

Heavy Vehicles Drivers' Behaviour and Road Safety Management: Evidence from Local Government Vehicle Inspection Officers in Lagos Metropolis

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ABSTRACT

Heavy vehicles face significant challenges in Lagos Metropolis due to poor infrastructure, such as inadequate road maintenance, lack of designated lanes, and insufficient signage. Also, their size, weight, and potential for accidents contribute to a disproportionate incidence of severe accidents. In view of this, the study examined heavy vehicle drivers' behaviour and road safety management in Lagos metropolis. The study employed the pragmatism philosophy and mixed method approach in data collection and analysis. The quantitative data were analysed using both descriptive and inferential statistics, while the qualitative data were analysed using content analytic approach. The findings of the study revealed that the attitude, knowledge, preference, experience, and perception of heavy vehicle drivers in the state towards road safety are poor. The study concluded that developing and implementing effective local government policies tailored to the specific challenges of heavy vehicles in Lagos Metropolis is critical. The study recommended evidence-based and data-driven approaches, likewise leveraging technological advancements, to improve road safety management.

Keywords: drivers' behaviour, heavy vehicles, lagos metropolis road safety management, and vehicle inspection officers

INTRODUCTION

Lagos Metropolis, like many major cities, faces significant challenges in managing road safety, notably for heavy vehicles (FRSC, 2023). There is no doubt that heavy vehicles pose an undoubtedly challenging challenge to road safety in Lagos State Metropolis due to their size, weight, and potential for accidents (Uzundu, Jamson & Lai, 2019). Effective local government policies and road safety management strategies are critical to addressing traffic congestion, as road safety is a major concern for all

road users in Lagos Metropolis, particularly heavy vehicles (Olajide & Ozturk, 2018). Assessing the effectiveness of local government policies and implementation strategies for addressing these challenges is critical for improving traffic flow and reducing accidents (LSG, 2020). This assessment evaluates the effectiveness of local government policies and their implementation in managing heavy vehicles and improving road safety. Meanwhile, the metropolis faces significant challenges regarding road safety, with heavy vehicles contributing disproportionately to accidents and fatalities. This was affirmed by the research conducted by the Global Road Safety Partnership in 2023, which discovered that the state has a high rate of road traffic accidents, with heavy vehicles frequently involved in severe collisions due to their size and weight. The weight of heavy vehicles accelerates road and bridge deterioration, resulting in additional costs and safety hazards; similarly, slow-moving heavy vehicles contribute to traffic congestion, affecting travel times and state economic activity (Uzundu, Jamson & Marsden, 2022).

Specifically, emissions from heavy vehicles contribute to air pollution, negatively impacting public health and leading to environmental impacts. Also, poor infrastructure, such as inadequate road maintenance, a lack of designated lanes, and insufficient signage, contributed to a disproportionate incidence of severe accidents involving heavy vehicles (WHO, 2020; Akindele & Ajayi, 2016). The reckless driving, speeding, and disregard for traffic regulations by heavy vehicle operators exacerbate the problem (Olajide & Ozturk, 2018), and the weak enforcement of traffic laws and regulations by the local government regarding heavy vehicles further undermines road safety measures.

Additionally, the lengthy hours spent on the road by heavy vehicles can result in driver fatigue, poor judgement, response time, and overall driving performance. Fatigue management becomes difficult, especially for drivers who have tight schedules or work irregular hours (Uzundu, Jamson & Hibberd, 2020). Some heavy vehicle drivers failed to comply with traffic laws and regulations specific to heavy vehicles. This includes speeding, disregarding weight restrictions, driving beyond permitted hours, or failing to take mandated rest periods (Akintola & Oni, 2017). Non-compliance on the part of these drivers endangers their lives and other road users. As a result, external variables such as poor road infrastructure, adverse weather, or the actions of other road users can all have an impact on heavy vehicle driver road safety management. These characteristics enhance the likelihood of accidents and pose challenges for drivers' behaviour management.

It is not a gain to say that local governments in the state have limited resources for effective implementation of road safety policies especially in terms of budget, human, and technological restrictions (Ajumobi & Afolabi, 2018). The prevalence of informal transport operators and limited enforcement capacity pose significant challenges as there is low sensitization to encourage safe and responsible behaviour from all road users, including pedestrians, cyclists, and drivers across the state (Global Road Safety

Partnership, 2023). There is no doubt that environmental impact, poor infrastructure, driver behaviour, weak enforcement of traffic regulations, overloading, and driver licensing deficiencies exacerbate the problem, especially since the state has limited public education campaigns on safe road sharing with heavy vehicles and responsible driving practices.

