

Evaluation of the Impact of Lagos State Traffic Management Authority Activities on Traffic Congestion in Lagos State

ALAMUTU, Suliamonu Adigun (Ph.D.), HAMMED, Olawale Gazal.
Department of Management Technology Faculty of Management Sciences, Lagos State University
Department of Management Technology College of Management Sciences, Bello University, Ota.

ABSTRACT: This study examined traffic management in Lagos state metropolis in relation to activities of Lagos state traffic management authority. This study identified various factors affecting the operation of Lagos State Traffic Management Authority on traffic congestion and assessment of public opinion in achieving the goal of Lagos State Traffic Management Authority. This study adopts survey research design for data collection. Yao Yamani was used to determine the sample size and simple random sampling technique was further used to select 388 drivers, Lagos State Traffic Management Authority officials and commuters. The instrument used was validated using content validity and test re-test was used to determine the reliability of the instrument. The data collected were analysed using descriptive and inferential statistics. Descriptive statistics was used to analyse the demographic data obtained for the study while regression analysis was used to test the hypotheses as well as determine the degree of relationships among the variables. The null hypotheses were tested at 0.05 level of significance. Thus, findings revealed that Shomolu Central Business District is a functional region within the Lagos metropolis because of the fraction it performs to Lagos in general and other neighbouring settlements in particular. It was therefore recommended that since the mobility patterns are also functioning of spatial distributions, there should be a developmental condition on the supply of public transportation and municipal planning on the basis of public transportation.

Keywords: traffic management, focus group, transportation, and road traffic.

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I. INTRODUCTION

Background of the study

According to Umoren Eni and Etim (2011), transportation is the movement of people, goods and services from place to place. Also, it is further described as an essential ingredient for socioeconomic development which serves as a great need for any settlement throughout the world. Transportation system is also seen as an important instrument for channelling directing, championing, and redirecting settlement development pattern (world bank, 2015).

Basically, Traffic can be seen as a function of activities, since people do not of course move about from one place to another for mysterious reason of their own. They only move in responses to specific needs. However, traffic congestion and cities; go hand in hand because traffic congestion are product of vibrant and successful cities and towns (Cresswell, 2018). Urban transportation is widely acknowledged and known all over the world for having a major impact and role on the extension and direction of technology development as well as communication and innovation diffusion. Thus, the growth of economic activities calls for more and improved transport facilities and management planning.

Statement of Problem

In a bit to reduce problem of traffic congestion and associated problem, Lagos state government introduced LASTMA (Lagos State Traffic Management Authority) established for road traffic administration and management through the gazette volume 33 no. 5 of 22nd June, 2000. The Lagos state traffic management authority is a parastatal under the ministry of public transportation (MOT) Lagos state. The agency was charged with the road traffic matters with a system of operations that makes it responsive to the demands of traffic and to ease traffic congestion, reduce travel delay, improve access to commerce and industry, redirect traffic, improve the environment, protect and enhance safety of all road users and enhance sustainable transport system in the mega city of Lagos. These are the major problems that cause traffic congestion in Lagos State. Despite the presence of LASTMA most of these problems still persist because the functions meant by this agency had not

been properly addressed. Therefore, this study focuses on the evaluation of LASTMA activities on traffic congestion for sustainable transport administration in Lagos metropolitan area.

II. OBJECTIVE OF THE STUDY

The main objective of the study is to evaluate the impact of LASTMA on the traffic congestion in Lagos State. The specific objectives are:

- i. To examine the effects of the establishment of Lagos State Traffic Management Authority on traffic control in Lagos State.
- ii. To examine the effects of unethical behaviour of motorist on traffic congestion in Lagos State.

III. RESEARCH QUESTIONS

- i. To what extent does the establishment of Lagos State Traffic Management Authority enhance control of traffic in Lagos State?
- ii. Does unethical behaviour of motorist lead to traffic congestion in Lagos State?

Hypothesis one

Ho: There is no significant relationship between traffic situation and establishment of Lagos State Traffic Management Authority

Hypothesis two

Ho: There is no significant relationship between unethical behaviour of motorist on traffic congestion in Lagos Metropolis

IV. LITERATURE REVIEW

Conceptual Framework

Road traffic congestion is imminent when users of a particular facility begin to interfere with other users, due to the limited capacity of the infrastructure (Van Oort, 2011). Traffic congestion occurs in a freeway, when the density of vehicles exceeds certain critical number. Since the addition of a singular car to a road that has already reached its saturation level will result in “dead-weight”, that is road traffic congestion. The dead weight, both vehicle speed and vehicle flow will drop precipitously thereby making travel time between two point on the road in question to become unpredictable. Other related problems include fluctuating transportation cost, excessive fuel consumption as well as aggravated auto-induced pollution (Buton 2010). Also, these are noticeable phenomenon on Lagos roads.

