The Interference of Financial Obligations and Institutional Governance on Road Safety Outcomes in Nigeria

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ABSTRACT

Road traffic crashes in developing countries are one of the major triggers by unsafe driving behaviour among commercial transport drivers. Although the conventional research mainly focuses on the driver error and vehicle inadequacy, this research paper explores the institutional context, which is the interference of transport unions and law enforcement agencies. Based on the structured questionnaires filled in by 735 stakeholders in Kaduna Metropolis (collected between November 2024 and January 2025), the analysis was based on descriptive statistics, chi-square tests, and comparative stakeholder analysis. The results indicate that institutional barriers such as financial strains imposed by the unions and enforcement bottlenecks are serious obstacles towards compliance in traffic regulations and by extension road safety. Financial obligations to unions, government and vehicle owners were found to have a significant relationship with unsafe driving. Influence is also found to mar the effectiveness of road law enforcement initiatives. The results also add to the political economy of road safety by promoting the institutional changes that would be aimed at aligning the organizational structures with the safety goals. Digitisation of revenue, enforcement autonomy and union-led safety initiatives were identified as measures that could improve the safety consciousness of drivers in Nigeria.

Keywords: Road Safety, Driver Behaviours, Financial burdens, Road accidents

INTRODUCTION

Road traffic accidents constitute one of the most serious international issues especially in low and middle income countries where the rate of motorization is often ahead of the creation of regulatory and institutional frameworks (Godthelp & Ksentini, 2024). It was projected that by 2030, road accidents will result in more deaths and disability than cerebrovascular disease, malaria, TB and HIV/AIDS (WHO, 2017, 2018; Ayodeji 2018).

Commercial transport sector in Nigeria is the major branch that carries the urban and intercity mobility in the country, which enables the transportation of a substantial percentage of the population within the country on complicated road networks (Afolabi & Akibo, 2020; Otuoze, 2021). Even though they are so critical, commercial drivers are often involved in the accidents with high fatality rates which are caused by unsafe working behaviours, e.g. driving too fast, making pushy overtaking, and making errors due to their fatigue.

Traditionally, road safety studies have embraced reductionist methodology whereby the cause of accidents has been isolated on the behaviour of individual drivers (Godthelp & Ksentini, 2024; Lakhan et al., 2020). According to this individualistic prism, human error is an independent choice, which is not dependent on the external nature. According to Boateng (2021) however, these views fail to take into account the fuller picture of the so-called governance environment that defines the reality of how the road operates. Drivers do not exist in a vacuum; they are the part of a complex network of actors including vehicle owners, transport unions, state regulatory agencies, among others that, jointly, constitute what sorts of economic incentives and regulatory pressures drivers experience.

This research attempts to close the divide between the outcomes of behaviour and the institutions. It discusses how administrative activities of transport unions and law enforcement agencies manipulate safety provisions in subtle ways. The study offers a multi-stakeholder approach to the political economy of road safety in Nigeria by considering the financial burden posed by non-state actors and restrictions experienced by the state in governing the road safety system. It includes an investigation into the interaction between union based extraction and enforcement weakness to form compliance in an attempt to offer a system of how best to build up the institutional management of the transport sector.

COMMERCIAL TRANSPORT INSTITUTIONAL ENVIRONMENT

Fully informal but highly complex governance structure manifests as a commercial transport industry in Nigeria in which the lines between the state and union governance is often blurred (Oluwakoya, 2025). As transportation is multi-disciplinary, we try here to review the role played by the respective stakeholders in the Kaduna road transport sector.

Drivers and Owners: Backbone of Operations

The functioning of the system is based on the connection between commercial drivers and vehicle owners. Mostly drivers are not owners of their vehicles but under rigid financial agreements with their owners who supply the capital assets (O. J. Afolabi & Akibo, 2020; Agunbiade, 2024). These schemes usually require drivers to pay a certain amount of money per day, which has formed a minimum financial strain. This target system will see to it that the drivers' personal daily profit, as well as their capacity to fuel the vehicle and sustain themselves, will not be achieved until this first need has been fulfilled. Consequently, the driver is not only an operator of traffic, but also a pressured agent of the capital asset.

