International Journal of Architectural, Civil and Construction Sciences
ISSN: 2415-1734
Vol:7, No:11, 2013

Traffic Congestion on Highways in Nigeria Causes, Effects and Remedies

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Abstract**—**This study investigates the causes, effects and remedies of traffic congestion which has become a common sight in most highways in Nigeria; Mowe/Ibafo section of the Lagos-Ibadan expressway was used as the case-study. 300 Structured questionnaires were distributed among the road users comprising drivers (Private and Commercial), passengers, pedestrians, traffic officers, church congregations, community leaders, Mowe/Ibafo residents, and other users of the road.

300 questionnaires were given out; the average of 276 well completed returned questionnaires formed the basis of the study and was analyzed by the Relative Importance Index (R.I.I.). The result from the study showed the causes of traffic congestion as inadequate road capacity, poor road pavement, poor traffic management, poor drainage system poor driving habit, poor parking habit, poor design junctions/round-about, presence of heavy trucks, lack of pedestrian facilities, lack of road furniture, lack of parking facilities and others. Effects of road congestion from the study are waste of time, delay movement, stress, accident, inability to forecast travel of time, fuel consumption, road rage, relocation, night driving, and environmental pollution. To drastically reduce these negative effects; there must be provision for adequate parking space, construction of proper drainage, enlarging the width of the road, rehabilitate all roads needing attention, public enlightenment, traffic education, hack down all illegal buildings/shops built on the right of way (ROW), create a separate/alternative root for trucks and heavy vehicles, provision of pedestrian facilities, In-depth training of transport/traffic personnel, ban all form of road trading/hawking, and reduce the number of bus-stop where necessary. It is hoped that this study will become the foundation of further research in the area of improve road traffic management on our major highway.

Keywords**—**Highways, Congestion, Traffic, Traffic congestion, traffic management, Nigeria.

I. Introduction

ROAD traffic congestion, one of the acclaimed indicators of a city socio-economic vibrancy, has continually challenged the efforts of city and transport planners alike on our highways, in terms of longer travel time and delays over time and space. It has equally created an artificial barrier to a cost effective flow of goods and persons along our highways linking major towns together. This paper aim examines the road user' perception to causes effects and remedies to traffic congestion on highway in Nigeria, with Mowe/Ibafo along Lagos-Ibadan expressway our case study area.

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The highway traffic conditions across highways in Nigeria are in a grim situation caused by daily congestion and daily accidents. The current highway systems are used for daily commuting, transportation of goods and interstate travels. It is then essential that we provide solutions to these problems or at least ways to alleviate the magnitude of their occurrences.

Many highways in Nigeria are bedeviled with traffic congestion which tends to defy various remedial measures adopted by different governments over the years. Journey times from one point to another, have remained unreliable and travellers have continued to face disturbing inconveniences in transportation. 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 [13]. The problem is no longer limited to traditional cities such as Lagos, Ibadan, Benin-City, Port Harcourt, Abuja, Kano, and Kaduna [12], [10]. Virtually every state capital city in Nigeria today faces the problem of traffic congestion [9]. For example, Abeokuta which was not previously associated with traffic congestion is now facing considerable traffic congestion on many of its roads, particularly when the schools are in session.

Although many researchers have conducted studies on traffic congestion and delays in Nigeria, most of these studies concentrate on specific cities such as Lagos [1], [3], [4], [11], etc. All these fall under only the township roads in Nigeria. Hence there is need for studies on inter-state roads within the country, and Lagos-Ibadan expressway is a perfect fit for this study, as it is one of the busiest roads in the country.The61st Annual convention of the Redeem Christian Church of God (RCCG) at the church headquarter at Mowe/Ibafo along Lagos-Ibadan Expressway, which held between 5th and 9th August, 2013, provided an opportunity for this study. The survey covered a variety of respondents from the road users comprising drivers (Private and Commercial), passengers, pedestrians, traffic officers, church congregations, Community Leaders, Mowe/Ibafo residents. This is intended to provide a wider perspective to the problem of traffic congestion on major highway 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 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:

- 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.
- 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."
- "Congestion is a situation in which demand for road space exceeds supply.

