

Traffic Congestion in Akure, Ondo State, Nigeria: Using Federal University of Technology Akure Road as a case study

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ABSTRACT

Urbanization level in developing world indicates that more people live in urban area than in rural areas. This pattern induces pressure on traffic flow in urban areas in Nigeria. The situation has started to manifest in Akure, Ondo State capital; a medium urban centre in Nigeria. This paper investigates traffic congestion which has become a common sight in recent times in Akure, especially along Federal University of Technology Akure Road / Oja-Oba Road. A survey was conducted and entities influencing traffic congestions were identified and documented. The data collected from both primary and secondary sources were analysed and these include using of cameral to capture traffic-congested zones; information on traffic-congested junctions; the roads and the land use areas; and traffic census for some selected road junctions in the study area. The results shown poor driving habits, weather condition, absence of traffic light and/warden, work zones, road side parking, special events, lack of public mass transit, reluctant to use parking facilities and bus stop constitute the greatest causes of traffic congestion in the study area. The paper concludes that both Federal and State governments should initiate plans for the introduction of other forms of urban transportation such as Metros and Trains which support mass movement of people as done in major urban cities globally

Keywords; Congestion, Flow, Road, Technology, Traffic, University, Urbanization,

1.0 INTRODUCTION

According to the Joint Transport Research Centre of the Organisation for Economic Cooperation and Development (OECD) and the European Conference of Ministers of Transport (ECMT), “Cities and traffic have developed hand-in-hand since the earliest large human settlements. The same forces that draw inhabitants to congregate in large urban areas also lead to intolerable levels of traffic congestion on urban streets and thoroughfares.”(ECMT 2007:5). This captures the relationship between urban cities and traffic congestion as well as the world-wide dimension of the problem of traffic congestion in urban cities.

Many urban cities in Nigeria are bedevilled with traffic congestion which tends to defy various remedial measures adopted by different governments over the years. Journey times from one point to another within a town have remained unreliable and residents have continued to face disturbing inconveniences in transportation system. These are accompanied by noise and air pollution and the high costs associated with burning of fuels from stationary vehicles. The contributions of road transportation to environmental degradation in urban cities of Nigeria have been highlighted by Onokala (2008). The problem is no longer limited to traditional cities such as Lagos, Ibadan, Benin-City, Port Harcourt, Abuja, Kano, and Kaduna

(Ogunsanya 2002). Virtually every state capital city in Nigeria today faces the problem of traffic congestion (Moses, 2011). In Akure, the town that was not previously associated with traffic congestion is now facing considerable traffic congestion on many of its urban roads, particularly when the schools are in session.

Although, many researchers have been conducted on traffic congestion and delays in Nigeria; but most of these studies concentrate on specific cities such as Lagos (Aworemi et al 2009; Bashiru & Waziri, 2008), Ilorin (Aderamo & Atomode, 2011), The survey covered a variety of respondents ranging from commuters, drivers to experts on transportation planning and engineering from all parts of Nigeria and beyond. This is intended to provide a wider perspective to the problem of traffic congestion in Nigeria. It has been argued that there is no single widely accepted definition of traffic congestion. The reason for this is associated with operational and user perspectives. The Joint Transport Research Centre (2007) of the Organisation for Economic Cooperation and Development (OECD) and the European Conference of Ministers of Transport (ECMT) provide the following definitions of traffic congestion to reflect the different broad perspectives:

- a) Congestion is a situation in which demand for road space exceeds supply.
- b) Congestion is the impedance vehicles impose on each other, due to the speed-flow relationship, in conditions where the use of a transport system approaches capacity.
- c) Congestion is essentially a relative phenomenon that is linked to the difference between the roadway system performance that users expect and how the system actually performs.”

Traffic congestion is a condition on road networks that occurs as use increases, and is characterized by slower speeds, longer trip times, and increased vehicular queuing. The most common example is the physical use of roads by vehicles. When traffic demand is great enough that the interaction between vehicles slows the speed of the traffic stream, this results in congestion. As demand approaches the capacity of a road as well as of the intersections along the road; and extreme traffic congestion sets in. When vehicles are fully stopped for a periods of time, this is colloquially known as a traffic jam or traffic snarl-up. Traffic congestion can lead to drivers becoming frustrated and engaging in road rage.

Just as the definitions of traffic congestion are broad so are the causes. There are many causes of traffic congestion and these differ from place to place. The study attempts to investigate the main causes of traffic congestion associated with Nigerian urban cities using Akure Road as a case study with a view to suggesting solutions to help governments and policy makers towards better cost and effective management of this problem.