In addition, extant literature (such as Uzundu et al., 2022; Olajide & Ozturk, 2018) has confirmed that designing appropriate policies at the local government to address road safety challenges will revolutionise heavy vehicle mobility across the local government in the state metropolis, while other studies (such as Atubi, 2022a; Siyan, Oyeyemi & Agunbiade, 2019) contend that the problem of heavy vehicle drivers across the local governments are not limited to non-compliance of road safety measures but poor behavioural dispositions among heavy vehicle drivers, and their related effects. However, previous studies have not examined the subject matter of this study using an empirical lens. Despite the government's attempts to implement stricter vehicle inspection, traffic regulations, defensive driving practices, and emergency response procedures, particularly in the metropolis, the outcomes have not yielded expected results. Efforts include the evaluation of brakes and suspension systems, tyre condition and tread depth, lighting and signalling equipment, exhaust systems and emissions, as well as load distribution and security.

For instance, the Lagos State government's Vehicle Inspection Service (VIS) has significantly increased its presence and enforcement activities in the city. VIS officers were deployed to major highways and transport hubs to conduct thorough checks on heavy vehicles, including commercial trucks, buses, and tankers. Thus, this study examines the effects of road safety management on heavy vehicle drivers' behaviour, with empirical evidence from local government vehicle inspection officers in Lagos metropolis. Further objectives are to present the analysis of the behavioural dispositions of heavy vehicle drivers among Vehicle Inspection Officers (VIOs) in selected local governments in Lagos State, To provide the analysis of the road safety measures among Vehicle Inspection Officers (VIOs) in selected local governments in Lagos State, And finally to examine the effects of road safety measures on the behavioural dispositions of heavy vehicle drivers among Vehicle Inspection Officers (VIOs) in selected local governments in Lagos State. However, this study reviewed existing literature based on road safety measures on the behavioral dispositions of heavy vehicle drivers among Vehicle Inspection Officers (VIOs) in selected local governments in Lagos State.

BEHAVIOURAL DISPOSITIONS OF HEAVY VEHICLE DRIVERS AMONG VIOS IN SELECTED LGAS

Heavy vehicle drivers are crucial for transporting goods across Nigeria, contrib-

uting significantly to the economy (Atubi, 2021b). However, their driving behavior can significantly impact road safety. The behavioural dispositions of heavy vehicle drivers towards Vehicle Inspection Officers (VIOs) in Lagos State can vary based on individual drivers and the specific circumstances of each interaction (Siyan, Oyeyemi & Agunbiade, 2019). Many heavy vehicle drivers, especially in the formal sector, understand the significance of adhering to traffic laws and regulations. They exhibit a disposition of compliance when interacting with VIOs, cooperating with inspections, providing required documents, and following instructions given by the officers while in the informal sector, some heavy vehicle drivers experience frustration when faced with inspections, penalties, or delays caused by VIOs (Uzundu, Jamson & Lai, 2019). Akintola and Oni (2017) is of the view that, heavy vehicle drivers in some cases may have complaints or disputes with VIOs as they believe they have been unfairly targeted or if they disagree with the validity of a citation or penalty. This frustration can stem from various factors, such as perceived inconsistencies in enforcement, financial implications of penalties, or time constraints affecting their delivery schedules (Atubi, 2021a). This makes them display a respectful attitude towards VIOs, recognizing their authority and role in enforcing road safety.

Moreover, heavy vehicle drivers who have positive disposition may cooperate fully with VIOs during inspections. They actively engage the process in a polite and courteous communication, maintaining a professional demeanor during interactions and questions answer, and address any concerns raised by the officers in a cooperative and helpful manner (Uzundu, Jamson & Hibberd, 2020). Such drivers may demonstrate a disposition of being knowledgeable about traffic regulations and adequately prepared for inspections. They may ensure their vehicles are in compliance with safety standards, carry all required documents, and be ready to provide the necessary information to VIOs (Ajumobi & Afolabi, 2018). It is germane to note that these behavioral dispositions are generalizations, and individual heavy vehicle drivers may exhibit a range of attitudes and behaviors when interacting with VIOs. Factors such as the driver's personality, past experiences, and the professionalism and conduct of the VIOs themselves can all influence the dynamics of these interactions.

It is based on the above assertion that vehicle inspection officers (VIOs) are responsible for enforcing traffic laws and regulations, including conducting vehicle inspections, issuing permits, and ensuring road safety (Atubi, 2018). Their interactions with heavy vehicle drivers can vary depending on several factors, including the officers' training, professionalism, and the prevailing culture and practices within the specific local governments.

Uzundu, Jamson and Marsden (2022) observed the behavioral dispositions among VIOs towards heavy vehicle drivers in the local governments across the state as follows.

