

Assessing Innovative Capabilities in the Namibian Road Freight Transport Industry

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ABSTRACT

Road freight transport plays a crucial role in fostering global economic growth. Namibia's increased transit traffic highlights its focus on becoming Africa's logistical hub. To stay competitive, Namibian road freight firms must be more innovative now than ever before. There are few studies on innovation in the Namibia road freight transport industry. This study investigated the innovative capabilities of Namibian road freight transport operators. To measure firms' innovativeness, the study used the non-linear constructs of innovation. The target population comprised Windhoek's road freight transport firms affiliated with Namibia Logistics Association, with 22 firms forming the representative sample. Both qualitative and quantitative data were gathered through interviews and questionnaires in a mixed-method approach. The study revealed that Namibia's road freight transport operators possess the capacity to deliver innovative logistics and transport services. In addition, the study highlighted the need to improve rewards systems and attitudes towards risk in the industry. Although the study was confined to Windhoek-based firms, it addressed a notable gap in research on innovativeness within the Namibian road freight transport sector.

Keywords: logistics, road freight transport, innovation, capabilities, Namibia

INTRODUCTION

There are four main types of transport, namely air, maritime, rail and road. In a globalized economy, road freight transport contributes significantly to efficiency and growth of national economies by facilitating mobility, urbanization, trade, connectivity amongst regions, job creation and productivity across various sectors (Nowakowska-Grunt & Strzelczyk, 2019).

Over the past quarter-century, the European Union's transport sector has experienced significant growth, with total goods transportation activities reaching 3271 billion tonne-kilometers in 2020. Of this, road transport is dominant, comprising 54%, followed by sea at 28% and rail at 11.5%. Notably, road transport has exhibited the most pronounced development, increasing by 55% between 1995 and 2020 (Joanna & Marta, 2023). The road freight transport industry accounts for about 7 per cent of GDP. In 2021, the transport sector in the EU employed 6.0 million individuals. The vast majority, accounting for 89.6%, were engaged in land transport, including road and rail services (Eurostat, 2022).

According to Kneale (2016), the road transport sector in South Africa makes up a minimum of 3.7% of the country's GDP. This industry is fiercely competitive, characterized by a narrow profit margin of around 4%. To enhance effectiveness and boost profits, stakeholders within the sector are embracing innovation and forming strategic partnerships to facilitate more integrated operations through various transportation modes and intermodal options.

In Namibia, road freight transport is a significant mode of transport, accounting for more than 72% of total tonne-kilometres of goods transported (Shimuafeni, 2021), including transit cargo. Despite the extensive distances involved and the efforts of the state-owned enterprise, TransNamib, the majority of inland transportation in Namibia relies on road freight. According to the Namibia Statistics Agency (2015:15), road transport in Namibia handles 29.9% of total exports and 59.9% of total imports. Additionally, there has been a notable increase in transshipment and transit traffic on Namibia's roads, rising from 117,000 Twenty-Foot Equivalent Units (TEUs) in 2006 to 283,000 TEUs by 2012, as reported by the African Development Bank in 2014 (African Development Bank, 2014:7). In 2017, the freight transported along Walvis Bay-Ndola Lubumbashi Development Corridor (WBNLDC) amounted to 1,150 million TKM, marking a significant increase of 39.2% compared to 2016, when 826.1 million TKM was transported. Similarly, Trans-Cunene saw a rise from 50.5 million TKM in 2016 to 54.1 million TKM in 2017, indicating a 7.1% annual increase

World Economic Forum (2017/2018) rated Namibia's road network the best in Africa, providing for seamless transit of road traffic along the trade corridors (National Planning Commission, 2018). Nevertheless, the imbalanced reliance on roads over rail has led to an excessive strain on the road infrastructure, amplifying safety apprehensions for passengers and underscoring the urgency for an extensive expansion of the nation's railway network (Namibia Ports Authority, 2023).

As the need for delivery of goods and services continue to escalate, and Namibia keeps positioning itself more and more as the logistical hub for the Southern African Development Community (SADC), there is need for the road freight transport industry to be fast, reliable and safe. There have been increasing transportation costs as a result of high fuel prices, longer distances and increased demand for faster and on time deliveries and high accident rates. High accident rates destabilize the efficient network of transportation and logistics due to delays, missed connections and ultimately financial loss for all stakeholders. The Namibian government has since realized the importance of the transport and logistics industry as manifested in the country's national development framework – the Fifth National Development Plan (National Planning Commission, 2017).

However, the frameworks lack essential knowledge on the capacity of the road freight transport industry to competitively sustain the country's economic activities given the increasing traffic movement along the Walvis Bay Corridor. This, therefore, calls for a study of innovativeness in the Namibian road freight industry given the critical role it plays in driving the economy. The research question that guided this study was: What are the innovative capabilities of the Namibian road freight transport operators?

Previous research (Simasiku, 2020; Odero, 2018; Savage, Fransman & Jenkins, 2013) established beyond doubt the importance of logistics to the Namibian economy. The studies including the one by the Walvis Bay Corridor Group (2013) revealed diverse challenges facing Namibia's road freight transport operators. The cited challenges included technical aspects of vehicle maintenance, operational planning, lack of qualified staff, safety concerns and strategic management, road capacity and conditions – all these ultimately lead to increased operational costs. Overall, embracing innovation across various aspects of operations can help road freight transport operators address the challenges they face, reduce operational costs and enhance competitiveness in the market.

Increasing transportation costs worldwide has forced companies to be innovative and utilize their transport resources in a more economic and efficient manner in order to survive the competitive business environment. While acknowledging the high quality of road network in Namibia (Schuler, 2013; the World Bank, 2012; & Savage et al., 2013) have questioned the road freight transport operators' capacity to provide outstanding services given the stiff regional and international competition and given the theoretical view that resources and capabilities are not valuable on their own and are essentially unproductive in isolation.

Despite innovation being a strategy and a pillar of competitiveness and growth for countries and firms around the world, there is little research on innovation capacity of Namibian firms, including the prioritized transport and logistics sector.

LITERATURE REVIEW

The literature reviewed in this paper assisted the researcher to gain informed knowledge about innovation capabilities of the road freight industry. It also provided a theoretical framework which acted as a foundation of the study.

The Dynamic Capabilities (DC) Theory

This study was guided by the dynamic capabilities theory which was selected as the most applicable theory to assess innovation capabilities in the Namibian road freight transport industry. The DC theory emerged as both an extension to and a reaction against the inability of the resource-based view (RBV) theory to interpret the development and redevelopment of resources and capabilities to address rapidly changing environments (Galvin, Rice & Liao, 2014).

The theory acknowledges that organizations thrive to explore the new strategic considerations required to seize opportunities as soon as they are noticed and reconfigure business operations accordingly. Dynamic capabilities, along with resources and strategy, collectively determine the competitive advantage a company can achieve over its competitors (Teece, 2018). The theory pinpoints innovation as the principal mechanism for organisational growth and renewal. In order to understand the dynamic capabilities framework, it is important to explain its key elements. Figure 1 below provides the key elements of the framework.