(Ikpong, 2016) conceptualised traffic congestion as when urban road network could no longer accommodate the volume of traffic using it. This situation is usually caused by rapid growth in motorization with less than corresponding improvements in the road network and related facilities. However, (Akinboro, Adeyiga, Johnson, Omotosho, & Adebayo, 2017) agreed that traffic congestion usually result in a situation whereby too many cars are occupying the same amount of road space available at a given time. In the same vein, (Rao & Rao, 2014) (Mabogunje, 2018) stated that one of the most important features of transport supply is congestion. In other words, the higher the numbers of new roads provided as panacea to congestion, the higher the demand for travel.

Consequent to these past studies, road traffic congestion in this paper is conceptualized as vehicular traffic impediment to free movement of persons or goods from one location to the other in an urban environment.

(Akinboro, Adeyiga, Johnson, Omotosho, & Adebayo, 2017) observed that one of the basic transportation obstacles all over the world was that traffic congestion which is mainly caused by agglomeration of different traffic generator in some part of the cities. (Griffis& Goldsby, 2017) argued that crisis in urban centre attracts the greatest number of traffic generating activities like conflicts in movements within and outside the urban centre. (Griffis& Goldsby, 2017) also mentioned that the site of urban centres arises out of the demand of external contact in long distance trade between people. Traffic congestion occurs as a result of continuous increase in road space utilization by vehicles and it is characterized by lower speeds, longer vehicle queues and increase journey time. In Lagos and in some other major Nigerian cities, traffic jam, which is an extreme case of traffic congestion whereby vehicles are fully stopped for a length of time before moving again, is more common. (Takyi, Kofi, &Anin, 2016) opines that traffic congestion and traffic jam are classic demand and supply problem which may be solved by either increasing road capacity (supply) or reducing traffic (demand).

Traffic congestion is considered one of the main urban transportation problems with an estimated cost of about \$100 billion annually in the US and comparable costs in other countries (Victoria Transport Policy Institute, 2005). Studies conducted by Shrank and Lomax (2001) placed the annual cost of traffic congestion at \$2,805,000,000 in San Francisco Bay Area in 1998 for 58,855,000 daily vehicles miles travelled with a negligible change in available lane miles. Traffic research still cannot fully predict conditions which “traffic jam” (as oppose to heavy, but smoothly flowing traffic) may suddenly occur (TTI, 2009). It has been found that

individual incident may cause ripple effect (a flowing failure) which then spread out and cause a sustained traffic jam. Traffic congestion occurrence is not a major sign of failure, but rather an inevitable by-product of vibrant and successful cities. Traffic congestion exists in every major metropolitan area in the world. Peak-hour traffic congestion in almost all large and growing metropolitan regions around the world may remain for some time.

For instance, various authors. Oyesiku (2002), Adeniji (2000). Auclair (1999), World Bank (2001), asserted that travel speeds in cities are decreasing and the travel environment for pedestrians and people-powered vehicles are deteriorating in developing countries. Furthermore, inefficiency of the entire road transport system in five major cities with over 4 million people (Bucharest, Jakarta, Kinshasa, Lagos and Manila) in the sixteen developing countries experienced an average one-way journey to work of about one and quarter hours or more. The economic and social waste from congestion necessitates the need that water transportation lives like a full-time support to development of Lagos. Lagos is known not only as a centre of commerce and investment but also for severe traffic congestion problems. Transportation in Lagos State is usually chaotic. This is because six million passengers hustle daily between Lagos mainland and island. Motorized transportation accounts for more than 90% of passengers and freight traffic. With the enormous growth in car traffic in recent years, the increased in congestion is expected to continue in the years to come unless there is a commensurate road expansion or new ones constructed.

There are two prominent types of road traffic congestion identified by Mkhize, (2005), namely: recurring and non-recurring congestion. The former result from the saturation of the road capacity by vehicles of various sizes, while the latter is as a result of happenings such as multiple accidents, disabled vehicles, and natural disasters to mention a few.

Nevertheless, traffic management according according to Tiwari, (2005) is a cost-effective measure of countering road traffic congestion in any given urban traffic environment. Traffic management as explained by (Cresswell, 2018) is the art of optimizing the use of a fixed network of streets and highways. Traffic Management Systems (TSM) was highly recognized in the 1970s in United States of America. Hence, he also divided against roads capacity expansion by construction in congested corridors, which was in the fifties an acclaimed technical strategy for curbing road traffic congestion in Unites States of America.

