

Synthesis of ERM Adaptation in Enhancing Transport Organisation's Performance: The Case of Nigerian Transport Sector

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Abstract

Businesses, government agencies (including transport departments) face an evolving landscape of Environmental, Social and Governance (ESG)-related risks that can impact their success and survival. In order to effectively cope with greater and widespread uncertainty, organizations must manage risk efficiently. This is particularly relevant for organizations in the transport sector, especially, as the nature of their operations is by default challenged by a diverse set of hazards and risks. Accordingly, this research proposes the development of a sustainable Enterprise Risk Management (ERM) framework that is specific in nature for the transport sector in the Global South (GS). Sustainable transport has a key part to play in fostering inclusive growth and expanding access to essential services, it is a vital driver of economic and social development linking people to jobs, education, health care, etc. Given the current attention on sustainable development, it is essential to identify the status of the transport sector in GS and the challenges to the development of a sustainable transport system. Academic and practice literature in the public domain have noted very limited literature focusing on aspects such as Agency, Program and Project risk management for strategic alignment, asset management and performance measure in the transport sector. Aside, various organisational and institutional challenges (such as poor policy and regulatory framework, understanding of the benefits and challenges of implementing ERM, Consideration of Transport Organisations (Internal and External) Context, Risk awareness culture, ERM alignment with key strategies and objectives, Coordination with different stakeholders; Lack of proper industry-specific guidance material; keeping up with the technology, budget constraints, lack of leadership commitment etc.) has been reported. It has also been established that Organizational resilience starts at the top with an Enterprise Risk Management (ERM) paradigm. However, despite several ERM frameworks developed, many organizations still face challenges in aligning ERM with their key strategies and objectives. This is because most of the existing frameworks lack implementation guidance and were often criticised for failing to consider the specificity of the organisations. Managing the complexity inherent in transport and logistics based on context has therefore, become a continuous test even for

experienced managers. This research focuses on the phenomena of ERM paradigm and its alignment with the requirements of GS transport organisations. The research proposes to approach the complexity of the design of the proposed SERM framework through the conjoint application of Contingency and Institutional theories. The nature of this research problem is defined in terms of an organisational phenomenon and the aim and objectives of this research determine the adoption of the Interpretivism paradigm concerned with exploring reality as a social construction. A Case study (Nigeria's transport sector) strategies using an abductive approach with the flexibility to combine qualitative and quantitative methodologies have been proposed. The research explores the two leading ERM frameworks (COSO, 2017 and ISO, 2018) that has been used globally with a view of adapting their guidelines to the context of GS countries. Secondary data from archival sources will be collected to complement empirical data, to validate and improve understanding of the proposed sustainable ERM framework. The key contribution of this research is to provide informed knowledge and understanding on the elements and drivers of success in implementing ERM Frameworks in the transport sector. It will also provide insight into the use of viable transport infrastructure with reduced enterprise risk in the economic development of Global South (GS) countries.

Keywords: Enterprise Risk Management (ERM), Global South (GS), Transportation, Risk Management (RM), Sustainability

1. Introduction

The This research proposes the development of a Sustainable Enterprise Risk Management (SERM) framework for the transport sector in the Global South (GS). Transportation constitutes one of the major features of the economic development of Nigeria. It has a key part to play in fostering inclusive growth, employment and expanding access to essential services, it is a vital driver of economic and social development linking people to jobs, education, health care etc. [1]. The report from [2] below provides forecasted GDP contribution from Nigeria's Transport sector (see Figure 1). However, the

transportation sector in Nigeria is seriously challenged by under-investment in critical transport infrastructure, lack of maintenance and lack of diversity in modes of transportation as shown in Figure 2. This is further exacerbated by the increase in population as shown in Figure 3, economic growth and urbanisation-induced congestion [3], [4], [5]. The transport sector is dominated by road as the mode of transport as shown in Figures 4 and 5.



Figure 1. GDP Contribution from Transport (2)



Figure 2. State of Nigeria Roads [3]

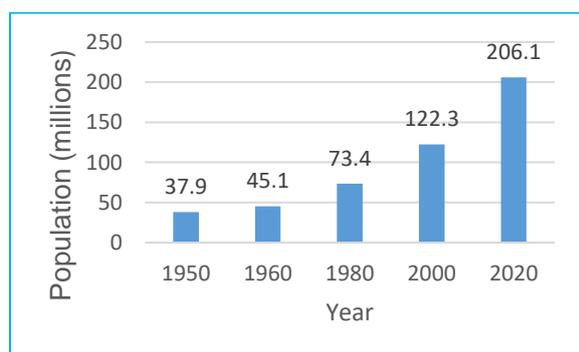


Figure 3. History of Nigerian Population: [5]

As a result of this, demand for road transportation exceeds supply as noted by [3]. The authors found that this dominance results in a high frequency of road traffic accidents and environmental pollution posing a

serious threat to the health and quality of life (see Figure 5). The challenges are summarised in Table 3.