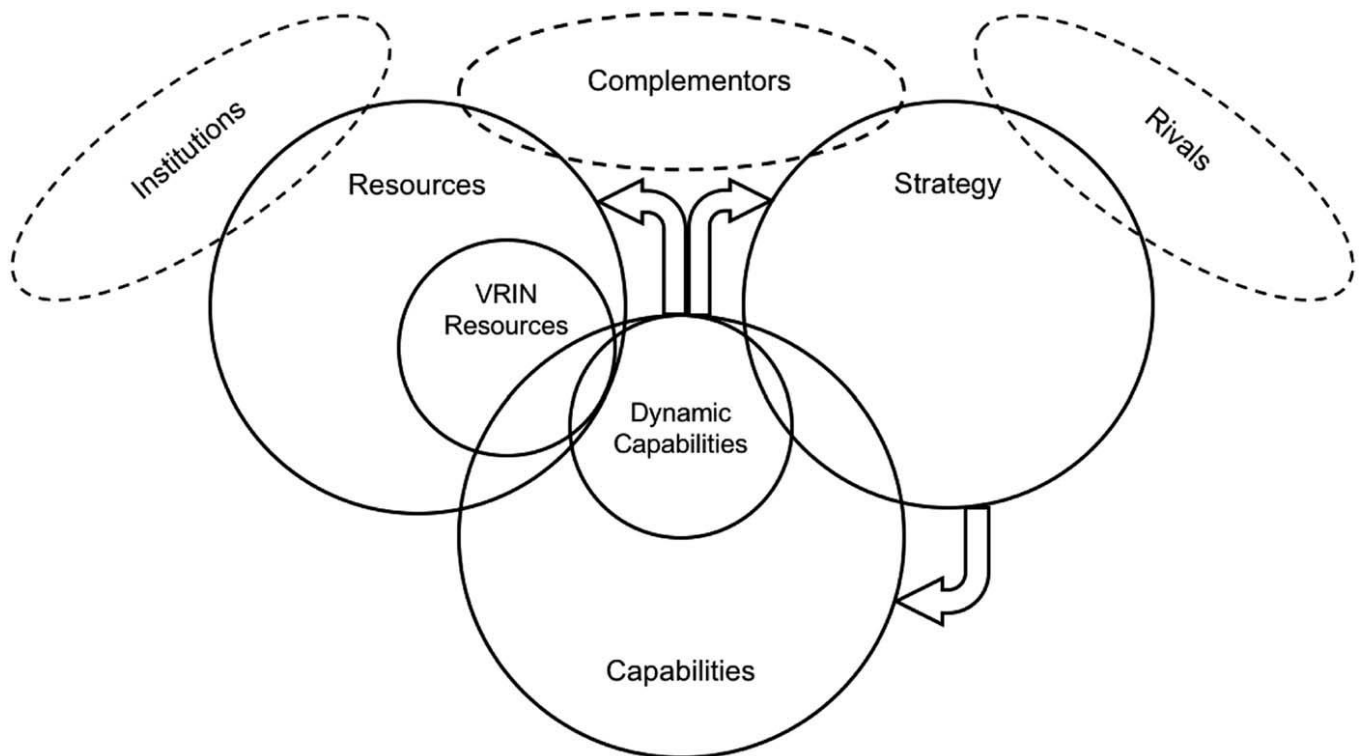


Figure 1: The key elements of dynamic capabilities framework (adopted from Bledy et al., 2018).

As depicted in Figure 1, additional elements of the framework encompass firm assets, strategic approach and external organizations and institutions. It is important to note that components outside the firm are

indicated by a dashed border, while arrows denote significant influence. The VRIN concept signifies attributes that are valuable, rare, imperfectly imitable and non-substitutable.

In light of the above, firms in the Namibia road freight transport industry need to continuously introduce new products and processes to match the dynamic technology and customer needs. Innovation is critical for strengthening service providers – customer relationships, generating customer loyalty, achieving competitive advantage and improving performance of logistics firms (Asian, et al., 2019).

Innovation Concept

Various scholars have grappled with defining innovation, resulting in the absence of a singular definition (Gault, 2018; Oberg, 2017). Innovation transcends mere technological advancements and extends to encompass social, cultural, institutional, inclusive, green, eco, open, user-driven, lean, low-cost, grassroots, public and transformative dimensions (Edwards-Schachter, 2018). The emergence of new definitions reflects the evolving nature of the innovation concept and its dependence on historical and sociocultural contexts.

Nelson and Barnes (2014) defined innovation as optimizing the potential benefits embedded in an idea that is new to an individual or a firm. Despite the significant attention given to innovation in corporate settings, the lack of a universally agreed definition can lead to ambiguity and hinder performance assessment of firms. The study adopted the following Oslo Manual definition of innovation because of its precision and widespread use in statistical measurement: the implementation of new or significantly improved products, processes, marketing methods or organizational practices (OECD/Eurostat, 2018).

Characteristics of Innovation Capability

Innovation capability is crucial for organizations to continuously translate knowledge into new products, services, processes and systems. Leading innovators, exemplified by Cisco, excel in swiftly innovating to maintain competitiveness, integrating learning and knowledge across all operations. This capability encompasses leadership, organizational structure, culture and communication; these are crucial for effective innovation management. Literature emphasizes key characteristics such as leadership, organizational culture, structure, external knowledge utilization, competence management, creativity and absorption capacity to high innovation capability (Boly et al., 2014; Saunila, 2017).

Based on the literature review, the level of innovation capability is influenced by various factors. Scholars have identified determinants of innovative capability such as managerial leadership (Kim et al., 2018), knowledge development (Saunila & Ukko, 2014), entrepreneurial orientation (Noor et al., 2017) and external networks (Kim et al., 2018). These dimensions collectively contribute to high levels of innovative capability. In the logistics sector, including road freight transport operators, firms compete based on their capabilities (Wang, 2016). A recent meta-analysis confirms that dynamic capabilities contribute to better alignment with the external environment, ensuring enterprise survival and fostering growth measured by profitability or turnover. Additionally, dynamic capabilities enable firms to be flexible in adapting to major changes and promote innovativeness, resulting in outcomes like new product development, patents, and organizational learning (Schilke et al., 2018)

This study investigated how these factors affecting innovation capability are evident in Namibian road freight transport firms, with the objective of evaluating their potential for innovation.

Innovation Typologies

It was found necessary to briefly explain different types of innovation in order to appreciate how they

contribute to the success of the road freight industry.

Product Innovation

Product innovation is the most studied individual type of innovation (Landoni et al., 2016). According to Gault (2018), product innovation is described as the introduction of a new or substantially altered product to potential users, distinguished by changes in its features or intended purposes. The author also alluded to the intrinsic interaction between product and process innovations. In contrast to manufacturing, where product and process innovation are often separate, in the services industry, production and consumption occur simultaneously.

Recent years have seen a notable shift in product innovation influenced by Von Hippel (2005, as cited in Edward-Schachter, 2018). This influential book redirects attention from internal firm processes to external actors, highlighting that users, both firms and individual consumers, are increasingly capable of innovating for themselves. Von Hippel emphasizes the benefits of user-centred innovation processes, contrasting them with traditional manufacturer-centric approaches that have been dominant for centuries.

Bstieler et al., (2018) highlight key areas and research directions in new product development, emphasizing the integration with open innovation, 3D printing, the Internet of Things (IoT), big data/analytics, and sustainability-focused innovation. Open innovation, as utilized by various companies including traditional enterprises and social ventures, involves accessing external knowledge, expertise, or technologies to aid in the new product development process (Chesbrough et al., 2014; West et al., 2014).

Process innovation

Process innovation can occur in various areas of an organization, including production, operations, logistics, and service delivery. It pertains to alterations in how a company manufactures and delivers its products or services (Hullova et al., 2016). Consequently, process innovation is predominantly focused on internal improvements and typically involves the introduction of new or enhanced machinery, equipment, tools or devices.

In service industries, process innovation often occurs alongside product innovation. For instance, Henry Ford's assembly line drastically improved vehicle production efficiency. Other examples of process innovation involve changes in manufacturing equipment and technology, software for product design, supply chain management and advancements in accounting methods.

Management innovation

According to Putriyadi et al. (2020, p. 50), "management innovation refers to various changes in operational management practices and establishes new management practices to enhance organizational performance." In other words, management innovations involve changes in various management undertakings such as setting strategic goals, coordinating activities, decision making, knowledge acquisition and talent management amongst other activities.

A few excellent examples of management innovations include Six Sigma (Motorola and General Electric), balanced scorecard (Analog Devices), lean production (Toyota) and brand management (Procter & Gamble) (Mandal, 2022). A recent shift from technological to non-technological competitive advantages led to increased popularity of management innovations (Nieves, 2016).

Marketing Innovation

Marketing innovation is a recent approach with a significant number of publications from 2009 (Matte et al.

2023).