The findings from this study can provide independent information to guide the Federal and State governments, including concerned private individuals, organizations 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.

II. Objectives

The objectives of this study include:

i. To review the literature on existing studies concerning road traffic congestion in major highways in Nigeria;
ii. To investigate the causes of traffic congestion in major Highways in Nigeria;
iii. To investigate the effects of traffic congestion in major Highways in Nigeria; and
iv. To investigate and proffer possible remedies to the traffic congestion problems in Nigerian major highway.

III. Literature Review

A number of studies have been conducted in Nigeria and elsewhere concerning traffic congestion and its causes. Reference [11] 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, etc. 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, in a study by [2], 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.

The problems of intra-urban traffic in Lagos Nigeria have been studied by [4]. 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 [2] for Abuja City. Reference [4] 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.

Reference [8] 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 [5], [6]; etc.

The above previous studies have only concentrated on township roads in Nigeria and do not reflect traffic congestion problems on major highways in the country.

A survey was conducted during the 61st Annual convention of the Redeem Christian Church of God (RCCG) at the church headquarter at Mowe/Ibafo along Lagos-Ibadan Expressway, which was held between 5th and 9th August. 300 questionnaires were distributed among the road users comprising drivers (Private and Commercial), passengers, pedestrians, traffic officers, church congregations, Community Leaders, Mowe/Ibafo residents, and other users of the road, an average of 276 respondents return to our questions and these were analysed to ascertain the broad perspectives concerning the causes, effects and remedies of traffic congestion at Mowe/Ibafo along Lagos-Ibadan Expressway. The results show that poor driving habits, poor road network, inadequate road capacity, and lack of parking facilities constitute the greatest causes of traffic congestion on the road.

IV. Methodology

General cause, effects and remedies to traffic congestion on highway in Nigeria were elicited from the road users comprising drivers (Private and Commercial), passengers, pedestrians, traffic officers, church congregations, community leaders, Mowe/Ibafo residents, and other users of the road. The general causes and effects and remedies to traffic congestion on highways were listed in well-structured questionnaire and administered to the road user that attended the 61st Annual convention of the Redeem Christian Church of God (RCCG) at the church headquarter at Mowe/Ibafo along Lagos-Ibadan Expressway, which held between 5th and 9th August, 2013.

300 questionnaires were distributed randomly among the road user at Mowe/Ibafo section of Lagos-Ibadan Expressway Nigeria comprising comprising drivers (Private and Commercial), passengers, pedestrians, traffic officers, church congregations, Community Leaders, Mowe/Ibafo residents, and other users of the road. The highest respondent for a particular question is 281(93.67%), while the lowest respondent for a particular question is 262 (87.33%). In all, an average of 276 questionnaires was returned. These were analysed using relative importance index (RII) and basic statistical tools to understand the trend of responses concerning traffic congestion problems on Mowe/Ibafo section of Lagos-Ibadan expressway Nigeria. The results are presented in tables.

Relative importance index was used to determine the causes, effects and remedies of the traffic congestion on highway. The four point scale was converted to Relative importance index (R.I.I) for each factors, which is made possible to cross compare the relative importance of each of the factor as perceived by the respondent. The Relative importance index (R.I.I) was formulated using the following statistical expression [7];

$$R.I.I. = (4n_1 + 3n_2 + 2n_3 + n_4)/4N$$

$$0 \leq (R.I.I) \leq 1$$

The respondent rated each factor on scale 1 – 4. The average of 276 well completed returned questionnaire retrieved formed the data in which the study is based. The data were analyzed by the Relative Importance Index (R.I.I.)

$$R.I.I. = (4n_1 + 3n_2 + 2n_3 + n_4)/4N$$

where:
n_1 = Number of respondent for strongly agree;
n_2= Number of respondent for agree;
n_3= Number of respondent disagree;
n_4 = Number of respondent for strongly disagree; and
N = number of respondents.