- i. **Enforcement:** VIOs are often involved in inspecting vehicles for roadworthiness, checking driver licenses and permits, and issuing citations or penalties for violations. This is tasked with enforcing traffic regulations and ensuring that heavy vehicle drivers comply with the law.
- ii. **Professionalism:** VIOs are expected to maintain a professional demeanor when interacting with heavy vehicle drivers. This includes treating drivers with respect, adhering to standard procedures, and providing clear and accurate information about any violations or necessary corrective actions.
- iii. **Fairness:** VIOs should strive to maintain fairness in their interactions with heavy vehicle drivers. This means applying traffic regulations consistently and without bias, regardless of the driver's background, ethnicity, or personal connections.
- iv. **Conflict resolution:** In some cases, conflicts or disputes may arise between VIOs and heavy vehicle drivers (Oyedele & Ajayi, 2016). VIOs should be trained in conflict resolution techniques to de-escalate tense situations and find amicable resolutions whenever possible. Meanwhile, the key ingredient to conflict resolution is effective communication. This is vital in the interactions between VIOs and heavy vehicle drivers (Atubi, 2022b). VIOs should clearly communicate the reason for any inspections or penalties and provide drivers with an opportunity to ask questions or seek clarification. Hence, the actual behavioral dispositions of VIOs towards heavy vehicle drivers may vary depending on individual officers, local policies, and prevailing circumstances.

Road Safety Measures among VIOs in Lagos State

Road safety measures among Vehicle Inspection Officers (VIOs) in Lagos State play a critical role in promoting and ensuring the safety of road users. VIOs are responsible for enforcing traffic regulations, conducting vehicle inspections, and ensuring that vehicles on the road comply with safety standards (Olajide & Ozturk, 2018). It is essential to note that road safety measures among VIOs in Lagos State may evolve over time, and specific initiatives and policies may be implemented by the government or transport authorities to address road safety challenges effectively. Meanwhile, VIOs conduct regular inspections on the overall condition of vehicles, including brakes, tyres, lights, signals, and other safety features so as to ensure they meet safety standards (Atubi, 2021a). They check for valid vehicle documents, such as roadworthiness certificates, driver's licenses, and vehicle insurance. More so, VIOs have the authority to impound vehicles that are deemed unsafe or non-compliant with road safety regulations (Uzundu, Jamson & Marsden, 2022). This measure ensures that vehicles posing a risk to road users are taken off the road until necessary repairs or improvements are made.

Furthermore, VIOs work in collaboration with other law enforcement agencies, such as the Lagos State Traffic Management Agency (LASTMA), Nigeria Police Force and the Federal Road Safety Corps (FRSC), to enhance road safety measures. They share information, coordinate operations, and support each other in enforcing traffic regulations and promoting road safety (Atubi, 2022b). Their collaboration have enhanced the enforcement of traffic laws and regulations to maintain order and safety on the roads across the local government in the state as they monitor vehicle speed, overtaking, lane discipline, and adherence to traffic signals (Uzundu, Jamson & Lai, 2019). They issue citations or penalties to drivers who violate traffic rules, discouraging reckless driving behavior. Moreover, the VIOs stay updated with evolving traffic laws, technological advancements, and best practices in road safety as they engage in public awareness campaigns and educational programs to promote road safety (Siyan, Oyeyemi & Agunbiade, 2019). They conduct seminars, workshops, and road safety campaigns to educate drivers, vehicle owners, and the general public about safe driving practices, traffic rules, and the importance of vehicle maintenance.

It is based on the above study, that Uzundu, Jamson & Hibberd (2020) identified some key measures VIOs implement to enhance road safety:

- i. Routine checks: VIOs conduct routine checks on vehicles at designated checkpoints and during mobile patrols across the local government. These checks focus on essential components like brakes, tires, lights, and steering, ensuring they meet safety standards.
- ii. Patrolling Through Random Inspections: VIOs patrol the roads to identify and address traffic violations like speeding, reckless driving, driving under the influence, and using mobile phones while driving (Atubi, 2022a). This will make random inspections enforcement effective as they are conducted on any vehicle to ensure compliance with regulations and identify potential safety issues across the local government in the state.
- iii. Roadworthiness Certification: VIOs are responsible for issuing roadworthiness certificates after thorough inspections. These certificates confirm the vehicle's roadworthiness and compliance with safety standards.
- iv. Traffic Control and Management: VIOs contribute to traffic flow management during peak hours, accidents, and special events, ensuring smooth traffic flow and minimizing congestion (Ajumobi & Afolabi, 2018). Also, they have the power to apprehend drivers violating traffic regulations and issue fines or take legal action depending on the severity of the offense.