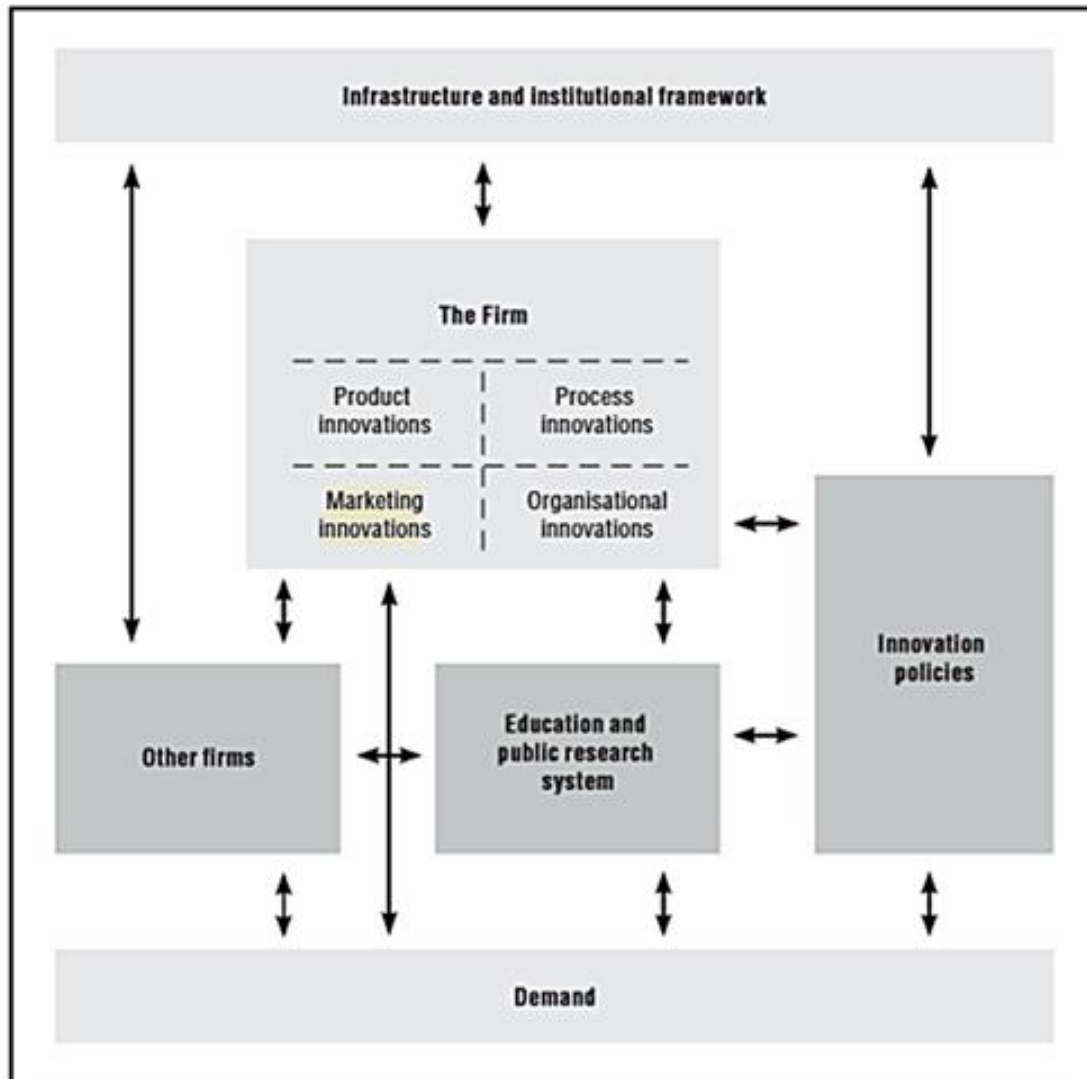


Figure 2: The structure of innovation | Source: Oslo Manual: Guidelines for collecting and interpreting innovation (2018)

The OECD and Eurostat introduced a framework (Figure 1) illustrating innovation as a systemic process, depicting various types of innovation within a company, its interactions with external organizations and responsiveness to market demand.

According to Lee et al. (2017), the synergy between marketing and innovation is crucial for the success of contemporary businesses. For instance, the emphasizes the importance of identifying market trends as a precursor to innovation, ensuring that products or services align with customer needs. Moreover, recent advancements in marketing techniques have enabled firms to gather consumer insights more effectively, facilitating the implementation of innovative marketing strategies that were previously impracticable (Grimpe et al., 2017).

Innovation in the road freight transport industry

Industry Brief Overview

The majority of merchandise, including 70-90% of agricultural products in Africa (World Bank, 2015), are

moved via trucks. This underscores the significance of comprehending road transport expenses within the realms of regional integration, urbanization, the potential for expanded production and distribution across broader regional markets. This linkage is crucial, particularly in light of increasing food consumption and incomes within the region. Addressing the challenges posed by high transport costs and logistical inefficiencies is acknowledged as imperative for fostering the development of cross-border value chains, as documented in the SADC Industrialisation Strategy and Roadmap (SADC, 2015).

Despite Namibia bordering the largest economies in the region, vast distances separate Namibia's ports from the centres of economic activity in the region. In addition, Namibia's large area and small population mean that the country faces an inherent problem of spreading the costs of maintaining a large road network over few people. Namibia is a massive country (824 292 square kilometres) with a small population of 3 022 401 (Namibia Statistics Agency, 2024). For road freight transport operators, a small population scattered around a large geographical area means covering long distances to reach small pockets of population.

It is important to note that Namibia's road freight transit cargo moves in one direction. For instance, the transit cargo travelling outbound from Walvis Bay to companies in Angola, Zambia and Zimbabwe outweighed inbound cargo nine to one. Consequently, trucks travel empty in one direction, making it difficult for Namibian service providers to offer competitive shipping rates and expand their business (World Bank 2021).

Namibian Road Freight Transport Industry's Innovation Capability

Innovation is crucial for the competitiveness of Namibian road freight transport operators, especially in attracting shippers amidst high costs compared to other ports. Data comparisons revealed that a 20-foot container (20-ton gross) for a Zambian importer via Dar es Salaam costs US\$3,320 compared to US\$4,180 via Walvis Bay port. Innovation capability encompasses operations and activities facilitating the assimilation of new ideas, techniques, and technologies (World Bank, 2021). High absorption capacity enables firms to generate novelty swiftly necessitating engagement in activities like networking, intra-organizational learning and staff training (Bratnicka-Mysliwiec et al. 2019). Organizational innovation involves a planned process aimed at developing capabilities to explore, construct and absorb innovation, with absorption capacity developed through fundamental behavioral activities. The study utilizes non-linear constructs of innovation to assess the industry's innovation capabilities, emphasizing intra-organizational learning, attitude towards risk, leadership, strategy and reward systems. Organizations investing in these aspects have a higher likelihood of achieving sustainable innovation outcomes (Zizakov et al., 2023).

Based on the review, the level of innovation capability is determined by multiple aspects. These determinants include top management leadership (Kim et al., 2018), knowledge development (Saunila & Ukko, 2014), entrepreneurial orientation (Mohd Noor et al., 2017) and external networks (Kim et al., 2018).

Intra-Organisational Learning

There are various mechanisms such as consultancy, idea competitions, hiring, market surveys and co-development with users, stressing the importance of users, universities, suppliers, competitors and intermediaries in innovation (Cother et al., 2023).

Hu and Randel (2014) found a significant link between intra-organizational learning and process innovation in the service industry.

Networks and alliances with customers, suppliers, competitors, and non-market entities are crucial for innovation, cost reduction, risk mitigation, and speeding up product development (Oliver & Muller-Seitz, 2022) Intra-organizational learning spaces in the road freight transport industry are fragmented, but

knowledge sharing occurs among employees in various departments (Levy, 2015; Ngcongco, 2014).

However, innovations in this sector have mainly been technical, necessitating organizational development approaches to foster behavioral changes among employees for enhanced innovation capabilities (Levy, 2015).

Attitude towards risk

Innovation is greatly influenced by a willingness to take risks. Numerous studies support the notion that risk-taking fosters innovation (Guimares & Parahjape, 2017; García-Piqueres et al., 2019; Hamdani & Khalifah, 2023). This propensity to taking risks encourages the emergence of uncertain ideas and motivates the allocation of time, human, and financial resources for their realization (Giaccone & Magnusson, 2022).

Creating an organizational environment that embraces tolerance for errors and failures during innovation processes (Manso, 2017) promotes employee engagement and attitudes toward risk-taking, thereby nurturing creativity (Chiang & Hung, 2014; Amabile & Pratt, 2016). Nurturing such an environment is particularly important in industries like road freight transport where innovation is vital (Ersoy & Tanyeri, 2022).

On the contrary, a reluctance to take risks may impede attempts at radical and disruptive innovation, potentially compromising overall innovation performance (Cai et al., 2015). However, excessive risk-taking can lead to the pitfalls of failure in exploring new ideas and result in higher costs in their exploitation potentially negatively affecting firm performance (Van Wesep & Wang, 2014). Given the inherent uncertainty of innovation activities, it is crucial to comprehensively balance risks and opportunities.

