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PUBLIC GOVERNANCE, TRANSPORT SAFETY AND REGIONAL SUSTAINABILITY: A QUALITATIVE ANALYSIS OF URBAN FREIGHT SYSTEMS IN DEVELOPING COUNTRIES**Aaram Gwiza***Department of Auditing, University of South Africa**E-mail: gwizaa@unisa.ac.za**Received 20 May 2026; accepted 30 July 2026; published 30 September 2026*

Abstract. Urban freight systems are increasingly recognised as critical drivers of regional economic development, yet their rapid expansion in developing countries has exposed significant governance and transport safety challenges. This study evaluates the role of public governance in shaping transport safety within sustainable supply chains, with a focus on urban freight systems in developing regions, drawing implications for regional sustainability. Drawing on a qualitative multiple case study approach, the research examines institutional structures, regulatory effectiveness, and safety challenges in cities such as Harare, Nairobi, and Lagos. Data were collected through semi-structured interviews with transport regulators, logistics managers, and urban planners, complemented by document analysis of policy frameworks and regulatory instruments. The findings reveal that fragmented governance structures, weak enforcement mechanisms, and constraints on institutional capacity significantly undermine transport safety outcomes. Furthermore, safety risks such as vehicle overloading, driver fatigue, and inadequate infrastructure contribute to supply chain inefficiencies and limit regional competitiveness. The study demonstrates that governance plays a central role in aligning transport safety with sustainable supply chain objectives, highlighting the need for integrated policy frameworks and institutional coordination. The paper contributes to the regional development literature by linking governance, safety, and supply chain sustainability and offers policy recommendations to improve regulatory effectiveness and enhance regional economic performance.

Keywords: urban freight transport; transport governance; sustainable supply chains; road safety; regulatory institutions; regional development

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1. Introduction

Urban freight transport has become a central cog of regional economic systems, facilitating the movement of goods across cities and supporting industrial and commercial activities. The expansion of supply chains in developing countries has intensified reliance on road-based freight systems, particularly in rapidly urbanising cities such as Harare, Nairobi, and Lagos. Scholars such as Holguín-Veras et al. (2023) and Maxner & Giuliano (2025) argue that urban freight systems are essential for ensuring regional connectivity and economic integration. Efficient freight systems enhance regional productivity by reducing transaction costs and improving market accessibility, thus acting as a catalyst for economic development (Barrera-Jiménez & Pineda-Jaramillo, 2024). The World Bank (2024) estimates that logistics costs account for up to 30% of GDP in some developing African countries, compared to around 10% in high-income economies, highlighting the significant drag that inefficient freight systems place on regional development. However, this expansion has also introduced complex challenges related to congestion, infrastructure strain, and safety risks. Adu & Dorasamy (2024) highlight that inadequate

road infrastructure in developing economies significantly increases supply chain costs and compromises safety outcomes, thereby affecting regional productivity and exacerbating spatial inequalities. The inefficiencies within these systems can hinder regional competitiveness and create barriers to inclusive growth, with the United Nations Economic Commission for Africa (UNECA, 2025) reporting that poor road infrastructure and regulatory fragmentation cost the African continent an estimated 2% of GDP annually in lost trade opportunities.

Regional development from the freight transport perspective is increasingly mediated through governance structures, ensuring that the transport systems are efficient and safe, the latter necessary conditions for sustainable regional development, as well as the need for good public governance, are all in place. In many developing countries, by contrast, governance models remain fragmented and poorly coordinated. Lindholm & Behrends (2012) acknowledge that urban freight planning is generally neglected in broader transport policies, leading to regulatory gaps that impede effective system performance. In contrast, Cowie and Fiskén (2023) emphasise that policy maturity in urban freight systems remains low, particularly in regions with limited institutional capacity. Transport safety is one of the most vital but least investigated aspects of sustainable supply chains, where the World Health Organisation (WHO, 2024) and Muzondo et al. (2026) pontificate that road traffic crashes lead to approximately 1.35 million deaths each year, with more than 90% of these deaths being recorded in low- and middle-income countries. The death rate is 27 per 100,000 people in sub-Saharan Africa, which is the most alarming record compared with any region across the globe. Freight vehicle road accidents are known contributors to deaths and economic losses; they also affect supply chain operations and generate significant externalities for regional economies. According to Tiwari et al. (2018) and Dangisso et al. (2025), governance failures, including weak enforcement and inadequate regulatory oversight, are closely related to transport system safety challenges. Particularly in developing countries, such problems are exacerbated by rapid urbanisation and growing interest in freight services, resulting in greater risks for urban logistics systems. This points to a growing concern about how the governance failures affect transport safety and, equally important, the sustainability and regional development potential of urban freight systems.

Against this background, the current research aims to assess *how public governance affects transport safety and environmentally friendly supply chains in the sub-Saharan region*. Particular attention is paid to regional development, analysing governance structures related to urban freight transport, examining safety challenges that affect the operation of freight facilities, evaluating effective governing bodies within regulatory institutions, and finally suggesting alternative strategies that may enhance safety and regional sustainability.