Figure 4. Road Transport Congestion in Nigeria [3]



Figure 5. Evidence of Environmental Pollution Nigeria [3], [4]

Literature in the public domain has noted various organisational and institutional challenges to transportation systems (such as such as poor policy and regulatory framework, understanding of the benefits and challenges of implementing ERM, Consideration of Transport Organisations (Internal and External) Context, Risk awareness culture, ERM alignment with key strategies and objectives, Coordination with different stakeholders; Lack of proper industry-specific guidance material; Keeping up with the technology, Budget constraints, Lack of leadership commitment etc. The sector is facing an evolving landscape of Environmental, Social and Governance (ESG)-related risks that can impact their success and survival. In addition, there is an inadequacy of literature focusing on aspects such as Agency, Program and Project risk management for strategic alignment, asset management and performance measure [6]. Managing the complexity inherent in transport and logistics based on context has therefore become a continuous test even for experienced managers. Given the current attention on sustainable development, it is essential to identify the status of the transport sector in GS and the challenges to the development of a sustainable transport system.

The idea that ERM can actually aid in minimizing

organisational risks has resulted in governments across Global North (GN) adopting ERM in a wholesale fashion [7]. Consequently, many regulators, industry professionals and academics have advocated a new approach to risk management denominated ERM. However, despite the multiplicity of developed guidelines and frameworks, scholars still regard ERM as an unproven and emerging field in which important knowledge gaps remain in practice and academia. Its research is limited in terms of exploring the coupling and fluidity of ERM in organisational settings. The frameworks are often criticized for failing to consider the specificity of organisations [8,] [9]. Scholars and standard-setting bodies argued there may be considerable value in developing an ERM approach aligned with the requirements of specific organisational contexts. Furthermore, the contingency theory perspective has been suggested for developing customised ERM systems [10]. In addition [11] claims that managers and leaders of ‘extended enterprises’ (i.e. “today’s complex organisations, their value chains and networks of relationships”) need to focus on the nature of complex 21st-century organisations in a world of ‘VUCA’ and how risk can be managed in that context. These statements underscore the need for a holistic and structured approach to running and managing public and private agencies and their projects. It highlights the urgent need to address and manage systemic global risks, by involving and creating synergies among all stakeholders. This is of particular relevance for transport organizations in terms of implementing forward-thinking and relevant ERM frameworks as the nature of their operations is by default challenged by a diverse set of hazards and risks.

2. Literature Review

Global South (GS) is a term used to refer to developing countries that are mostly situated in the southern hemisphere, with generally low levels of income. It refers to developing countries with emerging economies and different structural problems [12]. The author argues that one of the hindrances to the development of (GS) is inadequate financial capital to invest in technology. However, it is acknowledged that the region is rich in natural resources. Though, this has led to a situation of a natural resource curse, considering the fact that despite the abundance of natural resources, the economies experience low-income levels, slow development and high levels of corruption.

Sustainable transport has a key part to play in fostering inclusive growth, employment and expanding access to essential services, it is a vital driver of economic and social development linking people to jobs, education, health care etc. [1]. Report from [2], [13] has forecasted that global Gross

Domestic Products (GDP) contributions from transportation will increase significantly (see Figures 6 and 7) leading to an increase in energy consumption.

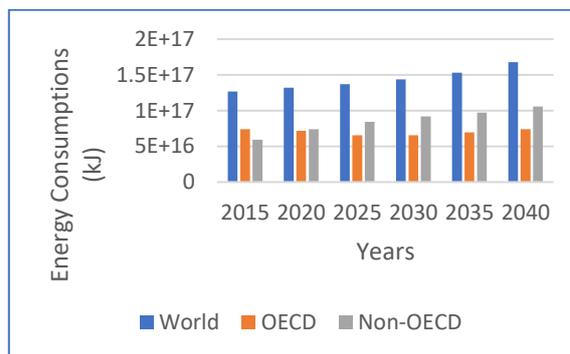


Figure 6. Transportation Energy Consumption [13]

