



ESCAPIST'S PERSPECTIVE MODEL FOR PROMOTING ROAD TRAFFIC DECONGESTION AND SAFETY IN NIGERIAN MEGACITIES

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Abstract

Nigeria is a fast-developing country with its multifarious megacities, which pose serious road traffic congestion. This study aimed to ascertain the relevance of the escapist's perspective model implementation in the promotion of road traffic decongestion and safety in Nigerian megacities. A descriptive survey design and multi-procedural approach were used in the study to arrive at the design, the population and the sample size. On the whole, 2,497 was the population while 250, comprising 158 males and 92 females formed the sample size. The validity was contrived and a reliability co-efficient of 0.72 was obtained. Using the statistical package for social sciences (SPSS), the received data were analyzed for the mean, standard deviation in the research question, and Z-value test at 0.05 level of significance hypothesis test. The result showed that all the respondents perceived that the escapist's perspective model which involves the use of the 4 D's and their various items is relevant in the promotion of road traffic decongestion and safety in Nigerian megacities. Also, it was recommended that various governments in Nigeria should adopt the 4D's in their bid to eradicate traffic congestion on our roads and promote road traffic safety in Nigerian mega cities. Also, this study recommended that promoting road traffic decongestion aids in improving the economic and public health standards of society and good governance.

Keywords: Mega Cities, Traffic Congestion, Traffic Decongestion, Road Safety and Escapists Perspective Model.

Introduction

Nigeria is a country with multifarious municipalities, some of which have heavily urbanized megacities, with their attendant population explosion. Kuddus, et al. (2020) quoted United Nations (UN) (2019) have estimated that in 2019, more than half of the world's population (4.2 Billion people) were living in urban areas and that by 2041, this figure will increase to 6 Billion people. However, the world population is now about 8 billion people according to popular reports. In consonance with the above, URBANET (2018) also declared that the urban population has been experiencing a rapid rise since 2010 and is expected to grow from 60 million to almost 300 million inhabitants in Nigerian cities. They also projected that the eight largest cities of Nigeria, including Lagos, Port Harcourt, Abuja, Kano, Benin, Onitsha, Aba and Owerri will become even bigger by 2030. These megacities are replete with high population indices and heavy vehicular and human traffic scenarios which rapidly flow, trickle or congest at different times. Traffic congestion or grid-lock occurs in mega cities because of two broad factors, namely; (i) human factors and (ii) constructionistic factors. Traffic congestion is where the movement of vehicles on a road is either teeming very slow, regularly disrupted or seized for a long period. As a result, we hear of phrases like traffic jam, traffic log-jam, or traffic grid-lock; where vehicles can't move at all for a long period; and traffic hurdle or traffic trickle; where vehicles move at either 'snail speed' or with some intermittent minor disruptions.

Traffic congestion is overtly and covertly hazardous and may kill in the short-term or long run. Car brake failures at traffic-congested road sections may cause fatal accidents or car damage. In most cases, the hazardous effects may be subtle like inhalation of toxic substances, and felt in the long-term by man and his vehicles. Traffic Congestion, no doubt, is deleterious to human health and man's property. It has been reported that Nigeria is at the top of the list of countries with the worst traffic congestion in Africa. Traffic congestion is a serious national socio-economic, health and safety risks that need to be tackled and treated as a herculean problem because of the over-all losses it attracts to the society. Can we count how many man-days or man-hours we lose in traffic congestion yearly? It is the inexcusable obligation of every government to mandatorily ensconce the roads for fair passage of road users and their properties. This study aims to fill the gap that exists which has been causing road congestion in Nigerian megacities. These societal puzzles, therefore, inform the reason for this study.

Effects of road congestion in Nigerian mega-cities

To institute any prevention and safety intervention, Rai et al. (2021) proffered that it is important to understand the magnitude of the problem. Road congestion unleashes heavy and subtle air pollutants from slow-moving or stationary vehicles to the affected road users. The vehicles emit metallic fumes as plumes and smoke from the exhaust pipes and some other compounds as alloys from their engines. Metallic fumes are implicated in the cause of Brook Syndrome (or metallic fume fever). As was reported by Chauhan et al. (2014), metallic fume fever is characterized by the following signs and symptoms: chest soreness, coughing, wheezing, fatigue, nausea, metallic taste in the mouth, irritation to eyes, vomiting and cramps, chest and respiratory tract irritation, thirst, chills among others. All these health impacts are a result of the polluted air from the vehicles which also pollute the vicinity around the congested road. Magaji and Hassan (2015) asserted that breathing polluted air all year round can shorten life by one to three years and also damage our environment. The effects of road congestion can be summarized as the following:

1. Inhalation of poisonous and toxic substances as fumes from the air of vehicular emission; which may result in many respiratory-related maladies to man.
2. Spoilage of goods in the vehicles due to time wasted in the congested traffic and "stop and start" vibrations (or tremors).
3. Over-heat impacts. Heat stress or heat stroke may result out of time in a traffic-congested area; especially during hot weather.
4. Dehydration may result in an over-heat situation in a traffic snarl-up.
5. Disappointment of valid appointments and loss of targets in one's destination. People have missed job interviews due to unwarranted delays in road congestive areas.
6. Car damage, due to accidents from scratch or hitting other cars.
7. Over-heat situations in the vehicle may result in damage to the vehicle's engine system and the eventual smoking and immobilization of the vehicle.
8. Brawls or fights may ensue from aggrieved vehicle owners or other road users due to cases of accidents or usurpation of one's right of way.
9. In the course of facing serious road congestion, some travellers may encounter ailments such as "travel sickness" and some other debilitating effects.
10. Wastage of vehicle's fuel – diesel, petrol and lubricants.
11. Death. Loss of lives of human beings or domestic animals may result at the scenes of road congestion due to either accidents or untoward impacts of road usage at the congested zones.
12. Armed robbery, assassination, and theft may occur at traffic-congested scenes.

From the above narrative, therefore, it is explicit to state here that road congestion is a critical societal governance problem that may not just be wished away in any society where it occurs.

As is believed by Barielnen and Abraham (2019), "people perform better when they are physically and emotionally able to work." So, there is no doubt that road congestion also deteriorates economic productivity in all sectors of life due to its high rate of stress impact on the victims. You pass through heavy traffic stress, you go to work, where is the complete energy and zeal for work after being exhausted by the traffic hurdles?

Causes of road traffic congestion – The Four D's Diminishing Effect

Issues of the cause of road congestion lie with the absence or lack of 4 D's of Escapists Road Safety Theory as are propounded by this study. These are as proposed – (a) Lack of defensive constructionism. (b) Lack of defensive manning (c) Lack of defensive traffic policies execution and (d) Lack of defensive traffic lights and signages (signals).

1. Lack of defensive constructionism

Road construction has some necessities so much so that their absence can hinder the easy flow of traffic. For instance, where there are no pedestrian lanes, parking lanes, cyclists' lanes and all that, then the traffic flow may suffer. Also, at intersections, like T-junctions, or cross-roads, if not properly constructed to pave the way for an escapist's diversion, then there is a problem. Sometimes, in the mega-cities, roads are constructed without avenues for pedestrians' (or leg-walkers') lanes, no parking space, no properly directing traffic lights and signals, no well-directional traffic coordinators and all that. So, what do you expect? Road congestion. Sensational and adequate construction designs have an immense impact on salvaging issues of road congestion. Poorly and inappropriately constructed overhead bridges, fly-overs, road bumps and irregular maintenance are all factored in causes of road congestion. These propositions are collaborated by Emesiobi (2004) and Adoghe

(2011) when they insisted that proper defensive and safety constructions on our roads would encourage road decongestion and safety.

2. **Lack of Defensive Manning.** In this case, the absence or lack of well-schooled and dedicated traffic warden controllers and will jeopardize good traffic flow, especially at road junctions and roundabouts.
3. **The lack of defensive policy execution** is another teething problem here. Stakeholders, especially government agents must not lose focus on policies, and regulations that would enhance proper road traffic engineering and control. When better road policies are established and executed, then the roads will be devoid of obstacles and congestion impacts. Also, unnecessary and over-located security checking points which cause traffic hurdles also lead to road congestion at times. The absence of professionally acceptable appropriate laws to encourage road traffic flow may not augur well for traffic decongestion in certain areas of the mega-cities. For instance, seeing traffic officers co-operatively encouraging wrong parking at road junctions after being parted with some cash would be highly counter-productive to the objectives of road traffic decongestion in a mega-city. Policies against these vices should be established and executed.
4. **Lack of defensive signals or signages.** Where there are no appropriate and adequate road signs and other traffic signs and lighting systems, accidents and road congestion may be inevitable. If the traffic **cat eyes** are not in place and some other signages are, we may be expecting accidents and congestion; especially, in the gloomy hours.