V. Characteristics of Respondents

In order to determine the characteristics of the respondents, respondents were asked to classify themselves according to the following: Sex, age, Sector of the economy, employment status, and frequent passage of the road. The results are presented in Tables I to VI.

TABLE I
SEX OF RESPONDENTS

Sex	No	Percentage (%)
Male	166	59.93%
Female	111	40.07%

Table I above shows that 59.93% of the respondents are male & 40.07% are female.

TABLE II
AGE OF RESPONDENTS

Age	No	Percentage (%)
Under 18	12	4.49%
18 – 25 years	123	46.07%
26 – 50 years	118	44.19%
50 years above	14	5.25%

Table II shows that much of our respondent fall within the age of 18years and 50 years, 46.07% lies between ages of 18-25years, 44.19% lies between ages of 26-50years, 5.25% are 50 years above, and 4.49% are under 18 years.

TABLE III
SECTOR OF ECONOMY OF RESPONDENTS

Sector of economy	No	Percentage (%)
Public	65	23.47%
Private	94	33.93%
Students	118	42.60%

Table III shows that 23.47% of the respondents are from public sector of economy, 33.93% are from private sector of the economy, while 42.60% are students.

TABLE IV
OCCUPATION STATUS OF RESPONDENTS

Occupation Status	No	Percentage (%)
Employed	71	25.82%
Self Employed	89	32.36%
Student	114	41.45%
Others	1	0.37%

TABLE V
PROFESSION OF RESPONDENTS

Profession	No	Percentage (%)
Engineer	28	10.86%
Clergy	25	9.12%
Trader	62	22.63%
Driver	19	6.93%
Traffic officer	23	8.39%
Others	117	42.70%

Table IV shows that 25.82% are employed, while 32.36% are self-employed. 41.45% are students, while 0.37% are indispose. Furthermore, the professional affiliations of the respondents are presented in Table V above. This show among the respondents, Engineers constitute 10.86%, clergy make up 9.12%, traders are 22.63%, drivers are 6.93%, traffic officers constitute 8.39%l and 42.70% are indisposed.

TABLE VI
RESPONDENTS' USAGE OF THE ROAD

How often do you pass through Mowe/Ibafo road	No	Percentage (%)
More than once a week	34	11.81%
Once a week	61	21.18%
Once a month	72	25.00%
Every religious programme	121	42.01%

Table VI shows most of respondents travel on the only when there is religious program, the table indicate that 42.01% travel when there is religious program, 25% ply the road once a month, 21.18% ply it once a week, and 11.81% ply it more than once a week.

TABLE VII
RESPONDENTS' TRAFFIC CONGESTION EXPERIENCE OF THE ROAD

Have you ever witnessed traffic congestion on this road	**No**	**Percentage (%)**
Yes	278	94.56%
No	16	5.44%

Table VII shows that virtually all our respondents have once witnessed the traffic congestion along the road, with 94.56% saying YES, and 5.44% of our respondent are yet to ever witness the traffic congestion.

TABLE VIII
RESPONDENTS' TRAFFIC CONGESTION FREQUENCY EXPERIENCE OF THE ROAD

How often is traffic congestion on this road	No	Percentage (%)
Everyday	68	24.11%
2-3 times a week	55	19.50%
Once a week	39	13.83%
Every religious programme	83	29.43%
No response	37	13.12%

Table VIII indicates that traffic congestion occurs mostly during the religious program along the road, while Table IX shows that lots of tomes are wasted on the road due to the traffic congestion.