Transport Unions as Quasi-Regulators

Most motor parks are dominated by the presence of transport unions. These include the National Union of Road Transport Workers (NURTW), the Road Transport Employers Association of Nigeria (RTEAN), Nigerian Association of Road Transport Owners (NARTO). They represent the local government in collecting park revenue, manage parks, handle cargo loading, ensure vehicle order, resolving any internal conflict, and serving as the main mediator between operators and governmental agencies (Fourchard, 2023; Yahaya & Abubakar, 2022). Nevertheless, as Fourchard (2023) notes, the power of these unions accompanied by the ability to raise different levies and park fees does not have legal backings. These financial liabilities considerably change the price set up of drivers (Oluwakoya, 2025; Yahaya & Abubakar, 2022), which would encourage drivers to take risky actions, including overloading or speeding, to keep the profit margins even in the face of high extraction rates.

Government and Regulation Effectiveness

The official regulatory environment is filled with various bodies, such as the Federal Road Safety Corps (FRSC), the Police, and the state-level organizations, such as the Kaduna State Traffic Law Enforcement Agency (KASTLEA). Although these agencies are required to implement safety standards and check documentation, their efficiency is usually undermined by institutional pressure. According to Adekunle *et al.* (2020), the growth of fake driver documents and the physical opposition that one may face when a traffic law enforcement officer performs an inspection at the roadside become major impediments to law enforcement. In addition, the fact that transport unions intervene in the enforcement mechanism also contributes to the regulatory capture, when safety regulations are not followed but negotiated, which undermines the safety net as a whole (Fourchard, 2023).

Financial Obligations and Cost Pressures in Commercial Transport

Nigeria's commercial public transport sector is fundamentally informal being encapsulated by the informal economy and informal actors. Its workers (drivers / producers) earn their living as workers than as micro-proprietors (Nwachukwu et al., 2023), operated as a kind of daily franchise where the owner requires daily returns (Alexender, 2025).

However, at the end of the day, the drivers/conductors' daily return will be whatever is left over after the driver has paid for all the cost for the day (Fueling; garage cost; NURTW tax/levies/charges, police tips; daily repairs/maintenance etc) (Fasakin, 2002; Atoyebi et al., 2015; Oguntimehin et al., 2025) Thus, the lack of proper regulation of commercial public transport services of trade industry and particularly employment relations between vehicle owners and drivers is therefore a fundamental cause of numerous inefficiencies in the transport industry (Fasakin, 2002; Atubi, 2021; Odufuwa et al., 2019; Boateng, 2020).

Enforcement Systems, Corruption, and Accountability Gaps

Commercial drivers commonly operate under exploitative leasing and repayment systems, union pressures, inconsistent enforcement regimes, and intense daily revenue demands (Aghanwa et al., 2025; Fasakin, 2002; Babatunde, 2020; Boateng, 2020; Ilevbare et al., 2021; Obiri-Yeboah et al., 2022). Additionally, multi-agency approach can lead to institutional issues, including overlapping objectives and a lack of coordination, which hinder effective maintenance and enforcement (Farah, 2016; Akande, 2021; Ameen et al., 2025). These systemic conditions strongly influence fatigue, speeding, law avoidance, and other risky behaviours, yet their behavioural implications remain poorly understood.

METHODOLOGY

The study has a quantitative survey design because it would need to reflect the multidimensional aspect of institutional interference in the commercial transport industry. This strategy is required due to the necessity to measure the latent pressures by non-state actors (unions), as well as state regulators, which have been highlighted in the publications of Adekunle *et al.* (2020) in terms of West African transport political economy.

Research Design and Multi-Stakeholder Framework

To capture the diverse institutional perspectives influencing road safety outcomes, four stakeholder-specific questionnaires were developed for commercial drivers, vehicle owners, transport union officials, and law enforcement officers. While the questionnaires shared a common focus on financial obligations, regulatory effectiveness, and safety-related behaviours, the wording and emphasis of questions were adapted to reflect the operational responsibilities and experiences of each stakeholder group. Prior to the main survey, the instruments were subjected to pilot testing among a small sample of respondents drawn from the study area. Feedback from the pilot exercise was used to improve question clarity, reduce ambiguity, and refine items relating to sensitive issues such as union influence, enforcement practices, and corruption. Participation was voluntary and anonymous in order to encourage candid responses and minimize social desirability bias. The groupings are as follows:

i. Commercial Drivers: To determine the direct effect that financial obligations and enforcement of roadside measures can have on driving behaviour.
ii. Vehicle Owners: To gain knowledge of the target system and the economic expectation of the drivers.
iii. Officials of the Transport Union: To consider the administration and extractive functions of the unions in the motor parks.
iv. Law Enforcement officers: To determine the bottlenecks of operation, including political interference and corruption, which are trying to undermine regulatory efficacy.