A reverse or converse section of all these causal factors above is the panacea, which is the four-D's solution; the escapist's solution.

Control of road traffic congestion

It has been appropriately stated by Aliyu and Amadi (2017) that managing urban growth and urbanization has become one of the most important challenges of the 21st Century. If managed carefully, urbanization could help to reduce hardship and human suffering, they continued. In the same light, Omotoso and Oni (2014:11) averred that "no nation worth its salt will stand by while its citizens are in harm's way, regardless of where they may be or what the circumstances are". It therefore follows from the foregoing that even if you are in a traffic environment, it is the primary responsibility of any purposeful government to ensure that you are not in harm's way, meaning: you should not be entangled in road traffic congestion with its attendant hazards. So, what are they that should be done? These bring us to the subsequent sub-title namely:

Control of road traffic congestion – the 4D escapist's solution

Certain measures are relevant in ensuring that roads are free from traffic congestion in mega-cities of Nigeria. These measures are propitious if properly adopted and they make for the 4D's escapist's theory of road traffic congestion control. These are grouped into four categories and are (i) Defensive Constructionism, (ii) Defensive manning, (iii) Defensive traffic policy execution and (iv) Defensive traffic lights and signages (signals). These are the opposite of the causes of road traffic congestion.

Defensive Constructionism: This term means the use of innovative and creative road designs and maintenance to forestall issues of road congestion. One such is regular proper maintenance of the road by the agents concerned by fixing pot-holes and ditches on the road on time. Still, on defensive constructionism, bumps should be appropriately spaced from each other to avert moving at snail's speed. Bumps on the road should be put only where necessary. Excess bumps on the road should be extricated to ensure easy traffic flow. Under the construction of major roads, especially highways, provisions should be made for bike routes. Along the street, protected or unprotected bike paths or lanes should be made. A bike path or lane could be protected or unprotected respectively if there is a pavement (kerb) or none separating it from motor vehicles through the construction of physical barriers like kerbs or sketch blocks. Also, parking spaces which are separated from the normal vehicular movement lanes with yellow marks, and kerbs for pedestrian lanes should be considered in advance when designing a road. Whether any of these could be added to the construction depends on the anticipated volume of traffic that may face the road and the available area for road construction. These are better done or considered in newly constructed or expanded road maps. At road intersections like crossroads, T-junctions, L-junctions, bends, and roundabouts, it is necessary to make adequate spacious provisions for long and large-size vehicles to turn easily. A very innovative thing now is to carve defensive turn spaces before approaching the turning zones of road intersections. See Figure 1. Also, it is necessary to construct moderate bumps at T-junctions, cross-roads, Y-junctions and road bends (curves) to avert accidents and road congest due to the rush to go first. See Figures 2 & 3.