Despite these efforts, Akintola and Oni (2017) asserts that road safety remains a significant concern in Lagos State due to the following identified challenges:

- i. Limited resources: Adequate staffing, equipment, and resources are crucial for effective enforcement and public awareness campaigns.
- ii. Public perception: Changing public behavior and instilling a culture of road safety requires sustained efforts and addressing societal attitudes towards traffic regulations.
- iii. Emerging trends: Addressing new challenges like electric vehicles and alternative transportation requires adapting enforcement strategies and public education efforts.

Road safety measures on behavioural dispositions of heavy vehicle drivers with VIOs

Road safety measures put in place by the vehicle inspection officers (VIOs) in the local governments across Lagos State have a mildly positive impact on the behavioural dispositions of heavy vehicle drivers (LSG, 2020). These measures aim to enhance driver awareness, adherence to traffic regulations, and overall road safety. VIOs have played a pivotal role in enforcing traffic laws, such as speed limits, lane discipline, and adherence to traffic signals, which could create a deterrent effect and encourage heavy vehicle drivers to comply with the rules (Olajide & Ozturk, 2018). More so, regular checks and penalties for violations influence drivers' behaviour positively. They conduct regular vehicle inspections to ensure that heavy vehicles meet the required safety standards (Atubi, 2022a). Inspections cover aspects such as brakes, tyres, lights, and other critical components. By ensuring that vehicles are in good working condition, VIOs contribute to reducing the risk of accidents caused by mechanical failures.

Currently, VIOs leverage technology to enhance road safety. For example, they deploy speed cameras, CCTV surveillance, and other monitoring systems to detect and deter traffic violations (Oyegbami & Ilesanmi, 2017). The presence of such technology acts as a deterrent and encourages heavy vehicle drivers to comply with traffic regulations. Akindele and Ajayi (2016) highlight specific road safety measures that can influence the behavioural dispositions of heavy vehicle drivers:

- i. Training and Education: VIOs provide comprehensive training and education programmes to heavy vehicle drivers, focusing on road safety rules, defensive driving techniques, and the importance of responsible behaviour on the road. These programmes can help drivers understand the consequences of their actions and encourage them to adopt safer driving practices.
- ii. Awareness Campaigns: VIOs organise awareness campaigns targeting heavy vehicle drivers and the general public. These campaigns focus on promoting safe driving prac-

tices, highlighting the dangers of reckless driving, and raising awareness about the importance of road safety. By fostering a culture of safety, these campaigns can influence the behaviour of heavy vehicle drivers positively.

- iii. Collaboration with Stakeholders: VIOs work in collaboration with other relevant stakeholders, such as LASTMA, transport unions, trucking associations, and road safety organizations. By sharing knowledge, resources, and best practices, these collaborations can help promote a safety-conscious environment among heavy vehicle drivers.

It is germane to note that the effectiveness of these road safety measures depends on their proper implementation, monitoring, and evaluation. Regular assessments and feedback mechanisms help identify areas that require improvement and ensure that the behavioural dispositions of heavy vehicle drivers are positively influenced in the long term.

METHODOLOGY

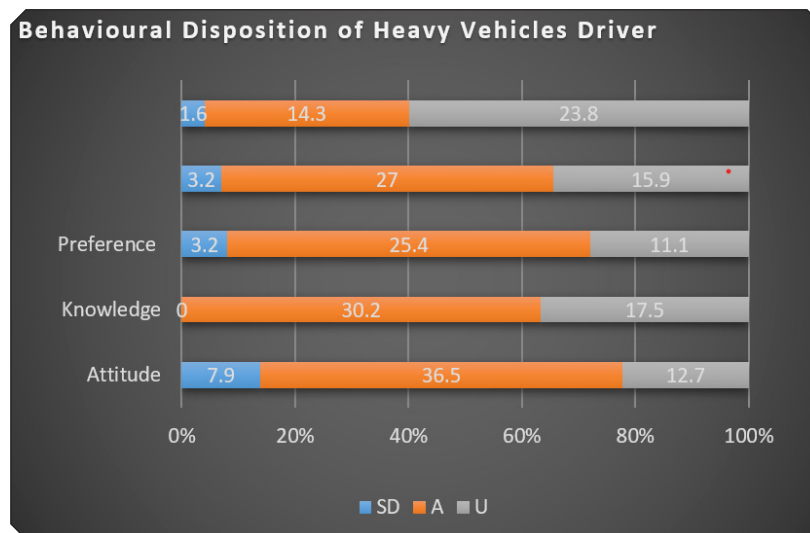
The study examines the effects of road safety management on heavy vehicle drivers' behaviour, with specific reference to local government vehicle inspection officers in Lagos metropolis. The pragmatism paradigm serves as the study's philosophical foundation. Hence, a mixed-method analysis was adopted. Quantitative and qualitative methods were used to gather data for the study. The population of the study consists of Vehicle In-spection Officers (VIOs) and Lagos State Traffic Management Agency officers (LASTMA) in five major divisions of Lagos. Sixteen respondents were selected from each of Ikeja, Ojo, Ijebu-Lekki, Lagos Island and Ikorodu East local governments. A sample of 80 respondents, 30 and 50 respectively, were drawn from each of these agencies and sixty-three (63) were found usable. The multistage sampling technique was adopted based on the location, knowledge of the study, and convenience of the respondents (i.e., area, judgement and convenience sampling techniques). Primary data were generated using questionnaire and key informant interview method with senior officers of vehicle inspection officers and LASTMA. Multiple secondary sources were used to reduce the risk of error and improve the study's reliability and validity. The quantitative data were analysed using descriptive statistics such as frequency table, percent-ages, charts, mean and standard deviation. The stated hypotheses were tested using simple regression analysis while qualitative data were content-analysed as the study also adheres to the qualitative model of social re-search.