Study Area: The Kaduna Transport Network

The study was carried out in Kaduna Metropolis, one of the major cities in Northern Nigeria, which is a strategic hub of transit in the region and the nation. Kaduna is an optimal case study to explore the issue of informal union power and its interplay with the state regulation since it is a transport centre dating back to its historical context.

Data collection was strategically focused on two major nodes:

1. Kawo Motor Park; this is a major park in Kaduna and serves as a linkage between Kaduna Metropolis to major Northern cities.

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2. Mando Motor Park; this is another major interstate motor park in Kaduna connecting the metropolis to the Federal Capital and Southern cities in the country.

These sites provide a representative cross-section of the Nigerian commercial transport ecosystem, housing a large population of diverse stakeholders.

Sampling Strategy and Data Collection

A stratified sampling approach was adopted to ensure adequate representation of the key stakeholder groups that shape governance and operational practices within the commercial transport sector. The four strata comprised commercial drivers, vehicle owners, transport union officials, and law enforcement officers. Because commercial drivers constitute the largest and most active stakeholder group within the selected motor parks and are directly responsible for operational decisions affecting road safety, they were intentionally assigned a larger sample proportion. Vehicle owners, union officials, and enforcement officers were sampled to provide complementary perspectives on financial, administrative, and regulatory dimensions of road safety governance.

Respondents were recruited from Kawo and Mando Motor Parks, the two largest interstate transport hubs in Kaduna Metropolis. Within each stakeholder category, participants were selected based on their active involvement in commercial transport operations during the study period. Data collection was conducted between November 2024 and January 2025. A total of 735 valid responses were obtained, comprising 450 commercial drivers, 120 vehicle owners, 85 transport union officials, and 80 law enforcement officers. The multi-stakeholder distribution was designed to capture both the operational experiences of transport operators and the institutional perspectives of actors responsible for transport governance and regulation.

Although the study employed measures to promote honest reporting, including confidentiality assurances and anonymous questionnaire administration, the findings remain subject to the limitations associated with self-reported survey data. Consequently, responses reflect stakeholder perceptions and experiences, which may be influenced by recall errors, subjective interpretation, or social desirability effects.

RESULTS

Descriptive Analysis of Institutional Pressures

The initial phase of analysis summarizes the distribution of factors that define the daily operational environment for drivers.

Table 1: Socio-Demographic and Operational Context of Respondents

Variable	Category	Frequency (f)	Percentage (%)
Stakeholder Role	Driver	450	61.2
	Owner	120	16.3
	Union Official	85	11.6
	Enforcement Officer	80	10.9
Primary Site	Kawo Park	382	52.0
	Mando Park	353	48.0
Operational Pressure	High Daily Revenue Target	512	69.7
	Excessive Union Levies	488	66.4
	Enforcement Resistance	415	56.5

Source: Field Survey (2025)

The figures indicate that the environment is highly-pressure with almost three out of four operators having a high daily goal and one out of six operators indicating that union levies are one of their major operational costs. In a situation where institutional levies have the effect of increasing the cost of operation, safety margins are the initial ones to be affected as Wheat et al. (2019) puts it.

The Friction of Regulatory Governance

Formal traffic enforcement is not so efficient simply because there are several officers on the road but because of the quality of institutional space in which they operate (Wheat et al., 2019). Regardless of the formality of the enforcement. When non-state institutions such as transport unions have high political capital, formal enforcement tends to be more of a performance exercise and not a matter of safety interventions (Fourchard, 2023).

Law enforcers in the Kaduna Metropolis have indicated that there is a consistent trend of interference, which indicates the existence of a regulatory capture. This is witnessed when officials tasked with protecting public interest end up serving commercial or political interests at the expense of the offenses they were supposed to regulate.

Table 2: Institutional Bottlenecks to Regulatory Efficacy

Rank	Identified Barrier	Impact Score (1–5)	Frequency of Occurrence
1	Political / Union Interference	4.8	Daily
2	Operational Resistance (Thuggery)	4.6	Frequent
3	Corruption / Informal Settlements	4.2	Persistent
4	Documentation Forgery	3.9	High
5	Logistical / Resource Constraints	3.5	Moderate

Source: Field Survey (2025)

The result was high in the variable Political/union Interference (4.8) as it agrees with the evaluation made by Afolabi and Ajileye (2025) and also Fourchard (2023) that in Nigeria, transport unions are often the so-called vote brokers, so they have some immunity to the rules of the road. When a driver has been caught committing a crime such as overloading, or driving recklessly, the officials of the union often step in to facilitate a mediation, by doing so informally, bypassing the processes of formal sanction. Such interference sets a regular pattern of defeating the deterrent impact of traffic laws. Operational resistance is also a high impact barrier to regulatory efficiency with an impact score of 4.6 in which road users engage in fracas with traffic law enforcement officers. These two are further enforced by 34% and 19% of drivers reporting that they have witnessed enforcement hindered by political inference and thuggery respectively.