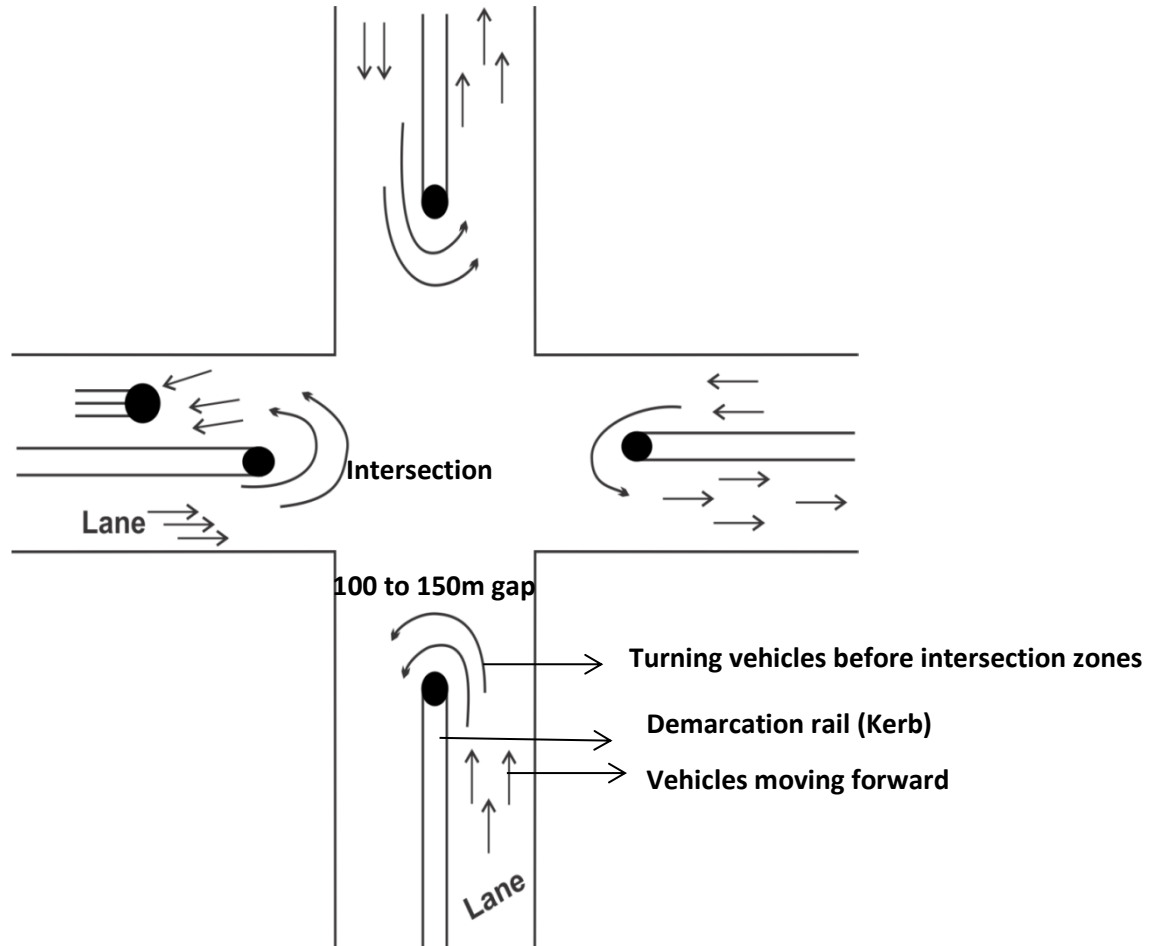


Fig. 1: Vehicles make U-turns far away before intersection zone.

From the figure above, defensive construction provides that **there should be a U-turn demarcation at conjoined lanes, far away from the intersection zone to make vehicles turn to the left if they want to go backwards, 100 to 150m gap.** This is a modern invention in construction in heavily congested zones of the road. It is a veritable construction invention for road decongestion. The gap from the point of intersection to the middle should be about 100 – 150m.

The provision of pedestrian lanes helps prevent road congestion and accidents. Finally, overhead bridges and fly-overs should be constructed in such a way as to alleviate areas of heavy and tight traffic flows to aid decongestion. Well-designed and properly maintained roads are the kernels for traffic decongestion in megacities.

A. Defensive Manning: This term is defined as the adequate involvement of relevant people, including drivers in aiding easy traffic flow on our roads.

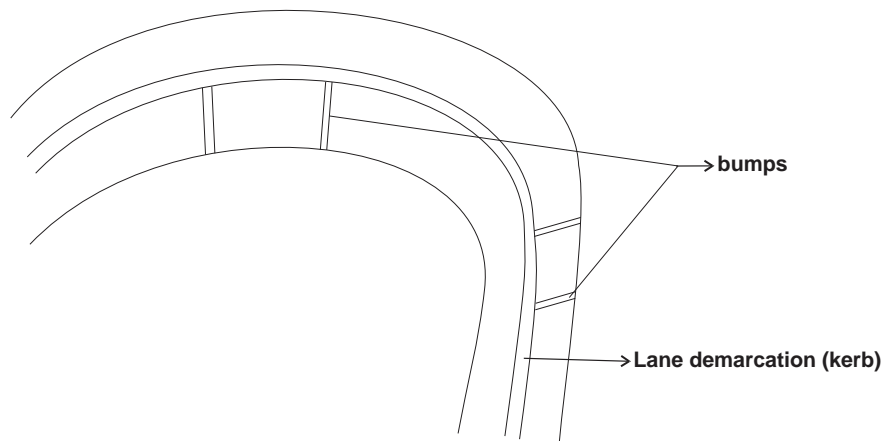


Fig. 2: A road curve (bend)