RESULTS

In this section, attempt is made to analyse the quantitative data collected using questionnaire.

Table 1: Behavioral disposition of heavy-vehicle driver

	Scale Level					Mean	Std Dev.
	SD	D	U	A	SA		
	1	2	3	4	5		
Behavior of heavy vehicles drivers towards road safety management are in compliance with road safety measures in the LG (attitude).	7.9	36.5	12.7	33.3	9.5	.150	1.191
Heavy vehicle drivers within my local government have knowledge of road safety measures (knowledge).	-	30.2	17.5	41.3	11.1	.130	1.032
Heavy vehicle drivers are more likely to commit road safety offences than comply with road safety measures (preference).	3.2	25.4	11.1	44.4	15.9	.143	1.133
My experience with heavy vehicle drivers on Lagos road incidences within my local government is horrible (experience)	3.2	27.0	15.9	41.3	12.7	.139	1.107
As a Vehicle Inspection Officer, heavy vehicle drivers compliance with road safety on Lagos Road is very high (perception)	1.6	14.3	23.8	36.5	23.8	.132	1.047



Source: Field survey, 2024

Behavioural disposition of heavy vehicles driver

In table 1, the behavioural disposition items for which data was sought from the entire respondents were *attitude, knowledge, preference, experience, and perception* of heavy vehicle rivers. The participants responded to the various items, wherein 44.4 percent expressed their disagreement in terms of attitude, 12.7 percent were indifferent, and 42.8 percent reinforced their agreement. For knowledge, while participants expressed 52.4 percent in support, 30.2 percent were in disagreement with it. Then, only 17.5 percent were indecisive. As for the preference, 60.3 percent of the entire participants displayed their agreement, 11.1 percent were indecisive, and 28.6 percent disagreed. For the experience, 54 percent agreed, 15.9 percent were undecided, and 30.2 percent expressed their ineptitude. More so, perception shows that 60.3 percent were in support and 15.9 percent were in disagreement with it. Then, only 23.8 percent were indecisive. The result of the descriptive statistics on the behavioural disposition of heavy vehicle drivers clearly shows that all the participants have similar opinions about all the subject matters, as indicated in their mean and standard deviation scores. This shows that participants' opinions of the survey items were normally distributed and centred around the mean. It further proved that because the means and standard deviation of the various survey items were similar, there were no notable differences in the distribution of the participants' opinions.

Table 2: Road safety measures

	Scale Level					Mean	Std Dev.
	SD	D	U	A	SA		
	1	2	3	4	5		
As a Vehicle Inspection Officer, I enforce government traffic regulations on heavy vehicle drivers for road safety purposes (govt regulation).	6.3	11.1	9.5	47.6	25.4	.145	1.150
I always encourage safety policies among colleagues within my local government so as to enforce compliance among heavy vehicle drivers (safety consciousness).	1.6	9.5	7.9	46.0	34.9	.124	.983
I enforce fines as penalties for traffic offense among heavy vehicle drivers to road safety compliance (fine charges).	4.8	4.8	11.1	38.1	41.3	.136	1.076
As a Vehicle Inspection Officer, I jointly organize public awareness campaigns among heavy vehicle drivers for road safety compliance (public awareness).	1.6	7.9	6.3	49.2	34.9	.118	.938

