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Appriaral of Cross River State Road Traffic Management and Regulatory Agency on Traffic Management and Control in Calabar Metropolis

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Abstract

Cross River State Road Traffic Management and Regulatory Agency was established in order to reduced the increasing number of road crashes and road violations as well as making road users comply with traffic laws and regulations and measures which remain a great challenge in Calabar metropolis. This study assesses the impact of Cross River State Road Traffic Management and Regulatory Agency on traffic management and control in Calabar metropolis. A stratified/accidental research approach was used through which data were collected from the respondents, traffic count and traffic observation were carried out in major traffic corridors in Calabar metropolis. Data were analyzed using descriptive statistics. The findings from the study revealed that Cross River State Road Traffic Management and Regulatory Agency has significantly ensured free flow of traffic in Calabar as well as reduced road crashes in Calabar metropolis by 20.5%, the agency has positively reduced road traffic violation in Calabar metropolis by 27.2%. Furthermore, 25.5% of FRSC staff and 30% of CRSTMRA staff agreed that public enlightenment programme is the most widely used technique for managing road safety and road accident reduction. The study also revealed that 63.7% of the commercial drivers agreed that CRSTMRA has done significantly well in its responsibility especially in educating motorists through various public enlightenment campaign. Also, 42.8% of CRSTMRA officials believed better working conditions (salary increase, staff bus, special allowance and security) are paramount for better operations. The study recommended among others, the provision of parking facilities, adequate manpower, funding for training of staff, the used of Smart technology, the need for a periodic check and maintenance of roads.

Keywords: *Traffic, traffic management, control and regulations.*

1.0 Introduction

Traffic is an undeniable condition in huge developing urban regions all over the world, from the USA to Japan, from Egypt to Nigeria. Heavy traffic is an inborn aftereffect of the actions of present-day cultures (Afonji, 2000). It originates from the far-and-wide craving of individuals to seek specific objectives that unavoidably overburden the streets and public vehicle frameworks consistently (Ajah *et al* 2016). Yet, everybody loathes gridlock, and the circumstance is deteriorating and becoming more terrible in spite of endeavors to fix it (Mabogunje, 2018). Traffic management is the act of dealing with the current traffic climate to make a road for the free progression of traffic and to control and oversee traffic methodology. Before 2010, the traffic and auto circumstances in Calabar were generally in a state of disregard and disarray. The state has a horrendous and high vehicle thickness. Concentrations on led show that the vehicle thickness in the state is around "88 vehicles for every kilometer, contrasted with the public normal of 15 vehicles; a record normal in New York's central area is 24 vehicles for each kilometer with cable car, train, metro, and water transportation." The result is successive gridlocks (Alamotu et al., 2019). Be that as it may, some time ago individuals depended too vigorously on road transport for between- and intra-city developments in Nigeria. This advancement has brought about traffic confusion in many populations. City like Lagos (Inyang 2015). Nevertheless, Calabar is now no longer an exception. In keeping with Traffic, Cross River State Road Traffic Management and Regulatory Agency in the State. Director General, MR. Godwin Nyian, view the state of affairs of Calabar roads earlier than the established order of CRSTMRA became frustrating. Employees determined it very tough to get to their numerous operating locations on the ordinary time schedule Akeke *et al (*2018). The state of affairs even worsened while it rained due to the fact that traffic congestion could be doubled, compounded with the hard riding of the commuters. Due to those problems, lifestyles became tense and insufferable for the maximum of employees in Calabar (Akinboro *et al* 2017). Thus, the situation that many road users confronted in Calabar became alternatively harrowing, begging for pressing authorities' attention (Umoren et al., 2011). Consequently, the Cross River State Road

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Traffic Management and Regulatory Agency (CRSTMRA) became mounted and charged with the obligation of making sure the loose waft of vehicular users in Cross River State will store adventure time and enhance the great lifestyles of Crossivians (Umoren, 2014).