Traffic congestion is sometimes the result of urban development, housing, employment and cultural policies which cause people to live and work relative to one another in close proximity (ECMT, 2007). Ogunsanya (2002) argues that traffic congestion is a major transportation problem of Nigerian cities. At international level, it has been argued that “dynamic, affordable, liveable and attractive urban regions will never be free of congestion” (ECMT 2007:7). If this is true then efforts will be geared towards cost effective management of the problem. The first step towards such effective management is the identification of the problem causes. The findings from this study can provide independent information to guide the Federal and State governments, including concerned private companies and international agencies in responding to the challenges of traffic congestion in Nigeria. Besides, it will also trigger further studies in attempt to find solutions to the issues raised by this study.

2.0 OBJECTIVES

The objectives of this study include:

- i). To review the literature on existing studies concerning road traffic congestion in major urban cities of Nigeria;

ii). To investigate and proffer possible remedies to the traffic congestion problems in Futa- Oja Oba road, Akure.

3.0 LITERATURE REVIEW

A number of studies have been conducted in Nigeria and elsewhere concerning traffic congestion and its causes. Ogunbodede (2003) studied traffic congestion in Akure Nigeria using GIS approach. It was argued that traffic congestion is as a result of the increasing growth in motor vehicles without a corresponding improvement in transport facilities such as road network, traffic management techniques. The study also highlighted illegal roadside parking and lack of geospatial information necessary to tackle the spatial problem as other causes of traffic congestion. The study further suggested the use of a dynamic Traffic Information System (TIS) structure to monitor congestions in Akure city. This will also alert or inform road users about congested routes through linkage with Federal and State Radios. It cautioned however that this should not be used in isolation but to complement traditional methods of traffic management such as construction of new routes, flyovers, one-way, odd and even numbers, etc which have earlier failed on their own to solve congestion problems in cities such as Lagos, Port Harcourt, Benin-City, The limitation in the TIS approach lies in the possibility of some road users not tuning to radios, or the radio stations not devoting the entire airtime to traffic information. However, with the level of technology available today, the use of Variable Messaging Signs (VMS) located at strategic points on the road may provide a suitable alternative to the TIS.

Also, the problems of intra-urban traffic in Lagos Nigeria have been studied by Bashiru and Waziri (2008). The study found that 57% of commuters and motorists spend between 30 to 60 minutes on the road due to traffic congestion. They also found that the worst traffic congestion occurred on Mondays. This agrees with similar findings by Agbonika (2011) for Abuja City. Bashiru and Waziri (2008) listed the causes of traffic congestion in Lagos to include the following: Presence of pot holes/bad road, trading activities, on-street parking, loading and discharging of passengers, illegal bus stops, flooding/poor drainage, vehicle breakdown, narrow road sections, religious activities, high volume of traffic, lack of parking space and lack of traffic light at some road intersections.

Similarly, Aworemi et al (2009) studied traffic congestion in Lagos Metropolis. In agreement with Bashiru and Waziri (2008), the study noted the following major causes of traffic congestion. These include: poor road condition, inadequate road infrastructure, accident, inadequate traffic planning, drivers' behaviour and lack of integrated transport system.

The problem of traffic congestion at road intersections in Ilorin Nigeria has been examined by Aderamo and Atomode (2011). Road intersections form a major component of urban roads and are generally prone to traffic congestion. The study found that traffic wardens and parking problems are the greatest causes of traffic congestion/delays at road intersections in Ilorin. Their study highlights the fundamental theory of traffic flow to underscore the importance of traffic flow characteristics such as flow, density and velocity to the planning, design and operation of urban roads. This is in line with Salter and Hounsell (1996).

In a study by Agbonika (2011) in Abuja Nigeria it was found that only 18.57% of the sampled commuting population lived within the city centre. This indicates that the location of major government offices with respect to the spread of residential areas, where this is not properly considered in town planning and development of master plans for major urban cities, can cause serious congestion problem due to mass movement within the same period as in the case of civil servants moving to and from work around the same period of time. This is confirmed by the study as the worst congestions in Abuja occur in the morning (8.00 am) and evening (6.00pm) respectively.

Momoh (2011) argues that poor planning of transportation system in Nigeria has led to over dependence in motor vehicles resulting in too many vehicles with its accompanied problems including traffic congestion. This problem of poor planning/design and management has been supported by many papers presented during the NSE conference (Igwe et al 2011; Haruna 2011). The above previous studies have only concentrated on just a few cities in Nigeria and do not reflect traffic congestion problems in the country. Hence, this paper brings together road users and residents along the major roads in Akure, provides a great opportunity to study and understand the problems of traffic congestion across different parts of Akure to provide a wider perspective to the problem.

