


# Rail freight transportation concerns of developing economies: A Namibian perspective

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**Background:** Although rail transport appears to be well established and outperforming other transport modes in Europe and beyond, in the majority of developing economies it was observed that firms and travellers were, on the contrary, shunning from the rail. Despite considerable infrastructural investments in the African rail systems, the sector has been deteriorating over the years.

**Objectives:** This study identifies the freight rail transportation problems faced by African developing economies, focusing on Namibia, and examines the potential actions and factors for minimising such problems, drawing lessons from some of the developed world's success stories.

**Method:** The objectives of this study are achieved through a survey of Windhoek-based industrial and logistics firms operating in Namibia. Self-administered survey questionnaires were distributed through the aid of trained research assistants.

**Results:** The study's results show that some of the reasons of shunning rail transport are a matter of attitude, whereas some are related to operational challenges. The study confirms that the transport mode used and ownership of the freight transport services used can affect the degree of satisfaction for the transportation of goods in Namibia.

**Conclusion:** Namibian industrial and logistics firms avoid using rail, owing to its low level of satisfaction obtained from its use. Besides engaging in Public Private Partnerships (PPPs) in rail transport operations, the study contends that rail transport should receive attention similar to that given to other transport modes for African economies such as Namibia to overcome the costs associated with the increasing road congestion.

## Introduction

Indeed, many factors contribute to economic and social progress, but mobility is especially important because the ingredients of a satisfactory life, from food and health to education and employment, are generally available 'only if there is adequate means of moving people, goods and ideas' (Owen & Phillips 1987:231). The different modes of transport have been deemed equally critical in enhancing mobility in both developed and developing countries. Literature reports that rail freight transport has been widely credited for a number of benefits, some of which include:

- *Efficient energy consumption:* On average, rail is reportedly more fuel efficient than other land transport modes. More specifically, the Association of American Railroads (2016) reports that rail transport is four times more fuel efficient than road transport (trucks), and rail fuel efficiency has kept on improving over the years.
- *Massive carriage capacity:* Rooted upon the views of Murty and Nag (2015), rail transport undoubtedly has the capacity to carry massive freight at any given time. Piggyback transport function offered by rail transport is evidence enough to prove that rail can carry both other modes of transport and the cargo itself. One fully utilised freight train can replace hundreds of trucks, and this, in turn, frees up lots of space on the highway, which could be utilised by other motorists (Association of American Railroads 2016).
- *Increased choice:* different types of wagons may be used to carry different types of cargo, including cargo classified as dangerous goods. These vary from flat rail cars, refrigerated wagons, tank rail cars, gondola rail cars, livestock rail cars and so on. This could imply that rail can carry a wider variety of cargo.
- *Environmentally friendly and sustainable:* Rail transport is perhaps one of the greenest forms of land transport. Significant amounts of harmful emissions are reduced when transporting freight by rail wagons compared to road trucks (Alessandrini et al. 2012; Association of American Railroads 2016; Pan, Ballot & Fontane 2013).

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Of late, there have been quite a number of freight railroad innovations enhancing the environmental friendliness and sustainability of rail transport. For instance, there has been a rise in the use of modern and more fuel-efficient locomotives, and the use of idling-reduction technologies (e.g. the stop-start systems).

Despite all these and other benefits, rail is today a minimally used transport mode in most developing economies, for both passenger and freight transportation. Although rail transport appears to be well established and outperforming other transport modes in the Europe and beyond (Granger & Kosmider 2016), it has been a different case in most developing economies such as Namibia. Even with the considerable infrastructural investments in an attempt to reap the benefits of this more sustainable transport mode (Babalik-Sutcliffe 2002; Perkins, Fedderke & Luiz 2005), the rail sector has been deteriorating over the years. As road transport has become the most favoured land mode of mobility, road congestion has become unavoidable in Namibia and other African countries. With the increase in road carnage, global road safety crisis remedies have become necessary (Cole 2004). With the ever-increasing road congestion, it could be only reasonable to assume that rail becomes the next preferred mode of inland transport. However, this has not been the case in Namibia. Passengers and freight institutions alike have been avoiding using rail transport, preferring the congested roads. This exploratory study identifies the rail freight transport problems faced by African developing economies and examines the potential actions and factors for minimising such problems, drawing lessons from the literature of success stories reviewed by the study. These objectives were addressed through a survey of industrialised and logistics firms operating in Namibia.

