Research Paper

Towards Efficient And Effective Traffic Management System. (A Case Study Of Abakpa Nike Enugu State Nigeria)

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ABSTRACT:- Traffic problems are very common in the Central Business District of Nigeria Cities as a result of the growth concentration of population, rapid urbanization and economic activities of certain point of the world. Edward Ulman observed that transport is applied to move people, goods or service in order to enable two places to interact in which there must be specific demand and supply. The attended cost and dependability of transport service and infrastructures have enabled an increasing number of people to seek economic, social and education opportunities that urban areas ideally provided. But contrarily, central Business District metropolitan cities have grown to the point where threaten to strangle the transportation that made them possible. In view of the above, this research work examine, toward efficient and effective traffic management system for Abakpa (Enugu state). The methods used for data collection were mainly questionnaire administration; secondary data extracted from documented information relevant to the research work; format and informal interview and data analysis technique and interpretation. Relevant literatures on the research on the research topic were reviewed.

I. INTRODUCTION

Traffic control is an outdoors occupation, night or day for long hours in all weathers, and is considered a dangerous occupation due to the high risk of being struck by passing vehicles. Safety equipment is vitally important. Fatigue is a big issue, as tired TC's may forget to watch their traffic, or may inadvertently turn their "Stop bats" to the "Slow'' position. Many drivers are annoyed by the disruption to their route, and some are sufficiently antisocial as to aim at traffic controllers. Other drivers simply don't pay enough attention to the road, often from using their mobile (cell-) phones, or because they are tired from a night shift at work. Not a few are exceeding the posted speed limit.

Typically, a worksite will be set up with warning signage well in advance of the actual work area. This may involve (in Australia) "Roadworks Ahead", temporary speed restrictions, "worker Symbolic" (a stylized workman with a pile of rubble, black silhouette on a retroflective orange background), "Reduce Speed", Lane Status board (indicating that some lanes on a multilane will be closed) "Prepare to Stop and advisory signs telling what's happening (e.g. Water Over Road, Trucks Entering, and Power Line Work Ahead). If lane s have been closed, large flashing arrows (arrow-broads) on trailers may be utilized to give motorists hundreds of meters warning to move over. Motorists will be advised they are leaving a worksite by speed reinstatement or "End Roadworks" signs.

The worksite will usually involve reserving a part of the road for work area. How this is done depends on the type of road: on a multi-lane road, one or more lanes will be closed off and traffic merged into the remaining lane (s), using cones and "Chevron" signs and arrow-boards to guide motorists. On a wide road (more than 3 meter per lane in Australia), traffic could be "diverted" around the work area by using cones to define a new road centerline and another line of cone around the work area. Sometimes, it is necessary to close a road and detour traffic.

Often, the road is not wide enough to permit opposing streams of traffic past the work area. Then it is necessary to use "Stop/Slow", where each stream is allowed past the work area in turn. On an intersection, this may involve four or more streams. At signalized intersections, it may be necessary to have the traffic light disabled.

Roundabout, working in London on a study of 500 accidents at conventional roundabouts found out that for one-vehicle accidents, 22 percent were caused by vehicles entering the roundabout, 20%by those on roundabout and 7%by those leaving, for two-vehicle accidents,8% were caused by both vehicles entering, 17% by entering and one on it, 3% by one entering and one leaving, 17% by both on the roundabout, 11% by one on the roundabout and one leaving and 2% by both leaving. The priority rule 'give way to the vehicle from the right' was found to have reduced accidents by about 40%

4-way intersections: these have been found to be more dangerous than the 3-way junctions. Study [6] show that 'YEILD' signs can be an effective way of reducing accidents sat low volume intersections.

1.1 BACKGROUND OF STUDY

EnuguState is a mainland state in southeastern Nigeria. Its capital is Enugu, from which the state-created in 1991 from the old   EnuguState -derives its name. The principal cities in the state are Enugu, Awgu, Udi, Oji, and Nsukka
EnuguState is one of the states in the eastern part of Nigeria.

The state shares borders with Abia State and Imo State to the south, Ebonyi State to the east, Benue State to the northeast, Kogi State to the northwest and Enugu State to the west.