Anchored on these four objectives, the research aims to address the following fundamental questions:

- How do regulatory institutions govern urban freight systems in developing countries? What safety problems affect freight transport?
- What is the impact of governance on safety?
- What policy changes can help to promote safety and regional development in Sub-Saharan Africa?

Apart from contributing to the extant literature on public governance, transport safety, and sustainability in the supply chain as vital components of regional development, this study provides a multipronged analysis of the interdependencies among these variables, especially in relation to regional development in developing countries.

This study seeks to close the knowledge gap in the existing literature on public governance and urban freight systems, demonstrating how they contribute to regional economic performance. This study provides deep insights into how institutional changes could not only contribute to transport safety and regional economies, but also promote overall sustainability, along with a reassertion of knowledge about the impact of governance and infrastructure on emerging economies.

2. Literature Review and Conceptual Background

Urban Freight Systems and Regional Economies

Urban freight systems are critical to regional economic development. They serve as the backbone of distribution networks and trade across urban and rural areas. Holguín-Veras et al. (2023) argue that efficient freight systems improve productivity through lowering transaction costs and increasing accessibility to the marketplace. On the other hand, Barrera-Jiménez & Pineda-Jaramillo (2024) highlight the collaborative contribution of integrated freight and land-use planning to enhance regional competitiveness and offer evidence that strategic infrastructure management can generate considerable economic gains. The performance of these systems is crucial, particularly with respect to regional connectivity, which drives choices regarding industrial placement and the labour market. According to Rodrigue (2020), in the Geography of Transport Systems, freight distribution networks are a key driver for regional economic integration. Therefore, if these networks are inefficient, logistics deserts will ensue, exacerbating the marginalisation of certain regions.

However, there is disagreement among scholars over whether modern urban freight systems promote sustainable development. Lindholm & Behrends (2012) highlight some structural inefficiencies in urban freight planning (e.g., congestion, lack of infrastructure), that are often the result of policy neglect. However, Russo & Comi (2016) argue that policies, including incentivisation of green logistics practices and off-peak deliveries, can mitigate these issues. This view of divergence reflects contrasting perspectives on the efficacy (and ease of implementation) of policy frameworks in promoting freight systems. The former is more pessimistic about political will to change, while the latter is more optimistic about targeted intervention. Some recent studies have introduced the technological dimension to express the potential of smart cities to improve the efficiency of freight transport. Klar et al. (2023) highlight the potential role of digital technologies such as the Internet of Things and digital twin technologies in improving logistics operations and route planning capabilities. Li et al. (2024) expand on the implications of cognitive digital twins in developing low-carbon freight systems. However, these approaches often overlook the institutional constraints in developing countries, where technological adoption is limited by weak, fragmented governance and resource constraints (Farquharson et al., 2021). Muzondo et al. (2025), in their systematic review of IoT in public transport logistics in Zimbabwe, established that while the potential is recognised, implementation is hampered by a lack of infrastructure and skilled personnel, among other factors.

Furthermore, existing literature points to a growing critical need to integrate technology, planning, and/or policy as a prerequisite for improving system performance. Using economic modelling, Tundulyasaree et al. (2025) observed that coordinated tax and subsidy policies are more effective than fragmented measures in incentivising modal shifts for sustainable urban freight. This study builds on these observations by exploring governance as a mediating factor that either enables or constrains these integration efforts.

Sustainable Supply Chains and Regional Development

Long-term sustainability of supply chain performance entails balancing economic, environmental, and social goals in regional development. Dwivedi et al. (2023) claim that sustainability in freight transportation plays a vital role in minimising environmental impacts whilst respecting operational efficiency, a position that Singh et al. (2026) emphasise by integrating efficiency, resilience, and environmental sustainability approaches to sustainable regional development. Similarly, Fan et al. (2023) highlight that government policies and stakeholder engagement drive sustainable logistics and that sustainability should be viewed as a public policy issue in both the private and public sectors. Jelti et al. (2023), in their review paper, projected the transition towards sustainable transport systems. Technological innovation, policy support and behavioural change were identified as the cornerstones in the framework.

However, the lack of integration of sustainability across regions into supply chains has so far been unevenly experienced. Muzondo & Pashapa (2025) denote that developing countries struggle to implement sustainable

practices due to limited resources and institutional capacity. This leads to a disconnect between the normative targets in the sustainability literature and the concrete realities of developing environments. In contrast, Prause & Hunke (2014) posit the use of ICT systems to facilitate the realisation of green transport corridors, in which technological innovation could overcome structural constraints. Similarly, this notion is supported by Fatorachian & Pawar (2025), who emphasise the correlation between Industry 4.0 technologies and sustainable freight transport.

Previous studies have examined the safety-fitness in the sustainability framework. Wang et al. (2022) underlined the importance of safety for transport sustainability, while Shankar et al. (2018) focus more on treating safety as a risk reduction issue rather than a core sustainability objective. These divergent perspectives signal the need for a more comprehensive and integrated approach to safety recognition, one that considers safety a central component of a sustainable supply chain, where accidents can jeopardise both the social and economic pillars of sustainability. According to a systematic review conducted by Nkesah (2023), making road freight transport more sustainable requires treating safety as a core performance indicator rather than an external factor.