Leadership and strategy

Leadership and strategy are integral for driving innovation within firms by shaping culture, vision and resource allocation. Strategic leadership is viewed as the ability to mobilize and focus energy and resources on factors that create differentiation and potential future success (Akbari et al., 2014). According to a McKinsey worldwide survey, over 70 percent of the executives view innovation as one of their top three growth drivers over the next three to five years emphasizing the importance of recognizing the human aspect within firms (Nelson & Barnes, 2014). Similarly, an Oliver Wyman and Economist Intelligence Unit survey underscores proactive leadership as crucial for creating an organizational environment conducive to innovation and intelligent risk-taking. Leaders must establish a clear purpose around innovation to prioritize it within the organization's agenda. Together, leadership and strategy create an environment conducive to innovation, enabling firms to remain competitive and responsive to market changes.

Despite the recognized importance of innovation, there often exists a lack of shared understanding and dissatisfaction with stimulating innovation among executives (Nelson & Barnes, 2014). Leadership is pivotal in cultivating an organizational environment supportive of innovation. There is an acknowledgment of the continual need to assess the role of leadership in fostering innovation (Chinyamurindi, 2018). Internal capabilities of firms are manifested through leadership behaviors (Akbari et al., 2014).

Effective leaders play a critical role in implementing successful change management strategies which can be decisive for an entity's success (Wetzel & Dievernich, 2014). Competent leadership drives innovation efforts toward optimal returns (Syafarudin, 2016), serving as the catalyst and source of organizational creativity and innovation. Hence, leaders, as managers of entities, must devise innovative solutions to drive organizational success (Rayna & Striukova, 2015).

Teece (2017) suggested that firms with similar traits exhibit varying levels of dynamic or innovation

capabilities due to differences in their managers. By analyzing this variable, the researcher was able to assess the level of innovativeness in the Namibian road freight industry.

Reward System for Innovation

Numerous studies, including those by Sanders et al. (2018) and Hogan and Coote (2014), have explored the relationship between rewards and innovation (Baumann & Stieglitz, 2014). It is widely acknowledged that rewards play a crucial role in driving innovation, as evidenced by research such as that by Darmaki, et al. (2019). However, this relationship is complex, with different types of rewards being suitable for various innovation types and stages. Therefore, designing reward systems that align with organizational goals, considering factors like timing and magnitude, is essential for effectively driving innovation.

Two main types of rewards, namely extrinsic rewards like financial incentives and intrinsic rewards such as praise and recognition, are identified as influential factors in driving innovation. Rewards play a crucial role in building trust among employees, facilitating open communication, and promoting the free exchange of innovative ideas. While rewards are essential for motivating employees, it is the acknowledgment of their contributions that truly fosters an innovative culture, as supported by research (Bhatnagar, 2014; Prajogo, 2016).

Studies suggest that jobs involving high risks are often rewarded accordingly implying that performance metrics should align with job responsibilities and conditions (Lockridge, 2015). Leading innovative companies incentivize and recognize innovation across all levels of the organization, not solely within research and development departments (Dills, 2015).

Furthermore, group rewards are found to encourage collaboration and organizational commitment, creating a culture where innovation is embraced by all employees (Meirinhos et al., 2023).

Road Freight Transport Technology Innovations

Road freight transport, crucial for economic activity, requires adaptation to changing trends, prompting the integration of Information and Communication Technology (ICT) into services to enhance competitiveness (Royo et al., 2016). According to Pernestal et al. (2021), “digitalization, including automation, digitized information and artificial intelligence provide opportunities to improve efficiency, reduce costs, and increase service levels in road freight transport.” Despite various technological innovations supporting behavioral change, true progress requires organizational innovation alongside technology adoption (Ziyadin et al., 2020). ICTs in transportation enhance information transfer, route planning, mobile communication and e-commerce (Giannopoulos & Mosschovou, 2023). Notable ICTs include GPS for monitoring, GIS for geographic data, and advanced information systems for real-time data (Sharma & Garag, 2023). Integration of these systems improves service quality and efficiency in road freight transport. ICT adoption aims to cut costs, enhance customer service and improve efficiency in freight transport (Perego et al., 2011). ICTs contribute to innovation by enhancing efficiency and sustainability in transport (Sternberg et al., 2014). Key ICT elements used by transport firms include computers, internet, wireless communication, GPS and vehicle tracking systems (Tavasszy, 2020).

The issue of environmental pollution cannot be left out in road traffic industry. According to Demircan et al. (2021), “An increase in the level of innovation in developed countries has a positive impact on carbon emissions due to transportation if the innovation results from an increase in trademark. As a result, innovation level has a positive effect on carbon emissions due to transportation, and this effect is stronger for developed countries”.

METHODOLOGY

Research Design

The researcher used the mixed survey method for collecting both quantitative and qualitative data from industry operators. According to Gul (2023, p. 65), “the quantitative survey method is used to collect information from a sample of people, which can then be used to generalize information about the population as a whole.” Survey methods are useful ways of collecting data in the form of facts, views, actions or attitudes from many respondents; they be in the form of interviews, observations or questionnaires. This mixed method was appropriate to explore the innovative capabilities of road freight transport firms in Namibia and establish their capability to meet increased business volume. Qualitative research is defined as “the study of the nature of phenomena including their quality, different manifestations, the context in which they appear or the perspectives from which they can be perceived ...” (Busseto et al., 2020, p.1). helps to collect data from organisations and provides the type of valuable insights, which may not be possible to gain in a case study or in quantitative style research. It has the flexibility to ask why, how or when, and to use probing questions to encourage participants to talk spontaneously about the area of interest.

Semi-structured interviews were used to obtain information from the main stakeholders about key areas. This allowed an exploration of emergent issues in greater depth whilst remaining able to react to individual respondents.

Semi-structured interviews were chosen as the principal method to collect primary, qualitative data where the major questions were the same in each interview but where the interviewer was free to alter the sequence of questions and probe for greater detail. Through the use of a guide, the researcher was able to obtain general information about the organisation, management and operations, cost and time management, technology and infrastructure of the organisations. Most questions were qualitative in nature, but semi-quantitative questions were used where the topic lent itself to estimation of the company’s or the country’s relative position in terms of a particular subject.

Questionnaires were also used to gather data relating to the innovativeness in the road freight industry. The questionnaire design was informed by constructs extracted from the literature review. Secondary sources were used to deepen understanding and application of innovative capabilities amongst road freight companies. Some of the sources were journal articles, relevant policy papers, websites, legislation, associations and newspaper articles.

Sampling

The target population of this study was all road freight transport firms in Windhoek that are members of the Namibia Logistics Association. NLA has 44 companies which are in three-fold classification: transport chamber (19), the freight expeditor chamber (12) and the mixed chamber (13) (transport and freight expeditors). Of the 44 road freight transport firms, 22 firms that have offices in Windhoek formed the representative sample for this study.

The study used the key informant approach to collect data. This method is appropriate for exploratory studies seeking to collect data at organisation level and this is achieved by identifying the most knowledgeable person in the firm (the person most familiar with the functional areas being studied). This approach is effective since it does not involve working with multiple informants whose knowledge is confined to their respective functional areas and render high levels of non-responses in remaining areas.

Data generation and collection

Data were generated by use of self-administered questionnaires supplemented by in-depth interviews which sought to answer the research questions. Non-linear constructs of innovation developed by Zizakov et al. (2023) were used to measure innovative capabilities in the road freight transport industry. The selected constructs included fundamental behavioural activities namely: intra-organisational learning; attitude towards risk; strategy and organisational leadership; and technology innovations.

Despite the inherent uncertainty of innovation, there are underlying patterns that can be identified. High performing innovators deliberately and systematically enable and motivate the chaotic, divergent behaviours required for breakthrough innovation. The model assumes that the organisation is focused on innovation and innovation outputs as their primary competitive strategy. Innovation capability itself is not a separately identifiable construct. The capability is composed of reinforcing practices and processes within the firm. These processes are a key mechanism for stimulating, measuring and reinforcing innovation (Zizakov et al., 2023).

To determine the innovative capabilities of road freight transport firms, information on external sources of new ideas or new information and organisational behaviours with regards to the four selected innovative constructs was collected. Responses on external sources of information and organisational behaviour were measured on a Likert-type scale ranging from 1= unimportant to 5= very important.