VI. RESULTS AND DISCUSSIONS

This section presents results and analyses of traffic congestion in major urban cities of Nigeria. A total of 278 or 94.56% of the respondents agree that they experience traffic congestions in on Lagos-Ibadan expressway, while 16 or 5.44% disagree that there are traffic congestions on the road. This appears to agree with [9] who argues that traffic congestion is a problem in most cities of Nigeria. Also concerning how frequent the traffic congestion persists, 29.43% agree that occurs on every religious program day, while 24.11% of the respondents agrees that it occurs every day, this indicates that the program activities on along the road affect the traffic congestion.. For instance, roads with bad pavement, like pot-holes and rutting are likely to impede the smooth flow of traffic and therefore will increase congestion of traffic around the position of bad pavement and have transition effect along the path of the road.

TABLE IX
RESPONDENTS ADDITIONAL TIME SPENT ON TRAFFIC CONGESTION EXPERIENCE OF THE ROAD

Additional time spent on traffic congestion	**No**	**Percentage (%)**
30min – 1hr	46	16.00%
Ihr – 2hrs	79	27.43%
2hrs – 3hrs	102	35.41%
Other specify	25	8.67%
No response	36	12.49%

A. Causes of Traffic Congestion

This study has shown that inadequate road capacity is the most significant cause of traffic congestion on Lagos-Ibadan expressway. From Table X, it can be seen that other major causes of traffic congestion include: Poor road pavement, accidents on the road, poor traffic control management, poor drainage system, poor driving habit, poor road network, poor parking habit, religious/special event along the road and presence of heavy. These tend to agree with earlier findings from a number of studies [1], [3], [4], etc.

TABLE X
CAUSES OF TRAFFIC CONGESTION ON HIGHWAYS

S/N	**CAUSES**	**n_1**	**n_2**	**n_3**	**n_4**	**N**	**R.I.I**	**Rank**
1	Poor driving habit	106	114	43	12	275	0.785455	**6**
2	Poor road pavement	119	115	36	9	279	0.808244	**2**
3	On-going construction activities	61	107	82	26	276	0.683877	**16**
4	Poor road network	102	121	40	13	276	0.782609	**7**
5	Inadequate road capacity	123	114	28	11	276	0.816123	**1**
6	Poor parking habit	105	112	51	10	278	0.780576	**8**
7	Lack of parking facilities	83	103	66	24	276	0.72192	**15**
8	Lack of road furniture	85	105	67	22	279	0.726703	**14**
9	Too many taxis/buses	67	66	105	44	282	0.638298	**19**
10	Poor traffic control management	120	93	43	16	272	0.79136	**4**
11	Poor drainage system	117	94	61	6	278	0.789568	**5**
12	Presence of heavy trucks	102	92	67	13	273	0.758212	**12**
13	Excessive speeding	64	81	93	33	271	0.662362	**18**
14	Poor design junctions/round-about	109	99	59	14	281	0.769573	**11**
15	Frequent use of sirens	22	54	130	60	266	0.535714	**24**
16	Lack of effective mass transit	51	84	91	46	272	0.628676	**20**
17	Malfunctioning vehicle	65	93	76	41	275	0.665455	**17**
18	Poor weather	41	58	118	45	262	0.590649	**22**
19	Religious/special event along the road	110	108	32	26	176	0.773551	**10**
20	Work zone	40	81	113	40	274	0.610401	**21**
21	Slow driving	43	64	101	62	270	0.581481	**23**
22	Accidents on the road	113	131	10	27	281	0.793594	**3**
23	Lack of pedestrian facilities	92	99	63	20	274	0.739964	**13**
24	Lack of overhead bridges/fly-overs	120	88	49	21	278	0.776079	**9**

B. Effects of Traffic Congestion

This study has shown that waste of time is the most significant effect of traffic congestion on Lagos-Ibadan expressway. From Table XI, it can be seen that other major effects of traffic congestion include: Delay movement, stress, accident, inability to forecast travel of time, fuel consumption, query at work, pollution, night driving, road rage and spill-over effect are among the major effects suggested from this study.