Public Governance and Transport Regulation

The concept of public governance in the transport sector provides a foundation for developing transport systems, designing regulatory frameworks, ensuring compliance, and shaping public participation in these systems. Rosales (2024) recognises different governance models in urban logistics, ranging from marketised mechanisms to state-led solutions, noting that the mode of governance may substantially influence outcomes. Similarly, Kervall et al. (2025) focus on the significance of governance in making transitions to sustainable freight systems feasible, particularly for small and medium-sized cities, whose capacity constraints can limit effective transition. Looking at the public authority sector as a whole, Tronca and Rotaris (2024) highlight that urban freight innovation ecosystems need to be designed through collaborative governance models.

However, governance is a patchwork of interventions that are unevenly effective across contexts. Cowie & Fiskén (2023) assert that policy maturity is a critical factor in determining transport system performance, with more advanced systems demonstrating higher levels of coordination and integration. In contrast, Ma et al. (2025) raise concerns regarding access restrictions as a policy framework, given their limited effectiveness in practice when enforcement capacity and stakeholder compliance are low. This indicates concurrence with the idea that effective policy design requires effective implementation and enforcement mechanisms. Fransen et al. (2023) establish a taxonomy of urban vehicle access regulations that indicates that the burden of policy instruments is sometimes greater in complexity than in administrative capacity to control them.

A longstanding tension between regulatory ambition and implementation capacity is evident across the literature. Although many policies seek to encourage sustainability and safety, weak institutional frameworks and compliance mechanisms undermine their effectiveness. Research in this area aims to fill this gap by focusing on the impact of governance structures (not just policies) on transport safety performance in developing countries. In their multimodal transport study, Makarova et al. (2023) emphasise that sustainable territorial development should be underpinned by strong governance to mitigate risks and facilitate coordination among these various modes of transport and regions.

Transport Safety and Economic Externalities

Transport safety is a significant concern with far-reaching economic and social consequences. Tiwari et al. (2018) state that traffic accidents impose costs on the economy in many ways, including healthcare costs, loss of productivity, and damage to infrastructure. Negative externalities, often unmentioned in transport planning, lead to market failures due to these costs. Similarly, Wang et al. (2025) detail spatial inequalities in crash severity, revealing heterogeneity in safety risk across regions and an ongoing exacerbation of regional disparities. The cost of road traffic crashes in developing countries ranges from 1% to 3% of GDP annually, according to the World Bank (2023).

Several researchers also underline the cruciality of the regulatory framework in enhancing safety outcomes. McLeod & Curtis (2022) suggest adding safety to transport policy through hazard control frameworks, while Anastasiadou and Kehagia (2025) present decision-support systems as an approach to improving road safety. Almashhour et al. (2023) take a Delphi-ANP perspective to reconcile highway transportation, health, and social equity, positing that sustainable transport planning should place safety at the heart of social justice. These interventions often require robust institutional resources that are sometimes absent in emerging contexts.

The literature broadly agrees on the necessity of safety but disagrees on how to achieve it, with some prioritising top-down regulatory responses and others encouraging bottom-up, technology-based solutions. Comi et al. (2024) present a comprehensive review of tools and policies relating to urban freight transport, reporting that safety is generally a secondary consideration to efficiency and environmental objectives in policy frameworks. This research contributes its own nuance to the nexus of this issue by linking concerns about safety with governance, regional progress, and supply chain performance within a much broader, more integrated framework that is essential in emerging economies.

Research Gap

The literature review established that, within a region's overall development framework, there are still knowledge gaps regarding the linkages among governance, transport safety, and sustainable supply chains. Existing studies tend to look at these dimensions individually, but few examine their interconnections, particularly in developing countries. Additionally, the literature treats safety as a separate issue, rather than as part of supply chain sustainability and regional competitiveness. This study, therefore, aims to address this gap by offering a qualitative analysis of governance structures and their impact on transport safety and regional sustainability. By so doing, the study contributes to the emerging discourse on regional safety and sustainable development.

3. Theoretical Framework

Institutional Theory

Institutional theory helps to explain how formal and informal rules of conduct inform organisational behaviour. According to this standpoint, regulatory institutions shape compliance and performance by defining norms and enforcement mechanisms. In urban freight systems, institutions set the stage for policy implementation and facilitate stakeholder interaction. Li & Abiad (2009) state that institutions are the rules of the game that govern incentives and economic performance. Rosales (2024) and Kervall et al. (2025) highlight the roles of institutions in shaping governance outcomes as well as the need for coordination and legitimacy. However, institutional theory holds that there is nonetheless room for inefficiencies, especially in contexts with poor governance, where institutions may have little impact on real governance (Li & Abiad, 2009). This study examines the effects of various regulations on transport safety outcomes through the lens of institutional theory, examining whether safety relates to the strength and integrity of these institutional formations. Given the limitations of institutional theory highlighted above, the current study utilises the Sustainable Supply Chain theory to strengthen its theoretical framework.