The motivation behind this study was to survey the effect of Cross River State Road Traffic Management, planning to accomplish a consistent progression of traffic using the Keen traffic the board framework in Calabar metropolis explicit goals are:

1 Traffic evaluation is present in Calabar metropolis.

2 Recognize the primary drivers of gridlock in Calabar metropolis.

3 Evaluate the effect of CRSTMRA on the control and management of road traffic in Calabar metropolis.

1.1 Literature Review

Theoretical Review

Theory of Road Pricing

Haritos (1974) acknowledged that blockage is a cost issue, not a foundation or supply issue. As per the customary neoclassical monetary hypothesis, the answer to this issue ought to be accordingly passed on to the cost system. Nonetheless, to give the gadget its own identity, the market creates such a large number of metropolitan vehicles. An expansion in abundance by and large prompts an expansion in vehicle possession and, hence, through an expansion in clog, a decline in bliss levels. In this way, the principal idea behind road cost assortment is to increment government assistance by confining outside elements and consequently remembering the social expense of metropolitan vehicles for the cost level. What are the advantages to be acquired by diminishing road traffic externalities? They have been determined in various ways by various offices; however, the basic hypothesis continues as before: Shadow costs are a method for changing business sector costs to reflect social expenses (Barrett 1991). In the instance of blockage, the following ought to be thought of: time reserve funds, conceivably related income acquired per reserve funds; the effect of air contamination on wellbeing and framework; what's more, clamor and visual aggravations to occupants living nearby. This last point is normal for the nearness impact on the grounds that individuals impacted by the issue are not really the clients of the item. Other traffic charges, for example, fuel and vehicle charges, are not powerful in diminishing the important externalities on the grounds that, on account of the car charge, the assessment is totally irrelevant concerning. Consequently, the evaluating component should straightforwardly focus on the reason for blockage, for example, individuals involving vehicles in specific regions during peak hours. A viable blockage expense would subsequently be one that considers this large number of negative overflows and charges drivers at the genuine expense of their excursion. Making them mindful of this cost will make them value the negligible utility of their excursion and will hence compel them to defer their requirement for less dire schedules at off-peak hours. It will shift charges from the people who just own vehicles to the individuals who use them the most. More or less, the premise of a clog the board framework is to charge every one of the drivers that go into the downtown area or even charge them for their time in the downtown area. The expense of the assessment should be sufficiently high to forestall superfluous travel and address the genuine expense of movement to society.

Queuing Theory

Agner Krarup Erlang's (2020) theory, which examines all the many dynamics of rows or queues and how they might be altered to operate more effectively, is the foundation of queue theory. The mathematical area of queuing theory examines the behaviors and patterns of queues. It primarily examines how people behave in lines while waiting to purchase products or get services, as well as the best types of queuing arrangements for moving the most people through the lines quickly. Early in the 20th century, Danish mathematician and engineer Anger Krarup Erlang was the first to develop queuing theory.

Macroscopic Traffic Flow Model

Khan (2018), Full scale Traffic Model is a numerical model of traffic that structures connections between traffic stream qualities like thickness, throughput, normal speed of traffic volume, and so forth., these models are traditionally gotten by incorporating large scale traffic, stream models, and component change at the single-element framework level. The large-scale level way to deal with demonstrating traffic streams is brought into the world from the presumption that traffic streams are for the most part practically identical to liquid streams. The principal significant stage in naturally visible rush hour gridlock displaying was taken by Light Slope and (Ojekunle *et al* 2020), when they filed the capacity to look at traffic volumes from diligently clogged streets with traffic. After a year, Richards (1967) consummated the thought with the presentation of shock waves on the roadway. The full-scale model can be of homogeneous and heterogeneous sort of traffic and is connected with the request for the numerical model.

2.0 Methodology

2.1 Sampling Techniques

The examining strategy utilized for this study is an irregular inspecting technique, which is utilized to choose vehicle drivers, including people in general, confidential people, walkers and other street clients. For public transports, information was gathered from (136) business transport drivers involving surveys in their armada, where they get and drop off travelers. For transport proprietors, the scientist utilized working environment examination and interview technique, in which a sum of one hundred and eight (108) polls were directed to them in work environments like schools, homes, and so on. private, banks, services, divisions, areas for data on traffic the board in the region of Calabar. People on foot and other street clients were additionally remembered for the study. A sum of one hundred and twenty-six (126) surveys were given to walkers and other street clients. These gatherings are essentially seen in the city of the Calabar metropolitan region. The scientist likewise led a review inside the Organization, where a sum of thirty (30) representatives finished up surveys about the CRSTMRA field of work and their difficulties. Traffic studies and traffic forgetting about are likewise conveyed at the fundamental traffic tomahawks of the city to know the ongoing traffic circumstance.