Enugu, the capital city of Enugu State, is approximately $2^{1/2}$ driving hours away from Port Harcourt, where coal shipments exited Nigeria. Enugu is also located within an hour's drive from Onitsha, one of the biggest commercial cities in Africa and 2 hours drive from Aba, another very large commercial city, both of which are trading centers in Nigeria. The average temperature in this city is cooler to mild (60 degrees Fahrenheit) in its cooler months and gets warmer to hot in its warmer months (upper 80 degrees Fahrenheit) and very good for outdoor activities with family and friends or just for personal leisure.

Enugu has good soil- land climatic conditions all year round, sitting at about 223 meters (732 ft) above sea level, and the soil is well draining its rainy seasons. The mean temperature in EnuguState in the hottest month of February is about 87.16 ^{o}f (30.64 ^{0}C).while the lowest temperatures occur in the month of November, reaching 60.54^{0}F (15.86^{0}C). The lowest rainfall of about 0.16 cubic centimeters (0.0098 cu in) is normal February, while the highest is about 335.7 cubic centimeters (2.18 cu in) July.

1.2 STATEMENT OF PROBLEMS

Traffic congestion, often bad enough to require drastic control measures, was a feature of city life at least as Roman times. A basic cause, then as now, was poor city planning, with road laid out in such a away as to bring traffic from all quarters to a central crossing point.

It is against this backdrop that the researcher deemed it fit to embark on this research "towards efficient and effective traffic management system for Abakpa (a study of Abakpa Nike Road)

1.3 AIMS AND OBJECTIVE OF THE STUDY

The main aim and objective of study is as follows:
  i.   To carry out an appraisal on the traffic management system for Abakpa Nike, Enugu
 ii.   To identify the problems of traffic management in Abakpa Nike Enugu
iii.   To ascertain the traffic management problems of Abakpa Nike Enugu

1.4 RESEARCH QUESTION AND HYPOTHESIS

The following question where derived in the course of this study
  i.   To carry out an appraisal on the traffic management system for Abakpa Nike, Enugu.
 ii.   Does poor planning result to traffic problem
iii.   Does efficient and effective traffic management minimize the traffic problem?
 iv.   Are there any possible any possible solutions to the traffic problems in Abakpa Nike Enugu.

1.5 SIGNIFICANCE OF THE STUDY

This research work is significant in that it set out to analyze the recent developments in traffic and the traffic issues in Abakpa Nike Enugu.
The study if fully digested will provide invaluable information and guide to various ways of solving the traffic management problems in Abakpa Nike.
 In particular, the study will provide the authorities a good insight into the benefits of effective and efficient traffic management in not only Abakpa Nike Enugu but also in order areas in Enugu state and NigeriaState and Nigeria at large.

1.6 SCOPE OF THE STUDY

The research narrowed down her investigation to quoted area in Enugu state, which is Abapka Nike. This will enable the researcher to have full concentration on the case study for easy data collection and analysis

1.7 LIMITATION OF THE STUDY

a)   One of the major problems faced in the course of this study   was scarcity of books and related literature on the subject matter written with the Nigerian background. As a result of this limitation due reliance was placed on official publications and foreign.
b)   The second and perhaps the most limiting problem encountered was the un-co-operative attitude of some respondent who were selected from Abakpa Nike Enugu

1.8 OVERVIEW OF THE STUDY

Management is a universal function which is applied in every area of human endeavor. Management is a dynamic process which is not limited to a place, time or area. Thus, the management process involves setting objectives and developing plans to achieve them, implementing the plan through leadership and controlling, and appraising performance against previously set standards (Konontz et al, 1980). Waste management is the collection, transport, processing or disposal, managing and monitoring of waste materials. Waste management practice can differ for developed and developing nations, for urban and rural areas, and for residential and industrial producers. Waste management, collection, treatment, and disposal in any society is a function of the level of sophistication of its technology. This is high industrialized societies, management of both solid and liquid wastes poses little or no environmental and health problems to their respective citizens, since they have developed technologies which convert for many useful by- products which serve as raw materials for many subsidiary industries. In contrast, management of solid waste in Nigeria and many other developing countries serious.Challenges due to the absence or lack of appropriate technologies, financial constraints and inefficiency in waste management. (Adeshina, 2000)

Indiscriminate dumping of solid waste along the streets and road corners cause a lot of deadly infectious diseases which could be responsible for the large proportion of morbidity and mortality in Nigerian. A deterministic model needed for short and term waste management and management information system in Enugu State sanitation and environmental protection agency (ESWAMA) is considered, with brief method of the literature on model methods is presented, with brief method of the study and analysis used for the determination of the required results. Moreover, this study was aimed to determine which type of integrated solid waste management option or programme will be used implement minimized cost and maximized benefit (benefit cost ratio) over a long period of planning period. Consequently, the model will be used by the decision makers in finding the solution to environmental, economical, sanitary, technical and social goals through the use of equipment, routine maintenance, personal and sundry.