Sustainable Supply Chain Theory

An integral part of sustainable supply chain theory is the integration of economic, environmental, and social goals (Dwivedi et al., 2023). This is true in urban freight systems, where safety, emissions minimisation and the effective use of resources should be ensured. The study's contribution to theory is a regional development perspective that situates governance of sustainable outcomes within this framework. By fusing safety and sustainability, the study presents a more comprehensive picture of supply chain performance, suggesting that safety is not merely a service cost in doing business but a crucial component of long-term regional sustainability. El Amrani et al. (2024) also found that freight can be embedded in existing public transport, which may lead to sustainable development, but where safety remains a challenge.

4. Methodology

This study adopted an interpretivist research philosophy, which is appropriate for understanding more complex social phenomena such as governance and institutional behaviour. This interpretive framework provides rich insight into how stakeholders think about or view the transport system in context (Paddeu et al., 2024). A qualitative multiple-case study design was employed to examine urban freight systems, focusing on capital cities such as Harare, Nairobi, and Lagos. Correspondingly, these cities were chosen better to understand their importance to regional development and rapid urbanisation, and to identify issues in transport governance (Dangisso et al., 2025). Additionally, cross-case comparison and pattern identification across contexts enabled the generalisation of research findings through a multiple-case approach, allowing study findings to be compared across cases. Harare serves as the capital city of Zimbabwe, a landlocked country in the Southern African region characterised by a harsh economic environment; Nairobi is the regional hub of East Africa with a flourishing technology-driven economy, and Lagos is a megacity in West Africa with intense congestion and informality. This diversity enhances the external validity of the study. Data were gathered using semi-structured interviews with 20 respondents (specialising in logistics and transport regulations, urban development and governance, see Table 1). Respondents were purposively sampled based on their lived experiences of the study subject. This is consistent with qualitative research methodologies intended to acquire deep insights into the study from knowledgeable and well-experienced people (Hauge et al., 2021).

Table 1. Interview Participant Breakdown

Participant Category	Number of Participants	Location (City)
Transport Regulators	6	Harare, Nairobi, Lagos
Logistics Managers	8	Harare, Nairobi, Lagos
Urban Planners	6	Harare, Nairobi, Lagos

Source: the authors

In addition to interviews, the study utilised document analysis to review policy documents, regulatory systems, and government reports from the three countries. Data were collected from published academic papers and policy documents available online. Document analysis is a technique used to enhance the trustworthiness and validity of the findings by using multiple sources and verifying them. Thematic analysis was used to analyse qualitative data collected through in-depth interviews, while secondary data were analysed using a content analysis approach. These qualitative analysis methods included familiarisation with data, coding, theme development, and interpretation. NVivo software was used to facilitate the organisation and analysis of data, providing a systematic and transparent coding process. Ethical concerns were addressed regarding informed consent, confidentiality, and compliance with research ethics guidelines.

5. Research Findings

This section presents and analyses the research findings in line with the study objectives and research questions. The findings are organised according to four major research questions: (1) how regulatory institutions govern urban freight systems in developing countries; (2) what transport safety challenges affect freight systems; (3) how governance structures influence transport safety outcomes; and (4) what policy interventions may strengthen safety and regional sustainability. The themes presented below emerged from semi-structured interviews conducted with transport regulators, logistics managers, and urban planners across Harare, Nairobi, and Lagos. Interview data provided experiential insights into institutional practices, enforcement realities, and operational challenges affecting urban freight systems.

5.1 Research Question 1: Governance of Urban Freight Systems in Developing Countries

This section addresses Research Question 1: How do regulatory institutions govern urban freight systems in developing countries? Findings from the interviews revealed that governance arrangements across Harare, Nairobi, and Lagos are highly fragmented and characterised by overlapping institutional mandates, weak inter-agency coordination, and inconsistent regulatory enforcement. Participants consistently emphasised that fragmented governance structures undermine operational efficiency, weaken transport safety oversight, and constrain integrated regional logistics planning.

Interview participants explained that multiple institutions are involved in freight governance, yet there is limited coordination among them. A transport regulator from Harare observed: *“Coordination is weak, and fragmentation is leading to gaps where unsafe behaviour can thrive. Road maintenance is the responsibility of the local municipality, the national police enforce traffic laws, and the city council issues trade permits. None of them speaks to each other.”*

The interviews were particularly valuable in revealing operational realities that are often overlooked in formal policy frameworks. Regulators and logistics managers described how fragmented institutional arrangements create inconsistencies in enforcement, delays in freight movement, and weaknesses in transport safety management. Participants further noted that the absence of a central coordinating authority contributes to inefficiencies throughout urban freight systems.