2.2 Types of Data Required

Primary and secondary information were gathered for the review. For the essential information, the accompanying information were gathered: applying traffic rules, advancing traffic training, measures to further develop traffic portability, and traffic signal issues in metropolitan regions. Calabar town. For auxiliary information, the accompanying information were gathered: information on criminal traffic offenses and auto collisions Other auxiliary information sources incorporate reports, libraries, and on the web and pieces of literature, for example, course books, CRSTMRA documents, diaries, manuals, and so on.

2.3 Method of Data Collection

Question lists, interviews, perceptions of traffic studies, and traffic counting are a portion of the strategies utilized by the specialist to gather information. The polls and meetings are led straight by the specialist to the respondents through outsourcing, with the goal that the researcher can gather their information properly. Respondents to these inquiries were chosen from various regions of the district of Calabar, a few in their workplaces, some in the parking area, and a few along the roads of Calabar. The Poll, Interview, Traffic Overview perception, and Traffic Count have been organized into four (4) segments, with each part intended for a particular reason. Section A is planned to gather data about respondents' financial or segment information, for example, orientation, age and schooling level, sort of work, and auto proprietorship mentioned in segment A. This. While Part B is intended to give traffic data, the structure requires perceptions just to get data about current traffic in the district of Calabar. Ten significant street networks in the district of Calabar were chosen for the overview. Data, for example, distance, number of crossing points, street type, number of stops, time at each stop, and reason for each stop, are a portion of the things estimated in this part. Nonetheless, Part C has been intended to assemble data about the exercises and difficulties of the Cross-Waterway State Traffic Organization and Administrative Power to guarantee a smooth traffic stream in Metropolitan Calabar. Part D is to gather data on measures to further develop the traffic stream in the region of Calabar. At long last, the last part is to gather data on traffic volumes in selected transport hallways in the district of Calabar.

2.4 Methods of Data Analysis

For the information examination, recurrence dispersion was utilized to break down the information gathered. This was processed in basic rates to show the relative portrayal of things estimated by different reactions acquired. The utilization of rates is proper since it brings out initially the general outcomes in relative extents, showing the places of respondents to issues in forceful ways of behaving. Coming up next were utilized to investigate the information grouped, basic relapse examination, Pearson item second connection coefficient, rates dispersions, speculation would be made as it influences every variable.

3.0 Results and Discussion

Table 1: Traffic Count at Major Road Corridors in Calabar Metropolis

Corridors	**Morning count** 7-8am	**Afternoon Count** 1-2pm	**Evening Count** 4-5pm	**Average**
Odukapni Junction/ Tinappa Junction	3199	2846	3627	322
U.J .Esuene Stadium/Atimbo Junction	3525	2908	3422	328

Corridors	Morning count 7-8am	Afternoon Count 1-2pm	Evening Count 4-5pm	Average
EtimEdem/Mary Selessory/Unical Main Gate	2199	1843	1974	2005
Millennium Park/ Watt Market Round about	3652	2764	2918	3111

Source: Author's Analysis, (2023)

Table 2: Traffic Survey on Selected Road Networks in Calabar Metropolis.

Morning Survey

Road Network	Length	Average time	Average Speed	Average No of Stops	Total Time Spend on Stops	% of Time Spend on delay
OdukpaniTinappa Road	8.5km	52mins	55km	13	14mins	19.76
MMHW	7km	58mins	50km	11	16mins	24.36
Atimbo Road	7km	49mins	60km	10	22mins	13.23
Mary Selssor/Unical Main Gate	4km	9mins	60km	3	2mins	0.63
Goldy by Mount Zion	3.8km	6mins	55km	4	2mins	0.24%
Etta Agbor Road	2.7km	4mins	60km	2	2mins	0.08%
MCCRoad	2km	4mins	40km	1	1min	0.12%
Parliamentary	2.5km	3mins	60km	2	1min	0.006
Marian Road	4km	11mins	40km	4	3mins	0.88
Goodluck Jonathan By pass	3km	4mins	50km	5	1min	0.12

Source: Author's Analysis, (2023)

Table 3: Traffic Survey on Selected Road Network in Calabar Metropolis.