1.2   BRIEF DESCRIPTION OF THE STUDY AREA

Enugu state is a mainland state in Southeastern Nigeria. Its capital is Enugu from which the state- created in 1991 form old Anambra-State derived its name. the principal cities n the state are Enugu, Agbani, Awugu, Udi, Oji and Nsukka .Abakpa is one of most populated area in Enugu state, some of the notable areas include Ugbene, Nike road, cornerstone bus-stop into the sprawling suburb or Ugbene I, the Eke layout street roads, villa Grade roads. Ogwuago among others around the timber market that adjourns New GRA some of the residents are middle class workers.

1.3   POPULATION OF STUDY

Population in this area can be animals, individuals or groups subjected to test in a particular study. But for the purpose of this study, the researchers used Abakpa Nike RoadEnugu as the area of study. Residents of Abakpa were considered for the study because they are well versed in the traffic situation in Abakpa Nike Road, Enugu.

1.4   The researcher randomly selected 500 respondents from the research population. The sample size for this study will be derived from the population using the Taro Yamane formula given as:

n   = N
    1+N (e) 2
Where n = Sample size; N = POPULATION SIZE;
      E = error margin; and 1   = constant

$$n = \frac{500}{1+500(0.05)2}$$

$$n = \frac{500}{1+500(0.0025)}$$

$$n = \frac{500}{2.25}$$

n   =   222.2
n   =   222

They sample of the study therefore is 222

in the light of the above, the research will adopt the simple random sample random sampling g technique to administer the questionnaire to the respondents. According to Uwakwe (2006, p. 18) in simple rand on sampling, "each element in the sample hand equal and independent chance of being selected in the sample''. This technique was chosen to enable the categories of the respondents, which from the representative sample.

1.5   SOURCES OF DATA

1.6   The data utilized in the study were gathered from two main sources. They are:

1.   Primary sources.
2.   Secondary sources

PRIMARY SOURCES OF DATA
This data are gathered with a structured questionnaire, field observation and with and with an interview schedule.

SECONDARY SOURCE OF DATA
 The principle sources of secondary data in this research consist of published and unpublished material from textbooks newspapers, workshop/conference papers, gazettes, etc.

1.7   INSTRUMENT OF DATA COLLECTION
The instrument of data collection in this study is the questionnaire. The questionnaire is a structured one and is designed with close-ended and questions. The questionnaire is also divided into two parts; the first part deals with the demographic details of the respondents while the second part concentrates on the questions designed to elicit responses for the study. In all, 222 copies of questionnaires will be administered to sample of the study.

1.8   METHOD OF DATA COLLECTION
The accuracy of the method employed in data collection invariably leads to good quantity research therefore, the following data collection method are adopted.

1. **OBSERVATION:** This method entailed physical visit to each of the sampled property to observe, obtained and record accurate data for the research.

2**. INTERVIEW:** in adopting this method, the research had to interview some respondents especially landlords, tenants and other residents in Abakpa Nike Road, Enugu which cannot be collected through questionnaire.

3. **QUESTIONNAIRES:** These were prepared and administered to the respondent on a face to face basis.

II.   DATA PRESENTATION AND ANALYSIS

The percentage and tabular method of analysis are used here to analysis the data collected. This is because of simplicity clarity and understanding which the method has to offer to a layman at a glance.

Reader will know the result of the analysis and which hypothesis is validated and one not validated and one validated by empirical test.

2.1   PRESENTATION OF BASE DATA

2.1.1 Table One: Question 1: Are there lots of traffic along Abakpa Nike Road?

OPTION	NO OF RESPONDENTS	PERCENTAGE
YES	82	82
NO	15	15
NO idea	3	3
Total	100	100%

Source: Field survey, 2012

The table above shows that out of the 100 respondent 82 agreed that there are lots o traffic along Abakpa Nike Enugu, 15 said that there are less traffic along Abakpa Nike Road while the remaining 3 had no idea to the subject matter.

2.1.2 Table two: Question 2: is there any measure in place to manage traffic along Abakpa Nike Road.

OPTION	NO OF RESPONDENTS	PERCENTAGE
Yes	58	58
No	15	15
No idea	3	3
Total	100	100%

Source: field survey, 2012

From the table above, it can be deduced that 58% agreed that there are any measure in place to manage traffic along Abakpa Nike Road, 15 disagreed and the remaining 3 had no idea on the subject matter.