C. Remedies to Traffic Congestion

The findings from this study on the possible remedies to traffic congestion are presented in Table XII. These show that enlarging the width of the road, construction of proper drainage, provision of parking space, rehabilitate all roads needing attention, public enlightenment/traffic education, hacking down all illegal buildings/shops built on the right of way (ROW), provision of road furniture, create a separate/alternative root for trucks and heavy vehicles, provision of pedestrian facilities, in-depth training of transport/traffic personnel, create special commercial transport coordinator and banning all form of road side trading/hawking are among the major remedies suggested from this study.

TABLE XI
EFFECTS OF TRAFFIC CONGESTION ON HIGHWAYS

S/N	EFFECTS	n_1	n_2	n_3	n_4	N	R.I.I	Rank
1	Waste of time	192	63	21	1	277	0.902527	**1**
2	Inability to forecast travel of time	138	102	29	10	279	0.829749	**5**
3	Fuel consumption	133	93	37	12	275	0.815455	**6**
4	Stress	158	94	19	6	277	0.864621	**3**
5	Emergencies vehicle	80	115	73	9	277	0.740072	**13**
6	Spill-over effect	88	110	67	12	277	0.747292	**12**
7	Pollution	114	106	43	10	273	0.796703	**8**
8	Delay movement	151	102	15	5	273	0.865385	**2**
9	Road rage	96	120	38	10	264	0.785985	**10**
10	Accident	152	80	39	6	277	0.828622	**4**
11	Query at work	110	112	39	12	273	0.79304	**7**
12	Night driving	115	94	52	12	273	0.785714	**9**
13	Relocation	82	109	65	21	277	0.727437	**15**
14	Road work	98	102	49	17	266	0.764098	**11**
15	Global warming	86	106	58	21	271	0.737085	**14**

TABLE XII
REMEDIES TO TRAFFIC CONGESTION ON HIGHWAYS

S/N	REMEDIES	n_1	n_2	n_3	n_4	N	R.I.I	Rank
1	Provision of parking space	147	88	38	4	277	0.841155	**3**
2	Public enlightenment/traffic education	136	101	30	13	280	0.821429	**5**
3	Parking fees	50	65	114	45	274	0.609489	**18**
4	In-depth training of transport/traffic personnel	98	118	34	24	274	0.764599	**10**
5	Launch more commercial vehicles	53	75	107	37	272	0.632353	**16**
6	Ban all form of road side trading/hawking	82	86	76	32	276	0.697464	**14**
7	Construction of proper drainage	173	84	17	5	279	0.880824	**2**
8	Hack down all illegal buildings/shops built on the right of way (ROW)	114	110	36	13	273	0.797619	**6**
9	Reduce the number of bus-stop where necessary	63	101	85	27	276	0.681159	**15**
10	Create special commercial transport coordinator	89	106	61	20	276	0.73913	**13**
11	Rehabilitate all roads needing attention	138	102	28	17	278	0.830935	**4**
12	Introduction of ferry services	90	111	50	17	268	0.755597	**11**
13	Construction of railway	103	93	47	30	273	0.746337	**12**
14	Removal of motocycles and tricycles on the road	63	60	101	22	272	0.626838	**17**
15	Provision of pedestrian facilities	108	98	44	22	272	0.768382	**9**
16	Create a separate/alternative root for trucks and heavy vehicles	115	81	49	21	266	0.772556	**8**
17	Enlarging the width of the road	181	78	14	2	275	0.898182	**1**
18	Provision of road furniture	110	110	48	10	278	0.78777	**7**

VII. CONCLUSION AND RECOMMENDATIONS

This study has brought into focus the issue of traffic congestion on major highways in Nigeria, Lagos-Ibadan expressway being the case-study area. The main causes of congestion have been considered indicating that inadequate road capacity, poor road pavement; accidents on the road, poor traffic control management, poor drainage system, poor driving habit, poor road network, poor parking habit, religious/special event along the road and presence of heavy are the greatest causes of traffic congestion in Nigeria.