Source: Field survey, 2024

Road Safety Measures

In table 2, the road safety measures items for which data was sought from the entire respondents were *government regulation*, *safety consciousness*, *fine charges*, and *public awareness* among Vehicle Inspection Officers. The participants responded to the various items, wherein 17.4 percent expressed their disagreement, 9.5 percent were indifferent, and 73 percent reinforced their agreement in terms of *government regulation*. As for *safety consciousness*, while participants expressed 80.9 percent support, 7.9 percent were indecisive, and 11.1 percent were in disagreement with it. As for the *fine charges*, 79.4 percent of the entire participants displayed their agreement, 11.1 percent were indecisive, and 9.6 percent disagreed. For *public awareness*, 84.1 percent agreed, 6.3 percent were undecided, and 9.5 percent expressed their ineptitude. The result of the descriptive statistics on road safety measures among Vehicle Inspection Officers (VIOs) in the understudied local government in Lagos State clearly shows that all the participants have similar opinions about all the subject matters, as indicated in their mean and standard deviation scores. This shows that respondents' opinions about the survey items were normally distributed and centred on the mean. It further proved that because the means and standard deviation of the various survey items were similar, there were no notable differences in the distribution of the respondents' opinions.

TEST OF HYPOTHESES

- H_{01} : Road safety measures have no influence on the behavioral dispositions of heavy vehicle drivers among Vehicle Inspection Officers (VIOs) in in Lagos State.

Table 3: Simple regression results for road safety measures vs. behavioral dispositions of heavy vehicle drivers

Model Summary										
Model	R	R square	Adjusted R square	Std. error of estimate	Change statistics					
					R square change	F change	Df1	Df2	Sig. F change	
1	.757 ^a	.574	.536	2.50790	.574	15.330	5	57 ^a	.000	
Predictors: (constant), perception, preference, knowledge, experience, attitude										
ANOVA ^a										
Model			Sum of Squares		Df		Mean Square		F	Sig.
1	Regression		482.097		5		96.419		15.330	.000 ^b
	Residual		358.506		57		6.290			
	Total		840.603		62					
a. dependent variable: road safety measures										
Predictors: (constant), perception, preference, knowledge, experience, attitude										
Coefficients ^a										

Model Summary									
Model	R	R square	Adjusted R square	Std. error of estimate	Change statistics				
					R square change	F change	Df1	Df2	Sig. F change
Model			Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
			B	Std. Error				Beta	Lower Bound
1	(Constant)		3.077	1.591		1.934	.058		
	Attitude		-.355	.528	-.115	-.672	.504		
	Knowledge		1.982	.624	.555	3.178	.002		
	Preference		.883	.359	.272	2.461	.017		
	Experience		.895	.416	.269	2.151	.036		
	Perception		.348	.444	.099	.785	.435		

a. Dependent Variable: Road Safety Measures. Source: Researchers' Computation, 2024

From Table 3, results of the regression analysis presented above, it is clear that there is a positive relationship between road safety measures and the behavioural dispositions of heavy vehicle drivers. The model also shows the variations experienced by the dependent variable that could be explained by the independent variable (R square), which shows that the behavioural dispositions of heavy vehicle drivers are responsible for about 57.4 percent of the variance in road safety measures. This means that 42.6 percent of the road safety measures put in place by the VIOs across the local government in Lagos State come from other factors other than the predictor used in this model (the behavioural dispositions of heavy vehicle drivers). The generalisation of the results (adjusted R square) indicates that 53.6 percent of the variation in road safety measures is explained by behavioural dispositions (*attitude, knowledge, preference, experience, and perception*). This result is almost close to reality, as the difference between R square and adjusted R square is not high. The standard error fit, which is a measure of the precision of the model, shows how wrong the statistical outcomes could be at 2.5 percent if one uses this model to make real-life predictions. The above result is statistically significant, as seen in the ANOVA table (p-value = 0.000), as it is less than the 0.05 confidence interval used in this study. A value greater than 1 shows that F-ratio yields an efficient model, but 15.330 F-ratio indicates that this model is not very efficient.

DISCUSSIONS

The findings revealed the *attitude, knowledge, preference, experience, and perception* of heavy vehicle drivers' behavioural dispositions in the state towards road safety are poor despite enacting and enforcing lower speed limits for heavy vehicles. The adop-

tion of technology like speed cameras, weighbridges, CCTV cameras, Intelligent Transport Systems (ITS), and Automatic Vehicle Location (AVL) to monitor heavy vehicle drivers' movements has improved enforcement mechanisms tremendously. Issues such as improper vehicle maintenance, faulty brakes, worn-out tyres, or malfunctioning lights are still rampant among heavy vehicle trucks. On this basis, we adjudged that mechanical failures pose a significant risk to the road, as most drivers neglect regular inspections and maintenance, leading to traffic congestion, accidents, and sometimes fatalities. The findings of the study agreed with the findings of other studies in the extant literature. For instance, the finding is in line with the studies of Atubi (2022a) and Siyan, Oyeyemi, and Agunbiade (2019) on road traffic accident deaths and injuries: drivers' accident analysis, safety, and prevention in Nigeria, where they concluded that fatigue management is a major challenge confronting heavy truck drivers. Drivers always have tight schedules or work irregular hours, as long hours on the road impair heavy vehicle driver judgement and reaction time, affecting overall driving performance. Also, external factors such as poor road infrastructure, adverse weather conditions, or the actions of other road users influenced heavy vehicle drivers' behaviour on road safety management. These factors increase the risk of accidents and pose challenges for drivers' behaviour management. This viewpoint is consistent with the research findings of Objective I.