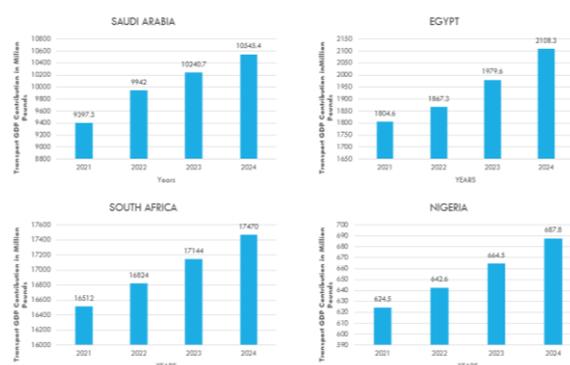


Figure 7. GS Forecasted GDP contribution from Transportation [2]

The 21st century technological-driven organisations are embedded in a dynamic and increasingly complex environment, where risk has a multitude of forms and sources and where adaptability, resilience and forward-thinking innovative strategies are key [14]. Earlier, [6] noted that related risks spanning an organization include strategic, program, project, operational, environmental social, governance, compliance or systemic risks. In addition, [15] argues that systemic risks may be classified under five categories, namely: economic, geopolitical, environmental, societal and technological risks. Organisations have continuously faced these different types of risk and sought to manage each separately, which led to categorising risks according to the various functions of carrying out risk management [16]. This eventually resulted in tools and techniques independent from each other. Thus, [16] promoted the approach of having coordinated and coherent risk management. In a related context, [17] noted that ERM has been developed as an extension of traditional risk management to elevate it to a strategic organisational level in response to a rapidly changing risk climate; the author argues that not only does ERM assess risk

through a much wider lens, but it also facilitates a more holistic approach that looks at opportunities as well as threat.

According to [18] ERM can be defined as ‘the systematic process of understanding, evaluating, and addressing enterprise risks to maximise the chances of objectives being achieved and ensuring organisations, individuals and communities are sustainable. Further, [19] described ERM as ‘the culture, capabilities, and practices, integrated with strategy-setting and its performance, that organizations rely on to manage risk in creating, preserving, and realizing value. A similar description was noted by [20].

The adoption of ERM frameworks by public sector organisations has seen a remarkable increase over the past twenty-five (25) years. The emergence and popularity of ERM have emanated from a response to the rapid changes due to globalisation and regulatory pressure on organisations to manage risk holistically. According to [6] globally, risk management has been recognised as implicit in transportation business practices as shown in Figures 8 and 9. Further, Table 1 summarised the transportation Challenges as noted by [21], [22], [23].

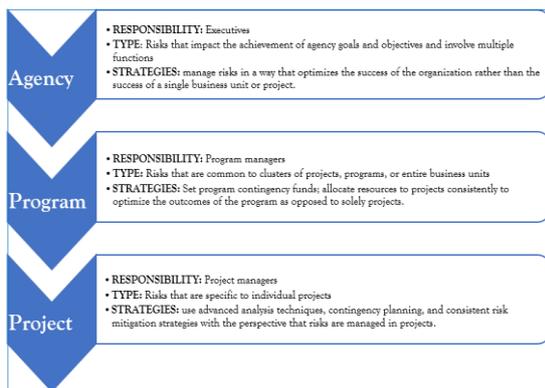


Figure 8. Levels of Transport Risk Management [6]

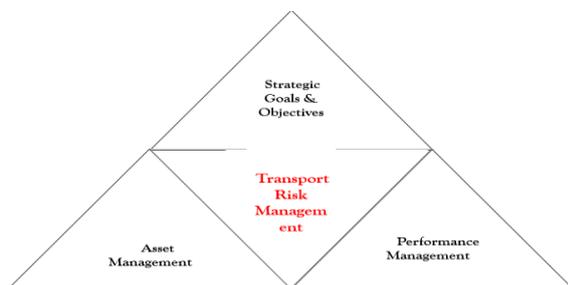


Figure 9. Relationship of Risk Mgt. to Transportation Objectives [6]

Risk management approaches in transportation are influenced by an interplay of institutional and technical factors and among others, by the business environment, the hazardous nature of transportation operations, regulatory framework, organisational risk

profiles and associated organisational aims and objectives [24]. As the concept of ERM gained prominence scholars have analysed a multiplicity of driving forces of both the institutional and technical nature behind ERM adoption and implementation. [25] Identified: regulatory requirements, internal audit effectiveness, human resource competency and top management commitment; other driving forces includes: the importance of demonstrating legitimacy to shareholders and the influence of risk specialists within organisations; the relevance of agency ratings (e.g., Moody, Standard and Poor) and the propensity of large organisations to adopt ERM was empirically demonstrated to drive ERM adoption.

