with the lives of the people of Nigeria could be set aside, and corruption minimized, allowing for transparency in governance, then the poor maintenance culture might be put in the past and expenditure by governments on road projects would become visible". This simple heartfelt and loaded statement is the true reflection of the Nigerian situation.

Nworji and Oluwalaiye (2012) argued that the huge fund sunk into the construction, rehabilitation and maintenance of roads in Nigeria in the last three decades is badly reciprocated by the poor and deplorable current state of the roads. They concluded that several Nigerian roads were constructed without proper design, construction specifications, use of sub-standard materials, all as off-shoot of corruption and lack of transparency.

Conceptual Framework

Brett Frishcman's theory of Infrastructure explains the importance of public accessibility to infrastructure (Frishcman 2005 and 2007). He argued that open access to infrastructure would generate significantly positive results for a society and that infrastructure should be utilized productively to promote development because it is fabric to the development of any society. Akinwale (2010) supported this and affirmed that the state is generally responsible for the provision of infrastructure through diverse revenue resources. This theory is relevant as there is close relationship between transportation and socio-economic development. The extent of the efficiency of transportation system in any nation determines the extent of the performance of the nation's economy.

The theory of demand is also relevant because transportation is a derived demand. It is the outcome of the demand by humans for other items or services. The need for transportation arises because people must move to satisfy their other needs such as work, relaxation, education, distribution, religion, health and all forms interaction. The increase in the demand for such items increases the demand for transportation and transportation infrastructure ensures the effective performance of the transportation services.

Objectives of Transportation Infrastructure

In the publication of the Nigerian Institute of Transport Technology, Zaria (2004) Chikolo highlighted the objectives of transport infrastructure to include:

- i. Provision of efficient interconnections between major activity centres
- ii. Support to Government policy on sectoral development
- iii. Designed to increase the average travel speeds and reduce trip duration.
- iv. Promote sustainable development and environmental protection.

The publication is a proposal in the master plan for an integrated infrastructure in Nigeria.

Socio-Economic Characteristics of Respondents

The larger proportion of the respondents are male, mostly aged between 18years and 36years. 50% of them married, mostly educated up to secondary school level, hence they can read, write and understand road signs and markings. Majority of them earn between ₦450,000 to ₦600,000 per annum, 65% are Christians while 30.63% are Muslims by religion.

Transportation Infrastructure Survey in Owo

88.13% of the respondents agreed to be frequent on the street roads where they were interviewed, hence they are capable of giving required detailed information. 68% of them also confirmed the inconveniences encountered on the roads and 95% observed the non-existence of public parking spaces along the roads. The very few ones are along the recently dualised road from Otapete to Iyere. Traffic lights are not installed at the required locations especially road junctions, thus leading to vehicular and vehicular-pedestrian accidents when each one claims the right to the road. There are no street lights along 90% of the roads which make visibility in the night very poor, especially by pedestrians. This causes pedestrian-vehicular accident and personal injury and damage to body and vehicles. Only the recently constructed roads has street lights and which does not function constantly due to one problem or the other.

Only the recently constructed Otapete to Iyere road has good asphalt surfacing, while most of the other roads are of old granite aggregate surfacing where road lacerations and pot holes have higher coverage because of non-maintenance and reconstruction. Unnecessary maneuvering by vehicle operators were noticed on such roads and can lead to accidents that could have been avoided. Most of the roads are of un-even width along their span from one location to another. The road width that is not constant leads to derailing because drivers are deceived. The cause of road width variation was traced to poor construction and activities of selfish developers that encroach on the right of way, through the building of shops or construction of fence. The roads in relation to their hierarchy are below required width when compared with standard requirements as proposed by Obateru (2005).

There are drainage channels along some roads while some do not have, but the existing ones are blocked either in totality or at intervals, by debris of sachet water, packages, cans, beverage bottles and household wastes. The blockage of the existing and the non-availability along these roads lead to flooding and its damaging effects on the roads. The width of majority of the available gutters is less than 0.6metre in width, mostly shallow to accommodate the volume of storm water and without required gradient for easy natural flow. Speed breakers, as means of reducing speed and were only identified along Ikare junction to Rufus Giwa Polytechnic road. Over speeding is therefore encouraged thus a risk to other road users. Pedestrian crossing otherwise called Zebra crossing could not be sited on all the roads in Owo, hence the pedestrian road users are at the risk of being knocked down by motorized vehicles.

Roadside kerb is one of the important road safety measures as apart from demarcating the edge of the carriage way and walkways, discourages run off by parked vehicles. It is only available along the only recently constructed dualised road. Lay-by meant for temporary drop off, quick and emergency check on vehicle, change of deflated tire and receiving of phone calls so as not to obstruct the flow of traffic are totally unavailable on all the roads except on the recently constructed road. The width of most of the existing culverts are not wide enough, in some cases, they are smaller than the carriage way, hence a bottleneck situation exists. Pedestrian walkways to avoid struggle for space by pedestrians and vehicles are not on 90% of the roads. This does not encourage a pedestrian-vehicular friendly environment. All sides of the roads are not landscaped to give beauty and shade, as only very few developers encourage tree planting in front of their houses.