Respondents also linked institutional fragmentation to broader regional economic consequences. Participants argued that weak coordination among regulatory bodies limits the development of integrated regional logistics strategies and undermines the efficiency of freight corridors. A logistics manager from Lagos explained: *“The port authority, the state government, and the federal ministry all have a say in how goods move from the port into the city. What you get is gridlock and a system in which all sides are battling instead of working together. Multiple checkpoints run by different agencies can make it take three to four days for a truck to move out of the port area.”*

These findings are consistent with Lindholm and Behrends (2012), who identify institutional fragmentation as a major barrier to effective urban freight planning. Similarly, Cowie and Fiskén (2023) argue that low policy maturity and weak coordination mechanisms significantly undermine sustainable freight governance systems. The current study extends this literature by demonstrating how fragmented governance structures directly contribute to regional economic inefficiencies, transport delays, and increased logistics costs.

Interview participants further explained that inconsistent permit systems, duplicated inspections, and overlapping enforcement responsibilities create unnecessary delays and operational uncertainty. A Lagos-based logistics manager remarked that the absence of coordinated governance structures prevents cities from functioning effectively as regional trade hubs, as freight operations become costly, unpredictable, and inefficient. These findings also support Castellón and Sánchez-Díaz (2024), who found that fragmented city-level freight management systems generate significant operational inefficiencies and weaken urban logistics performance globally.

Overall, the findings demonstrate that governance fragmentation is not simply an administrative issue, but a structural challenge that undermines transport safety, freight efficiency, and regional economic integration within developing-country urban freight systems.

5.2 Research Question 2: Transport Safety Challenges Affecting Urban Freight Systems

This section addresses Research Question 2: What transport safety challenges affect urban freight systems in developing countries? Findings from interviews identified overloading, driver fatigue, weak vehicle maintenance systems, corruption, and reactive safety management practices as the most significant threats affecting freight

transport safety. Respondents further explained how operational pressures and weak enforcement structures contribute to unsafe freight practices across the three cities. A logistics manager at Nairobi said: *"Drivers are under pressure to meet deadlines and to maximise the load, which results in unsafe behaviours such as overloading and driving without sufficient rest. Last year, a truck driver who had been driving for 18 hours in a row fell asleep and crashed, killing two people. There is great pressure from the company to deliver; anything late can have penalties."*

A transport regulator based in Harare also mentioned that, *"We'll run roadblocks, but it's a game of cat-and-mouse. Drivers, knowing the routes and when to take them, will overload at night or pay off officials to be waved through. There isn't the capacity for consistent, 24/7 enforcement."*

The interview findings strongly support Tiwari et al. (2018), who argue that freight transport safety risks often stem from broader systemic and operational failures. Similarly, McLeod and Curtis (2022) advocate proactive hazard-control frameworks, yet the present findings demonstrate that many developing-country freight systems remain largely reactive and crisis-driven. A traffic officer in Harare has to pontificate this: *"We deal with accidents only after they occur," said a city planner in Harare. "We have no proactive safety management system. There is no data collection on near-misses or any systemic analysis of the causes of accident incidents. It's just crisis management."* It is a reactionary response that fails to address the deeper determinants of safety failures, thereby perpetuating vulnerabilities and their negative economic impacts in the area.

5.3 Research Question 3: Influence of Governance on Transport Safety Outcomes

This section addresses Research Question 3: What is the impact of governance on transport safety outcomes? Findings from the interviews consistently revealed that weak enforcement systems, institutional fragmentation, corruption, and inadequate political commitment significantly undermine transport safety management and regional freight efficiency across Harare, Nairobi, and Lagos. Participants further explained that governance failures are not merely administrative weaknesses, but structural barriers that directly contribute to unsafe freight practices, infrastructure deterioration, increased logistics costs, and weakened regional competitiveness.

The interview findings revealed that transport regulations are often poorly enforced and inconsistently implemented across the three case study cities. Participants emphasised that although formal regulatory frameworks exist, enforcement agencies frequently lack the institutional capacity, coordination mechanisms, and political support necessary to ensure compliance. A city planner in Lagos explained: *"There are policies to follow, but the enforcement is lax, and frequently influenced. They're rules on paper, but they're rarely enforced in practice. Axle load limits, for example, are ignored since the officials at the weighbridges are easily bribed. That causes the roads to crumble faster, and that comes at a high cost to the state."*

The interviews were particularly important in exposing the disconnect between formal institutional frameworks and operational realities within freight systems. Respondents described how weak governance structures allow informal practices such as bribery, regulatory evasion, and overloading to become normalised within freight operations. This reflects what Institutional Theory describes as the gap between institutional design and institutional practice, in which formal rules exist symbolically but are weakly implemented (Li & Abiad, 2009). The findings further support Cowie and Fiskén's (2023) argument that low policy maturity and weak coordination mechanisms reduce the effectiveness of urban freight governance systems in developing countries.

Interview participants further argued that institutional barriers such as corruption, resource shortages, limited technological capacity, and weak political commitment intensify governance failures and compromise regional development outcomes. Across all three cities, respondents consistently linked governance weaknesses to delays, increased transport costs, inefficient freight movement, and declining regional competitiveness. A transportation regulator in Lagos expressed concern that *"The inefficiencies in our freight system, whether at checkpoints, delays, or poor road conditions, mean that goods are more expensive and less competitive in the marketplace"*

compared to other regional markets. A container sent from the port to a warehouse 20 kilometres away can be more expensive than shipping it from Europe to Lagos. This leaves our local industries uncompetitive and drives up prices for all.” Similarly, a logistics manager in Nairobi remarked: “We lose almost 20% of our transport capacity to idle time at weighbridges and police roadblocks. This constitutes almost 20% of our fleet that could be moving, but instead they are sitting and waiting to be cleared. That increases the cost of every consumer good in the region.”