## Literature review and research hypotheses

Research related to rail transport generated some interests particularly in the late eighties but went into a dormant phase thereafter. With the increasing interests in rail transport especially in the developed world (to avert ever-increasing road congestion), rail research interests have been revived. However, to the best of the author's knowledge, not much of these interests have cascaded into the developing economies' deplorable rail situations.

Thus, there has been very little formal research done on the rail freight transport issues within an African context worst still from a Namibian perspective. Because of its contact with the Atlantic Ocean, Namibia has been earmarked as the 'Logistics Hub' of, and ultimately the 'gateway' to Southern Africa (National Planning Commission [NPC] 2012). This has been well documented in Namibia's National Development Goals (NDGs). In some of the few surveys conducted to identify logistics challenges in Namibia (Savage, Fransman & Jenkins 2013; Tukuta & Saruchera 2015), it emerged that firms that operate in and/or make use of Namibian logistical services encountered serious

challenges in all logistics functional areas, and the barriers were closely related to economic, institutional and socio-cultural factors. Some of the problems cited include the lack of cargo tracing services, inadequate infrastructure, negative attitude, rigid government regulations, lack of training, manpower shortage, poor service delivery dependability, excessive loading and unloading time at shipment and transshipment terminals, as well as unavailability of transport services.

Different actions have been taken by firms to counter these challenges, and these include establishing and running own transport fleets, exercising caution in the selection of outsourced carriers and switching to intermodal transport rather than relying on unimodal transport systems. Unfortunately, the rail transport system has been deserted in the process. These and other studies have concluded that the transport systems in Namibia are expected to improve if the national priority development goal to become a regional hub is to be achieved. Within these transport systems are rail transport systems. Railway transport occupies a significant role in the transport system of a country because the development of trade, industry and commerce of a country largely depends on the development of railways.

Issues and challenges in rail transport are neither a new phenomenon nor only a developing economies' problem. Even those economies whose rail sectors are currently faring well once had some challenges. For instance, in the mid-nineties, one study by Speece and Kawahara (1995) examined transport issues in China and cited infrastructural development issues and some challenges encountered with the use of rail, road and water modes. Prior to the introduction and full rollout of electrical and bullet trains (mostly for passenger rail services), China's rail transport was described as 'slow and expensive', particularly for shipments to the inland (Huu-Phuong & ChooChee-Chuong 2000; Li 1994; Oum, Waters & Yu 1999). The rail lines and locomotives were then described as old. It was predicted that up to 70% of the locomotives were steam engines, whereas only 13% of the rail routes were electrified. The system was characterised by shipment theft and this further burdened the inefficiencies of the system. Not only China has experienced this. In the late nineties, the European rail system once suffered in terms of productivity, efficiency measurement issues, and train schedule optimisation issues. The European Union has at some point had many of its railway lines lacking conformity to modern design standards and has suffered from poor maintenance strategies (Gavin et al. 2012). Irfan, Kee and Shahbaz (2012) reported some rail service quality issues and other concerns in Pakistan. At some point, Europe faced some challenges regarding rail transactional costs, including the costs of misalignment of incentives between actors created by some seemingly failed structural reforms in the sector. In response to this, Van de Velde et al. (2012) assessed the impact of several forms of partial or total vertical separation in the rail from a European perspective. This study was aimed at addressing a policy-related issue regarding 'whether a limitation in the choice between structural railway regimes'

was recommendable or not (Van de Velde et al. 2012:8). Justified by mixed conclusions from previous studies regarding this matter, this study by Van de Velde et al. (2012) still failed to provide a conclusive solution as it clearly proposed that economies be free to select the structural option that they feel best fits their specific circumstances, as this will possibly allow some competition between different models.

More recently, Mizutani et al. (2015) waded into a related study in which they sought to compare vertical separation, integration and intermediate organisational structural costs in European and East Asian Railways. The study was part of efforts to address a policy debate within Europe structuring the railway systems in order to enrich competition, while minimising costs. The same issue was further echoed by Makovsek, Benezech and Perkins (2015), in support of Smith and Christopher (2014), whose studies both bemoan efficiency issues in railway operations and infrastructure management. This challenge has a lot in common with most of the railway sectors in developing economies such as Namibia.