Authors	Title	Transportation Challenges
[21]	Intelligent Transportation Systems in a Developing Country: Benefits and Challenges of Implementation	Coordination with different stakeholders Keeping up with the technology Integration with existing systems and Budget constraints.
[22]	Grand Challenges in Transportation and Transit System	Greenhouse emissions and other pollution. Monitoring uncertainties and mitigating risks Ageing and failing transport infrastructures Enabling the Internet of Things (IoT) Educating transport stakeholders
[23]	Planning and Design for Sustainable Urban Mobility	Fragmented policy implementation Lack of best practice examples Lack of political will to change Bureaucratic constraints Historical legacy and recent conflicts

Table 1: Illustrating key Transportation Challenges in GS

[26] conducted a comparative analysis of the landmark ERM frameworks and concluded that updated [19] and [20] are the most recognized and applied worldwide. Synthesis of these landmark frameworks highlights the same continuous and consistent risk management processes customised to the organisational context and emphasises the importance of integrating the risk management function within the organisation’s culture, core strategies and business processes. The guidelines provide organisations with recommendations regarding, among others, designing enterprise-wide risk governance structures and risk management processes, developing positive risk cultures and formal frameworks of policies and procedures, or adopting adequate risk management tools and technological solutions. Further, literature review from the public domain has confirmed the potential benefits that implementation of ERM frameworks may bring to organisations such as increased capital efficiency, improved risk-based decision making, increased firm value, or recognition among important external stakeholder groups [26]. As mentioned

earlier, this is of particular relevance for organizations in the transport sector, as the nature of their operations is by default challenged by a diverse set of hazards and risks. In this research some of the identified ERM literature gaps are presented in the Table 2 below:

ERM Areas	ERM Literature Research Gap	Research Author (Year)
ERM Concept	Existing frameworks are often criticised for failing to consider the specificity of organisations contingency theory perspective has been suggested for developing customised ERM	Arena et al. (2010) Woods, (2011); Kaplan and Mikes, (2014), Chen et al (2019)
Support from Top Management	Lack of intensive support by the management, Lack of meaningful risk reporting. Boardroom is lacking adequate set of skills in risk management	Rubino Michele (2018), Mishal (2018)
ERM integration with strategy and processes	Unclear understanding of the link between aligning ERM with strategy and decision making Risk aware culture is a significant component of ERM Implementation Low consideration of the changes occurring in internal and external environments.	Protiviti, (2016), Misha (2018), Rubino et al. (2018) Keith (2014); Misiura (2015) Chen et al., (2019); Allini et al., (2022)
ERM Challenges	ERM is still guided by the global perspectives. Existing risk management frameworks lack effective understanding and implementation	Anton and Nucu. (2020) IRM (2018a).

Table 2. Evaluation of ERM Literature

3. Methodological Approach

We approach the complexity of the design of transportation risk management systems through the conjoint application of Contingency and Institutional theories with a view of the interconnectedness of how the systems feed into each other. The nature of this research problem and the aim and objectives of this research determines the adoption of the interpretivism paradigm concerned with exploring reality as a social construction. A case study (Nigeria’s transport sector) and survey strategies using an abductive approach with the flexibility to combine qualitative and quantitative methodologies have been proposed. Figure 10 below illustrate Research Strategy and Design. The research explores the two leading ERM frameworks that has been used globally with a view of adapting their guidelines to the context of GS countries (see Figures 11 and 12).

Secondary data sources from the public domain were adopted at the early stage of the research. Primary sources will explore semi-structured interviews and questionnaires. These data will be analysed using data analytics software such as

iThink®, IBM SPSS® for quantitative data and NVIVO for qualitative data.



Figure 10. Research Strategy and Design



Figure 11. Components of ERM – COSO (2017) Standard

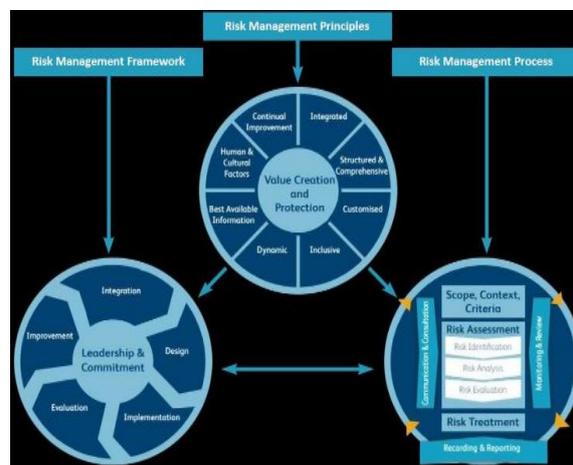


Figure 12. Components of ERM – ISO (2018) Standard

4. Initial Findings

The literature review in this research suggested both a growing need and interest in the development of enterprise-wide risk management approaches in the transport sector. Concerns have been raised that ERM is a critical determinant of the success of effective risk resiliency for transport organisations. Based on [27] matrix of evaluating literature, most of the contributions made to the literature relating to ERM