The study has also highlighted some remedies to improve traffic congestion in Nigeria. Enlarging the width of the road, construction of proper drainage, provision of parking space, rehabilitate all roads needing attention, public enlightenment/traffic education, hacking down all illegal buildings/shops built on the right of way (ROW), provision of road furniture, create a separate/alternative root for trucks and heavy vehicles, provision of pedestrian facilities, in-depth training of transport/traffic personnel, create special commercial transport coordinator and banning all form of road side trading/hawking are among the recommendations to reduce traffic congestions. The various state governments and federal government controlling most of these major highways affected by congestion should encourage the enforcement of traffic laws on the users of the road, and most especially the

ISSN: 2415-1734
Vol:7, No:11, 2013

management of the various religious bodies situated along the road, the use of reliable mass transit buses to reduce the number of vehicles on the highway should also be encouraged. Proper and consistent bus stops should be sited along the highway; there should be provisions for enforcing compliance by bus drivers, private car drivers, pedestrians. The Federal and State governments should initiate plans for the introduction of other forms of transportation such as Metros and Trains which support mass movement of people from one town to another as done in major cities globally.

The finding revealed that the unpredictability of time used in traffic is as a result of the spatial spread of traffic bottleneck points, the prolong time used in traffic is further aggravated in the selected corridors as a result of the significant concentration of commercial, religious and trading activities on the identified bottleneck points. The dearth of traffic management infrastructure; and weak institutional framework in traffic management and land use management and control in the study area. However, land use reordering through the integration of traffic management plan with comprehensive urban plan is recommended as one of the cost-effective ways of solving traffic congestion on our highways.

REFERENCES

[1] Aderamo, A. J and Atomode. T.I. (2011) *Traffic Congestion at Road Intersection in Ilorin, Nigeria*. Australian Journal of Basics and Applied Sciences, 5 (9). 1439-1448.
[2] Agbonika, F.O (2011). *Road Traffic Congestion and the quest for effective Transportation*. Proceedings of the National Conference of Nigerian Society of Engineers in Calabar.
[3] Aworemi, J. R., Abdul-Azeez, I. A., Oyedokun, A. J. and Adewoye, J. O (2009) *A study of the causes, effects and Ameliorative Measures of Road Traffic Congestion in Lagos Metropolis*. European Journal of Social Sciences. II (1), 2009.
[4] Bashiru, A. R. and Waziri, O. O. (2008). *Analysis of intra-Urban Traffic Problems in Nigeria: A study of Lagos Metropolis.* Indonesian Journal of Geography 40 (1), 31-51.
[5] Haruna. M. S. (2011). *Road Surveillance as a Remedy for Effective Transportation in Nigeria.*
[6] Igwe, C. N et al (2011). *Effective Transportation System in Nigeria: The Challenge of Nigerian Entrepreneurs Poor Designs.* Proceedings of the National Conference of Nigerian Society of Engineers in Calabar.
[7] Lim, E.C., & Alum, J., (1995). Construction productivity: issues encountered by contractors in Singapore. International Journal of Project Management, 13 (1), 51–58.
[8] Momoh, O. A (2011). *Transportation planning and management for economic development: Global best practices.* Proceedings of the National Conference of Nigerian Society of Engineers in Calabar.
[9] Moses S.O (2011), *Information technology applications in transportation system*. Proceedings of the National Conference of Nigerian Society of Engineers in Calabar.
[10] OECD (Organisation for Economic Cooperation and Development) and ECMT (European Conference of Ministers of Transport). Joint Transport Research Centre (2007). *Managing Urban Traffic Congestion* (Summary Document).
[11] Ogunbodede, E.F (nd) *Assessment of Traffic Congestions in Akure (Nigerian) Using GIS Approach: Lessons and Challenges for Urban Substances.*
[12] Ogunsanya A.A (2002). *Maker and Breakers of Cities*. 59th Inaugural Lecture, University of Ilorin.
[13] Onokala, P.C. (2008) *Contribution of Road Transportation to Environmental Degradation in Nigerian Urban Centres : A Critical Analysis*. Annual Conference on Public Transportation at the Lagos Sheraton Hotel & Towers Ikeja.