Institutional Pressure and Road Risk

To overcome these anecdotal pieces of evidence, a chi-square test was carried out to establish whether there is any statistically significant correlation between the interference of institutional and non institutional actors and the rate at which unsafe driving behaviours might occur.

Table 3: Chi-Square Test for Institutional Influence on Safety Outcomes

Institutional Variable	Associated Driving Behaviour	χ^2 Value	p-value	Statistical Decision
Union Levy Frequency	Speeding / Trip Maximization	54.12	0.001	Significant
Financial Target Pressure	Overloading / Unsafe Loading	42.85	0.004	Significant

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Enforcement Interference	Non-Compliance with Regulations	38.60	0.069	Non-Significant
Documentation Fraud	Unlicensed Driving / Vehicle Defects	31.22	0.045	Significant

Note: Chi-square test conducted at α = 0.05 significance level.

Source: Field Survey (2025)

The findings show that there is strong association between the financial levies and risk-taking. Particularly, the correlation of Speeding with Union Levy Frequency ($p = 0.001$) indicates that the more tickets or fees a driver has to pay, the higher the driving speed he/she has in an effort to make the fee justify the expenses by making more trips in one day.

Besides, the non-compliance variable is found not to be significant with enforcement interference at 95% confidence level ($p = 0.069$). However, a small percentage of drivers (19%) have reported enforcement hindered by operational resistance of drivers while a much higher percentage (34%) reported witnessing enforcement hindered by influence including bribery on law enforcement officers. Unsafe driving in this case is not a consequence of the lack of knowledge about the law, but rather a rational action toward a governance operation that uses profit and power more than safety.

Comparative Stakeholder Analysis

To recognize the interference of institutional governance, we went beyond aggregate statistics and look at the competing accounts between the regulators and the regulated. According to Afolabi and Ajileye (2025), the Nigerian transport sector is a negotiated space because the definition of a violation would most likely vary depending on who you talk to in the specific stakeholder

Table 4: Comparative Perception of Operational and Regulatory Pressures

Issue / Variable	Driver Perspective	Union Official Perspective	Enforcement Officer Perspective	Vehicle Owner Perspective
Union Levies	Viewed as exploitative and a major cause of speeding and trip maximization.	Considered necessary for union welfare, park administration, and operational management.	Generally viewed as outside regulatory jurisdiction and rarely addressed.	Regarded as a routine operational expense.
Traffic Fines	Often perceived as negotiable through union mediation or informal arrangements.	Seen as a source of conflict with enforcement agencies; unions frequently intervene on behalf of drivers.	Enforcement efforts are sometimes weakened by political or institutional interference.	Considered a financial risk that reduces daily operational returns.
Overloading	Seen as necessary to meet daily financial targets and offset union levies.	Officially discouraged but often tolerated due to revenue implications for parks.	Identified as a key safety violation and major focus of enforcement activities.	Viewed as a strategy for maximizing vehicle utilization and revenue.
Road Safety	Often perceived as secondary to financial survival and daily earnings.	Considered important but frequently subordinated to park order and revenue generation.	Represents the core mandate of enforcement agencies but difficult to implement effectively.	Primarily associated with vehicle maintenance and asset longevity.

Source: Field Survey (2025)

Table 4 shows that there is an important gap in the data. Although enforcement officers consider safety to be their number one priority, drivers consider it as the second priority that can only be taken care of after the driver has met the financial interference of the union levies and the owner targets. This is in line with the survivalist logistics theory according to Boateng (2021) in which the economic set-up of the transport operator (the driver-vehicle unit) is precarious enough to make adherence to safety regulations an unaffordable expense.

THE POLITICAL ECONOMY OF NON-COMPLIANCE

The findings of this study provide empirical weight to the argument that road safety in Nigeria is a product of institutional governance rather than mere individual behaviour. The interference manifests in three critical dimensions.