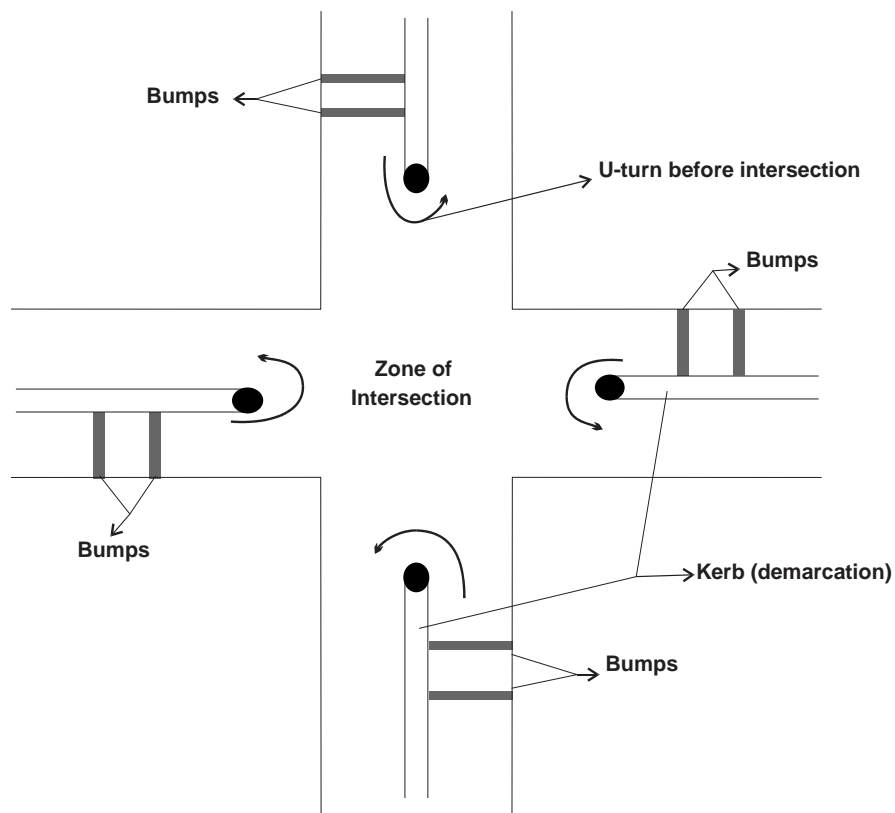


Fig. 3: Bumps and U-turns at crossroads.

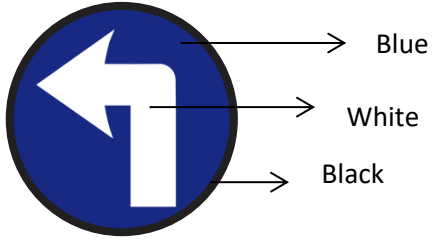
Defensive manning includes what people are supposed to do practically to encourage traffic flow and avert road congestion. Traffic controllers should stop vehicles far away from road intersections. These are – the use of adequate traffic officers, road marshals, road – safety officers and voluntary individuals or organizations to control traffic. It

also involves road users like drivers, cyclists and pedestrians knowing what to do while using the road. They should be forced to read and be able to obey traffic signs and lights. For instance, Emesiobi (2004) stated that a motorcycle rider or driver, while approaching a road intersection, should slow down and be cautious. He reasoned that a vehicle coming from the other side of the intersection may enter the space in front of you without seeing you, hence an accident may occur. In the same vein, Adoghe (2011) posited that if two vehicles stop for road signs at the same time, the vehicle on the left must let the vehicle on the right move first before it follows. Hence, "giving way to the vehicle on the right principle" is adopted here. Also, don't be at propinquity to a large vehicle which is preparing to turn so that it may not harm you or your vehicle. Enough personnel should be employed to conduct traffic movements at red spots.