Data Analysis Methods

The inductive approach was used to analyse data, that is, to derive concepts, themes and models through interpretations made from raw data. Data from completed questionnaires and responses from interviews were coded and analysed using Microsoft excel spreadsheets. Data on external sources of new ideas and information was analysed using mean scores to identify how important different sources of new ideas in the industry are. The study analysed the sum of scores of constructs of innovation capability using answers provided on a Likert-type scale. The sum of scores was then expressed as percentages. Information gathered from interviews was used to compare and discover the connections between themes and finally integrated these themes into a theory that offered a comprehensive and accurate interpretation of the innovative capabilities of road freight transport firms.

The researcher employed absolute and relative frequencies for single response questions. For multiple response questions, the Likert scale was used to collect and analyse data where a scale of 1-5 points was used in computing the frequencies and percentages. The results were presented in tables, graphs and charts, and explanations were given in prose.

PRESENTATION OF FINDINGS

The findings of this paper assisted the researcher to make conclusions on the innovation capabilities of the road freight companies studied. The findings are presented in the sections that follow.

Companies in freight logistics business

Out of the 44 companies that are on the NLA member list, only 22 have offices in Windhoek and they formed the representative sample. Questionnaires were administered to 22 companies and only 18 questionnaires were completed and returned. Out of 22 road freight transport firms in Windhoek, 56% are Private Limited companies, whilst 44% are Close Corporations.

In this study, it was also important to get information about the number of years the companies had been in operation. This information is provided in Table 2 below.

Table 2 Number of years in Operation

Range of years	Number of firms	Percent
Below 10	12	66.67%
11 –30	2	11.11%
31– 50	3	16.67%
Above 50	1	5.56%
Total	18	100%

As indicated in Table 2, 66.67% of the companies had been in the freight logistics business for 10 years or less followed by 11.11% companies that had been in the business for between 11-30 years, 16.67% of the companies that responded had been in the freight logistics business for the period between 31-50 years. Finally, only one company (5.57) had been in the business for over 50 years.

The study also investigated the number of trucks each company had. The information is presented in the Table 3 below.

Table 3: Number of trucks the company has.

Range of Number of Trucks	Number of Firms	Percentage
10-30	10	55.56%
31-50	5	27.78%
Above 51	3	16.67%
Total	18	100.0%

Table 3 presents findings on the distribution of companies' number of trucks in their fleet. From the findings, 55.56% of the companies had between 10-30 trucks in the fleet, 27.78% companies had between 31-50 trucks in their fleet and 16.67% of the companies had over 51 trucks in their fleets.

These findings show that most companies (10) had trucks in the range of 10-30. This could be attributed to the fact that the majority of companies (12) had been in existence for 10 years or below (see Table 3).

Classification of operation

In this study, it was crucial to categorize road freight companies. The types of companies and the number of companies in each category are indicated in Table 4 below.

Table 4 Classification of Operation

Classification	Number of Firms	Percentage
Transport Chamber	3	16.67%
Freight Expeditor Chamber	5	27.78%
Transport & Freight Expeditor	10	55.56%
Total	18	100.0%

Table 4 presents findings on classification of the companies' lines of operations. From the findings, a total of 16.67% (3) of the respondents indicated that their companies could be classified as being in the category of transport chamber, whilst 27.78% (5) classified their companies into the freight expeditor chamber and 55.56% (10) respondents classified their companies as transport and freight expeditor. However, it's important to note that the majority (12) of companies which participated in this study are fairly new in the logistics business. This could explain the reason as to why many companies are in the transport and freight expeditor category.

How skills are developed at the companies

They were varying responses from participants. Among other skills development methods for employees that were indicated are on the job training, Commercial Advancement Training Scheme (CATS) system, in-house training, E- learning system (intranet), external training and the use of local training academies.

Strategies on Organisational Leadership

Leadership plays a crucial role in fostering an organisational environment supportive of innovation in companies. Respondents from the studied companies were asked whether there are strategies of organisation leadership in their companies. A total of 73% of the respondents answered "YES" indicating that they agreed that there were strategies in place while 27% answered "NO".

The significance of those who answered "NO" might be attributed to the fact that the majority of companies who participated are still new in the industry. Those who indicated "YES" cited that their companies exploited the advance in technology to smoothen processes and reduce paperwork. Some of the technology advances included Global network partners, Multi modal team approach, Setting up of virtual teams, employee exchange programmes with Germany or Walvis Bay Branches, own customs officials to avoid delays and service level agreements with clients and accreditation to transport special cargo such as chemicals. These were cited as being among critical strategies in place to maintain competitiveness.

The study first sought to establish whether management at these participating companies provided adequate work resources. These resources were classified under Time, Training, Mentorship, and Equipment. When asked whether the companies provide adequate resources, 73% of the respondents answered "Yes" indicating that they agreed that adequate resources were provided, while 27% answered "NO".

The study found out that the relationship that a company had with clients was of paramount importance in the road freight transport industry. The various relationships are indicated in Figure 4 below.

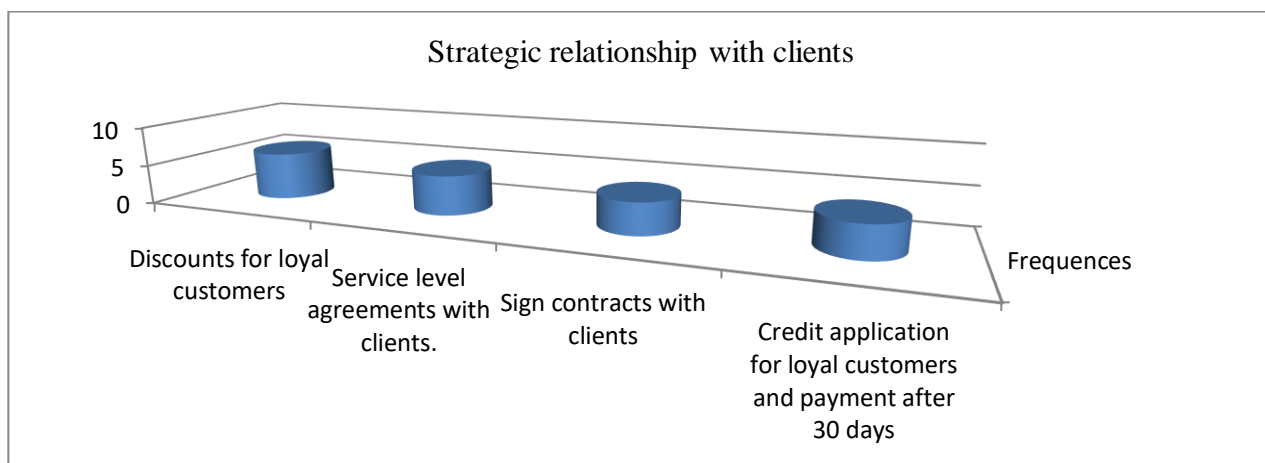


Figure 4: Strategic relationship the companies strive to cultivate with clients

Figure 4 shows that 33.33% of the respondents alluded that their companies have discounts with loyal customers as a strategic link with their clients, whilst 22.22% indicated that their companies used service level agreements as strategic link with clients. A total of 27.57% respondents indicated that contracts were a strong aspect of strategic relationships in the logistics industry. They articulated these to the cost that are involved, citing that when a contract is in place, it is made easier to find out who is responsible for costs in terms of delays and other risks. A total of 16.67% of the respondents cited credit application for loyal customers and payment after 30 days as a strategic relationship tool for their clients.

Leadership qualities play a crucial role in determining the success of a company. Table 5 shows respondents' views on the role of leaders in their organisations.

Table 5 Respondents' views on the role of their leaders in the organisations

	Strongly Agree		Agree		Neutral				Disagree		Strongly Disagree	
	Number of companies	%	Number of companies	%	Number of companies	%	Number of companies	%	Number of companies	%	Number of companies	%
Mentorship and coaching provided.	3	16.67	6	33.33	0	0	1	5.56	8	44.44		
Leaders Continuously seek learning.	6	33.33	3	16.67	1	5.56	5	27.78	3	16.67		
Leaders match actions with its values	9	50	5	27.78	1	5.56	2	11.11	1	5.56		
Work with outside community	10	55.56	1	5.56	0	0	4	22.22	3	16.67		
Staff encouraged to think from a global perspective.	3	16.67	12	66.67	0	0	5	27.78	0	0		
Staff encouraged to seek answers from across the organisation when solving problems.	13	72.22	2	11.11	2	11.11	0	0	1	5.56		

These above results (Table 6) show that the companies that took part in this study value community work, continuous learning, promotion of global perspective thinking and employee involvement in decision making. The study also confirms that the leaders of these companies' match actions with its values and confirms that there was less mentorship and coaching provided by leaders in the majority of companies that

participated in this study.