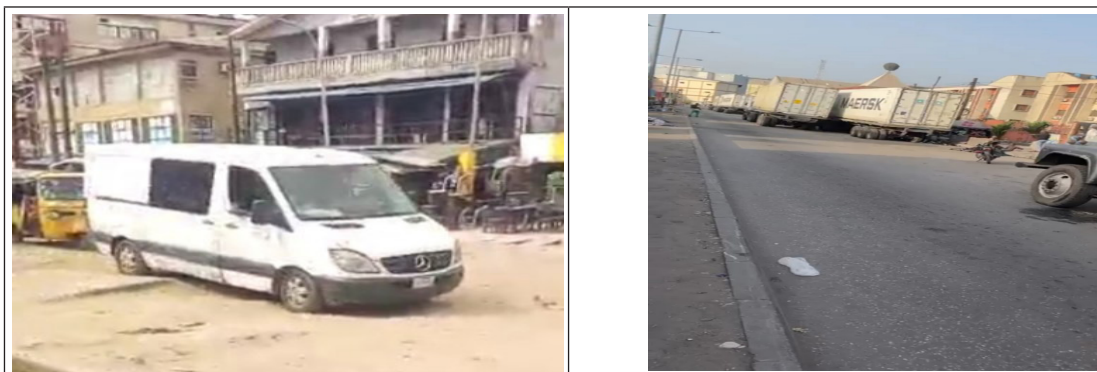
The key informant interviews supported by the quantitative analysis revealed that the road safety measures, such as *government regulation, safety consciousness, fine charges, and public awareness*, taken by the VIOs are creating a mildly safer and more efficient transportation system for all road users across the state as far as the local government policies that addressed road safety challenges and improved safety involving heavy vehicles in Lagos Metropolis are effective. The study discovered that a comprehensive approach would be required, encompassing vehicle regulation, infrastructure development, and public awareness. This can be achieved by developing and implementing effective local government policies tailored to the unique challenges posed by heavy vehicles in the Lagos Metropolis. The need for the government to promote intermodal transportation for freight mobility is indicated in the appendix. Hence, the city can create a safer environment by ensuring safer and more sustainable transportation for all road users. The findings of the study reflect the analytical data analyses based on the data gathered from the extant literature. The above finding is in line with the views expressed by Uzundu, Jamson & Marsden (2022) and Olajide & Ozturk (2018) on road safety in Nigeria: unravelling the challenges, measures, and strategies for improvement, which stated that the state needs to invest massively in modern road traffic management infrastructure, such as dedicated lanes for heavy vehicles, wider roads, improved signage, and better road maintenance to enhance safety, as well as continuous training of VIOs in the

state on contemporary road safety measures. This viewpoint is consistent with the research findings of Objective II.

CONCLUSION

Developing and implementing effective local government policies tailored to the specific challenges of heavy vehicles in Lagos Metropolis is critical in order to improve road safety, reduce congestion, and create a more sustainable and livable city for all. This research guarantees the need to invest in additional infrastructure development in order to develop robust data collection and analysis systems so as to identify accident hotspots for the purpose of actualising informed policy decisions. By working collaboratively with stakeholders and embracing innovative solutions, Lagos can achieve safer and more efficient road commuting for its citizens. Also, investment in driver training schools, stricter licencing requirements, and training will foster a culture of responsible driving behaviour among heavy vehicle drivers. The adoption of evidence-based and data-driven approaches will enhance properly informed policy decisions on effective heavy vehicle man-agement strategies to address policy gaps. More so, a comprehensive review of existing policies on road safety management on heavy vehicle operations and stakeholders' collaborative involvement in policy development should be embraced specifically on heavy vehicle driver attitudes. By implementing a comprehensive approach encompassing vehicle regulation, infrastructure development, enforcement, and public awareness, the city can create a safer environment for all road users, while leveraging on technological advancements to improve road safety management on heavy vehicle operations and securing sustainable funding to ensure long-term impact on infrastructure development. This will promote intermodal transportation for freight mobility across all the local governments in the state.