4.0 THE STUDY AREA.

The study area is Akure, the administrative capital of Ondo State. Akure became the state capital of Ondo State in 1976. The town is located within 7°15'North of the Equator and Longitude 5°05'East of the Greenwich Meridian (Figure 1). The area towards Ado-Ekiti and Idanre are hilly and studded with large granite formation, rising to 410 metres and 496 metres above sea level respectively.

In 1991, the provisional population for Akure was put at 316,925 (1991 census). The increased relative political influence of Akure as a State capital since 1976, when Ondo State was created has been partly responsible for its rapid development. This is because, the decentralization exercise, which accompanied the policy that led to the creation of the State led to the creation of jobs, which attracted many people. Improvements in transport facilities were given prominence in Akure shortly after 1976 when the city became the seat of Government. The multifarious activities, performed by Akure, influence the desire to construct new roads and rehabilitate the old ones to take care of the envisaged new roles and status of the city. Thus, houses were demolished along the major road, which hitherto was a single carriageway, to accommodate dual carriage road. Other important transport facilities that were developed include pedestrian walkways, overhead bridges, zebra crossings, bus stops, parking facilities, tarring of some feeder roads, erection of streetlights and traffic lights. The Futa to Oba-Adesida road down to Alagbaka is the most busy in Akure due to its linkage to the central business district (CBD) of Akure.

5.0 METHODOLOGY

The preliminary stage involved a reconnaissance visit to the study area for on-the-spot evaluation of the selected traffic congestion areas in the city. The primary source of data collection involves direct collection of information on the field, using camera to capture three dimensional situation of traffic jam, traffic counts, oral interview and observations. The data collected from primary sources include, pictures of traffic-congested zones, information on traffic-congested junctions, the roads and the land use areas.

The secondary source of data collection involves sourcing information from existing records. Such data include Land Use Images of Akure for 1986 and 2006, which were collected from RECTAS, Traffic counts for different road junctions in the town, topographical and street guide maps, which were collected, from the Ministry of Works and Planning, Akure.

5.1 Characteristics of respondent.

In order to determine the characteristics of the respondents, respondents were asked to classify themselves according to the following: Passenger, Taxi-Driver, Private car driver, Pedestrian, Resident along major roads. The results are presented in Table 2, it shows that 30% of the respondents are taxi driver, 24% are Private car driver, 20% are passengers, 14% are pedestrian, 12% are resident along the major roads.

6.0 RESULTS AND DISCUSSIONS

This section presents results and analyses of traffic congestion in major urban cities of Nigeria. A total of 94% of the respondents agree that they experience traffic congestions along FUTA to Oja-Oba road, while 6% disagree that there are traffic congestions along the road. This appears to agree with Moses (2011) who argues that traffic congestion is a problem in most cities of Nigeria. Also concerning the state of roads in the city, 60% of the respondents agree that the state of roads in the city is at least good, while 40% believe that the state of roads is poor. The nature of roads has a tendency to affect traffic congestion. For instance, roads with pot-holes are likely to impede the smooth flow of traffic and therefore will increase congestion of traffic around the position of pot-holes.

6.1 Causes of Traffic Congestion

This study has shown that road economic importance (important of places the road link to) is the most significant cause of traffic congestion in Nigerian urban cities. From Table 3, it can be seen that other major causes of traffic congestion include: poor driving habits, work zones, inadequate road capacity, lack of parking facilities, poor traffic control/management, presence of heavy vehicles, road side parking, special events, reluctant to use parking facilities and bus stop, poorly designed junctions/roundabouts and lack of efficient public mass transport system. These tend to agree with earlier findings from a number of studies (Bashiru and Waziri 2008; Aworemi et al 2009; Aderamo and Atomode 2011).

6.2 Modes of Urban Transportation

In order to understand the problems of congestion and proffer solutions in line with global practice, the authors investigated different means of urban transportation available to respondents. The results are presented in Table 4. These indicate that urban transportation in Nigeria is mostly done using private cars and taxis. These have a tendency to increase congestion due to too many vehicles on the road. For instance 20 passengers in a single mass transit bus will translate to 20 vehicles on the road at the same period of time, if all the passengers chose to use private cars instead of bus and about 6 to 20 vehicles, if the passengers chose taxis. Hence, the means available for urban transportation has a tendency to affect traffic congestion.

6.3 Remedies to Traffic Congestion

The findings from this study on the possible remedies to traffic congestion are presented in Table 5. These show that good road network/improvement, encouragement of public mass transport, proper traffic planning/management, regular road maintenance, construction of interchanges and regular education of road users are among the major remedies suggested from this study.