On the contrary, Poland and the former Czechoslovakia (Eastern Europe) had to face some difficulties in crafting appropriate mechanisms that could help them attract foreign investments and technical expertise so as to upgrade their then inefficient systems during the era of privatisation (Persson & Backman 1993). Bulgaria also faced an almost similar challenge. The privatisation and deregulation of the Polish industry as Poland moved from a centrally controlled economy to a market economy came along with a host of challenges, most of which were resolved through proper logistics training by foreign experts (Rydzkowski 1993). However, the rail sectors in these economies have experienced substantial improvements over the last two decades, in terms of ownership, competition and industry liberalisation, and the author explores some object lessons from the transformations that can be adopted in trying to improve the African situation.

In 1994, one specific study by Nollet, Leenders and Diorio (1994) attempted to explore the supply-chain-related challenges in Africa through face-to-face interviews with 35 supply managers. The study identified a multifaceted selection of challenges, comprising the lack of foreign currency to pay for imports, the recurrent breakdown of transport equipment, the high cost of communication and the poor condition of the highway and railroad infrastructure. Other challenges included the lack of qualified personnel trained in logistics and supply management and the corrupt practices of customs officials. However, no solutions were proffered as the authors felt that the data were too scarce. The study was, therefore, inconclusive. Besides substantiating the more specific rail transport challenges in Namibia, this study draws lessons from the success stories from sectors that once faced similar challenges, and attempts to fill in this gap by offering recommendations to improve the dire situation.

This exploratory study mixes qualitative research and quantitative analysis to comprehend and examine the rail transport concerns of Namibian freight companies. Given the lack of preceding studies within the study's context, this study commenced with pilot interviews of freight managers of Windhoek-based industrialised and logistics companies operating in Namibia and key informants within TransNamib, the Namibian rail transport parastatal. Findings from these preliminary interviews together with a review of the literature provided a base for, and very pragmatic insights into, the formulation of the following hypotheses:

- **Hypothesis 1 (H<sub>1</sub>):** The use of road transport will result in higher contentment than the use of rail.

Despite the economic and social costs that road accidents have had in Namibia and Africa at large, the road-based transport has still remained the most favoured mode of transport for both freight and passenger mobility. There has been a growing concern in Namibia of the high prevalence of road traffic accidents (Motor Vehicle Accident Fund 2013, 2014). On the contrary, accidents related to rail transport in Namibia have been very rarely reported. Even so, it is believed that there are differences in the levels of satisfaction for firms that use different modes of transport (Mary & Mario 2008); no wonder why some firms are willing to take the risks associated with some transport modes. The following hypothesis is thus formulated:

- **Hypothesis 2 (H<sub>2</sub>):** The use of the company's own fleet of transport can positively influence the level of satisfaction.

Using the company's own transport can allow better control over the transportation of freight (Mary & Mario 2008). Namibian industrialised firms could be very keen to work with TransNamib, but they probably feel that they cannot control the rail transportation process:

- **Hypothesis 3 (H<sub>3</sub>):** There is a positive association between the extent of failure by government to upgrade rail and/or modernise rail infrastructure and the agreement with the government giving adequate support for rail transport.
- **Hypothesis 4 (H<sub>4</sub>):** Utilisation of rail transport depends on access to the appropriate rail infrastructure.

Past studies have empirically demonstrated that government actions generally tend to fall behind both local and foreign firms' expectations (e.g. García-Arca & Prado-Prado 2006; Li 1994) but this and other related gaps have always been associated with resource and time constraints. The affected parties, however, usually question the commitment of the government and its priority framework. Even though the Namibian government has invested in baseline rail infrastructure through constructing rail lines across the whole country (as shown in Figure 1), interested parties still believe that a lot more could still be done to upgrade the system to meet not only the modern standards but also to meet the expectations of the interested parties. This study thus further hypothesises that the limited access to this much called for appropriate rail infrastructure affects the utilisation of rail transport in developing economies such as



Source: TransNamib, 2016, *Rail line network across Namibia*, viewed 20 July 2016, from <http://www.transnamib.com.na>

**FIGURE 1:** Railway line network across Namibia.

Namibia. The arguments for privatising some of the state carriers, including rail and air transport, or opening the modes to free market competition remain some of the unresolved issues in the developing economies like Namibia.