The three distinct separate purposes of traffic management are maximizing of vehicles carrying capacity, the maximization of people-carrying capacity, and the promotion of amenity and safety by assigning some road space predominantly or exclusively for pedestrian use. But, until recently according to Oyesiku (2002), virtually all traffic engineers have viewed their main task as maximization of vehicle-carrying capacity on any given road. However, the establishment of Lagos State Traffic Management Authority is an attempt to eradicate or reduce death rate, injuries and economic losses from road traffic accidents, conflicts, congestion and delays on public highways in Lagos State by employing modern traffic management techniques to inject order and control into the road traffic system; Determinations of locations, types and specification of traffic control devices, adjusting alignment and width of roads, allocations parts of the carriage way to particular classes of vehicles, especially buses, providing crossing, facilities and exclusive areas for pedestrian, provision of terminal for buses and taxis, development of efficient traffic policing system to regulate actions of the road and to apprehend as appropriate. Since some of the measures are by and large restrictive, their successful implementation therefore depends on public management and control measures must be followed with adequate public education plans prior to implementation. The implementation must therefore be carried out without fear, favour or prejudices of any kind and dimension Ogunsanya, (2002).

Theoretical Framework

The theoretical framework for this study is the systems concept. A system is a set of elements in mutual interaction or which are played together or adjust into regular and connected whole (Kirk Patrick, Chamber 20th century Dictionary). System concept is an approach that views a phenomenon (such as objects and showing their relationship in the form of process, with the object of first understanding, and then controlling and optimizing the phenomenon or its constituent processes). The system concept is an important concept in most social science studies.

According to (Rodrique, 2018) “Any change introduced in one part of the system will affect all others, i.e. the entire system through a change reaction”. He further explained that transport system has been identified to have three (3) components, these are the vehicle, terminal and human element. The road is the fundamental to any form of movement of people and goods moved from one point to another while terminal is regarded as to anywhere access is available between ways. These are what makes up the transport system, they are vital inter-structural needs without which any transport system can function effectively. The system concept in this study is used to explain the importance of the vehicle, terminals and human elements. The concept is based on the belief that this is greater than the constituent elements forming the whole system but these elements are so important that reach exerts influence or role in the making of the system such that absence of one of these elements create distorious and makes the whole system not to work or be representative of what it should stand for

(Vukanovic&Ernhofer, 2016). Any attempt to overlook the important of one of components within the framework of urban transport system will not only causes traffic jams, chaos and congestion but will also lead to insecurity of lives and property and consequently impair the efficiency of the whole transport system. The system concept used have explained the framework of the transport system, which shows the important of not only the roads and the vehicles, but also the terminals and human elements are equally important for efficient and effective running of the entire system Mkhize, (2005).

Research Methods

This study evaluates the impact of LASTMA on management traffic is Lagos metropolitan area. Survey research design was used for data collection using structured questionnaire. The population of the study is 12,400, which comprises of drivers, LASTMA officials and commuters in Shomolu local government respectively. Yaro Yamani formula was used to determine the sample size at 5% significance level, given sample of 388 which was proportionally allocated to n_1 for drivers, n_2 for LASTMA official and n_3 for commuters using a simple random sampling technique. The instrument was validate using content validity and the reliability of the instrument was done using test-retest methods. The data collected was analysed using descriptive and regression analysis.

Analysis of Demographic Characteristics of the Respondents

Background characteristics of the respondents are very important in the analysis of social survey related to human behaviour. In this particular case, they helped in undertaking the social background of the person who responses are germ and to this study. This section is devoted to the discussion of the respondents’ variables. These variables are gender, age, marital status, academic qualifications and occupation. These were measured by requesting the respondents to tick alternative responses provided in the bio-data.

Distribution of Respondent by Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	203	52.3	52.3	52.3
Valid Female	185	47.7	47.7	100.0
Total	388	100.0	100.0	

Source: Field Survey, 2018

The table above shows that the majority of the respondents were male and they constitute the people who are forthcoming in their responses. A total of two hundred (203) which constitute 52.3 percent of the respondents were male 1 while the remaining twenty-four respondents (185) which constitute 47.7percent of the respondents were female. The table further indicates the frequency count covered the scope of the study.

Distribution of Respondents by Academic Qualifications

	Frequency	Percent	Valid Percent	Cumulative Percent
WAEC	55	14.2	14.2	14.2
OND	96	24.7	24.7	38.7
NCE	50	12.9	12.9	51.8
Valid	58	14.9	14.9	66.8
HND	79	20.4	20.4	87.1
B.Sc.	50	12.9	12.9	100.0
Other	388	100.0	100.0	
Total				

Source: Field Survey, 2018

Hypothesis Testing

Two hypotheses were formulated to give statistical validation to the solutions proffered by the study. Regression analysis was used to test the hypotheses and the results were presented in table below.