are mainly descriptive rather than implementational. Reviewed archival data (from public domain) revealed that there is generally an under-representation of GS countries in ERM and transportation risk management literature. In Nigeria, in particular, no sector’s specific ERM Framework for Transport organisations is developed yet. Available Literature discussing ERM and transportation risk and mitigation issues in Nigeria has focused mainly on the general challenges of transportation as noted below in Table 3.

[3] [4] [5]	Problems and Challenges facing the Nigerian transportation system	Poor road network, Poor regulatory framework, Poor maintenance, Poor coordination with different stakeholders, Lack of diversity in mode of transportation
	Poor Public Transport Infrastructure in Lagos Nigeria	Monitoring uncertainties and mitigating risks Ageing and failing transport infrastructures Enabling the Internet of Things” (IoT) Educating transport stakeholders Keeping up with the technology Integration with existing systems and Budget constraints.
	Risk management framework for safe transportation of petroleum products in Nigeria	Corruption and rent-seeking culture Poor accident reporting and investigating culture Traffic congestion Greenhouse gas emission and environmental pollution Activities of private commercial vehicles Lack of best practice examples Bureaucratic constraints Historical legacy and recent conflicts

Table 3. Transportation Challenges in Nigeria

This Literature provides some limited insights on the adoption and implementation of ERM to address transportation risk management based on Nigeria’s context as noted in Table 2, which leads to the gaps identified. Some of the key challenges in ERM implementation are discussed in the following Sections.

4.1. Enterprise Risk Management (ERM) Practices in Nigeria

The practice of ERM is an evolving practice among public sector organisations globally [7]. In Nigeria, the absence of adequate project management practices including compliance and risk management in the public sector has been a long-standing issue and it has cost the country a lot in various ways [28]. The author noted that all highly ranked factors leading to project failure in Nigeria were project management related risk issues. The authors acknowledged that ERM is mainly practiced in the private sector organisations with inadequate levels of implementation in the public sector in their research

work focused on the importance of ERM to Public Sector Organisations in Nigeria. Some ERM practice evidence in Nigeria include: [26] focusing on the challenge of risk management in Nigerian banks in the post consolidation era; [27] Risk Management and ERM in Nigeria: Implications for National Development and Growth etc. Most of these studies highlight the scenarios in the private sector. [28] noted that the absence of a specific legal framework for the establishment of project and program management practices in the public sector may be responsible, they recommended that public sector organisations establish ERM processes, cadres for project and program management officer and compliance and risk management officers. This research acknowledged that section 6.0 of the Code of Corporate Governance for Banks and Discount Houses in Nigeria provides for risk management, however, it was not very detailed on the risk management approach but rather encouraged clear roles and responsibilities for the Board, Board Risk Management Committee, Management and Internal Audit.

4.2. Resources Allocation and Support from Transport Organisation Executives

As emphasised by [20] top management should ensure that risk management is integrated into all organizational activities and should demonstrate leadership and commitment by issuing a policy that establishes a risk management approach, ensure that the necessary resources are allocated to managing risk and assign authority, responsibility and accountability at appropriate levels within the organization. Similarly, [19] posits that risk management structure and culture need to be understood and imbibed from the board of directors to all staff; top management must demonstrate commitment through actions, by exemplifying and embodying the values they espouse. Ultimate responsibility for ERM starts at the top. The guidelines argue that everyone who matters within an organization should participate in the ERM process. While several executives have significant responsibilities for ERM, including the Chief Risk Officer, Chief Financial Officer, Chief Legal Officer and Chief Audit Executive, the ERM process works best when all key managers of the organization contribute. [19] further states that managers of the organization support the entity’s risk management philosophy, promote compliance with its risk appetite and manage risks within their [respective] spheres of responsibility consistent with risk tolerances. Therefore, identifying leaders throughout the organization and gaining their support is critical to successful implementation of ERM. The goal of ERM is to incorporate risk considerations into the organization’s agenda and decision-making processes. ERM is integral to running and managing a business Organisations (Transport department included).