Road markings and information posts that guide both vehicle operators and pedestrians are only available on the recently constructed road and the Ikare junction to Rufus Giwa Polytechnic road. Bus stops are very few along the roads in Owo as only the gate to the Federal medical centre and a location along Achievers university road have the facility. The two are also being misused by roadside traders/hawkers and destitute, hence encouraging incessant parking of vehicles along carriageways. On-street parking and trading which constitutes restriction to the flow of traffic are very common on all the roads in Owo and seriously affected roads are; general post office to Isuada junction, Mobil to Ikare junction, Uka junction to Iloro, Ojakoko to rainbow junction, Oja Oba to Ilale road, Owaluwa and Otutu streets. Modern traffic control devices such as traffic lights for regulating traffic movement do not exist on all the roads in Owo. Traffic wardens/personnel were only sited at Uka and rainbow junctions. This situation has led to lawlessness on the part of the road users and accidents at the junctions as confirmed by the Nigerian Police force and the Nigerian road safety commission in Owo.

Table 1: The availability level of Road Transportation Infrastructure in Owo

S/N	Traffic zones	Parking space	Traffic signs	Street lights	Road surface	Road width	Drainage	Speed breaker	Zebra Crossing	Kerb	Culvert	Lay by	Walk-way	Land scaping	Road marking	Remarks
1	Otepete/ Rufus Giwa Polytechnic	No	Few	No	Good	Good	Yes	Yes	No	Yes	No	No	No	No	Yes	Above average
2.	Idasen/Uka	No	No	No	No	No	Yes	No	No	No	Yes	No	No	No	No	Low level
3.	Farm centre/ General centre	Yes	Few	No	Good	Good	Yes	No	No	Yes	Yes	Yes	Yes	Few	Yes	Above average
4.	Ijebu/Iyere	No	No	No	No	No	No	No	No	No	No	No	No	No	No	Low level
5.	Ikare road/ glass quarter	Yes	Few	No	Good	Good	Yes	No	No	Yes	Yes	Yes	Yes	Few	No	Above average
6.	Okedogbon/ Ojutu	No	No	No	No	No	No	No	No	No	Yes	No	No	No	no	Low level
7.	Isuada Road	No	No	No	No	No	No	No	No	No	Yes	No	No	No	no	Low level
8.	Palace post office/ mobil	No	No	No	No	No	No	No	No	No	Yes	No	No	No	no	Low level
	Comment	Inadequate	Inadequate	Not available	Inadequate	Inadequate	Average	Inadequate	Inadequate	Inadequate	Almost adequate	Inadequate	Inadequate	Inadequate	Inadequate	Low level

Sources: field survey, 2018.

The advantages of the summary stated above are numerous and include:

- i. For the purpose of planning and budgeting to know which zone/road require the greater or greatest attention
- ii. Identification of the availability of urban road transportation infrastructure in different zones of Owo
- iii. Prospective tenants in Owo will be guided in the choice of location for easy accessibility.

Recommendations for Improved Performance

It is recognized that government, groups, associations and individuals have at different times made efforts to improve road transportation infrastructure in Owo urban area, but the efforts have not been long lasting because of political differences, poor funding, corrupt practices and the lack of maintenance culture. The following recommendations are therefore hereby suggested for the improvement of urban transportation infrastructure in Owo, which may also be applicable to other urban towns in Ondo State and beyond.

1. Transportation Policy Guidelines

The transportation policy both at National and State levels must be given adequate attention where there will be given effective co-ordination among all the different levels of government. A well designed and executed policy is the bedrock of an efficient and sustainable transportation system.

2. Public–Private Partnership (PPP)

The government must encourage public-private partnership whereby the private companies, associations and wealthy individuals will be encouraged to have input in the provision of urban road transportation infrastructure because past experience have indicated that the government may not be able to do it alone.

3. Availability of Data and Manpower

Urban road transportation planning and management without relevant and accurate data cannot achieve the required standard. Such data includes maps, statistical records and projections that should assist the capable trained and experiences manpower in the handling of urban transportation planning, management and maintenance for sustainability.

4. Enforcement of Standard

There are standards for planning, implementation, monitoring and management in urban transportation, depending on local situation, manpower and level of technological development. The enforcement of the sets of standards must be handled by recognized and qualified professionals, relevant professional bodies and government organizations and the relevant agencies in charge of urban transportation must establish monitoring teams to ensure early discovery wherever immediate attention may be required, so as to disallow the degeneration of transport facilities.

5. Budgetary Allocation

The basis of any expenditure is budgetary allocation hence government at all levels are advised to ensure enough budgetary allocation for the transportation sector of the economy. Lack of enough fund has always been a recurring reason for non-provision and maintenance of transportation infrastructure. The issue of effective utilization of fund must also be given adequate attention as corruption and diversion of fund has always been recognized within the Nigeria economy but not checked. There must be a proper and sincere auditing to ensure financial expenditure compliance.

6. Culture of Maintenance

Public infrastructure in which transportation is one, cannot stand the test of time unless required maintenance is ensured. The government cannot have enough fund to make provision for a new set of facilities at all times, thus the existing ones must be properly maintained. Aging, use, environmental and human factors all lead to the necessity for maintenance and repairs, hence the modalities and public/community participation for the attainment of maintenance culture without much stress, especially for public facilities must be encouraged.

7. Legal Framework

There is the need for appropriate legal framework that will ensure the enforcement and compliance to transportation rules, regulations and protection of public facilities. The framework must however be practicable and provision made for easy compliance.

8. Public Education

The transportation operators, commuters, pedestrians and the general public must be educated on the merits of having an effective use of the facilities, the impact of the facilities on their socio-economic well-being and the effect and punitive measures in the case of misuse, damage or vandalisation. All relevant means of local and national publicity coupled with the opportunity of utilizing socio-economic and religious groups must be explored.

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