How do you associate the word ‘risk’ within your organisation?

It was also necessary to find out how respondents’ companies viewed the word ‘risk’ Figure 5 presents the responses got from this aspect of the study.

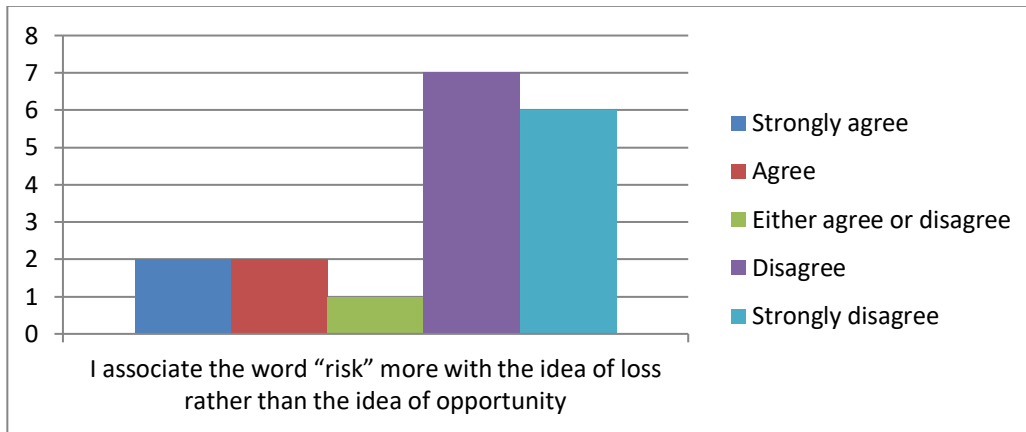


Figure 5: Association of ‘risk’ within organisations

The above results show that most of the respondents associated risk more with an opportunity as opposed to a loss.

Extent to which companies are willing to experiment with new ideas or technology

All companies indicated that they were always looking for new opportunities and were willing to try new ideas or technology if they could afford it and if the returns were good. The results on undertaking risk are presented in Figure 6 below.

Risk appetite in road freight innovation

Literature (Latham & Braun, 2009; Yang, 2012) shows companies which that have a positive attitude to risk have a potential for innovativeness. The responses on risk appetite of the studied companies are given in Figure 6 below.

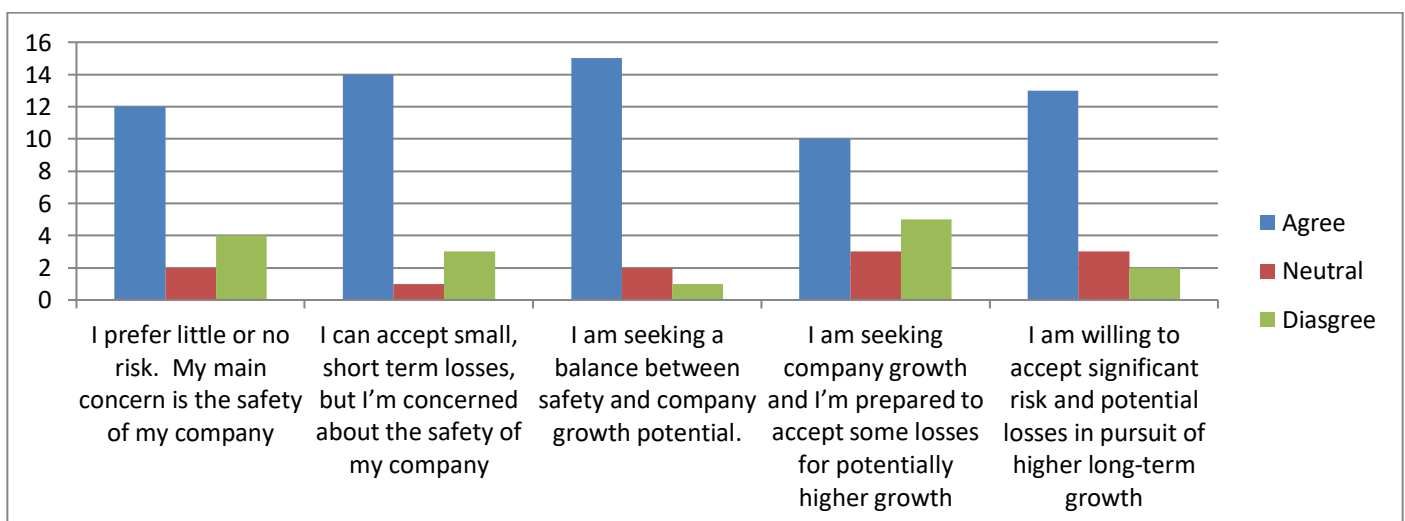


Figure 6. Risk appetite in road freight innovation

Figure 6 shows that a total of 12 respondents concurred that they preferred little or no risk, 2 were neutral while 4 disagreed on the same. The results indicate that the concerns of most of the respondents (12) were the safety of the company hence they preferred little or no risk. On whether the respondents could accept small short-term losses, 14 agreed, 1 was neutral and 3 disagreed. Those who agreed indicated that the safety of the company was top priority.

On whether the respondents were seeking company growth and prepared to accept some losses for potentially higher growth, 10 agreed while 3 and 5 were neutral and disagreed respectively. From these findings, it can be concluded that majority of companies were willing to ensure company growth and were also prepared to accept some losses for potentially higher growth. A total of 13 respondents agreed that they were willing to accept significant risk and potential losses in pursuit of higher long-term growth, while 3 were neutral and 2 disagreed. The lower number of respondents who were not willing to accept significant risk and potential losses in pursuit of higher long-term growth might be attributed to the fact that a significant number of respondents preferred little or no risk.

Use of Technology

In this age of digitalisation, there is no doubt that technology plays a critical role in the innovation capabilities of road traffic companies in Namibia and elsewhere. It was therefore mandatory for this study to investigate to what extent the studied freight companies use technology in the pursuance of innovation. Responses to the question on the use of technology are captured in Figure 7 below.

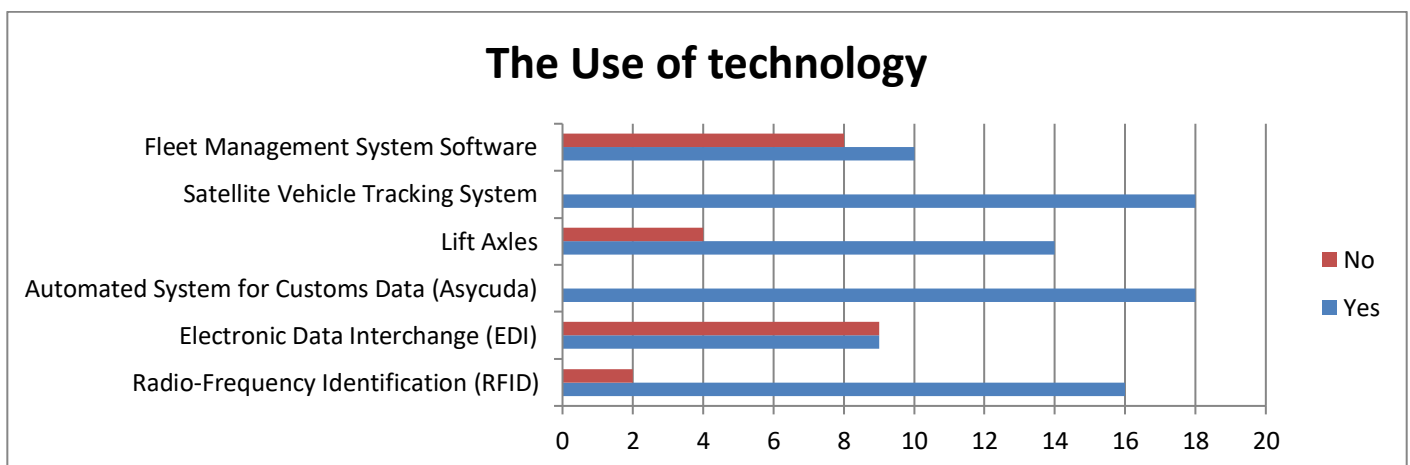


Figure 7: The use of technology

Figure 7 presents findings on whether the companies that participated in the study used technology. The findings revealed that 10 of the companies used fleet management systems while 8 did not. These findings may be attributed to the fact that most companies (12) have been operating for 10 years or less. All 18 companies indicated that they were using satellite vehicle tracking systems. It was also established that a total of 14 companies used lift axles while only 4 did not have lift axles.