4.3. Risk Awareness Culture - Significant Component of ERM Implementation

A strong risk culture is a prerequisite for a sustainable ERM program [20]. The ERM cultural alignment establishes a new focus for risk-based decisions that is sustainable over time and influences management and all employees. It also allows effective ERM implementation and becomes a source of sustainable competitive advantage. It inspires staff to promote integrity, enhance share-holder value, meet regulatory compliance and generate long-term sustainability. In the context of ERM, culture is a value that impacts business decisions and determines the way the organization identifies, understands, discusses, and acts on the risks it faces and the risks it takes. ERM culture affects the decisions of management and employees, regardless of whether they consciously weigh benefits and costs. In a sound risk culture, everyone not only knows and understands the policies, but also shares the values behind them. Employees and managers alike are aware of risk and adjust their behaviour accordingly. However, organizations that do not have an ERM culture fail to reap the benefits of a functional ERM program. When there is no ERM culture, business units work in silos and do not align themselves to manage risks and achieve strategic objectives. The result is low reliability and lack of consistency in executing risk management processes.

The ERM Practices in Nigeria [29] specifically noted that; no private or public organization in Nigeria has a risk-aware culture that drives the organization into proactive risk management, seeking to gain full advantage from its uncertain environment and no private or public organization in Nigeria has best-practice processes that are implemented at all levels of the business, with regular updating, active feedback, and learning. Various organisational and institutional challenges such as poor accident reporting and investigating culture; poor coordination with different stakeholders; poor policy and regulatory framework; lack of proper industry-specific guidance material; keeping up with the technology, integration with existing systems, budget constraints, lack of leadership commitment, etc. has been reported. The report emphasized that Nigeria is not exempted from the current volatility, uncertainty, complexity, and ambiguity in today's organisational business context. These statements underscore the need for a holistic and structured approach to running and managing public and private agencies and their projects. It highlights the urgent need to address and manage systemic global risks, by involving and creating synergies among all stakeholders. This is particularly relevant for organizations in the transport sector, especially, since the nature of operations is by default challenged by a diverse set of hazards and risks

4.4. Consideration of Transport Organisations (Internal and External) Context

Standard guideline [20] emphasized that risk management framework and process need to be customized and proportionate to the organization's external and internal context related to its objectives. By establishing the context, the organisation articulates its objectives and defines the external and internal parameters to be considered when managing risk and sets the scope and risk criteria for the remaining process. The guideline noted that examining the organization's external context may include, but is not limited to: the social, cultural, political, legal, regulatory, financial, technological, economic and environmental factors, whether international, national, regional or local; key drivers and trends affecting the objectives of the organization; external stakeholders' relationships, perceptions, values, needs and expectations; as well as the complexity of networks and dependencies. Examining the organization's internal context may include, but is not limited to: vision, mission and values; governance, organizational structure, roles and accountabilities; strategy, objectives and policies; the organization's culture; guidelines and models adopted by the organization; resource capabilities; data, information systems and information flows; relationships with internal stakeholders, taking into account their perceptions and values; contractual relationships and commitments as well as the interdependencies and interconnections.

4.5. ERM Alignment - Transport Organisational Strategies and Decision Making

Increasing complexity due to transport networks, shifts in technology and business cycles can produce more risks related to strategy than ever before. By establishing a close link between transport organisation's strategic planning and risk management processes, managers can help ensure that new strategic initiatives are connected to appropriate risk mitigation strategies, that changes in the organisation's strategic direction are accompanied by timely assessment of new or emerging risks, and that the organisations are better prepared to identify risk related competitive advantages. Integrating ERM practices throughout an organization improves decision-making in governance, strategy, objective-setting and day-to-day operations. Just as ERM requires customization to suit a company's unique objectives, culture, and business model, the integration of risk management and strategic planning also requires a company to consider its objectives and culture before deciding the best way to align the two processes. The diligence required to integrate ERM

provides an organisation with a clear path to creating, preserving and realizing value. While a company's strategy drives its value creation, it also entails risk-taking; when strategies change or new initiatives are implemented, new risks may be introduced, or existing risks could change. The greater the degree of integration between strategy and risk management, the more likely it is that an organisation will be able to successfully implement its strategy.

4.6. Implementation Guidelines and Direction on ERM framework

The literature on ERM generically addresses how ERM should be implemented. Too generic in their nature, existing risk management frameworks often have different structures, requirements and terminology that prevent their effective understanding and implementation [18]. Taking into consideration that in theory, organisations know how to deal with risks (due to guidelines, frameworks, scholarly literature, and legislation), the events of the last decade reflect that issues have only been partly resolved. Theoretical guidance of implementing ERM varies quite widely among industries. In the context of GS countries, Fragmented policy formulation and implementation, lack of proper industry-specific guidance material; keeping up with the technology, integration with existing systems, lack of leadership commitment, limited human resources and funding capacities, Over-regulation and duplicating legislation, managerial confidence in the existing practices of risk management and regardless of ERM benefits and resources, a lack of qualified in-house personnel to implement ERM and of internal knowledge are clear obstacles and an undesirable challenge.