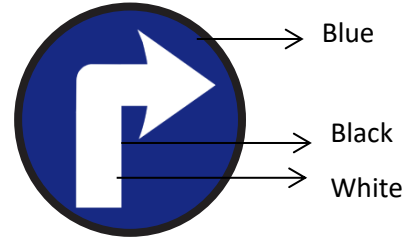
Defensive Traffic Policies execution: Policies should not only be made by stakeholders but they should be seen to have been executed to aid free traffic flow. An intending driver or rider must be seen to have compulsorily undergone a veritable driving school where road signs and the importance of such signs are made known to them for their assimilation and practices. Reasonable penalties for disobedience of traffic signs and rules should be properly communicated to all road users and made handy to them at vehicle license collection. Education has been defined by Alimba (2017) as a continuous process by which a society makes its members understand and imbibe its acceptable culture and values for their constructive development and to make laudable contributions to their societies and its sustainability in future. As a result, therefore, regular mass – media enlightened on the roles of pedestrians and drivers while making use of the road and the meanings of road signs and constructions should be carried out by the authorities concerned. However, penalties for disobedience of traffic laws should be minimal, and corrective and not as punitive as it is currently known to be in Nigeria. Nobody is perfect!

Defensive Traffic Lights and Signages (signals). Traffic lights and signs are symbolic guides to enable road users to know what to do while using the road. They could be as road marks, like pedestrian lanes, parking lanes or zebra crossing for leg users to cross the road, school children slowing down the sign, bend (curve), stop signs, and cat-eyes at road demarcation (kerbs). No U-turn sign and what have you. Some of these signs are displayed conspicuously, so, it is the mandatory duty of the road users to look out for them while driving to prevent accidents and the attendant road congestion. Encourage devices that show green lights more in lanes of regular heavy traffic.

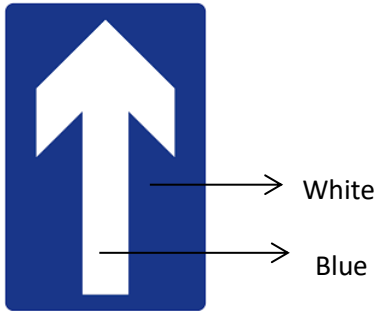
The bottom line to road traffic signs and lights is directions. It means you must be alert to see the road signs always by looking ahead of you and your sides and at the side mirrors for the un-coming vehicles. Some examples of such signs are as follows:



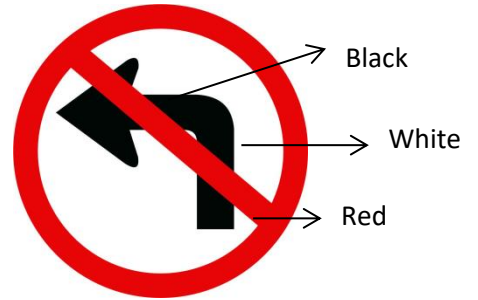
Turn left



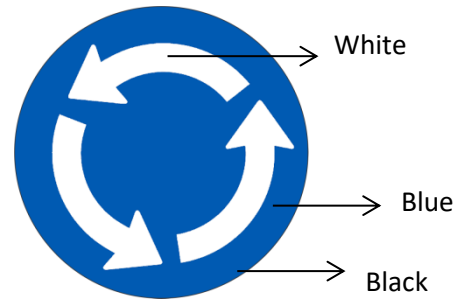
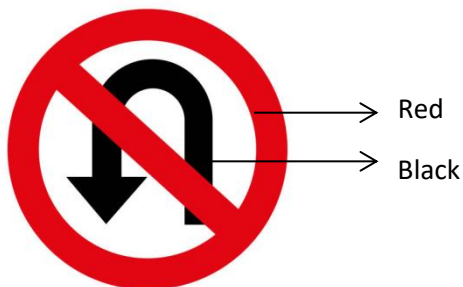
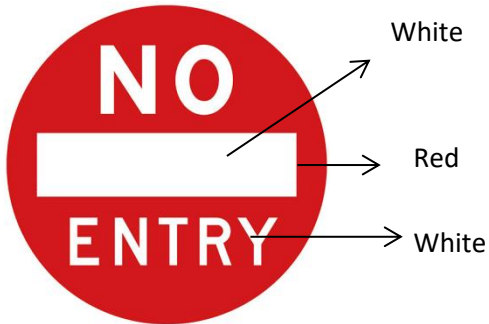
Turn right



One-way traffic



No left turn



Roundabout

No U-turn

Fig 4: Some Road Signs and their colours

Aim and objectives of the study

This study is aimed at adopting the escapist's perspective model to promote transport safety in Nigerian megacities. The specific objective is:

- to determine the perception of male and female road users on the relevance of the escapist's perspective model in the promotion of road decongestion and safety in Nigerian megacities.