The findings also revealed that weak governance structures undermine compliance behaviour in the freight industry. A logistics manager from Harare explained that: *“Companies seeking to implement the rules in places where enforcement is weak are at a competitive disadvantage. This undermines safety standards throughout the industry. It turns into a race to the bottom.”*

This finding demonstrates how inconsistent enforcement environments create incentives for non-compliance and weaken industry-wide safety standards. The results corroborate Adu and Dorasamy (2024), who argue that governance inefficiencies significantly increase logistics costs and reduce regional economic productivity. The findings are also consistent with those of Dangisso et al. (2025), who identified institutional weaknesses and enforcement deficiencies as major barriers to sustainable transport systems in developing countries. However, unlike previous studies that primarily describe governance barriers, the current study demonstrates the mechanisms through which governance failures systematically undermine transport safety, supply chain efficiency, and regional competitiveness simultaneously. Consequently, fragmented governance systems generate an inefficient, unsafe, and economically unsustainable urban freight environment that constrains broader regional development objectives.

5.4 Research Question 4: Policy and Sustainability Implications for Regional Development

This section addresses Research Question 4: What policy interventions may strengthen transport safety and regional sustainability? Interview findings demonstrated that transport safety is fundamentally linked to sustainable supply chain performance. Respondents argued that governance weaknesses increase operational uncertainty, insurance costs, delays, and reputational risks, thereby undermining regional competitiveness and long-term sustainability objectives. A logistics manager in Nairobi summed this up: *“Safety incidents result in delays, add price to the insured sector, and tarnish our good name. This is a great obstacle to developing a sustainable and dependable supply chain. Our clients, from abroad, require high standards for safety and sustainability. If we are unable to do that, we lose our contracts.”*

A regulator in Harare said, too: *“So many people in our industry still find sustainability to be very abstract. They are focused on survival. But safety is a specific beginning point. You can't talk about environmental sustainability or social responsibility when the very simple system on the ground is unsafe and unpredictable.”*

This supports Dwivedi et al. (2023) in demonstrating that sustainability cannot be secured without a safety base. It also builds on the argument by showing how governance failures result in a system in which safety and sustainability are simultaneously compromised. The key themes and implications are summarised in Table 2 below.

Table 2. Summary of Thematic Findings and Implications

Research Question	Key Interview Findings	Regional Implications	Supporting Literature
How do regulatory institutions govern urban freight systems?	Fragmented authority, overlapping mandates, weak coordination	Delays, weak logistics integration, increased transport costs	Lindholm & Behrends (2012); Cowie & Fiskén (2023)
What transport safety challenges affect freight systems?	Overloading, fatigue, poor maintenance, reactive safety management	Accidents, supply chain disruptions, economic losses	Tiwari et al. (2018); WHO (2024)

What is the impact of governance on safety outcomes?	Weak enforcement, corruption, inconsistent implementation	Unsafe practices, infrastructure deterioration, reduced competitiveness	Li & Abiad (2009); Ma et al. (2025)
What policy interventions may improve safety and sustainability?	Institutional coordination, proactive safety systems, technology adoption	Improved sustainability, lower logistics costs, regional integration	Dwivedi et al. (2023); Tundulyasaree et al. (2026)

Source: the author

6. Analysis and Interpretation of Research Findings

The findings presented in Chapter 5 are interpreted in this section through the lenses of Institutional Theory and Sustainable Supply Chain Theory. The analysis connects empirical interview evidence with broader scholarly debates on governance, transport safety, and regional sustainability. The analysis of findings points out that the efficiency and effectiveness of urban freight systems in developing countries are essentially informed by the nexus between sound institutional governance and changes in supply chain sustainability. Informed by the Institutional Theory and Sustainable Supply Chain Theory, this paper establishes that governance challenges are not merely administrative inadequacies but structural issues that consistently compromise transport safety and regional development outcomes in cities, including but not limited to Harare, Nairobi, and Lagos.

Drawing on Institutional Theory, the research findings revealed a mismatch between formal regulatory frameworks and informal practices (actual enforcement and behaviour). Whilst regulatory frameworks governing freight transport are present in all three cities, their weak and fragmented character, underpinned by overlapping roles among municipalities, police, port management offices, and government ministries, generates what institutional scholars have termed institutional voids. These gaps compromise regulatory coherence efforts and enable the prevalence of opportunistic behaviour (such as overloading, bribery, and regulatory evasion). Lack of a centralised coordination office again compounds this fragmentation, culminating in uneven enforcement and inadequate accountability.