7.0 CONCLUSION AND RECOMMENDATIONS

This study has brought into focus the issue of traffic congestion in major road in Akure, Ondo State, Nigeria. The main causes of congestion have been considered indicating that poor driving habits, road side parking, presence of heavy vehicles, weather condition and lack of public mass transport system are the greatest causes of traffic congestion on FUTA to Oja-Oba road, Akure.

The study has also highlighted some remedies to improve traffic congestion in Nigeria. Good road network, encouragement of mass transport system, proper traffic planning/management, regular road maintenance, construction of interchanges and regular education of road users are among the recommendations to reduce traffic congestions. The state government who controls most of the areas

affected by congestion should encourage the use of reliable mass transit buses to reduce the number of vehicles on their urban roads. Proper and consistent traffic control system should be sited across each junction, including provisions for enforcing compliance by taxi drivers. The Federal and State governments should initiate plans for the introduction of other forms of urban transportation such as Metros and Trains which support mass movement of people as done in major urban cities globally.

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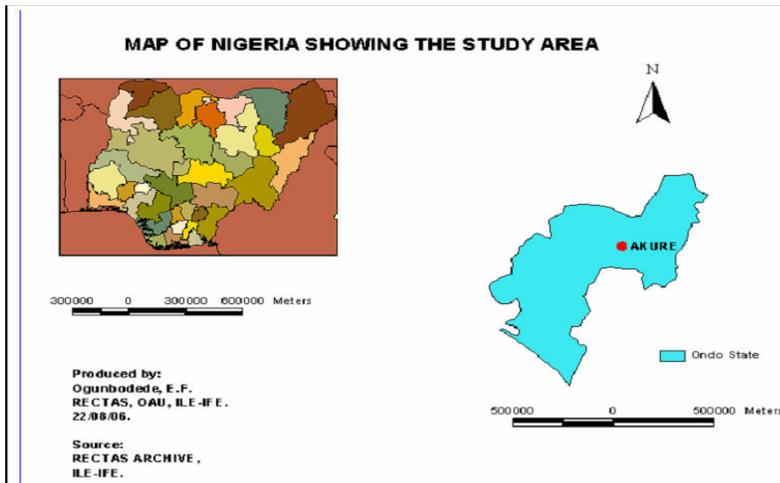


Figure 1: Map of Ondo State Showing the Study Area (Akure)



Plate 1: NURTW officials standing in the middle of road



Plate 2: Road side parking causing traffic



Plate 3: Showing Cathedral bus stop



Plate 4: Showing walkway and road furniture



Plate 5: Showing digital traffic control system



Plate 6: Showing unuse toll free car park

Table 1: Traffic entities and their description

S/No	Entities	Description
1	State	Political and administrative area where the study area is located
2	City	The study area whose traffic situation is being studied
3	Road	The traffic corridor on which vehicular means such as motor cycles, cars, taxis, pick-ups, lorries, tippers, buses etc ply.
4	Junction	This is the point of convergence of traffic emanating from two or more traffic corridors. The junction could be "T" or "Cross"
5	Traffic light /warden	This could be an automatic traffic management technique or human control system used to instill orderliness in the passage of vehicles at junctions

Table 2: status of respondent

S/No	Status	No	Percentage
1	Taxi / Commercial driver	15	30
2	Private car driver	12	24
3	Passenger	10	20
4	Pedestrian	7	14
5	Resident	6	12

Table 3: Causes of Traffic Congestion.

Rank	Causes	No	Percentage
1	Road economic importance	9	18
2	Poor driving habits	8	16
3	Road side parking	7	14
4	Presence of heavy vehicles	6	12
5	Poor traffic control/management	5	10
6	Weather condition	5	10
7	Poorly designed junctions/roundabouts	3	6
8	Reluctant to use parking facilities and bus stop	2	4
9	Lack of public mass transport system	2	4
10	special events	2	4
11	Others	1	2

Table 4: Modes of Transportation

Rank	Means of transportation	No	Percentage
1	Taxi and others	10	20
2	Private cars and others	8	16
3	Taxi	7	14
4	Private cars	6	12
5	Motorcycle and others	6	12
6	Motorcycle	5	10
7	Bus and others	4	8
8	Trekking and others	3	6
9	Bicycle	1	2

Table 5: Remedies to Congestion

S/No	Remedies to Congestion	No	Percentage
1	Improved urban work zone	9	18
2	Education	8	16
3	Enforcement	7	14
4	Parking	4	8
5	Public mass transport	4	8
6	Traffic management/ Planning	5	10
7	Provide alternative road	6	12
8	Re-routing of heavy-duty vehicles	6	12
9	Road furniture	1	2