Research Question

- What are the perceptions of male and female road users on the relevance of the escapist's perspective model in the promotion of road traffic decongestion and safety in Nigerian megacities?

Hypothesis

- There is no significant difference in the perceptions of male and female road users on the relevance of the escapist's perspective model in the promotion of road traffic decongestion and safety in Nigerian megacities.

Theoretical framework

The theoretical basis of this work is traced to the postulation of Anyanwu and Safiu (2018) who asserted that good policies are put in place by the government but there is poor implementation of such policies. They continued that often when new policies are designed or existing ones are reviewed, they are not given wide publicity. This study is also premised on the framework of the assertions of Aliyu and Amadu (2017) who stated that "If managed carefully, urbanization, in this case city development, could help to reduce hardship and human suffering.

Materials and Methods

This study made use of the descriptive survey design. This study invented the multi-procedural approach to obtain the sample size. The population for this study was obtained through a preliminary random research survey in the eight megacities by making use of some research assistants who were local road transport workers in the areas. The lack of adequate statistics on road users from various authorities consulted had necessitated this approach. On the whole, a total of 2,497 population of road users in the megacities were observed out of this 1,572 were males and 923 were females. A sample size of 250 road users was continued through a proportionate stratified sampling technique by making use of 10 percent of the male and female road users respectively, (158 males and 92 females). Escapist's perspective on promotion of road decongestion and safety questionnaire (EPPRDSQ) – administered as a structured interview scheme to elicit the responses of the road users, under agreed or disagreed responses. The questionnaire was properly validated and a reliability coefficient index of 0.72 was obtained. The received data were analyzed by using a statistical package for social sciences (SPSS), the mean and standard deviation to answer the research question while the z-test was used to test the hypothesis at 0.05 level of significance.

Results

Research Question: What are the perceptions of male and female road users on the relevance of the escapist's perspective model in the promotion of road decongestion and safety in Nigerian megacities?

Table 1. Weighted mean and standard deviation scores of perceptions of male and female road users on the relevance of the escapist's perspective model in the promotion of road decongestion and safety in Nigerian megacities.

Key: Any item mean score that is less than the criterion mean of 2.50 is rejected

S/N	THE 4D'S	Male N = 158		Decision	Female N = 92		Decision
		X ₁	SD ₁		X ₂	SD ₂	
A.	Defensive Constructionism Helps						
1.	Regular maintenance of road	2.73	0.67	Agreed	2.95	0.61	Agreed
2.	Removal of unnecessary road bumps	3.18	0.57	Agreed	3.15	0.58	Agreed
3.	Construction of proper bumps at road intersections	3.24	0.53	Agreed	3.12	0.56	Agreed
4.	Construction of spacious road intersection	2.62	0.71	Agreed	2.71	0.67	Agreed
5.	Construction of far-away U-turn demarcation at road intersections	2.93	0.61	Agreed	2.92	0.62	Agreed
6.	Construction of over-head bridges and fly-overs	2.83	0.64	Agreed	2.85	0.63	Agreed
B.	Defensive Manning Helps						
7.	Using adequate traffic personnel	2.62	0.71	Agreed	2.71	0.67	Agreed
8.	Vehicles should be stopped far away from intercession	3.02	.059	Agreed	3.00	0.60	Agreed
9.	Giving way to vehicles on the right at intersections	2.93	0.61	Agreed	2.92	0.62	Agreed
10.	Regular mass enlightenment of road users	2.83	0.64	Agreed	2.85	0.63	Agreed
11.	Staying far away from a turning large vehicle	3.02	0.59	Agreed	3.00	0.60	Agreed
C.	Defensive Traffic Policies Execution Helps						
12.	Making good policies on defensive driving	3.24	0.53	Agreed	3.12	0.56	Agreed
13.	Give all road users policy documents	3.18	0.57	Agreed	3.15	0.58	Agreed
14.	Supervise road users and moderately penalise offenders	2.73	0.67	Agreed	2.95	0.61	Agreed
D.	Defensive Traffic Lights and Signals Help						
15.	Install traffic lights at road intersections	2.62	0.71	Agreed	3.00	0.67	Agreed
16.	Install traffic lights that encourage more green lights at heavy-traffic lanes	3.01	0.69	Agreed	3.00	0.70	Agreed
17.	Install appropriate road-sign designs	3.06	0.66	Agreed	3.04	0.67	Agreed
	Aggregate mean and standard deviation=	2.93	0.63	Agreed	2.99	0.62	Agreed
	2.50						