Fundamentally, the study confirmed the applicability of the Institutional Theory by showing that disintegration not only leads to governance failures but also creates systemic safety risks. Weak enforcement capabilities, together with rife corruption and resource gaps, standardise unsafe behaviours within freight services. For example, the recurrence of overloading and driver fatigue cases demonstrates a regulatory system that treats compliance as debatable rather than mandatory. This supports the idea of institutional isomorphism in weak and fragmented governance environments, where companies normalise unsafe yet economically convenient behaviours to sustain their competitive edge amid uneven regulation. Consequently, safety standards deteriorate across the entire system, generating a 'race to the bottom' that compromises both regulatory acceptability and market stability.

Additionally, the study found that institutional limitations are deeply entrenched within broader political and economic systems. Endemic corrupt tendencies, lack of political will, and weak commitment to enforcement technologies (e.g., weighbridge systems) compromise efforts to capacitate regulatory structures to fulfil their mandates productively. This is indicative of a classic institutional deficiency in which rules are symbolically designed with no practical relevance, thus widening the gap between policymaking and operationalisation. Eventually, governance frameworks do not guarantee the predictability and coordination needed to ensure a sound urban freight system, resulting in congestion, delays, and heightened logistics costs. If assessed through the lens of the Sustainable Supply Chain Theory, these governance deficiencies generate ripple effects on regional sustainability. The study findings categorically confirm that transport safety is not merely an isolated operational issue but a foundational cog in sustainable supply chains. Unsafe practices, such as overloading, poor vehicle maintenance, and driver fatigue, not only compound accident-related uncertainties and risks but also further affect supply chain dependability, increase insurance costs, and minimise overall system productivity. This resonates

with the theoretical assumption that sustainability in supply chains depends on the combination of economic efficiency, social responsibility (e.g., safety), and environmental considerations.

Notwithstanding this, the study adopts the Sustainable Supply Chain Theory by demonstrating the relationship among governance, safety, and sustainability in a developing-country-specific environment. Weak and fragmented governance systems concurrently compromise all three dimensions of sustainability. On the economic front, issues such as unnecessary delays at checkpoints and port congestion compound transaction costs and minimise regional competitiveness. From a social perspective, high accident rates usually call for people's deaths and public health challenges. The environmental consequences stem from a poor freight system, which increases emissions due to congestion and prolonged vehicle idling. Therefore, governance limitations generate serious negative effects that undermine the overall sustainability of urban freight movement.

A key insight derived from the study findings is that retrospective safety management practices are characterised in the case study cities discussed above. A lack of proactive practices such as data-driven risk evaluation tools, monitoring of near-misses, and consolidated safety planning points to serious institutional capacity challenges for sound anticipatory governance systems. Theoretically, this indicates an inability to migrate from compliance-based regulation to performance-based and preventive governance systems, which are key to effective, sustainable supply chain management. In the absence of such a governance shift, safety commitments serve no purpose at all, particularly in addressing the structural causes of safety risk. Additionally, the study found that governance deficiencies at the urban level have serious effects on regional development. Ineffective and unsafe freight movement increases business costs, reduces trade competitiveness, and limits cities' capacity to operate as regional logistics hubs. For instance, sustained cargo clearance delays and extreme checkpoint disruptions in Lagos and Nairobi demonstrate how local institutional inadequacies disrupt broader regional supply chains. This advances the proposition that regional sustainability depends on the effectiveness of local governance systems, particularly in the transport sector.

Moreover, the study findings demonstrate the fundamental role of the private sector in addressing governance limitations discussed in this paper. Even though companies are often pressured to rely on unsafe behaviours, evidence shows that proactive measures in safety management, driver training, and technology utilisation are key to promoting both efficiency and sustainability. This underlines the imperative of hybrid governance systems, characterised by public regulation that complements private-sector self-regulation and industry standards. Such integrated governance systems align with Sustainable Supply Chain Theory, which emphasises synergies among all stakeholders to realise system-wide sustainability outcomes.

Overall, the analysis shows that the governance issues confronting urban freight movement in the developing world are not merely technical but essentially institutional and systemic. Institutional fragmentation, weak enforcement, and governance loopholes create a non-conducive environment in which safety risks are normalised, compromising sustainability imperatives. Dealing with issues requires not only upgrading the infrastructure but also significant institutional reforms that promote proper coordination, strengthen enforcement, and align incentives among stakeholders. Through the integration of the Institutional Theory and Sustainable Supply Chain Theory, this study provides deep insights into how governance inefficiencies translate into safety risks and, consequently, undermine concerted efforts aimed at regional development.

7. Policy Implications for Regional Development

The policy implications for regional development through the enhancement of local urban freight systems are substantial. These are taken in different action layers presented below.

Government Level

Strengthening institutional coordination, especially at the national and regional government levels, is crucial. This entails the development of a specialised freight transport agency to alleviate existing fragmentation (UNECA, 2025). Policies must be more realistic in their implementation capability and move from aspirational ambitions to the enforcement of standards. This means investing in equipment and services sufficient for regulators to carry out inspections and enforce safety requirements, including weigh-in-motion technologies to reduce human interaction and corruption. Governments need to tackle the source of corruption and informal malpractices that compromise the rule of law. Tundulyasaree et al. (2026) argue that well-designed tax and subsidy policies can provide positive safety- and sustainability-facilitated incentives that do not rely on a purely punitive approach to implementation.