## Methodology

Given the deficiency of original research related to rail transport concerns, particularly from developing economies' perspectives and the comparative nature of this study, a sequential process of combining the extant (rail) transport literature with real modern-world practices was adopted. More specifically, the method formulated the survey instrument questions from literature and results from the pilot

study (preliminary interviews). The study's target population consisted of Windhoek-based industrial and logistics firms having at least one plant or branch in any city or town through which the TransNamib railway lines pass (see Figure 1). This would ensure that the survey is conducted amongst those firms that are currently using rail, have at some point used rail or have a potential of using rail transport for moving their freight. This would also enhance the accuracy of the study. Guided by Namibia's 2015 Business Directory, the study's sample was drawn from a population of over 500 operational firms. Only ninety companies were, however, considered eligible. This was because of the fact that most of the companies in the directory were neither in the manufacturing nor in the logistics industry nor had a plant (or branch) in any city through which the TransNamib's railway tracks pass.

Mainly targeted at logistics and distribution key personnel within the target firms, the self-administered survey questionnaire was distributed through the aid of trained research assistants. A single data collection instrument was used across all respondents from both industrial and logistics firms. Results obtained were generalised across these firms because it was assumed that these firms were likely to share the same sentiments and possibly face similar challenges regarding rail transport usage in Namibia. Of the 90 self-administered questionnaires distributed, 80 were returned. The fruits of the combined efforts yielded a stunning 89% response rate. Guided by literature and the results of the pilot study, the questionnaire was comprised of four thematic sections whose questioning revolved around: (1) respondent company profile and background, (2) perceptual issues regarding rail freight transport in Namibia, (3) rail transport concerns and problems and (4) actions taken to minimise the rail transport problems.

The reliability of the research was tested and a *Cronbach's alpha* value of 0.725 was recorded, indicating that the self-administered questionnaire was highly reliable. The total Cronbach's alpha measured the internal consistency of the following variables: perceptual issues regarding rail freight transport, rail transport concerns and problems and actions taken to minimise the rail transport problems.

## Main research findings and discussion

### Respondent company profile and background

Table 1 shows that firms in logistics activities dominate with 79%, whereas industrial firms trail behind with 21%. Statistics from Table 1 also show the type of cargo or freight moved by the respondent firms follows a normal distribution with the construction and industrial products category being the dominant one (31.25%), followed by bulk liquids such as fuel (18.75%) and bulk agricultural products and timber-related products following closely at 17.50% and 15.00%, respectively. These statistics imply that the economy has some considerable amounts of cargo that could be ferried by rail, especially given that the country has been a net importer of many commodities (Rakotoarisoa, Iafate & Paschali 2011). The country has also been undergoing massive infrastructural development in an effort to pursue the dream of becoming a logistics hub for Southern Africa (NPC 2012).

As reported in Table 1, most firms have been operating in Namibia for an average of between < 5 years to > 15 years. The majority of the respondents who participated in this study were from the transport and logistics section of their respective firms (56.25%), followed by those from sales and marketing (18.75%) and business development personnel (11.25%). Views and opinions shared by all respondents who participated in this study were considered relevant and valid as confirmed by the Cronbach's alpha ( $\alpha$ ) reliability test results.

**TABLE 1:** Respondent company profile and background.

Factor	Frequency	Percentage
<b>Firm type</b>		
Logistics	63	79.00
Industrial firm	17	21.00
<b>Total</b>	<b>80</b>	<b>100.00</b>
<b>Type of cargo/freight shipped</b>		
Quarry products and aggregates	3	3.75
Timber-related products	12	15.00
Steel	10	12.50
Bulk liquids	15	18.75
Construction and industrial products	25	31.25
Bulk agricultural products	14	17.50
Others	7	8.75
<b>Total</b>	<b>80</b>	<b>100.00</b>
<b>Years of company operation in Namibia</b>		
Less than 5 years	23	28.75
6–10 years	17	21.25
11–15 years	18	22.50
Over 15 years	22	27.50
<b>Total</b>	<b>80</b>	<b>100.00</b>
<b>Respondent's background</b>		
Transport and logistics	45	56.25
Sales and marketing	15	18.75
Production	7	8.75
Business development	9	11.25
Technical	4	5.00
<b>Total</b>	<b>80</b>	<b>100.00</b>

### Preferred mode of transport

The study established that the most commonly preferred mode of transport is road transport (94%) compared to rail (6%). The industrial and logistics firms found the rail to be the less satisfactory mode of transport as compared to road transport. Most trucks used in road transport have long been deemed useful for short-haul traffic or for long-distance shipments of small loads (Speece & Kawahara 1995), and it is obviously favoured for its door-to-door delivery capability and quick turnaround time. On the contrary, it emerged that when using Namibian rail transport, one must bear in mind that most of the rail heads have minimal facilities for products that require special handling facilities, and in most cases, there is always need for road transport to complete the journey. Firms could perhaps improve rail transport by building their own branch-off lines to link their plants or depots to the main rail networks.