All the 18 companies studied used Automated System for Customs Data (Asycuda). However, there was an even distribution in the number of companies that used Electronic Data Interchange (EDI). Nine (9) companies used Electronic Data Interchange (EDI) while the same number did not use Electronic Data Interchange (EDI). Finally, on the use of technology, the use of Radio-Frequency Identification (RFID) was common in 16 companies while only 2 did not make use of the Radio-Frequency Identification (RFID).

What prohibited the use of technology in most companies?

It was anticipated that there could be some challenges on the use of technology by some companies. So,

respondents were asked to respond on this question on technology. Their responses are presented in Table 6 below.

Table 6 What prohibited use of technology in most companies?

Reason	Number of companies	Percent
Lack of capital	12	66.67%
Lack of knowledge	2	11.11%
Company too small	3	16.67%
Few trucks	1	5.56%
Total	18	100%

Table 6 presents findings on what prohibited the use of technology in most companies. From the findings, 66.67% (12) of the respondents' companies highlighted that lack of capital to implement sophisticated technologies. This was followed by 11.11% (2) who attributed the inadequate use of technology in most companies to simply lack of knowledge. Only 16.67% (3) of the respondents highlighted that the companies are too small and hence there is no need for technology in their companies. Finally, 5.57% (1) of the companies that participated in this study indicated small fleet size or few trucks as the main reason for not having technology in most companies.

The importance of stakeholders to the Business

The study also investigated how companies viewed and treated their stakeholders. The results are shown in Figure 8 below.

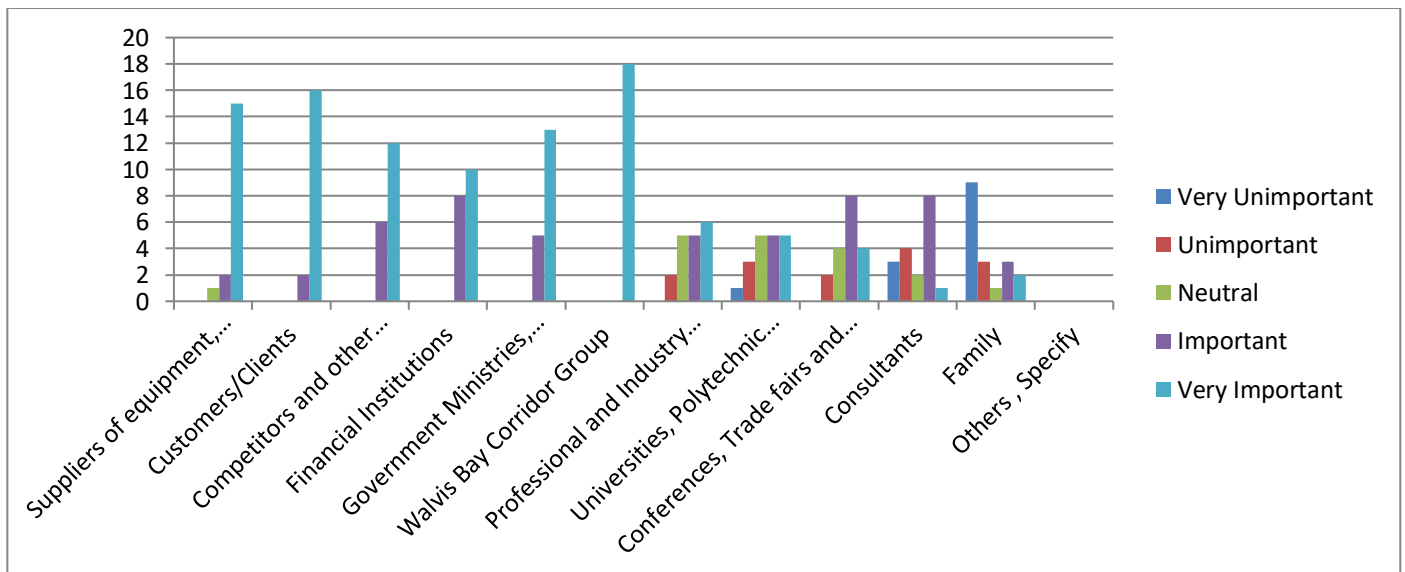


Figure 8: The importance of stakeholders to the business

The findings in Figure 8 indicate that 16 of the respondents alluded that suppliers of equipment, materials, components, or software were very important as compared to 2 respondents who said suppliers of equipment, materials, components, or software were important. Only 1 participant was neutral and no participant indicated that suppliers of equipment, materials, components or software were either unimportant or very unimportant.

A majority of 16 out of 18 of the respondents confirmed that customers/clients are very important stakeholders in the business. Only two respondents indicated that the clients/customers are important. Again, no participant indicated that customers were either unimportant or very unimportant.

On the issue of how important the competitors and other transport and logistics operators, 12 participants indicated that they were very important while 6 indicated that they were important. No participant indicated that competitors and other transport and logistics operators were either unimportant or very unimportant. The importance of financial institutions was supported by 10 participants who said they were very important with 8 saying they were important. None either said they were unimportant or very unimportant.

Government ministries, municipalities and town councils’ importance was supported by 13 participants who said they were very important while 5 alluded that they were important. Again, none of the participants said they were either very unimportant or unimportant.

The importance of Walvis Bay Corridor was seconded by all 18 respondents. This finding therefore indicates how important this stakeholder is to their businesses. Of the Professional and Industry Associations category (i.e. NLA, NATA, NCCI)6 (33%) indicated that they were very important while 5 (28%) thought they were important and another 5 (28%) indicated that they felt neutral about the importance of Professional and Industry Associations.

Only 2 respondents felt that Professional and Industry Associations were unimportant, and none felt they were very unimportant. Conferences trade fairs and expos’ importance to businesses was alluded to by 4 participants who said they were very important. Another 4 participants were neutral and 8 said they were important. A total of 2 participants indicated that they were unimportant with none indicating that they were very unimportant.

These findings show that the stakeholders that included suppliers of equipment, materials, components, or software, customers/clients, competitors and other transport and logistics operators, Financial Institutions, Government Ministries, Municipalities, Town Councils, Walvis Bay Corridor Group, trade fairs and expos, and consultancy are very important stakeholders to business. However, families and Universities, Polytechnics and other higher education institutions are said to be important but not very important.

Reward system for innovation

Generally, rewarding employees motivates them to be more innovative in the execution of their duties (Prajogo, 2016). Therefore, this study investigated the reward systems of road freight companies and the results are presented in Figure 9 below.