Financial Extraction as a Catalyst for Risk

The results indicate that the financial obligations serves as a structural driving force to unsafe driving. The break-even point of a driver in Kaduna Metropolis is forced to a further point in the working day when he or she is subjected to several a-day levies, usually collected by the abrasive task forces or union officials. This forms a speed-revenue trap as indicated by the Chi-Square findings ($p = 0.001$). The driver has to drive more trips to ensure a take-home pay and as a result of this, he or she will over speed and ignore the required periods of rest. In this regard, the monetary expropriation of the union is a financial problem as well as a direct cause of road traffic accidents (Fourchard, 2023).

Regulatory Capture and the Deterrence Gap

The nature of the institutional governance of road safety in Nigeria can be described as the so-called deterrence gap presented by Fourchard (2023). For a law to change behavior, the threat of certain and swift punishment must exist. Nevertheless, the score of high impact on Union Interference is quite high (4.8) indicating that the enforcement process is often interrupted. When the union officials exploit their contacts to lift the impounded cars or bargain the amount of fines, they will send the signals to the population of drivers that the rules can be bent. This interference undermines the powers of agencies such as the FRSC and KASTLEA making the road a place of negotiated compliance and not a place of legal order.

The Operational Resistance Factor

One of the key discoveries in the research is the concept of operational resistance or thuggery that defines safety outcomes. According to the enforcement officers, the physical fear of violence by the operators usually determines their location and timing to carry out inspections. This leaves enforcement gaps in some of the densely populated places in Kaduna like around the interchange of Kawo where the informal government of the union is stronger in the geographical location than the state. This in turn causes the worst driving habits to be in the same regions where enforcement is required most, yet, they are not able to perform such functions.

CONCLUSION AND POLICY RECOMMENDATION

This study has gone beyond the traditional emphasis on the individual driver error towards a questioning the interference of the financial and governance arrangements within the Nigerian commercial transport sector. There is an indication that road safety results are essentially influenced by the institutional environment, as demonstrated by evidence collected in 735 stakeholders in Kaduna Metropolis. These reinforces assertments by Boateng (2021) that Nigerian roads are a place of strong political and economic bargaining whereby safety laws are often compromised by the survival instinct of motorists and the extractive imperative of non-state organizations.

The described interference is twofold: one, a financial one in which union levies and owner targets result in a speed revenue trap to the drivers; and two, an institutional one in which regulatory agencies are captured and lack independence. Giving more driver education in this kind of environment will have little effect on the final outcome but there has to be some structural incentives rewarding risk and not compliance.

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Policy Recommendations for Structural Reform

The following policy interventions are suggested to decouple commercial transport and these systemic risks:

1. Digitization of Revenue and Documentation: The Government needs to digitalize the motor park fees into an open system that is not prone to financial interference caused by the informal levies. This would make the task forces role less significant and give a better ceiling to the financial commitments imposed on drivers.
2. Enforcement Institutional Autonomy: FRSC and KASTLEA agencies should be kept out of political and union interference. The legal frameworks need to be enhanced so that when a safety violation is documented, it cannot be bargained out by the institutional actors of the third parties.
3. Union-Led Safety Incentives: Transport unions should be motivated to embrace the philosophy of Safety-First model of revenue generation, instead of being purely extractive institutions.
4. A Multi-Stakeholder Governance Council: It could be helpful to create a regular meeting point in urban centers that involves drivers, owners, union leaders and enforcement bodies to meet on a regular basis such as once a month to enable the bridging of the perceptual gaps that this study has identified.