Urban/Regional Planning

In long-term development plans, freight transport must be taken into account at both the urban and regional planning phases. That includes land-use planning, infrastructure planning, and spatial development that consider freight and transport needs. The establishment of dedicated freight routes, the development of off-peak delivery programs, and the upgrading of essential infrastructure, such as roads, border posts, and other physical requirements of the area, would greatly enhance the efficiency and safety of freight. The African Development Bank (2024) introduced corridor management interventions designed to overcome non-tariff barriers and enhance cross-border cooperation, highlighting a model that could play a role in urban freight. This is to ensure that the systems that transport goods serve the region's interests, leading to more networked and competitive markets among regional economies.

Private Sector

The private sector, including logistics firms and shippers, must play a vital role. This study's analysis shows that safety management should take a proactive approach rather than remain reactive. Companies need to invest in areas such as safety compliance systems, driver training programs, and vehicle maintenance. Technology adoption in fleet management and route optimisation is integral to increasing transport safety and efficiency. Industry associations have to promote best practices and self-regulation and alleviate the load on public agencies. While Industry 4.0 technologies can be the key enabler for firms willing to invest (Fatorachian & Pawar, 2025), it requires a paradigm shift to view safety from cost to competitive advantage.

Regional Impact

These policies are designed to maximise regional productivity, reduce regional inequality, and promote sustainable growth. Regions can improve their competitiveness by building a better, less risky, more efficient, and more predictable freight system. Logistics costs can be lowered, and supply chain reliability improved, which will eventually lower market entry barriers for businesses, create jobs, and promote economic diversification. Safety risks also bring some direct social benefits as they tend to lead to fewer deaths and injuries. Together, these actions ensure a more sustainable and inclusive regional development path and contribute to the Insights into Regional Development theme, which focuses on emerging and less developed economies.

7. Conclusions

This study reveals the potential impact of public governance on transport safety and sustainable supply chains in developing countries. This study has developed a framework that integrates governance, safety, and regional development to provide a broad view of urban freight systems. Fragmented governance structures and a lack of institutional capacity have been identified as major barriers to achieving urban freight safety and sustainability.

The findings of this study largely corroborate existing literature on governance fragmentation and transport safety challenges in developing countries. Similar to Lindholm and Behrends (2012) and Cowie and Fiskén (2023), the study confirms that fragmented institutional structures weaken urban freight coordination and regulatory effectiveness. The findings also support Tiwari et al. (2018) and McLeod and Curtis (2022), who argue that weak

enforcement systems and reactive safety management practices contribute significantly to freight transport risks. However, unlike many previous studies that examine governance, safety, or sustainability in isolation, the current study demonstrates how these dimensions interact to influence regional economic performance and sustainable supply chain development.

This study makes the following critical contributions. First, in theory, it applies institutional theory to provide a solid foundation for exploring urban freight systems, focusing on the poor safety performance of institutions, including supply chain inefficiency. Empirically, the study provided considerable qualitative evidence from multiple case references derived from three developing countries in the sub-Saharan region, which is a considerable gap in the study. From a practical and policy perspective, it suggests actionable recommendations for governments, planners, and industry.

The findings underscore the imperative for institutional reforms to improve regulatory effectiveness and sustainable regional development by raising standards and improving regulatory efficiency. The fragmentation of governance and enforcement, and the embedding of freight in regional development agendas, are two issues informing future studies. From the practitioner's perspective, the review highlights the critical need to move from a responsive approach to safety management to one which is more proactive and systemic.

The novelty of this study lies in its integrated examination of public governance, transport safety, and sustainable supply chain performance within the context of regional development in Sub-Saharan Africa. While previous studies have often examined these variables separately, this study demonstrates their interconnectedness through qualitative evidence drawn from multiple developing-country case studies. The study further contributes by positioning transport safety not merely as a technical or operational concern, but as a central determinant of regional competitiveness and sustainable development.

Lastly, this study has a specific impact on the regional development literature by demonstrating that transport regulation and governance are not local or technical issues but are fundamental to regional economic performance and sustainability. Poor and hazardous freight is a major threat towards regional productivity and competitiveness. Subsequent studies should focus on quantitative investigations to measure the economic effects of these governance failures and examine institutions and case studies with successful reforms that can serve as models for other developing countries. Comparative research across governance models and regions may also help enhance the evidence base for such policy measures.

Limitations and Future Research

Despite its contributions, the study has several limitations. The research relied on qualitative data collected from a relatively small sample of participants across three cities, which may limit the generalisability of the findings to other developing-country contexts. Additionally, the study focused primarily on governance and institutional perspectives and did not quantitatively measure economic losses associated with freight inefficiencies and safety failures. Future research should therefore employ mixed-methods or quantitative approaches to evaluate the economic costs of governance fragmentation and transport safety failures. Comparative studies examining successful governance reforms across different regional transport systems would also strengthen policy understanding in this field.

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