2.2 Table Three: Question 3: can traffic along Abakpa Nike Road be managed

OPTION	NO OF RESPONDENTS	PRECENTAGE
YES	75	58
NO	20	20
NO IDEA	5	5
TOTAL	100	100%

Source: Field survey, 2012

TABLE FOUR, above shows that 75% respondent agreed that traffic along Abakpa Nike Road can be managed. While 20% said no and the remaining 5 had idea on the subject matter.

2.2.1 Table four Question 4: Does efficient and effective traffic management minimize the traffic problem?

option	No of respondents	percentage
Yes	89	89
No	11	11
Total	100	100%

Source**: FIELD SURVEY, 2012**

Table four shows that 89 respondent 89% said that efficient and effective traffic management will minimize the traffic problems. and the remaining 11 disagreed.

III. SUMMARY OF FIND AND CONCLUSION
a. SUMMARY OF FINDINGS

The transportation of goods between location to end up in a store or at end-user, these are part of mobility of our society. Each day, millions of people travel to and from work, shops, sports family or clubs. A bottle neck develops when too many people or goods wants to use the same infrastructure at the same time. After all, each infrastructure has a maximum capacity. A place like Abakpa Nike road where there is slow traffic moves can be solved with infrastructural extensions and adjustments However, the significance of alternative ways to sole bottlenecks increase since it requires large investments and also takes time and one of those alternative is traffic management.

The improvement of the available infrastructure is an important way to meet the mobility growth on a network that has limits to its increase in size. The implementation and the provision of proper information of traffic management measures, the number of traffic can be spread in a better way over time, available capacity and modalities. The best result can be achieved by combining approach to traffic issues.

The local levels have this road network of decentralized road authorities (like municipalities and provinces) which their traffic management measure are in place equipped for traffic management. They are mainly related to traffic light. Also on increasing number of advice and information system like route and parking guidance system are being used because DTV consultants is a research and expert firms that mostly works for municipalities and provinces. We have an objective and broad view to the impossibilities and possibilities, also much experience of traffic management in the field.

b. CONCLUSION

Traffic management measures can be deployed in various ways. They are well-suited to react in pre-determined ways to local traffic flow problems. To also make more efficient use of the available capacity on a route or a network level, local meansures should be implemented so that they cooperate with other systems in a coordinated way. Traffic can for example be spread better or be re-directed with help of Variable Massage Sign (VMS). In case of congestion, the specific traffic surplus can be allowed green lights longer or more often.

In addition to a vision on how to deal with traffic and the road network, new traffic management measures are required, as well as central software and adjustments to existing instruments.

Dependent on the level of regional cooperation to keep traffic flowing properly, links need to be made between local, regional and central traffic control systems. This way, traffic flows on other roads will not unintentionally be influenced in a negative way. In some regions,cooperation on various government levels is already so concrete, that a regional traffic control centre coordinates the use of local measures, thereby facilitating complete traffic flows(and not just measures, thereby facilitating complete traffic flows(and not just separate parts of it) in these cases, the road users and not the (administrative) boundaries of road authorities from the starting point. DTV Consultants has much expertise in traffic light systems and how to coordinate or influence them from other traffic management systems or central traffic light central systems.

Traffic barricade is one of the oldest ways in which police and road safety team can handle the traffic situation. In major metropolis across the planet traffic jams are bound to happen during peak hours and therefore traffic

control equipments like traffic barricade are really required apart from the technology that helps us to take control of things on the road.

Apart from traffic barricades, traffic police also make use of the regular traffic cone that are quite popular. These bright c olored cones are normally places on the road smartly so that the drivers bring down their vehicle speed which would further avoid any major accidents in rush hour time. Warning flags are also used on the city roads as well as on major highways that connect different cities.

These flags are the best way in which police and road safety team can communicate with the driver on what they need to do next so that road safety rules can be followed and accidents can be avoided.\

c.   RECOMMENDATIONS

From the findings of the study, the researcher makes the following recommendations:
a)   Road users (drivers and pedestrians) should adhere to traffic rules.
b)   Those in charge of traffic should set up traffic signs in the appropriate areas and help make sure that road users adhere to traffic rules.
c)   Further research should be carried out in the area of traffic management.

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