State of activities in areas of study. Source: Authors' compilation, 2024

REFERENCES

- Adewuyi, A. O. & Ogunjuyigbe, A. S. (2014). An assessment of road traffic crashes caused by heavy goods vehicles in Lagos, Nigeria. *Journal of Transportation Safety & Security*, 6(2), 75-89.
- Ajumobi, A. O. & Afolabi, O. (2018). Assessment of the effectiveness of road safety policies in Lagos State, Nigeria. *Journal of Transport & Logistics*, 9(1), 91-102.
- Akintola, B. O. & Oni, B. R. (2017). Road traffic crashes in Nigeria: An analysis of causes and effects. *Transportation Research Part A: Policy and Practice*, 10(1), 231-242.
- Atubi, A.O. (2018). Identification of cycles and periodic oscillations of reported number of injured from road traffic accidents in Lagos State, Nigeria. *European Journal of Research in Social Sciences, United Kingdom*, 6(4), 1-16.
- Atubi, A.O. (2021a). The political economy of road safety audit operations in Nigeria: A literature review. *The International Journal of Humanities and Social Studies*, 9(5), 122-131.
- Atubi, A.O. (2021b). Road network accessibility to healthcare facilities using geospatial techniques in Delta State, Nigeria. *The International Journal of Humanities and Social Science*, 9(6), 67-77.
- Atubi, A.O. (2022a). Road traffic accident deaths, injuries, drivers safety and socio-economic development in Nigeria. *Innovations*, 68(3), 436-447
- Atubi, A.O. (2022b). A geographical perspective on driving attitudes and behaviour in Nigeria. *Innovations*, No. 68(3), 413-427
- Federal Road Safety Corps (FRSC) (2023). National Road Safety Strategy 2023-2032. FRSC Headquarters, Abuja.
- Lagos Metropolitan Area Transport Authority (LAMATA) (2018). Lagos State Strategic Transport Master Plan. *Lagos State*
- Lagos Metropolitan Area Transport Authority (LAMATA) (2019). Lagos State Transport Master Plan. *LAMATA, Lagos*.
- Lagos State Government (2017). Lagos State Road Traffic Law. <https://lagosstatemoj.org/wp-content/uploads/2020/12/Lagos-State-Road-Traffic-Law.pdf>

- Lagos State Government (2020). Lagos State Road Traffic Law 2018 (as amended). *Lagos State Government Printing Press*.
- Olajide, B. T. & Ozturk, M. A. (2018). Road safety policies and enforcement in Lagos, Nigeria. *Accident Analysis & Prevention*, 1(17), 270-278.
- Olonade, O. A. & Olowogbile, A. A. (2013). Causes and effects of road traffic accidents in Nigeria: A review. *Journal of Sustainable Development*, 6(2), 229-238.
- Oyedele, L. O. & Ajayi, O. O. (2016). The effectiveness of road traffic safety regulations on heavy vehicle drivers in Lagos Metropolis, Nigeria. *Journal of Sustainable Development*, 9(5), 157-167.
- Oyegbami, O. O. & Egbelakin, T. O. (2016). Traffic management and control strategies in a developing city: The case of Lagos, Nigeria. *Journal of Transportation Safety & Security*, 8(1), 47-59.
- Siyan, P.; Oyeyemi, B. & Agunbiade, O. (2019). Road accident analysis and prevention in Nigeria: Experimental and numerical approaches. *Int. J. Adv. Sci. Res. Dev.* 6, 1-12.
- United Nations (UN) (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. *UN, New York*.
- United Nations Economic Commission for Africa (UNECA) (2017). Road safety in Africa: A review of progress and challenges.
- Uzundu, C. C., Jamson, S. & Hibberd, D. (2020). Can infrastructure measures mitigate unsafe road safety culture: A driving simulator study exploring cross cultural differences. *Transportation Research Part F: Traffic Psychology and Behaviour*, 7(3), 205–221. <https://doi.org/10.1016/j.trf.2020.06.022>
- Uzundu, C. C., Jamson, S. & Lai, F. (2018). Exploratory study involving observation of traffic behaviour and conflicts in Nigeria using the traffic conflict Technique. *Safety Science*, 1(10), 273–284. <https://doi.org/10.1016/j.ssci.2018.08.029>
- Uzundu, C. C., Jamson, S. & Lai, F. (2019). Unsafe behaviours in traffic conflict situations: An observational study in Nigeria. *Journal of Traffic and Transportation Engineering*, 6(5), 482–492.
- Uzundu, C. C., Jamson, S. & Marsden, G. (2022). Road safety in Nigeria: unravelling the challenges, measures, and strategies for improvement. *International Journal of Injury Control and Safety Promotion* 4(29), 522 – 532. (<https://www.tandfonline.com/doi/abs/10.1080/17457300.2022.2087230>)
- World Health Organization (WHO) (2020). Global Status Report on Road Safety 2020. *WHO, Geneva*.