### Satisfaction with transport ownership

From the study's findings, it also emerged that firms are highly satisfied when they use their own trucks. The *t*-test results indicate that there are significant differences in the mean degrees of satisfaction for different ownership types. The findings suggest that, statistically, the use of company-owned truck services produced higher satisfaction scores compared to the use of rail transport ( $t = 0.570$  significantly different at  $\alpha = 0.10$ ) or use of a hired truck ( $t = 1.020$ ). Respondents felt that they do not have any control over the movement of their rail freight from one point to the other. The lower satisfaction scores for the rail services could also be attributed to the poor state of infrastructure and equipment

used in the rail transport networks in Namibia. It also emerged that the rail service provider lacks commitment in improving basic customer services such as delivery reliability and provision of personalised service.

### Rail transport management expertise

It emerged that 93% of the rail transport management personnel at TransNamib were local expertise. Only 7% were foreign experts. This confirms an empirically proven tendency for firms to employ locals to handle logistics (Huu-Phuong & ChooChee-Chuong 2000). A possible reason for this trend could be that rail operators in developing economies think that rail logistics is not as critical as other transport modes. It is important to note that certain functions within the rail transport sector (especially technical issues) may require the use of expatriates even though they may be more expensive and demanding to attract. From the analysis of rail transport success stories elsewhere, the study established that most of these rail operators have a number of expatriates who were hired for both technical and managerial functions. Thus, although the local expertise can manage certain aspects of the rail transport chain more effectively, it is critical to also engage some imported personnel to manage the other aspects.

### Rail transport concerns and problems

The rail transport concerns in Namibia are revealed in Table 2. The problem with the highest mean score (5.43) was the lack of appropriate rail infrastructures. It emerged that problem could be attributed to poor or inadequate rail transport signal equipment (including vandalised equipment), lack of appropriate cargo handling equipment at many of the rail heads in Namibia, poor telecommunications and information technologies. The available rail infrastructure has not been well maintained. For instance, dunes have not been well managed such that they now close some of the railway lines, whereas, in some cases, trees are seen blocking some railways tracks. All these issues have created a chain of

**TABLE 2:** Rail transport concerns in Namibia.

Rank	Challenges faced	Mean <sup>a</sup>	Standard deviation
1	Lack of appropriate rail infrastructures	5.43	1.39
2	Poor service delivery	5.30	1.43
3	Lack of rail carrier selection	5.28	1.55
4	Lack of intermodal services	5.14	1.68
5	Government policy favours road than rail growth	5.09	1.68
6	Lack of essential transportation equipment	4.84	1.44
7	Non-procedural practices at the rail ports	4.78	1.56
8	Limited flexibility	4.78	1.52
9	Lack of provision of door-to-door service	4.73	1.78
10	Poor rail transport management skills	4.71	1.44
11	Unwarranted transshipment time at terminals	4.69	1.38
12	Theft or pilferage of goods	4.67	1.64
13	Unavailability of choice or range of rail transport services	4.64	1.65
14	Unpredictability of rail transport charges	4.52	1.25
15	Frequent changes in transportation regulations	4.50	1.55

<sup>a</sup> Mean based on seven-point Likert scale, 1 = not serious problem, 7 = extremely serious problem.

problems such as difficulties in tracking cargo during delivery and in-transit thus prompting unexpected delays. The poor infrastructure was also attributed to the shortage of human capital to maintain and establish new railways. As a result, the prevailing old-fashioned technology has seen Namibian railways carry less cargo compared to the modern standard gauges elsewhere. The pilot interviews with the rail operator had also confirmed that they do not have enough civil or mechanical engineers to fix or maintain the country's railway lines and that they rely on getting people from other countries to do the job for them but mostly on a contract basis. The respondents strongly felt that the government should expand railroad capacity and they perceived that the government fell short of their expectations regarding channelling more resources to railway infrastructure.