Hypothesis One

Ho: There is no significant relationship between traffic situation and establishment of Lagos State Traffic Management Authority.

Model Summary Table

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
I	.621 ^a	.376 ^a	.376	.35618
a. Predictors: (Constant), To what extent does the establishment of Lagos State Traffic Management Authority enhance control of traffic in Lagos State?				

The table above indicates the model summary of the regression equation showing whether: there is significant relationship between traffic and the establishment of Lagos traffic management authority or not. The interpretation of the information provided in the model summary table about the regression analysis are provided as follow. First, the simple R' column is the correlation between the actually observed independent variable and the predicted dependent variable (i.e. predicted by the regression equation). 'R square' is the square of R and is known as the coefficient of determination. It states the proportion (or percentage) of the (sample) variation in the dependent variable that can be attributed to the independent variable(s).

In this study, the value of the **R²** is 0.376 or 37.6%. This means that the population of variation in transport sustainability in Lagos metropolitan area is explained by the LASTMA activities. Though the value is below average, being significant at 0.0000, makes it significant at 0.05 significant level. This shows that LASTMA activities contributes to the significant changes in transport sustainability in Lagos metropolitan area. The value of R² (**R² = 0.376**) also suggests that some other factors contributes to transport sustainability in Lagos metropolitan area. The adjusted R square refers to the best estimate of R square for the population from which the sample is drawn. The value is 0.376, meaning that the model is moderately fitted. The standard error of estimate indicates that, on average, observed traffic flow volume or scores deviate from the predicted regression line by a score of 0.35618. The low value indicated that the regression equation is valid and significant.

Hypothesis Two

Ho: There is no significant relationship between unethical behaviour of motorist on traffic congestion in Lagos Metropolis

To test the hypothesis, regression analysis was adopted and the same statistical tools were used. The results are presented below

Model Summary Table

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
I	.621 ^a	.475	.467	.36570
a. Predictors: (Constant), Does unethical behaviour of motorist lead to traffic congestion in Lagos State?				

Source: Field Survey, 2018

The table above indicates the model summary of the regression equation showing whether: there is no significant relationship between unethical behaviour of motorist on traffic congestion in Lagos Metropolis. The interpretation of the information provided in the summary of the regression analysis is to predict whether the restriction of commercial motorcycles in the metropolis significantly affected travel time of commuters or not. In the Table, the value of the R² is 0.475 or 47.5%. This implies that the proportion of variation in the travel time of commuters' in the study area is explained by the restriction of commercial motorcycles. The value of R^z indicates that variation in lack of implementation of traffic r-les, negligence and traffic discipline/lane discipline lead to traffic congestion. The result showed that the lack of implementation of traffic rules, negligence and traffic discipline/lane discipline leads to traffic congestion in Lagos State. The result is significant at 0.5. The value of adjusted R square is 0.467, indicates that the model is well fitted. The standard error score is 0.36570. the low value shows that the regression equation is valid and significant. The results suggest that the lack of implementation of traffic rules, negligence and traffic discipline/lane discipline leads to traffic congestion in Lagos State.

V. SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The study investigated activities of LASTMA in the management and control of traffic in Lagos Metropolitan Area, using Shomolu Local Government as a study. Having fully-synthesized, analysed and evaluated all relevant survey data collected in the study area, it was observed that the study area, Shomolu CBD is adequately fit into typical CBD in any typical urban centres in Nigeria, West Africa and even the whole world. Also, the research conducted identified Shomolu CBD as the central in terms of location and accessibility. Such as Shomolu - Agege, Iyana Ipaja route, Shomolu - Mushin, Ijora, Idumota route, Shomolu - Mile 2, Badagry route, Shomolu – Ikeja route, Shomolu – Ikorodu Road, Yaba route, the study also revealed that, Shomolu CBD is a functional region within the Lagos metropolis because of the function it performs to Lagos in general and other neighbouring settlements in particular.

Conclusion

The study concluded that the solution to the traffic congestion problems in major cities on Lagos is not necessarily a question of choosing one option out of various proposed alternatives to the complete exclusion of the others. Rather, it involves apportioning priorities to the all proposed alternatives put across. It is better to commensurate, complement and ensure a desired minimizing movement friction among the alternative proposed. Hence, there is need for strict enforcement of the proposed alternatives in order to achieved desired results

Recommendations

Based on the findings of this study, it was recommended that measures should be taken to assist private and public urban transport operators in procurement of public transport vehicles, which includes downward review of important exercise duties on these vehicles.

Since mobility patterns are also a function of the sparcial distribution of activities and modes of transportation, and tis distribution is frequently influenced by physical planning approach, therefore priority to public transportation and municipal planning on the basis of public transportation should be given an adequate attention in government fiscal planning.

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