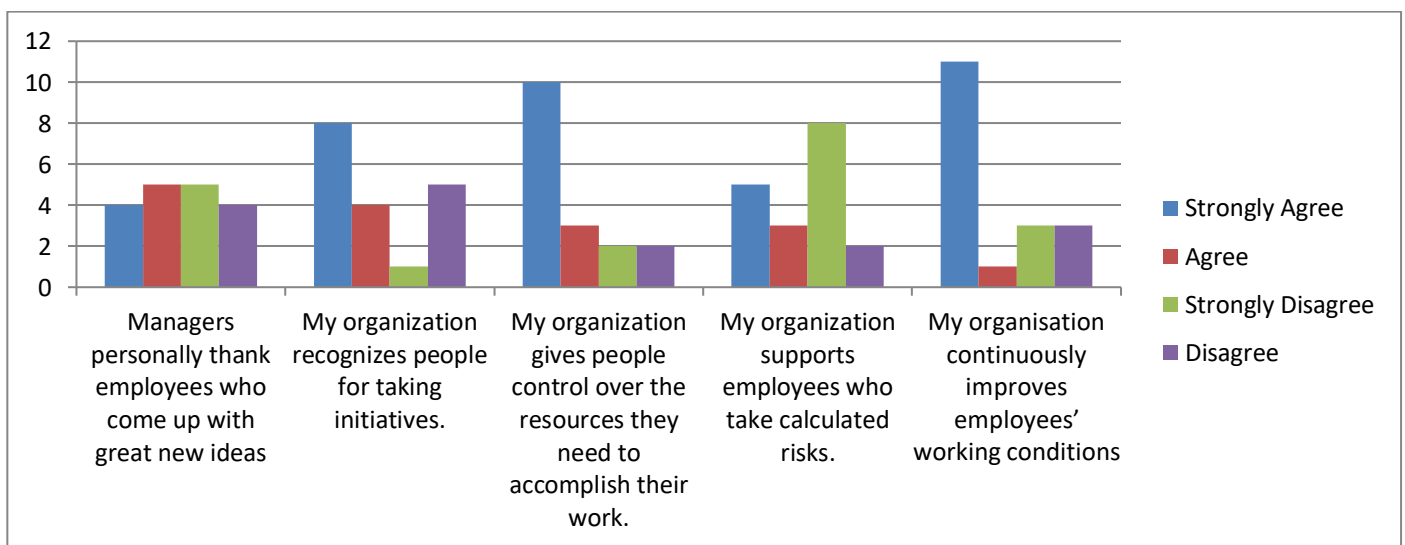


Figure 9. Reward system for innovation

From the findings in Figure 9, 5 participants strongly disagreed, while another 5 agreed, followed by 4 who strongly agree while another 4 disagreed that managers personally thank employees who come up with great new ideas. On whether their organisations recognize people for taking initiatives, 8 totally agreed, 4 agreed, 1 strongly disagreed while 5 disagreed. The findings further reveal that 10 participants strongly agreed, 3 agreed, 2 strongly disagreed, 2 disagreed organisation gives people control over the resources they need to accomplish their work.

Further, the study revealed that 8 of the participants strongly disagreed while 5 strongly agreed, a further 3 agreed and 2 disagreed that their organisation supports employees who take calculated risks. On whether organisations continuously improve employees' working conditions, 11 strongly agree, 1 agreed, 3 strongly disagreed and 3 disagreed.

These findings reveal that indeed there are reward systems in place for innovation in the companies that participated in the study.

Interview Guide Analysis

The findings from interviewees indicate that inter-organisational learning was mostly done informally as industry players were more concerned about protecting information peculiar to their company. Therefore, there was a lack of formal platforms for sharing important information amongst Namibian road freight transport firms.

The interviewees further indicated that the extent to which companies were willing to experiment with new ideas or technology varied from company to company. However, firms were always looking for new opportunities and were willing to try new ideas or technology if they could afford it and if the returns were good. It is important to point out that change in value in the past had given rise to limited opportunities to try new technology even when returns were good. Among other reasons for the change in value among these companies were: increased size of the fleet to maintain service delivery and expanded the market, some introduced new services, some expanded their warehouses to cater for increased stock and one company lost one big client and they were forced to retrench.

Regarding transformation of knowledge and ideas into new products, processes and systems for the benefit of the firm and its stakeholders, all interviewees answered "YES". Among other reasons they gave were that companies strove towards continuous improvement and continuous development of new processes to enjoy competitive advantage. The interviewees also indicated that company management was keen on improving systems and processes that improve efficiency and productivity amongst staff members. Companies continuously tried to improve systems to make services provision faster.

The study further sought to establish whether organisations provided their employees with the knowledge needed to build innovation. Once more all interviewees answered "YES". The interviewees indicated that their companies encouraged sharing of ideas and knowledge that enabled their companies to do things differently to satisfy their customers. Companies were always looking for new ways to remain competitive in the market and meet their customer demands.

DISCUSSION

Technology absorption within the industry is limited due to lack of adequate financial resources. This is apparent in small firms with small fleet size and therefore investing in popular technology innovations may not be justified given the high costs involved and small-scale operations. However, firms that made use of technology innovations such as satellite vehicle tracking system, automated system for customs data; radio-

frequency identification, lift axles, fleet management system software and electronic data interchange systems, promoted innovation in their companies. There is a high information asymmetry within the road freight industry and therefore some companies may not easily adopt certain technologies or new ideas due to lack of adequate knowledge. It therefore suggests that there was little innovation in companies that did not adopt technologies at all.

Innovation in the Namibian road freight transport industry helped to overcome the challenges associated with border-crossing delays on long-distance hauls, poor infrastructure and differing load requirements. For instance, some industry operators had introduced the use of lifting axles to comply with different load requirements. Others who had freight-forwarding functions in their firms had adopted customs-processing systems such as the Automatic System for Customs Data (ASYCUDA) to reduce customs clearance and border-crossing time. However, in my opinion, it is to the disadvantage of innovation capabilities that there are no formal platforms to share information that is crucial for the continuous improvement of processes and systems within the road freight transport industry.

A point of great importance was the acknowledgement from firms that training is provided to employees to improve on general innovative capabilities within the companies. Most of the companies are commended for conducting on-the-job training and in-house training, adopting the Commercial Advancement Training Scheme (CATS) system, E- learning system and external training. In addition to the aforementioned strategies, companies make use of local training academic institutions as various channels used to impart knowledge to employees. This is important to ensure that companies keep abreast with new technologies and information which promote innovation capabilities.

It is also important to note that many companies provided adequate work resources to employees which in turn added to innovativeness amongst employees. The availability of resources in fostering innovation capabilities in road freight transport industry cannot be overemphasized. The resources were classified under time, training, mentorship and equipment which were found to be readily available for employees' innovation. In line with previous research, the findings of this study show that there is a positive relationship between reward systems and innovation capabilities in companies studied.

The role leadership plays in the advancement of road freight industry is crucial. One can argue that it was imperative that leadership and management of all companies continuously sought to match actions with firm values, worked with the outside community, encouraged staff to think from a global perspective and sought for answers from across the organization when solving problems. There is no doubt that these practices promoted the road freight industry innovations amongst firms. In addition, positive attitudes towards risk management encouraged innovativeness within companies that were under study.

The economic benefits of the road traffic freight industry in any country include job creation. The hiring of drivers, their assistants and other personnel is of high economic significance. Equally, the building and maintenance of infrastructure adds to the economic development and benefit at country and regional levels. In the same vein, when it comes to policies, development policies and strategies promote regional cooperation and cohesion in the transport industries of countries in the same region like SADC.

Conversely, there are many challenges in the road traffic industry. Here I cite some of the challenges that the World Bank ([iru-world-bank-road-freight-transport-services-reform-en -www.iru.org](http://iru-world-bank-road-freight-transport-services-reform-en-wwww.iru.org)) heightened: "high prices for road transport services; high costs for road transport companies; poor road safety and security (e.g., cargo theft); low predictability and reliability of road transport services; low revenues generated by the transport sector; harmful environmental effects; and corrupt practices." My argument is that the road traffic industry can use innovation to ameliorate these and other challenges.

CONCLUSION AND RECOMMENDATIONS

This paper set out to explore the innovation capabilities of the road freight industry in Namibia. It discussed various factors that influence the absorption capacity of road freight transport firms and the effects of innovation on performance and ways to promote road freight industry innovations. Overall, there is evidence to conclude that Namibia's road freight transport operators possess the capacity to provide efficient transport services to the economy, but there is a need to improve rewards systems and attitudes towards risk in the industry. Despite the high levels of intra-organizational learning, it appears that innovation capabilities are not translating into efficient transport services; hence the high transport costs in Namibia. The results therefore draw the attention of industry operators to move beyond simply enabling employees to participate in the innovation process, but to allow them to initiate, implement and evaluate innovative ideas.

Despite the Namibian road freight transport firms displaying capabilities to innovate, the researcher recommends the establishment of more robust business models in line with the dynamic business environment coupled with economic recession. Furthermore, firms should also consider appointing innovation mentors and consultants to spearhead innovation training programmes aimed at developing and distributing the mindset and skills of innovation. Namibian road freight transport operators should also allow innovation to flow across all organizational functions to foster free flow of information, skills and knowledge. The government, private sector and academia need to work together to enhance the capabilities of people and firms in the transport and logistics sector. Government and logistics industry bodies such as NLA, should support industry innovation capabilities through providing smaller businesses with best practice examples, "how to" guides and by educating business owners.

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