Another major problem was poor service delivery from TransNamib, the local state-controlled rail operator. Respondents cited poor reliability in terms of not delivering the goods on time. It emerged that the rail operator lacks customer service orientation, has poor communications with customers and lacks a sense of urgency, thus they do not act expeditiously when eventualities occur. Consequently, Namibian rail has not managed to withstand competition from other modes of transport such as road, which the respondents perceived to be faster and more reliable. Third-ranked was the problem related to lack of rail career selection and hence the lack of competition, a problem that most respondents attributed to the ill-service that they receive from TransNamib. Evidently, there is a need for the government to increase competition via rail regulatory liberalisation and deregulation. This has proven to have a potential to improve efficiency in many European rail sectors as concluded by Oum, Waters and Chunyan (2010).

Ranked fourth was the lack of intermodal services with a mean of 5.14 and a standard deviation of 1.68. Respondents lamented the lack of proper linkage of the rail network to other modes of transports such as road and sea. Given that most industrial and logistics firms in Namibia are not linked up directly to the railway line, it emerged that users are looking forward to a situation whereby rail heads are connected to the waterways and road network. This could be done through the development of intermodal ports where different modes of transport (including rail) converge.

It is worthwhile to note that some of the concerns raised had relatively higher standard deviations. For instance, the lack of provision of door-to-door service has the highest degree of standard deviation (1.78). This might be due to the fact that rail transport is tied to a particular track; hence, different respondents had varying ratings depending on their access to the rail network. Though some few respondent firms had access to the main rail network through rail sidings, the majority did not have such access. The relatively large variations in other challenges such as the lack of intermodal service, the unavailability of choice of rail transport services and theft or pilferage problems could also be due to variations in access to rail networks.

It also emerged, from the study's findings, that developing economies' government policies mostly favour the development of roads instead of rail (mean = 5.09). This limits the number of both passenger and freight rail activities. This biased policy-making has been worsened by reports of embezzlement of funds allocated for the rail network that never gets recovered or taken seriously. Other concerns that emerged include transshipment issues (including delays, greater cost and increased chances of wear and tear) and limited flexibility as the network does not reach all corners of Namibia.

A further analysis of the rail transport problems suggests that the 15 problems can be categorised into four groups, but not necessarily following their ranking order. The four groups include challenges related to infrastructural development and maintenance, service delivery issues, government policy as well as organisational policy issues. The fact that these groupings are not necessarily following the ranking order implies that the rail transport challenges that Namibia is facing should be given equal attention.

## Summary of hypotheses results

In order to substantiate some of the presumptions regarding rail transport in Namibia, hypotheses were developed and consequently tested. Table 3 shows a summary of the hypotheses tests results.

The tests were meant to compare the significant and non-significant relationships in the proposed relationships through the use of Pearson's chi-square tests of associations. The hypotheses test results were also evaluated in terms of strength of the relationships using Cramer's value tests. From the summary of hypotheses results, all the four proposed hypotheses were supported. These supported hypotheses confirm the major findings.

## Conclusion and recommendations

In this study, the findings of a survey conducted on Windhoek-based industrial and logistics firms were discussed. The objectives of this study were to identify the freight rail transport problems faced by African developing economies, focusing on Namibia, and to examine the potential actions and factors for minimising such problems, drawing lessons from some of the developed world's success stories. The study concludes that Namibian industrial and logistics firms

avoid using rail, because of its low level of satisfaction obtained from its use. Despite the increasing road congestion and costs associated with road transport, it emerged that Namibian industrial and logistics firms still derive higher satisfaction in owning a fleet of vehicles. Although to some it has been a matter of a negative attitude building up over the years, the study also concludes that the low level of satisfaction is a result of neglected rail infrastructure, lack of intermodal transport services and poor service delivery from TransNamib, the state-owned rail operator.

Based on the conclusions above, the study reiterates that rail transport is just essential as the other modes of transport and should not be restricted nor sidelined as if it were a national burden. More effort should be put in rail infrastructure so that freight mobility may be moved from the congested road to rail for sustainable transport future (Alessandrini et al. 2012; Frémont 2016). Marketing and advertising should be utilised so that more potential rail freight users are aware of trains and that they are not expensive and can be used by anyone in need. In fact, there is need to market the rail services in a manner that is similar to what those in trucking business do. The government could also consider investment in the integration of all modes of transport, that is, the development of multimodal stations such as the 'Park and ride' (Meek 2008) used for passenger transport in most developed economies such as Germany. The development of a Multimodal Urban Distribution Centre could also be considered, drawing lessons from European experiences (Alessandrini et al. 2012). It is also high time Namibia should start dreaming and imagining the usage of electrical and high-speed trains. These could go a long way in enhancing pollution reduction, speed and competitiveness with other land modes of transport.