Afternoon Traffic Survey

Road Network	Length	Average time	Average Speed	Average No of Stops	Total Time Spend on Stops	% of Time Spend on delay
Odukpani / Tinappa Road	8.5km	1h:3mins mins	40km	16	22mins	25.83%
MMHW	7km	57mins	50km	12	19mins	21.66%
Atimbo Road	7km	37mins	50km	8	13mins	8.88%
Mary Selssor/ Unical Main Gate	4km	11mins	60km	3	2mins	0.99%
Goldy by Mount Zion	3.8km	5mins	50km	4	3mins	0.1%
Etta Agbor Road	2.7km	4mins	60km	2	2mins	0.08%
MCCRoad	2km	4mins	40km	3	2min	0.08%
Parliamentary Road	2.5km	8mins	50km	2	4min	0.006%
Marian Road	4km	8mins	40km	2	3mins	0.4%
Goodluck Jonathan By pass	3km	5mins	40km	6	2min	0.15%

Source: Author's Analysis, (2023)

Table 4: Traffic Survey on Selected Road Network in Calabar Metropolis.

Evening Traffic Survey

Road Network	Length	Average time	Average Speed	Average No of Stops	Total Time Spend on Stops	% of time Spend on delay
Odukpani/Tinappa Road	8.5km	54mins	50km	13	15mins	21.06%
MMHW	7km	1h:15mins	40km	14	23mins	39%
Atimbo Road	7km	49mins	60km	10	22mins	13.23%
Mary Selssor/ Unical Main Gate	4km	9mins	60km	3	2mins	0.63%
Goldy by Mount Zion	3.8km	5mins	50km	4	2mins	0.15%
Etta Agbor Road	2.7km	6mins	40km	2	3mins	0.18%
MCC Road	2km	4mins	40km	1	1mins	0.12%
Parliamentary Road	2.5km	3mins	50km	2	1min	0.06%
Marian Road	4km	12mins	40km	3	3mins	1.08%
Goodluck Jonathan By pass	3km	5mins	50km	5	2min	0.15%

Source: Author's Analysis, 2023

Traffic survey carried out in Ten (10) major roads in Calabar metropolis shows that Odukpani/Tinappa - Murtalar Mohammed Highway recorded the highest traffic in the Afternoon/Evening (PM) while Millennium Park /Watt market roundabout has the peak traffic in the Morning (AM). It also followed by Etta Agbor road/Unical Main Gate. And finally, the Marian road has an average traffic in the Afternoon.

The Millennium Park /Watt market recorded the highest traffic in the Morning (AM) peak hour with an average delayed of 5 minutes per – kilometer. While Tinappa- Odukpani road has the highest traffic in the Afternoon/Evening (PM) peak traffic with an average delayed of 8 minutes 3 seconds on every kilometer. This implies that there are certain roads people can avoid at certain period of the time of day.

Table 5: Category of Vehicles involves in Traffic Violation in calabar from 2015 to 2019

YEAR	2015	2016	2017	2018	2019
PRIVATE	747	674	648	507	433
COMMERCIAL	703	628	540	586	488
GOVERNMENT	18	17	13	7	5
TRICYCLE	654	486	397	343	228
MOTOBIKE	358	154	133	122	117
TOTAL	2480	1805	1731	1565	1271

Source: CRSTMRA Annual Report (2015 - 2019)

Table 6: Category of Vehicles involves in Traffic Violation in calabar from 2007 to 2011

YEAR	2007	2008	2009	2010	2011
PRIVATE	655	873	908	1097	1290
COMMERCIAL	347	569	740	908	1190
GOVERNMENT	32	40	38	44	4 7
TRICYCLE	474	643	882	1034	1154
MOTOBIKE	643	866	894	1054	1152
TOTAL	2151	2991	3462	4136	4833

Source: FRSC CRS COMMAND, Annual Report (2007 – 2011)

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Table 7: Category of Vehicles involves in Road Crashes in CRS from 2014 -2018

YEAR	2014	2015	2016	2017	2018
PRIVATE	102	85	48	39	47
COMMERCIAL	85	47	42	30	33
GOVERNMENT	10	6	4	3	6
DIPLOMAT	2	-	-	-	-
TOTAL	**197**	**138**	**98**	**72**	**86**

Source: CRSTMRA Annual Report (2014 – 2018)

Table 8: Category of Vehicles involves in Road Crashes in CRS from 2007 to 2011

YEARS	2007	2008	2009	2010	2011
PRIVATE	144	147	171	189	217
CMMERCIAL	83	92	116	107	112
GOVERNMENT	9	10	8	6	11
DIMPLOMAT	3	1	-	-	1
TOTAL	209	250	295	302	341