Table 1: indicates that all the items had mean score values of 2.93 and 2.99 for the male and female road users respectively, which are greater than the criterion mean of 2.50. This shows that all the mean scores are greater than the criterion mean; so we accept the research question. Hence, all the correspondents agreed in the 17 items that the escapist's perspective model for the promotion of traffic decongestion and safety was relevant in the Nigerian megacities. This shows that the male and female respondents were of a common perception that implementation of the various items in the escapist's perspective model would enable road traffic decongestion in megacities of Nigeria, thereby ensuring safety for road users

Table 2: Summary of z-test on the difference between the response of male and female road users on the relevance of the escapist's perspective model for the promotion of road traffic decongestion and safety in Nigerian Mega Cities

Gender	N	\bar{X}	SD	DF	Z-Cal.	Z-Critical	p	Decision
Male	158	2.93	0.63	248	-0.06	1.96	0.05	H0. Retained
Females	92	2.99	0.62					

Table 2. Z-test analysis of mean scores of male and female road users on the relevance of the escapist's perspective model for the promotion of road traffic decongestion and safety in Nigerian megacities. This hypothesis is retained (accepted) because Table 2 shows that at a degree of freedom of 248, the calculated Z-test value was - 0.06 which is less than the critical Z-value of ± 1.96 . So, the null hypothesis is accepted as stated. This implies that there was no significant difference between the perceptions of the male and female road users on the relevance of the escapist's perspective model for the promotion of road traffic decongestion and safety in Nigerian megacities, at 0.05 level of significance. They all accepted that the model was relevant.

Discussion

This study revealed that the table mean scores of all the respondents on all the items, set above the criterion mean of 2.50, implies that all the respondents over-all agreed that the escapist's perspective model for the promotion of road decongestion and safety in Nigerian megacities is relevant. For example, item number 15, in which the respondents agreed on the relevance of the installation of traffic lights at road intersections and 17, in which they agreed that appropriate road designs are also relevant respectively, all imply that the escapist's perspective model was relevant for road traffic decongestion and safety in Nigeria mega cities since the mean scores are above the criterion mean. These all support the findings of Barielnem and Abraham (2019) who found out that caution signs when not provided, constituted hazards to people, in this case, the road users. The findings of this study, in item numbers 4, 5, 8, 9 and 11 are in agreement with the revelations of Adoghe (2011) who asserted that, if two vehicles stop at the same time, the vehicle on the left must yield to the vehicle on the right. They also stated that vehicles needed extra space in which to make right and left turns and that if you are approaching an intersection at which oversized vehicles are preparing to turn, you should give them the room needed by them (the space)

The findings of this study in items numbers 10, 12, 13, 14 and the rest all revealed the necessities of good policy formation, good policy implementation/execution and appropriate information dissemination in road traffic decongestion which are all supported by the model. These findings agree with Anyanwn and Safiu (2018). Who found out that good policies are put in place by the government but there is poor implementation of such policies. They continued and revealed that, oftentimes, when new policies are designed or existing ones are reviewed, they are not given wide publicity; hence most people are ignorant. This is also the perception of Jain and Rao (2015) who inferred that education is the principal means of enhancing awareness both among the public at large and among a focused group.

Conclusion

No good government feels comfortable when its citizens are regularly humiliated and harassed by preventable public health hazards or threats. Saving the citizens from hardship and health challenges is the pivot of national engineering and good governance.

Recommendations

The Escapist's perspective model which entails the 4D items, the four defensive proposed solutions to road traffic decongestion, namely:

1. Defensive constructionism
2. Defensive manning
3. Defensive Traffic signs and lights
4. Defensive Policies execution, with their inherent items, are relevant in the promotion of road traffic decongestion and safety in Nigerian mega cities and should be adopted and implemented by various state governments.
5. A traffic-decongested and safe road in the mega cities helps promote economic and primary health enhancements, which are all major concerns of public health and good governance in Nigeria.

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