4.7. Data Risk Integration in Nigeria Transport Organisations

Integrating risk data across the organisation can be made based on a flow of risk information down from top management. In the context of GS countries:

- Poor coordination with different stakeholders.
- Lack of collaboration among multiple ministries and transport agencies.
- Lack of political will to face up to the challenges of change.
- Fragmented policy formulation and implementation, Bureaucratic constraints on transport infrastructure project delivery couple with energy crisis means that lack of data risk integration across an organisation presents a great challenge.

The flow of information about risk has, as a purpose,

not only to sustain an operational side, but also to provide risk support for management and executive boards; useful in both, strategic planning and execution, and consequently enhances the decision-making capabilities.

5. Conclusion

In this research an investigation of the ERM practices was conducted through analysing the literature in the public domain with the aim of developing a sustainable ERM framework for transport sector in the Global South. It identifies the key contributions of ERM to both private and public sector organisations. It was revealed from the literature review that transport organisations could benefit significantly from implementing ERM customised to fit the unique business environment of the transport sector. Previous research of management control systems in general, and of risk management systems in particular, recognised the need to consider the specificity of organisational context in the designs of risk management systems. The theoretical assumptions using (Contingency and Institutional theories) and the identified research gap create the basis for understanding the context of the existing literature, and explains how the research problem can expand the current knowledge.

A Systems Thinking/System Dynamics paradigm was proposed to compliment ERM paradigm as a way of simplifying the inherent complexities, feedback, non-linearity and delays in the transport sector of the (GS). Secondary data from archival sources will be collected to validate and improve understanding of the developed sustainable ERM framework. Analysis of key ERM implementation challenges in the transport organisations revealed the following:

Limited resources allocation and Support from top management; Consideration of Transport organisations (Internal and External) Context.

- Risk Awareness Culture.
- ERM Implementation best practice examples.
- Understanding of the benefits and challenges of implementing ERM.
- ERM alignment with core organisational strategies and key objectives.
- Lack of in-house skills and experiences in ERM implementation etc.

6. Contributions to Knowledge

The proposed contributions of this thesis are to add to the body of knowledge in the application of ERM paradigm, specifically, it would accomplish the following: Provide informed knowledge and understanding on the elements and drivers of success

in implementing ERM Frameworks in the transport sector. Provide insight into the use of viable transport infrastructure with reduced enterprise risk in the economic development of GS nations.

7. Future Work

Following the development of a problem statement and preliminary findings from literature review, mixed-methodological research approach was determined. Further work will include deeper experiences and insight into the identified research gaps. This evidence will rely on qualitative and quantitative data collection. Complemented with findings from the literature review, analysis and evaluation of data will lead to the development of a sustainable ERM framework for the GS Transport sector that conveys key drivers of effective risk management. Next important steps include the collection of additional data and expand on the identified research gaps; Collect additional data to create a participant sample through questionnaire and semi-structured interview to validate findings from literature; Elaborate on the strategic components of the proposed theoretical framework (inputs, core, integration and outputs); Further investigate how ST/SD could complement ERM framework in developing a sustainable ERM paradigm for the transport sector