Source: **FRSC CRS Annual Report (2007 – 2011)**

In summary, data collated from Federal Road Safety Corp (FRSC) Cross River State command from 2007 to 2011 and data collate from Cross River Traffic Management and Regulatory Agency between 2015/2020 shows the numbers of vehicles involved in road crashes and traffic violation in Cross River State, within this period under view, data shows that they were gradual increased in road crashes in Cross River State from 2007 to 2011. While table 4.3.4 shows vehicles involves in road crashes from 2014 to 2018 in Cross River State. The data collated shows that they were a declined in the number of road crashes and traffic violation within this period under review, showing a significance reduction in road crashes and traffic violation in Cross River State. This is justified by the impact of Cross River State Traffic Management and Regulatory Agency in traffic management and control in Calabar metropolis. The Agency has been able to keep road crashes/traffic violation low despite increased in population by 4.36% (NPC; 2006) yearly, and a proportional increase in cars acquisition.

Table 9: CRSTMRA yearly report on traffic violations

	Year						
INFRINMENT/OFFENCES	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Light/Sign Violation	213	196	107	177	219	152	232
Road Obstruction	89	43	52	39	27	17	26
Route Violation	24	21	19	17	14	7	8
Under Age Driving	21	19	14	18	26	13	15
Speed limit	93	102	67	131	126	134	92
Driving Under alcohol or drug Influence	213	196	107	177	219	152	232
Assaulting officer	174	137	119	92	98	76	64
Attempting to corrupt Officer	28	17	13	9	6	17	36
Excessive Smoke	13	25	14	20	19	21	13
Driving in a Direction Prohibited by the Law/neglect of Traffic Direction	43	37	53	37	31	19	21
Illegal U- Turns	92	109	78	83	72	67	57
Wrongful Overtaking of Other	103	192	186	147	117	112	94

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	Year						
INFRINMENT/OFFENCES	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Over loading of Vehicle on Highway	46	32	17	26	16	24	13
Driving on the Walkway or Kerbs	158	74	63	38	27	147	126
Parking on the Walkway or kerbs	21	16	26	17	44	36	21
Parking or stopping to pick passengers by a Vehicle on the Highway	73	31	84	92	72	97	72
Abandoned Vehicle on Highway	382	246	189	203	194	139	157
Vehicle Causing Obstruction on Highway if Broken down	42	69	73	47	23	37	42
Commuters Hanging on tailboard of moving Vehicle	86	97	52	33	39	49	33
Vehicle with doors left open	31	20	28	13	11	9	6
Making and Receiving calls while driving	62	43	92	23	27	16	13

Source: CRSTMRA yearly report on traffic violation (2015-2021)

4.0 Summary, Conclusion and Recommendations

4.1 Summary

This study focused on the appraisal of Cross River State Road Traffic Management and Regulatory Agency on traffic management and control in Calabar metropolis.Objectives were formulated tested and results were as follows:

1. Cross River State Road Traffic Management and Regulatory Agency has significantly reduced road crashed in Calabar metropolis.
2. The Agency has positively reducing road traffic violations in Calabar metropolis since its formation in 2012.
3. The agency has also contributed to the enlightenment of road users in area of creating traffic awareness.
4 .Cross River State Road Traffic Management and Regulatory Agency has impacted positively in reducing traffic congestion in calabar Metropolis.

4.2 Conclusion

From the results and analyses carried out, the following conclusions can be drawn.

Since Cross River State is a tourist attraction state and with population explosion, it was however noted that the existing roads have become too narrow, more traffic control personnel should be mobilize to the Odukpani/Tinappa road for more efficient and effective traffic control system since this is the only access road in and out of Calabar metropolis. More awareness should be created in term of traffic management and its benefits, the roads within the capital city of Calabar should be regularly maintained to avoid pole holed. The commuters and traders should also be educated on consequences of traffic congestion to their health and environment.

The most congested road in Calabar Metropolis is Odukpani- Tinappa which is the only access road into the metropolis. The study found out that the highest peak hour traffic (AM) was recorded at Millennium Park through watt- market roundabout, while Tinappa- Odukpani road recorded the highest (PM) traffic.

However, the study concluded that the solution to the traffic congestion problems in major cities like Calabar 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 ensures 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.

4.3 Recommendations

The findings of this study therefore, bring to limelight the need for the following recommendations:

1.There should be a provision of enforcement equipment and adequate manpower

2. Government and private cabs owners should provide parking facilities and bus stops along the routes.

3. They should be restrictions and enforcement of parking rules and regulations to prevent vehicles from parking and blocking the road.

4. Street trading should be discouraged in major roads in Calabar metropolis.

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