REFERENCES

1. Adekunle, S. E., Abdullahi, M. B., & Adepoju, S. A. (2020). *Development of a Vehicle Driving Authorization Permit and Fake Driver Detection System Using Fingerprints Techniques*.
2. Afolabi, M. B., & Ajileye, O. J. (2025). Law Enforcement Challenges and Road Safety Corps in Ekiti sState, Nigeria. *IZU: JOURNAL OF CRITICAL PERSPECTIVES*, *3*(2).
3. Afolabi, O. J., & Akibo, K. O. (2020). Urban challenges and informal public transport services in Nigeria. *Revista de Management Comparat International*, *21*(3), 319–331.
4. Aghanwa, O. C., Azeez, R. O., Bhatt, S., Mogaji, E., & Ugboma, O. (2025). Typology of female drivers in Nigeria's transport ecosystem. *J Transform Transp Serv*, *3*(1), 23-46.
5. Agunbiade, A. (2024). *A new approach to transport investment appraisal for developing economies: A case study of Lagos, Nigeria*.
6. Alexander, L. (2025). Challenges and Opportunities in Car Service Franchising: Analyzing the Challenges and Opportunities that Come with Franchising in the Car Service Industry.
7. Ameen, H. A., Fagbemi, M. K., Bello, M. B., Yusuf, K. O., Alatishe-Muhammad, B. W., & Tijani, A.-R. O. (2025). Risk Factors and Patterns of Road Traffic Accidents among Commercial Tricycle Operators in Nigeria: A Public Health Perspective. Zagazig University Medical Journal, 0(0), 00. https://doi.org/10.21608/zumj.2025.350347.3781
8. Atoyebi, A. O., Gbadamosi, T. K., Nwokoro, I. I. C., & Omole, F. K. (2015). Analysis of intra-city public transport system of ojuelegba park, lagos state, Nigeria.
9. ATUBI, Augustus Orowhigo. (2021). Road Investment and Traffic Safety in Nigeria . *International Journal of Scientific and Applied Research (IJSAR), EISSN: 2583-0279*, *1*(8), 7-14. https://ijsar.net/index.php/ijsar/article/view/8
10. Babatunde, I. A. (2020) 'The Policy Institutional Approach to Transport Failure in Nigeria', OALib, 07(01), pp. 118.
11. Boateng, F. G. (2021). Why Africa cannot prosecute (or even educate) its way out of road accidents: Insights from Ghana. *Humanities and Social Sciences Communications*, *8*(1), 13.
12. Fasakin, J. O. (2002). Daily cost considerations in the operations of commercial motorcycles in Nigeria: a locational analysis for Akure township. *Transportation Research Part A: Policy and Practice*, *36*(3), 189-202.
13. Fourchard, L. (2023). Expanding profit and power. The National Union of Road Transport Workers in Nigeria. *Canadian Journal of Development Studies/Revue Canadienne d'études Du Développement*, *44*(1), 97–112.
14. Godthelp, H., & Ksentini, A. (2024). Specific road safety issues in low-and middle income countries (LMICs): An overview and some illustrative examples. *Traffic Safety Research*, *8*, e000068–e000068.
15. Lakhan, R., Pal, R., Baluja, A., Moscote-Salazar, L. R., & Agrawal, A. (2020). Important aspects of human behavior in road traffic accidents. *Indian Journal of Neurotrauma*, *17*(02), 085–089.

16. Ilevbare, F. M., Fagbenro, D. A. and Adediran, A. G. (2021) 'Personality Traits, Mental Health and Driving Anger among Commercial Drivers in Lagos Metropolis, Nigeria', 29(2), pp. 7280.
17. Nwachukwu, M. U., Obinna, C., Jiburum, U., & Okeke, D. C. (2023). Analysis of modal split of intra-urban trips in a centenary city: A case study of Enugu, Nigeria. *Sage Open*, *13*(1), 21582440231154420.
18. Obiri-Yeboah, A. A., Owusu-Ansah, P., Abdul-Aziz, A. R., Woangbah, S. K. and Asamoah, J. N. (2022) 'Modelling the economic impact of rickshaw transportation in Ghana: The case of kumasi', Results in Engineering, 15.
19. Oguntimehin, A., Azeez, R., Nwangwu, O., Ogunkoya, S., & Asenime, C. (2025). An assessment of factors affecting informal minibus (Danfo) transport operators in Lagos State: A case study of Alimosho LGA. *Transportation Research Procedia*, *89*, 350-363.
20. Odufuwa, B. O., Salisu, U. O., Fasina, S. O., Ogunseye, N. O., & Omoniyi, S. S. (2019). Driving behaviour of taxi drivers towards sustainable public road transport in Ogun State, Nigeria. *Ghana Journal of Geography*, *11*(2), 199-226.
21. Oluwakoya, A. O. (2025). Regulatory frameworks and enforcement mechanisms in urban transport governance: A case study of Lagos State. *Contemporary Journal of Politics and Administration*, *3*(1).
22. Otuoze, S. H. (2021). *Sustaining critical transport infrastructure space in megacities: Multimodal assessment of railway and road systems in Kano & Lagos—Nigeria*.
23. Wheat, P., Stead, A. D., Huang, Y., & Smith, A. (2019). Lowering transport costs and prices by competition: Regulatory and institutional reforms in low income countries. *Sustainability*, *11*(21), 5940.
24. Yahaya, M. Z., & Abubakar, S. (2022). Risk behavior on road traffic accident among commercial vehicle drivers in Jalingo Metropolitan, Taraba State, Nigeria. *World Journal of Advanced Research and Reviews*, *14*(3), 241–247. https://doi.org/10.30574/wjarr.2022.14.3.0529