As confirmed by the study's findings, most developing economies' transport infrastructural support has been biased towards the road at the expense of rail. As a result, there has been growing competition amongst the truck firms and this has caused road logistics charges to drop significantly and service quality to rise tremendously. This has put pressure on the local companies to improve as competition has also been emanating from foreign trucking players. This implies that the developing economies' rail sector has to fight harder in order to catch up with this trend. However, the researcher argues that catching up is still very possible. Besides embracing the above recommendations, this study closes by cherry picking some lessons that Namibia can learn from other countries that have had their success stories well documented.

It emerged from the study that the rail transport sector is operated by the state. Drawing lessons from other successful rail sectors in the developed world, governments of developing economies such as Namibia should consider encouraging private carriers to operate in rail transport. There is need to encourage private sector involvement (including foreign investors) in rail management in order to improve railway efficiency and reduce structural distress

**TABLE 3:** Hypotheses tests results.

Hypotheses	<i>p</i>	Remarks
H <sub>1</sub> : The use of road transport will result in higher contentment than the use of rail.	***	Supported
H <sub>2</sub> : The use of own fleet the company's own fleet of transport can positively influence the level of satisfaction.	***	Supported
H <sub>3</sub> : There is a positive association between the extent of failure by government to upgrade rail and/or modernise rail infrastructure and the agreement with the government giving adequate support for rail transport.	0.002**	Supported
H <sub>4</sub> : Utilisation of rail transport depends on access to the appropriate rail infrastructure.	***	Supported

\*\*\*, probability < 0.001; \*\*, results supported at significance level  $p < 0.005$ .

emanating from maintenance work costs. In Europe, liberalisation of the railway sector resulted in increasing rail traffic load because of new competitors (Di Mascio, Loprencipe & Moretti 2014). The Namibian government could consider making TransNamib Holdings a Public Private Partnership (PPP), as a starting point. The role of PPPs as a mechanism for freight transport infrastructure delivery can never be underestimated as propounded by Ittmann (2017).

Given that most industrial and logistics firms in Namibia are not linked up directly to the railway line, it emerged that users are looking forward to a situation whereby rail heads are connected to the waterways and road network. This could be done through the development of intermodal ports where different modes of transport (including rail) converge. Such ports could serve as platforms to interlink rail with other modes of transport. The weakness of one mode of transport could then be overcome by the strength of the other mode of transport at such intermodal ports.

The Namibian government should also consider raising funds through toll fees as a way of raising revenue. The revenue could be used to maintain and upgrade the country's transport infrastructure including rail and road. There is also need to consider the establishment and expansion of rail sidings to industry and logistics along the current rail network. This could enhance usage of rail transport by such firms. At some point, the German rail sector introduced access charge regulations (Link 2012), and currently, it is one of the countries with the best-managed rail sectors.

It should be noted that, apart from expecting the government to do much of the work in alleviating the situation, the independent efforts by the affected firms can also go a long way in resolving the rail transport problems. For instance, logistics firms could pool their resources together and build infrastructure such as rail sidings. Combined efforts of private firms and the government could even help in coming up with more efficient and cost-effective ways to resolve the current rail transport concerns in developing economies. The state could focus on funding issues, while the private firm partners could use their market analytics to focus on marketing and promotion of rail transport.

The study established the emergence of poor service delivery from the current rail freight providers, TransNamib. Poor service delivery ranked second with a *mean* of 5.30. Thus, in order to address this, the parastatal should consider offering employee training on excellent customer service. The institution must also consider the provision of training and incentive programmes to help their key personnel such as locomotive engineers to develop and apply best practices and improve their awareness of fuel-efficient rail freight operations. This will help in saving the parastatal a lot of costs.

Namibia is currently in the process of building and upgrading its road network and elevating the road transport network to meet world standards. If road freight is not managed properly, all these massive investments may be in vain as lots of resources will be churned towards maintenance works. Hence, shifting freight from trucks to rail will save the Namibian economy from these enormous costs through the reduction of highway deterioration as well as reducing government pressure to construct new costly highways.

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