8. References

- [1] World Bank Report. (2022). Transport overview: <https://www.worldbank.org/en/topic/transport/overview#1>. (Access Date: 8 February 2022).
- [2] Trading Economics. (2022). GDP from Transportation Forecast (2022/23). <https://tradingeconomics.com/forecast/gdp-from-transport?continent=europe>. (Access Date: 22 June 2022).
- [3] Onokala, P. C. and Olajide, C. J. (2020). Problems and Challenges Facing the Nigerian Transportation System which affect their Contribution to the Economic Development of the Country in the 21st Century. <https://www.sciencedirect.com/science/article>. (Access Date: 12 October 2021).
- [4] Edema E. J., (2019). Poor Public Transport Infrastructure in Lagos Nigeria, How Sustainable Improvement could enhance the well-being of the people and provide environmental benefits. <https://www.theseus.fi/bitstream>. (Access Date: 10 September 2021).
- [5] Ambituuni, A., Amezaga J M., and Werner, D. (2015). Risk management framework for safe transportation of petroleum products in Nigeria: 17(4), pp. 329-351.
- [6] Curtis, J. A., D'Angelo, D., Hallowell, M. R., Henkel, T. A., and Molenaar, K. R. (2012). Enterprise Risk Management for Transportation Agencies. *Transportation Research Record*, 2271(1), 57–65.
- [7] Hendy, P.J., (2018). Navigating the Practice: An Exploration of Enterprise Risk Management at the Port of London Authority (Doctoral dissertation, King's College London).
- [8] Mikes, A., and Kaplan, R. S. (2014). Towards a Contingency Theory of Enterprise Risk Management. Working Paper. https://www.hbs.edu/ris/Publication%20files/13-063_5e67dffe-aa5e-4fac-a746-7b3c07902520.pdf. (Access Date: 5 June 2022).
- [9] Anton, S. G., and Nucu, A. E. A. (2020). Enterprise Risk Management: A Literature Review and Agenda for Future Research. *Journal of Risk and Financial Management*. 13(11), pp.281.
- [10] Woods, M. (2012). Risk Management in Organizations: An integrated case study approach. Routledge.
- [11] Anderson, R. (2014). Extended Enterprise: Managing risk in complex 21st-century organisations - Executive Summary. The Institute of Risk Management (IRM) 2014. https://www.theirm.org/media/8632/irm-extended-enterprise_a5_aw-exec-summary.pdf. (Access Date: 7 August 2022).
- [12] Kowalski, A. (2020). Global South - Global North Differences. *ResearchGate*. 1 (1), 1-12.
- [13] Energy Information Administration. (2017). Today in Energy. <https://www.eia.gov/todayinenergy/detail.php?id=32912>. (Access Date: 12 April 2022).
- [14] Mishal Alajmi (2018). Enterprise Risk Management: Development of Strategic ERM Alignment Framework for Oil and Gas Industry in Kuwait: PhD Thesis.
- [15] World Economic Forum (WEF). (2022). The Global Risks Report. 17th edition. https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2022.pdf. (Access Date: 12 October 2022).
- [16] Bromiley, P., Mcshane, M., Nair, A. and Rustambekov, E. (2015). Enterprise risk management: Review, critique, and research directions. *Long range planning*. 48(4), pp.265-276.
- [17] Donohue, J. (2022). Enterprise Risk Management vs. Traditional Risk Management: Which One Is Best for You?
- [18] Institute of Risk Management (IRM). (n.d.). <https://www.theirm.org/>. (Access Date: 8 February 2022).
- [19] COSO. 2017. Enterprise Risk Management Integrating with Strategy and Performance. <https://www.coso.org/shared%20Documents/2017-COSO-ERM-Integrating-with-Strategy-and-Performance-Executive-Summary.pdf>. (Access Date: 7 March 2022).
- [20] International Organization for Standardization (ISO:31000). (2018). Risk Management—a practical guide. <https://www.iso.org/standard/65694.html#:~:text=ISO%2031000%3A2018%20provides%20guidelines,not%20industry%20or%20sector%20specific>. (Access Date: 14 March 2022).

[21] Shaaban, K., Elamin, M. And Alsoub, M., (2021). Intelligent Transportation Systems in a Developing Country: Benefits and Challenges of Implementation. *Transportation Research Procedia*. 55, pp.1373-1380.

[22] Kaewunruen, S., Sussman, M. and Matsumoto, A. (2016). Grand Challenges in Transportation and Transit System <https://www.frontiersin.org/article/10.3389/fbuil.2016.00004> (Access Date: 5 June 2022).

[23] United Nations-HABITAT. (2018). Planning and Design for Sustainable Urban Mobility. <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>. (Access Date: 18 July 2022).

[24] Anna Misiura (2015). Enterprise Risk Management in the Airline Industry - Risk Management Structures and Practices, London. Ph.D. Thesis: Brunel University, London.

[25] Dabari, Isahya and Saidin, Siti. (2015). The extent of enterprise risk management implementation in the Nigerian banking sector. 13. 2817-2833.

[26] Rubino, Michele. (2018). A Comparison of the Main ERM Frameworks. 13(12): pp203-214.

[27] Althonayan, AA. (2003). Integrating technology strategy with business strategy in the airline industry. Ph.D. Thesis: Brunel University, London.

[28] Abah, R.C. and Esq, E.C.O. (2019). The Importance of Enterprise Risk Management to Public Sector Organisations in Nigeria.

[29] Enterprise Risk Management Practices in Nigeria. (n.d.). <https://www2.erm-academy.org>. (Access Date: 15 June 2022).